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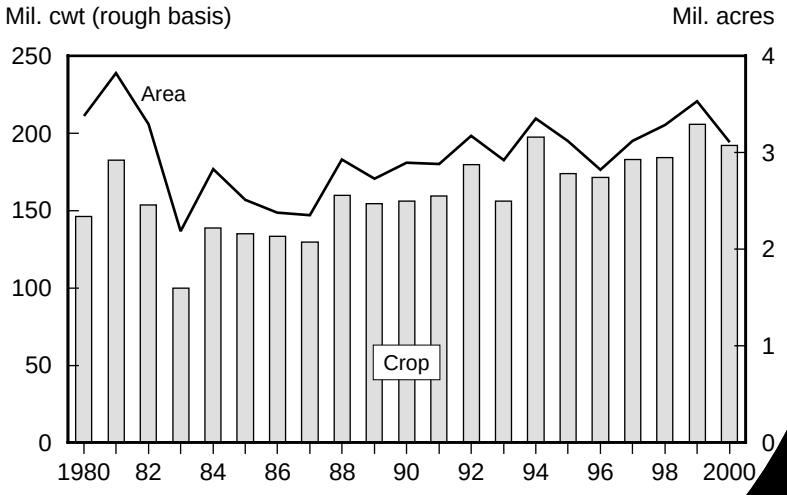
November 2000

Rice

Situation and Outlook Yearbook

A 12-percent drop in plantings pulls U.S. rice production down in 2000



2000 projected.
Source: National Agricultural Statistics Service, USDA.

Rice Situation and Outlook Yearbook. Market and Trade Economics Division, Economic Research Service, U.S. Department of Agriculture, November 2000, RCS-2000.

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Summary

Smaller Supplies, Weaker Exports Projected for 2000/01 U.S. Rice Market

Total U.S. rice supplies for 2000/01 are projected at 230.2 million hundredweight (cwt) (rough basis), down more than 3 percent from a year earlier's record. A 7-percent drop in production to 192.4 million cwt is behind the projected smaller total supplies. In contrast, beginning stocks and imports are up slightly from a year earlier.

U.S. rice plantings for 2000/01 are estimated at 3.11 million acres, down 12 percent from a year earlier's near record. Lower prices, as well as some drought-related problems in Louisiana, are behind this year's decline in rice acreage. In contrast, the average yield is projected to be a record 6,236 pounds per acre, up 6 percent from a year earlier. Generally good weather in most rice producing areas and a greater share of total U.S. plantings in California—which achieves the highest yields in the United States—are behind the stronger yield this year.

Long grain accounts for almost all of the decline in production. Long grain production in 2000/01 is projected at 130.6 million cwt, down 14 percent from a year earlier's record. Low prices at planting were behind a major drop in long grain plantings across the South. In contrast, combined medium/short grain production is projected to rise 14 percent to 61.8 million cwt, the largest since 1994/95. The larger crop is the result of expanded acreage in both California—which produces the bulk of the U.S. medium/short grain crop—and in the South. In fact, California is expected to produce a record crop in 2000/01. At planting, medium grain prices were substantially higher than long grain prices.

Total use is projected at 202.9 million cwt in 2000/01, down nearly 4 percent from a year earlier's record. Exports account for all of the expected decline in total use. Domestic disappearance is projected to increase fractionally. U.S. rice exports are projected to drop more than 10 percent to 80 million cwt, the lowest since 1996/97. While rough rice exports are projected to remain virtually unchanged at 25 million cwt, milled rice exports are projected to drop 14 percent to 64 million, the smallest in more than 20 years. Smaller U.S. supplies and expectations of very strong price competition in the international market are behind the substantial drop in U.S. milled rice exports.

With both total supply and total use each declining by nearly 8 million cwt, ending stocks are projected to drop just fractionally to 27.3 million cwt in 2000/01. The stocks-to-use ratio is projected at 13.4 percent, barely above a year earlier's 13.1 percent.

U.S. Long Grain Supplies Projected To Drop 10 Percent in 2000/01

The market outlook is very different by grain type. Long grain supplies are projected to drop more than 10 percent, to 155 million cwt, the smallest since 1997/98. A 14-percent drop in production accounts for the smaller supplies. Long grain beginning stocks and imports are up from 1999/2000. Total long grain use is projected to drop 10 percent to 142 million cwt, also the lowest since 1997/98. Both domestic use and exports of long grain rice are projected to be well below a year earlier.

Long grain ending stocks are projected to drop 15 percent to 13.3 million cwt, the lowest since 1995/96. The resulting stocks-to-use ratio is 9.3 percent, down from 9.9 percent in 1999/2000 and the second lowest since supply and use tables were first reported by grain type in 1982/83.

The medium/short grain market faces a very different outlook in 2000/01. Total supplies are projected to rise 16 percent to 73.4 million cwt, the largest since 1994/95. Both beginning stocks and production are up substantially from a year earlier. Total medium/short grain use is projected to rise 15 percent to 60.9 million cwt. Domestic use is expected to account for all of the increase. Exports are projected at 18 million cwt, virtually unchanged from a year earlier. The net result is a 20-percent increase in ending stocks to 12.5 million cwt, the largest since 1995/96. The stocks-to-use ratio is projected to rise slightly to 20.6 percent.

The 2000/01 season-average farm price is projected at $5.75 to $6.25 per cwt, with a mid-point of $6.00, nearly unchanged from a year earlier's $6.11. However, the price situation by grain type is expected to be very different. Long grain prices have already risen from the recent lows of last spring and summer, a result of expected tighter supplies and several large food aid purchases early in the 2000/01 market year. In contrast, medium/short grain prices began dropping at harvest in both the South and California from the relatively high levels of the past 2 years. The recent decline is due to much larger supplies this year.

U.S. prices for both long and medium grain milled rice are well below a year earlier. In late November, prices for high quality southern long grain (U.S. No. 2, 4-percent brokens, fob mill in Houston) were quoted at $276 per ton, down from almost $300 a year earlier. However, U.S. long grain milled prices were as low as $248 in May before rising on several large food aid purchases and expectations of tight supplies in 2000/01. Prices for California medium grain milled rice (U.S. No. 1, 4-percent brokens, fob mill in Sacramento) were quoted at $342 per ton in late November, down from $452 a year earlier. Prices for California medium

grain have been dropping since mid-summer on expectations of a record California harvest.

Abundant Supplies Projected for Major Exporters in 2001

Since last summer, international rice prices have been the lowest in 7 years, a result of bumper crops in 1999/2000 in most major exporting countries, and, except for Iran, no significant production problems were reported in a major importing country. For 2000/01, even with global rice production projected to drop more than 1 percent from a year earlier's record to 397.7 million tons (milled basis), there is little expectation of any price strengthening. This forecast assumes normal weather for the remainder of the 2000/01 market year. A major weather problem could alter this projection.

China accounts for the bulk of this year's expected reduction in global rice production. However, China is expected to have plenty of supplies for both its domestic market and to expand exports. Other major exporters—Thailand, Vietnam, and India—are expected to produce record- or near-record crops in 2000/01. Drought reduced Pakistan's crop in 2000/01, and the United States' crop is down due to weaker plantings. With the exception of a severe drought in parts of the Middle East that has reduced crops in Iran and Iraq, most major importers are expecting to harvest bumper crops in 2000/01.

Global rice trade is projected at 24.6 million tons in 2001, up 8 percent from a year earlier but still 10 percent below the 1998 record of 27.3 million tons. On the import side, Indonesia accounts for the bulk of the increase in global trade, with imports expected to rise 1 million tons to 3 million, a result of steady production and rising population. Iran and North Korea are the only other countries where imports are projected to rise more than 100,000 tons in 2001. Smaller increases in imports are projected for the Philippines, Saudi Arabia, Russia, Cuba, Guinea, and China. In contrast, imports are projected to decline in 2001 for Bangladesh, Malaysia, and South Africa.

On the export side, Thailand, Vietnam, India, and China are all expected to ship more rice in 2001. Pakistan's exports are projected to drop slightly in 2001, and U.S. exports are expected to remain unchanged from 2000. Both Australia and Egypt are projected to export more rice in 2001, indicating strong competition with the United States in the eastern Mediterranean.

Global rice prices have remained relatively unchanged since July. Quoted prices for Thai 100 percent Grade B have averaged about $190 per ton since mid-July, with prices trading within a very narrow range around this level. These are the lowest quoted prices for any significant period of time since the late 1980's. Prices for Vietnam's 5 percent brokens have remained between $175 to $185 since July, even with severe flooding during much of late summer and fall.

Rice Conversions

1 cwt = 100 pounds = 2.22 bushels = .0453 metric ton
1 metric ton = 2,204.6 pounds = 22.046 cwt = 48.992 bushels
1 cwt rough rice = .032 metric ton milled
1 metric ton milled = 31 cwt rough

Smaller Crop Pulls U.S. Rice Supplies Down

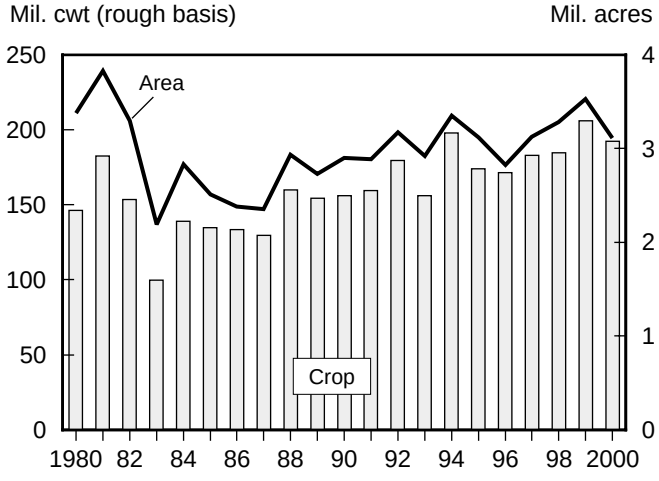
U.S. rice supplies are projected to decline more than 3 percent in 2000/01, the result of a 7-percent drop in production. The smaller crop is the result of a 12-percent cut in plantings, nearly all long grain. Long grain will account for all of the supply contraction, with supplies projected to drop more than 10 percent. In contrast, combined medium/short grain supplies are projected to rise 14 percent.

U.S. Rice Crop Down 7 Percent On Smaller Plantings

Based on estimates by the U.S. Department of Agriculture's (USDA) National Agricultural Statistics Service (NASS) in early November, the 2000/01 U.S. rice crop is forecast at 192.4 million hundredweight (cwt) (rough basis), down nearly 7 percent from a year earlier's record. A more than 12-percent reduction in harvested area to 3.09 million acres accounts for the smaller crop. The area drop was partially offset by a more than 6-percent increase in the average yield to a record 6,236 pounds per acre.

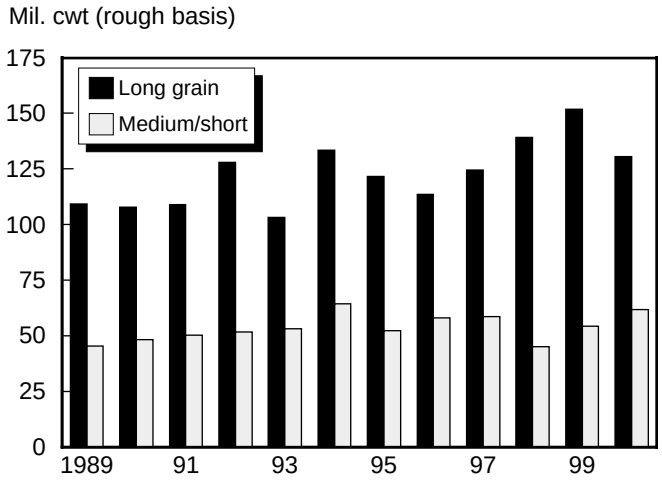
NASS reports annual rice production grown in six States: Arkansas, California, Louisiana, Mississippi, Missouri, and Texas. These six States account for about 99 percent of total U.S. rice production, with Florida accounting for most of the remainder. In addition, Tennessee, Oklahoma, South Carolina, and Kentucky typically grow very small amounts of rice.

Figure 1
A 12-percent drop in plantings pulls U.S. rice production down in 2000



2000 projected.
Source: National Agricultural Statistics Service, USDA.

Figure 2
U.S. long grain production projected to be down 14 percent



2000 projected.
Source: National Agricultural Statistics Service, USDA.

Long grain accounts for almost all of the drop in production. Long grain production is projected at 130.6 million cwt, down from a year earlier's record of 151.9 million. In contrast, medium grain production is projected at 59.4 million cwt, up nearly 18 percent from a year earlier and one of the largest on record. Short grain production, accounting for slightly more than 1 percent of the total U.S. crop, is projected at 2.4 million cwt, down almost a third from 1999/2000.

Declining prices for long grain rice at planting, and expectations of further declines, accounted for most of the acreage contraction. In addition, problems stemming from early-season drought further caused plantings to decline in Louisiana. In September, NASS reported 2000 long grain plantings at 2.26 million acres, down 17 percent from a year earlier's record and the lowest since 1996/97.

In contrast, the prices for medium grain rice were significantly higher than for long grain rice at planting. Tight sup-

plies caused by weather problems in California—where the bulk of the medium grain crop is grown—were a major factor behind relatively high medium grain prices during 1999/2000. The high prices resulted in a more than 9-percent increase in medium grain plantings, estimated by NASS in September at 817,000 acres, the largest since 1996/97.

Short grain acreage, accounting for about 1 percent of total U.S. rice plantings, dropped 36 percent to 33,000 acres in 2000. California accounted for all of the reduction. The bulk of California's short grain crop is exported to Japan.

U.S. Average Yield Estimated At Record 6,236 Pounds Per Acre

In early November, NASS forecasted average field yields for 2000/01 at a record 6,236 pounds per acre, up more than 6 percent from a year earlier. Generally favorable weather in most growing areas, as well as a shift in acreage to the higher yielding California rice are behind the record yield. Weather problems reduced California's yields during 4 of the past 5 years. And although much of the Delta experienced extremely hot weather this summer, it occurred after the rice had filled out and had little impact on field yields. However, the hot weather may have reduced milling yields.

Field yields are reported higher this year in all rice growing States except Louisiana where a marginal decline is projected. In fact, in November, NASS estimated record yields for Texas, Mississippi, and Missouri. The Texas rice yield is projected at 6,500 pounds per acre, up 600 from a year earlier. This is the highest average yield ever reported by a southern rice producing State. Mississippi's yield is projected at 6,000 pounds per acre, tied with the 1996 record and up more than 6 percent from a year earlier. Missouri's yield is up 300 pounds per acre to a record 5,700 pounds per acre.

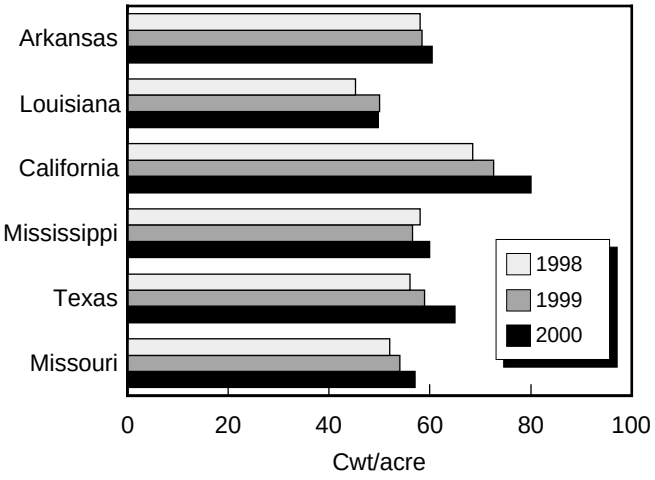
California yields are projected at 8,000 pounds per acre, up from a year earlier's weather-damaged 7,270 pounds. However, California's rice yield remains below the record 8,500 pounds per acre achieved in 1991, 1992, and 1994. Average yields in Arkansas are projected at 6,050 pounds per acre, up more than 3 percent from last year and the second highest on record. Yields in Louisiana are estimated at 4,980 pounds per acre, down 20 pounds from the 1999 record. Several problems stemming from early-season drought, including salinization, account for the weaker yield in Louisiana. Louisiana consistently has the lowest yields of any rice producing State.

Rice Acreage Drops This Year In Southern States

In September, NASS reported total harvested area at 3.09 million acres, down 427,000 from a year earlier, with all Southern States reporting smaller acreage. Arkansas, the largest producing State, accounted for the biggest share of the reduction. Harvested area dropped 215,000 acres to 1.41 million. Mississippi reported the largest percentage reduction, nearly 33 percent, with harvested area dropping 105,000 acres to 218,000, the smallest since 1996/97. In addition to low prices, an insurance plan that favored cotton over rice contributed to the steep decline in rice acreage in Mississippi. Harvested area in Louisiana is estimated at 495,000 acres, down almost 20 percent from 1999, the lowest since 1989/90.

Figure 3

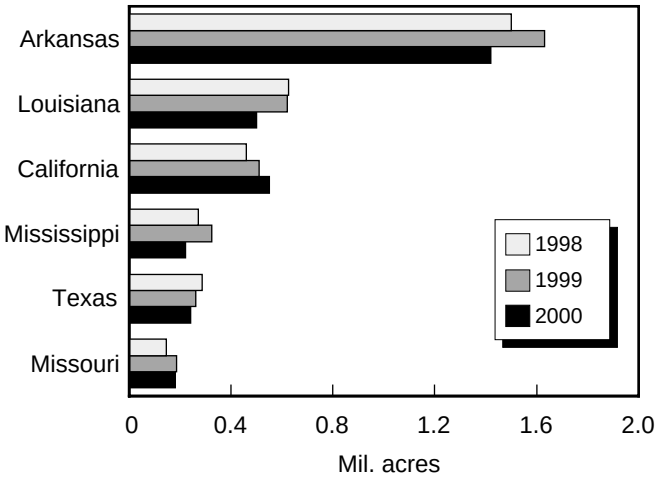
Yields are higher in every State except Louisiana



2000 estimated.
Source: National Agricultural Statistics Service, USDA.

Figure 4

Rice plantings dropped in every State except California



2000 estimated.
Source: National Agricultural Statistics Service, USDA.

The decline in acreage is smaller in Texas and Missouri. Harvested area in Texas is estimated at 239,000 acres, down 20,000 from last year and the lowest in well over 50 years. Texas rice acreage has been declining for 20 years. In Missouri, the smallest rice producing State, harvested area is estimated at 175,000 acres, down about 5 percent from the 1999 record but still the second highest on record.

In contrast to the South, harvested area in California is estimated to have risen nearly 9 percent in 2000 to 548,000 acres, the largest since 1981. California has the second largest rice acreage among rice growing States this year. Relatively high prices for medium grain rice at planting, the bulk of the State's rice crop, were behind the area expansion this year. Except for 1997, California experienced significant weather problems in 4 of the past 5 years that cut supplies and helped maintain prices.

Record Production Projected For California in 2000

Rice crops are estimated to be smaller this year in Arkansas, Louisiana, and Mississippi. In contrast, California and Missouri are expected to harvest record crops. Arkansas is expected to account for the bulk of the 13.6-million-cwt drop in total U.S. rice production in 2000. Rice production in Arkansas this year is estimated at 85.3 million cwt, down 9.7 million from a year earlier's record, a result of weaker plantings.

In Mississippi, rice production is estimated at 13.1 million cwt, down 28 percent from 1999, a result of much smaller plantings. This is the smallest Mississippi rice crop since 1996/97. Rice production in Louisiana is estimated at 24.7 million cwt, down 20 percent from a year earlier's record, a result of a big drop in area and a slightly smaller yield. This is the smallest rice crop in Louisiana since 1993.

In contrast, California's 2000 crop is estimated at a record 43.8-million cwt, up nearly 20 percent from a year earlier. Both area and yield are estimated to be larger than in 1999. Even with an 8-percent reduction in area, Texas rice production is projected to rise almost 2 percent to 15.5 million cwt. Missouri's rice production is projected at nearly 10 million cwt, a record and up fractionally from 1999. A higher yield more than offset reduced plantings in Missouri. Rice production has expanded significantly in Missouri in the last decade.

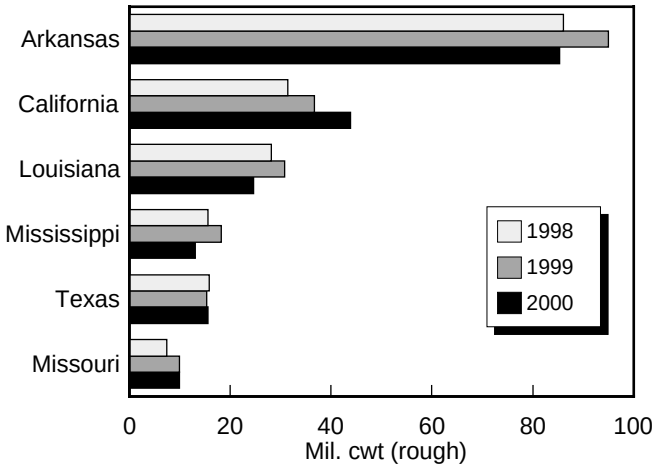
Total U.S. Supplies Are Projected To Drop to 230 Million Cwt

Total U.S. rice supplies in 2000/01 are projected at 230.2 million cwt, down more than 3 percent from a year earlier's record 238.1 million. The smaller supplies are the result of a 7-percent drop in production. In contrast, both beginning stocks and imports are expected to be higher than a year earlier. Based on the NASS August *Rice Stocks* report, beginning stocks for 2000/01 are estimated at 27.5 million cwt, up 5.4 million from a year earlier.

U.S. rice imports in 2000/01 are projected at almost 10.3 million cwt, up 230,000 from a year earlier. Nearly all U.S. rice imports are aromatic varieties. Most are long grain varieties. U.S. rice imports have increased sharply over the past two decades. However, the rate of growth has slowed slightly since 1995/96. About 75 percent of U.S. rice imports come from Thailand—mostly jasmine rice—and the bulk of the remainder is basmati from India and Pakistan. Italy also exports small quantities of arborio rice to the United States,

Figure 5

A record California rice crop is projected for 2000

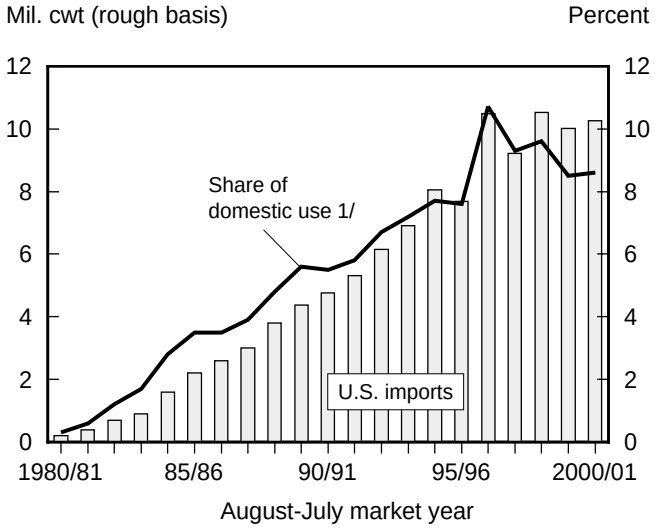


2000 projected.

Source: National Agricultural Statistics Service, USDA.

Figure 6

U.S. rice imports have grown little since 1996/97



1/ Does not include seed use. 2000/01 projected.

Source: Economic Research Service, USDA.

and smaller quantities of rice are imported from Vietnam, China, and Egypt.

The supply situation is very different when examined by grain type. For long grain rice, total supplies are projected at 155.3 million cwt, down more than 11 percent from a year earlier's record. The smaller supplies are the result of a 14-percent drop in production, both beginning stocks and imports are larger than a year earlier.

Based on the August *Rice Stocks* report, long grain rice stocks at the start of the 2000/01 marketing year are estimated at 15.6 million cwt, up more than 11 percent from a year earlier. A record 1999/2000 long grain crop is a main factor behind the larger beginning stocks. Imports of long grain rice are projected at 9.1 million cwt, up more than 20 percent from a year earlier.

The supply situation in the medium/short grain market is quite different. Total medium/short grain supplies are projected at 73.4 million cwt, up 16 percent from a year earlier and the largest since 1994/95. Greater production and larger beginning stocks are behind the substantial increase in medium/short grain supplies. Combined medium/short grain production is estimated at 61.8 million cwt, up 14 percent from a year earlier and the largest since 1994/95.

Based on NASS reporting, medium/short grain stocks at the start of the 2000/01 market year were estimated at 10.4 million cwt, up 53 percent from a year earlier. In 1999/2000, beginning stocks of medium/short grain were the lowest on record since supply and use tables were first reported by grain type in 1982/83. An extremely weak 1998/99 California crop was the primary reason for the extremely tight 1999/2000 beginning stocks of medium/short grain rice. In contrast to production and beginning stocks, medium/short grain imports are projected to drop more than 50 percent to 1.2 million cwt in 2000/01.

Total Use Projected To Drop 4 Percent

Total use in 2000/01 is projected to drop nearly 4 percent from a year earlier's record. Exports are expected to account for all of the reduction in total use. Total domestic and residual is projected to increase slightly. Long grain is projected to account for nearly all of the reduction in total use, with exports and domestic use declining. In contrast, total use of combined medium/short grain is projected to rise more than 15 percent.

Weaker Exports To Pull Total Rice Use Down

Total use—domestic and residual plus exports—in 2000/01 is projected at 202.9 million hundredweight (cwt), down nearly 4 percent from a year earlier's record. Exports account for all of the expected reduction in total use. Total domestic use (including residual) is projected to increase slightly.

Total domestic utilization (food, industrial, and residual plus seed use) is projected at a record 122.9 million cwt, up more than 1 percent from 1999/2000. Food, industrial, and residual—projected to increase more than 1 percent to a record 119 million cwt—accounts for all of the expected growth. Seed use is projected to drop fractionally to 3.9 million cwt.

While rice consumption in the United States has increased steadily since the late 1970's, the rate of growth has slowed slightly since the mid-1990's. Fewer meals fixed at home and a premium on meal preparation time have contributed to a slowing of the growth in U.S. rice consumption.

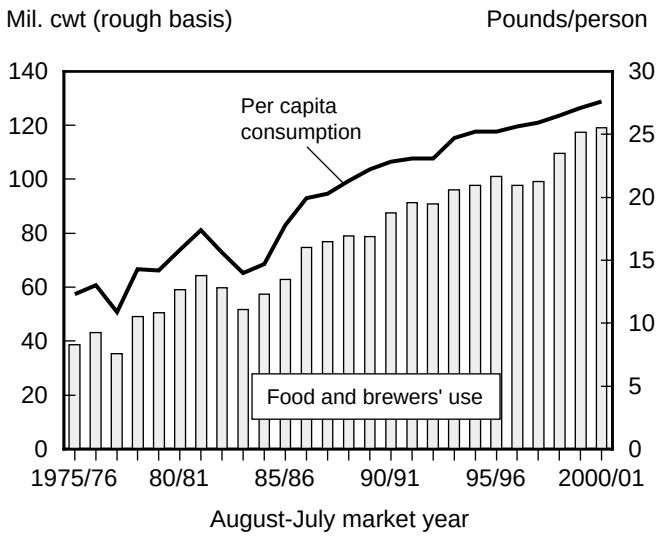
Food use accounts for most of the expansion in U.S. rice consumption over the past two decades. In fact, during the 1980's and early 1990's, growth in U.S. food consumption of rice averaged 5 percent a year. The U.S. Department of Agriculture's (USDA) 2000 long-term baseline projection forecasted a growth rate of 2 to 3 percent a year for the next decade. Strong growth in U.S. food use has been largely due to a big increase in immigration from Asia, Latin America, and Africa since the late 1970's. These ethnic groups typically have much higher per capita rice consumption than the United States as a whole. In addition, greater emphasis on healthy life styles, convenience, and versatility have encouraged greater U.S. rice consumption.

In contrast, beer use has essentially been flat since the late 1980's. Greater popularity of "lite" beers, increased beer imports, and little growth in per capita consumption account for the lack of growth in rice use in beer.

Per capita rice consumption—including direct food use, processed foods, and beer—has doubled since the mid-1980's and is currently about 27 pounds a person. Since the mid-1990's, per capita consumption has grown about a half a pound a year, down from about nearly a pound a year in the 1980's and early 1990's.

Figure 7

U.S. rice consumption has more than doubled in less than 20 years



2000/01 projected.
Source: Foreign Agricultural Service, USDA.

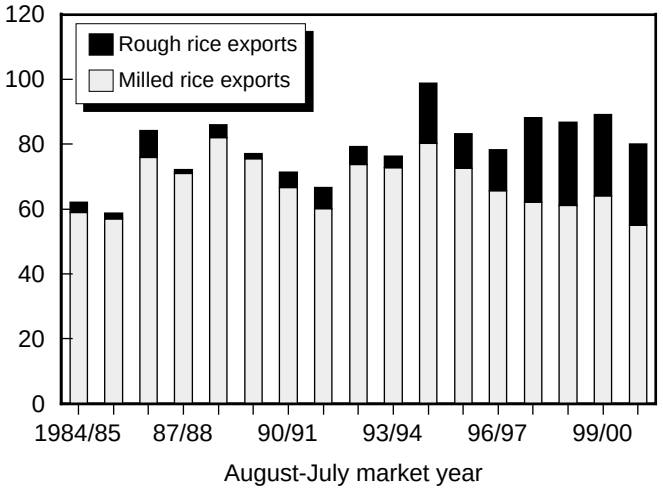
U.S. Exports Projected To Drop 10 Percent to 80 Million Cwt

In contrast to rising domestic use, total U.S. rice exports are projected to decline more than 10 percent to 80 million cwt in 2000/01, the lowest since 1996/97. Smaller supplies and very strong competition from low-priced Asian exporters are behind the substantial drop in U.S. exports. Milled rice is expected to account for all of the reduction in exports. Rough rice exports are projected to remain at a year earlier's level.

U.S. milled rice exports are projected at 55 million cwt in 2000/01, down 14 percent from a year earlier and the lowest in more than 15 years. Extreme price competition with

Figure 8
U.S. milled rice exports projected to drop 14 percent in 2000/01

Mil. cwt (rough basis)



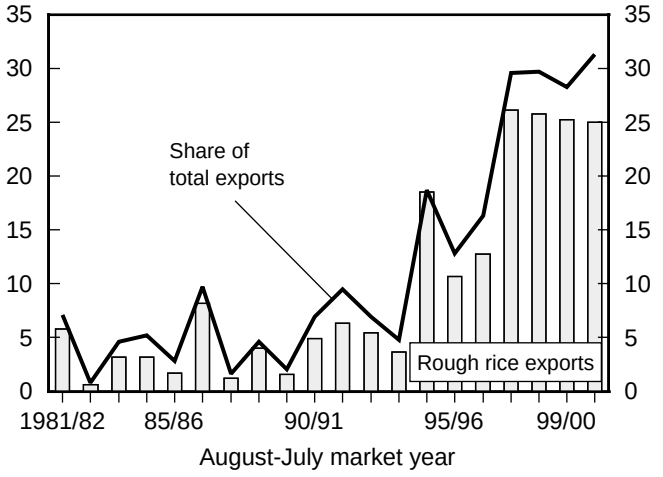
2000/01 projected.
Source: Economic Research Service, USDA.

Asian exporters, particularly in South Africa and the Middle East, is behind the substantial reduction.

In contrast, rough rice exports are projected at 25 million cwt, fractionally below a year earlier and down only 4 percent from the 1997/98 record. Continued strong shipments to Mexico, Central America, and Turkey are behind the robust rough rice export forecast. The United States is the only major exporter of rough rice, and rough rice has

Figure 9
Rough rice accounts for more than 30 percent of U.S. rice exports

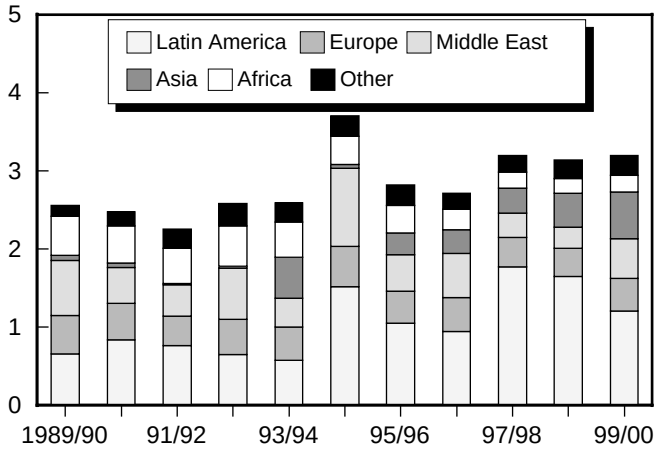
Mil. cwt (rough basis) Percent



2000/01 projected.
Source: Economic Research Service, USDA.

Figure 10
Latin America is the largest market for U.S. rice exports

Mil. tons (product weight)



Source: Bureau of the Census, USDC.

become a larger share of U.S. exports, accounting for around 30 percent in recent years.

Long grain accounts for the bulk of U.S. rough rice exports, with Latin America the top market. Mexico and Central America are generally the largest buyers in Latin America, although South America has taken substantial amounts in some years. The United States exports smaller amounts of medium grain rough rice to Turkey.

U.S. rough rice exports have expanded substantially over the past decade. And while the 1997/98 El Niño pushed U.S. shipments to record and near-record levels in 1997/98 and 1998/99, shipments to regular buyers have risen as well. While none of the major Asian exporters ship rough rice, Argentina, Uruguay, and Guyana ship some rough rice within Latin America, and Australia has recently started shipping rough rice to Turkey.

Long Grain Accounts for All of the Reduction In Exports and Domestic Use

Long grain accounts for all of the projected reduction in total rice use in 2000/01. Total long grain use is projected at 142 million cwt, down 10 percent from a year earlier's record and the smallest since 1997/98. Both domestic use and exports are projected to drop substantially from a year earlier.

Total domestic use (including residual) of long grain rice is projected at 80 million cwt, down 8 percent from a year earlier's record but still the second largest on record. Expectations of some shift by brewers and food processors from long to medium grain rice is behind some of the projected reduction in domestic use of long grain rice. Last year,

due to very tight supplies of medium grain rice, some shift to the more abundant and lower priced long grain rice occurred.

Long grain exports are projected to drop 13 percent to 62 million cwt, the lowest since 1996/97. Milled rice is expected to account for nearly all of the drop in long grain exports. Tight supplies and expectations of continued very low prices among Asian exporters are behind the substantial drop in U.S. long grain exports. The United States faces its strongest competition from low-cost Asian exporters in the Middle East and South Africa.

In contrast to the U.S. long grain market, total use of combined medium/short grain rice is projected to rise 15 percent to 60.9 million cwt, the largest since 1996/97. Domestic use, including residual, accounts for all of the growth. Medium/short grain exports are projected at 18 million cwt, virtually unchanged from a year earlier.

Total domestic use of combined medium/short grain rice is projected to rise 24 percent to 42.9 million cwt, the second largest on record. Abundant supplies and lower prices are behind the expected big increase in domestic use. In 1997/98 and 1998/99, supplies of medium/short grain rice were reduced by weak crops in California, which kept prices well above those for long grain rice.

No growth is projected for U.S. medium/short grain exports in 2000/01. Japan is the largest global importer of japonica (or medium/short grain) rice and the largest market for U.S. medium/short grain rice. The United States typically supplies about half of Japan's annual rice imports. China, Australia, and Thailand supply most of the rest. Virtually all of Japan's rice imports are purchased under World Trade Organization's (WTO) minimum access requirements.

This is the last year of a scheduled increase in Japan's WTO imports. Imports are expected to remain at the 2000/01 level unless a new agreement is reached. In recent years the United States has lost market share under the Simultaneous-Buy-Sell portion of Japan's minimum access purchases, primarily to Australia and China.

Both Australia and Egypt, major competitors of the United States in the global japonica market, are projected to harvest bumper crops in 2000/01. The United States competes with these two countries in Turkey and Jordan.

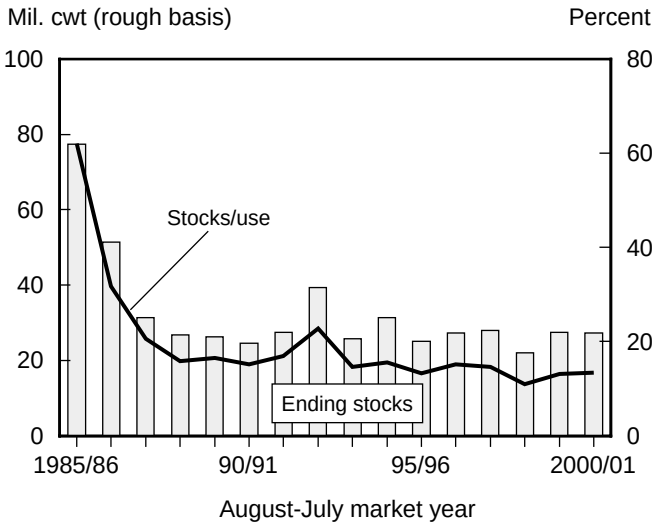
Long Grain Ending Stocks Projected To Drop 15 Percent

U.S. ending stocks of all rice are projected at 27.3 million cwt, down less than 1 percent from 1999/2000. The near-steady ending stocks are the result of total supplies and total use each dropping almost 8 million cwt in 2000/01. The stocks-to-use ratio is projected at 13.4 percent, slightly higher than last year's 13.1 percent.

The ending stocks situation is expected to be vastly different by grain type. Long grain ending stocks are projected at 13.3 million cwt, down more than 15 percent from 1999/2000. The long grain stocks-to-use ratio is projected at 9.3 percent, down from 9.9 percent from a year earlier. This is the lowest long grain stocks-to-use ratio since 1995/96 and the second smallest ratio since supply and use were first reported by grain type in 1982/83.

In contrast to the tight ending supply situation for long grain rice, medium/short grain ending stocks are projected to rise more than 20 percent to 12.5 million cwt, the largest since 1995/96. The stocks-to-use ratio is projected at 20.6 percent, up from a year earlier's 19.8 percent and the highest since 1997/98.

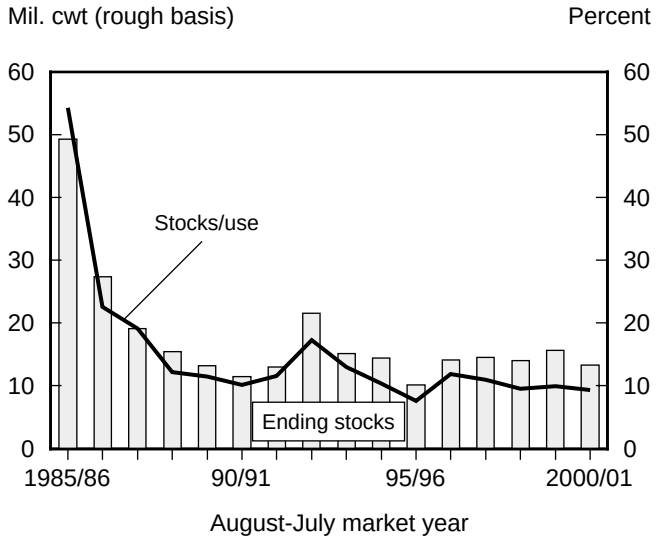
Figure 11
Little change projected for U.S. ending stocks in 2000/01



2000/01 projected.
Source: Economic Research Service, USDA.

Figure 12

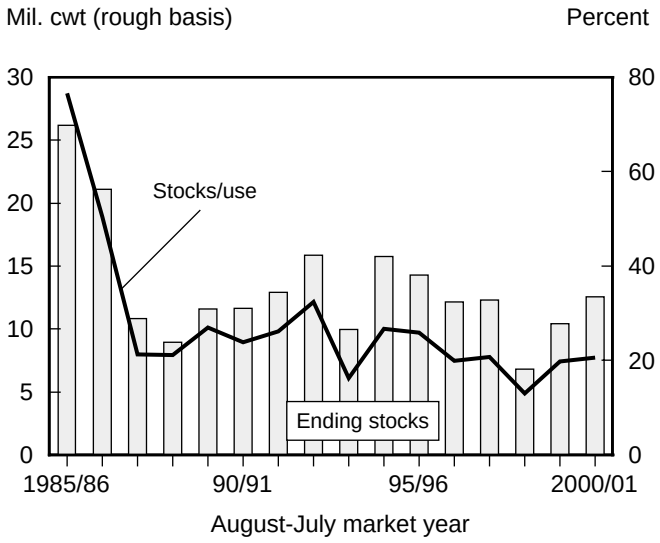
Long grain ending stocks projected to drop 15 percent



2000/01 projected.
Source: Economic Research Service, USDA.

Figure 13

Combined medium/short grain ending stocks projected to rise 20 percent



2000/01 projected.
Source: Economic Research Service, USDA.

Little Change Is Projected for the U.S. Season-Average Farm Price

With total supply and use each projected to drop nearly 8 million cwt in 2000/01, little change from a year earlier is projected in the 2000/01 season-average farm price. Marketing loan gains are currently the highest since 1986/87, a result of extremely low world prices. Without a major weather disturbance there is little reason to expect strengthening world prices. Total food aid shipments in fiscal 2000 are estimated to be nearly 402,000 tons, down about 30 percent from a year earlier.

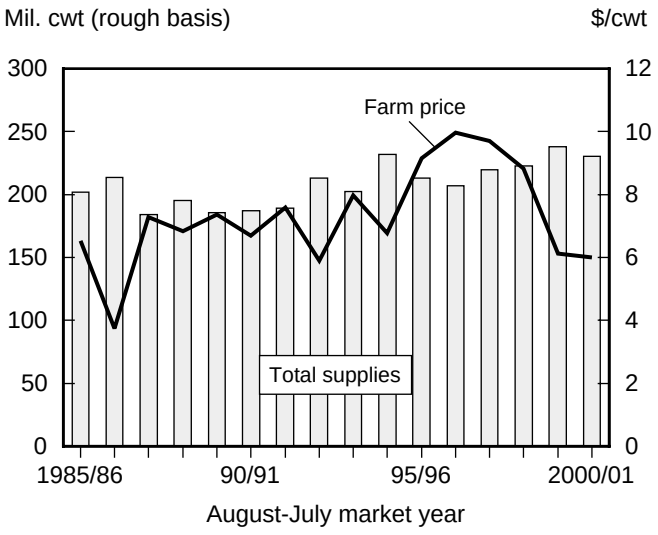
Season-Average Farm Price Projected at $5.75 to $6.25 per cwt

The 2000/01 U.S. season-average farm price is projected at $5.75 to $6.25 per cwt, with a $6.00 per cwt mid-point, virtually unchanged from a year earlier's $6.11. With both ending stocks and the stocks-to-use ratio almost unchanged from 1999/2000, there is little reason to expect a major change in the season-average farm price.

Average U.S. monthly cash prices have strengthened slightly since the start of the 2000/01 market year. In November, the National Agricultural Statistics Service (NASS) reported the October mid-month price at $5.86, up from $5.72 in September and $5.60 in August. Average monthly cash prices had dropped to $5.47 in July, the lowest since September 1993. Average monthly cash prices have risen since July based on expectations of tighter supplies of long grain rice this year and several large food aid purchases early in the 2000/01 market year.

Figure 14

Despite smaller supplies, little change is projected in the U.S. season-average farm price 1/



1/ 2000/01 is mid-point of projected range.
Economic Research Service, USDA.

Quoted prices for long grain rice have risen slightly since spring on expectations of a much smaller long grain crop this year and several large purchases for food aid shipments in late summer and early fall. In May, quoted prices for long grain rice in the Delta were reported below $5 per cwt, the lowest since the mid-1980's. By mid-November, prices in the Delta were reported above $6 for long grain.

In contrast, medium grain farm prices have dropped since last spring. Because of very tight supplies, there was very little selling of medium grain rice from spring until the start of the 2000 harvest. Since late September, southern medium grain prices have been reported around $5.20 per cwt, nearly $1 below prices for long grain. The California harvest has only recently ended, so there is not much price data on the 2000 crop yet. Most of California's rice crop is purchased under a pooling method where producers receive an initial payment at harvest and additional payments over the next year.

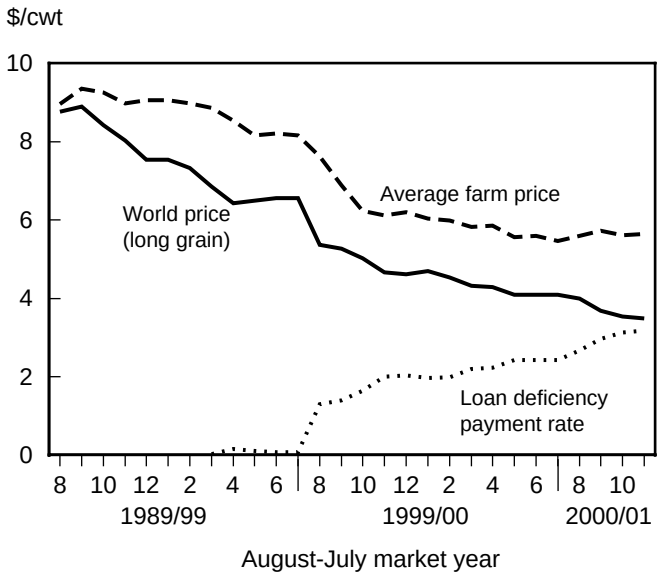
Marketing Loan Gains Exceed $3 Per Cwt for Long Grain

U.S. producers are eligible for marketing loan benefits when foreign prices (represented by USDA's weekly announced world price) fall below the loan rate for rough rice. Since the spring of 1999, world prices have remained below the loan rate, making U.S. rice producers eligible for marketing loan benefits. From the start of the 1995/96 market year until late March 1999, the announced world price exceeded the loan rate, thus marketing loan payments were not available.

Payment rates were less than $1 per cwt from the spring of 1999 until the start of the 1999/2000 market year. Declining world prices caused payment rates to rise during 1999/2000 and by early spring exceeded $2 per cwt for all three classes of rice—long, medium, and short. By late November 2000, the payment rate for long grain rice was $3.26 per cwt, for medium grain $2.85, and for short grain $2.88. This is the highest payment rate for long grain since July 1987. The payment rates for medium and short grain were slightly higher in September.

Figure 15

U.S. farm prices have remained less than $6 per cwt for nearly a year



Sources: Monthy farm prices, National Agricultural Statistics Service, USDA. Announced world price and loan deficiency payment, Farm Service Agency, USDA.

In late November, the announced world market price for rice was reported at $3.40 for long grain and $3.28 for medium and short grain. This is the lowest announced world price for long grain ever reported. In September, the announced world price for medium grain was reported at $3.16 per cwt, the lowest reported for medium grain since January 1987. Abundant world supplies make it unlikely that these prices will rise very much during the current market year.

U.S. Food Aid Shipments Dropped in Fiscal 2000

Food aid and credit guarantees account for the bulk of government assistance available for rice exports. Total program exports—food aid plus credit guarantees—in fiscal 2000 are estimated at 626,000 tons, with credit guarantees accounting for 225,000 tons and food aid shipments about 402,000 tons. Combined, these export programs accounted for 19 percent of total U.S. rice exports in fiscal 2000, down from 25 percent a year earlier. These estimates are based on annoucements and purchases through October 2000.

In fiscal 1999, total program exports were nearly 777,000 tons (192,000 tons in credit guarantees plus almost 585,000 tons for PL 480). Both total program shipments and food aid shipments in fiscal 1999 were the largest since 1993.

Marketing Loan Program Assist U.S. Producers When Global Prices Are Low

The marketing loan program was introduced in 1986 to improve the competitiveness of U.S. rice in international markets. The program is designed to assist producers when international prices are low. During much of the early and mid-1980's, U.S. loan rates exceeded international prices, isolating U.S. rice from the global market. However, under the marketing loan program, when the prevailing world price of rice is less than the loan rate, loans are paid back at the world price. This prevents the loan rate from acting as a price floor for U.S. rice in international markets.

Payments under the program are based on the difference between the announced world rice price (as calculated by USDA) and the loan rate for rough rice. Both the announced world price and loan rates are reported for long, medium, and short grain rice. Income gains to producers occur when foreign prices (represented by USDA's weekly announced world price) fall below the loan rate for rough rice. The statutory loan rate for all classes of rice is fixed at $6.50 per cwt. To achieve this national average loan rate, separate loan rates are calculated for each grain type based on historic average milling yields.

Farmers can receive government payments under the marketing loan program in two ways, either through "marketing loan gains" or "loan deficiency payments." Under either method, government payments are made when the world price falls below the loan rate. These payments are referred to as *marketing loan benefits.*

The payments received by farmers from the marketing loan program vary from year to year. From 1995/96 through 1997/98, the announced world price exceeded the loan rate, so no marketing loan payments were made. However, in early 1999 when world prices began to fall, marketing loan payments were available. A steady decline in world rice prices pushed these payments to more than a $1 per cwt in August 1999, and by the end of the 1999/2000 market year, they exceeded $3 per cwt. In fiscal 1999, government payments for the marketing loan program totaled $395 million.

U.S. rice is shipped under three food aid programs PL 480 (Title I and Title II), Section 416(b) surplus removal, and Food for Progress. Title I, or concessional sales, accounted for more than 135,000 tons in fiscal 2000. Title II, or food donations, accounted for almost 86,000 tons (including 32,000 tons shipped under the World Food Program). More than 141,000 tons of rice were shipped under the Section 416(b) surplus removal program, including nearly 89,000 shipped under the World Food Program. Rice shipments under the Food for Progress program were nearly 40,000 tons in fiscal 2000.

Compared with fiscal 1999, these were substantial decreases for shipments under both Title I and Title II. However, fiscal 2000 was the first year in which rice was shipped under Section 416(b) surplus removal since fiscal 1991.

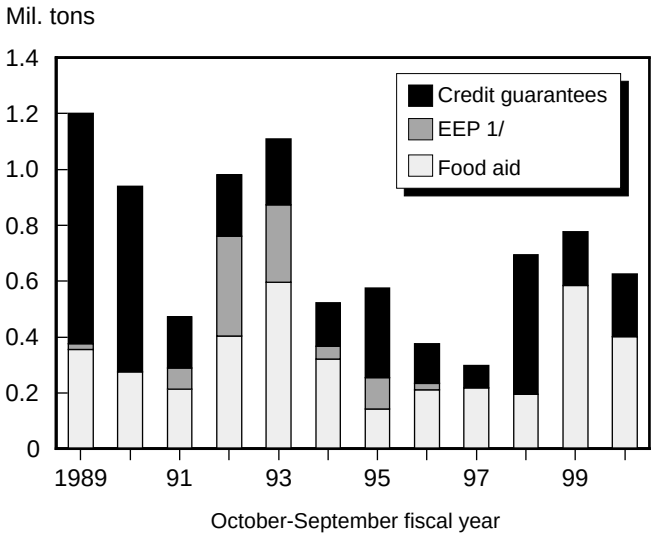
In fiscal 2000, the Philippines was the largest recipient of Title I shipments, purchasing more than 104,000 tons. In addition, Angola bought more than 17,000 tons, and Jamaica 13,500. Major recipients in fiscal 2000 under Title II included Indonesia, Haiti, North Korea, Burkina Faso, Guatemala, Niger, and Peru. Under the Food for Progress program Russia received nearly 25,000 tons, the Ivory Coast about 9,000, and Azerbaijan almost 2,000.

In fiscal 1999, PL 480 Title I shipments were almost 336,000 tons, the largest in more than a decade. Indonesia received 118,000 tons of rice under Title I in fiscal 1999, Russia more than 103,000, and the Philippines more than 59,000 tons. The Ivory Coast and Jamaica received smaller amounts. Shipments under Title II totaled more than 140,000 tons in fiscal 1999. Major recipients of Title II in fiscal 1999 were Indonesia, Honduras, Serbia, Nicaragua, the Dominican Republic, Guatemala, and Burkina Faso.

In fiscal 2000 Turkey accounted for more than half of 225,000 tons of U.S. rice shipped under General Sales Manager (GSM) export credit guarantees. Central America accounted for most of the remainder, with the Andean Region, Mexico, and East Caribbean taking smaller amounts. In fiscal 1999, Brazil accounted for the largest share of U.S. rice shipped under GSM export credit guarantees, taking 76,000 tons out of a total of nearly 192,000. Turkey was the next largest, importing almost 50,000 tons under GSM. The Andean Region, East Caribbean, and Mexico imported smaller amounts under GSM in fiscal 1999.

Figure 16

U.S. rice food aid shipments dropped in fiscal 2000



All shipments reported in a product-weight basis. 2000 estimated.
1/ Export Enhancement Program.
Source: Foreign Agricultural Service, USDA.

Government Programs Assist U.S. Rice Exports

Three types of government programs account for the bulk of government assistance available to U.S. rice exports. *First*, the United States sells rice on concessional credit terms and donates rice to needy countries either bilaterally or through the World Food Program. *Second*, USDA provides export credit guarantees for commercial financing of U.S. agricultural exports. And *third*, USDA funds the creation, expansion, and maintenance of foreign markets for U.S. agricultural products. In additional, several other programs can provide assistance to U.S. agricultural exports as well.

Food Aid Programs:

USDA currently provides food aid abroad through three channels: the Public Law 480 (P.L.480) program—also known as the Food for Peace program, the Section 416(b) program, and the Food for Progress program.

P.L. 480—The P.L. 480 food aid program is authorized under the Agricultural Trade Development and Assistance Act of 1954 as amended. The P.L. 480 program is comprised of three titles. Title I is administered by USDA. Titles II and III are administered by the Agency for International Development (AID). Each title has different objectives and provides agricultural assistance to countries at different levels of economic development.

Title I of the P.L. 480 program provides government-to-government sales of agricultural commodities to developing countries under long-term credit arrangements. Repayments for agricultural commodities sold under this title may be made either in U.S. dollars or in local currencies on credit terms up to 30 years, with a grace period of up to 7 years.

Title II provides for donations of U.S. agricultural commodities by the U.S. Government to meet humanitarian food needs in foreign countries. Commodities may be provided to meet emergency needs under government-to-government agreements, through public and private agencies, including intergovernmental organizations such as the World Food Program, and other multilateral organizations. Non-emergency assistance may be provided through private voluntary organizations, cooperatives, and intergovernmental organizations. Commodities requested may be supplied from the Commodity Credit Corporation (CCC) inventory acquired under price support programs or purchased from private stocks.

Title III provides for government-to-government grants to support long-term economic development in least-developed countries. The U.S. Government will donate Title III agricultural commodities without charge to the recipient country and will arrange for and pay the costs of purchasing, processing, handling, and transporting the commodities to the port or point of entry in the recipient country.

Section 416(b)—The Section 416(b) program provides for overseas donations of surplus commodities owned by the CCC to carry out assistance programs in developing countries and friendly countries. Surplus commodities acquired by the CCC as a result of price support operations may be made available under Section 416(b) if these surplus commodities cannot be sold or otherwise disposed of without disruption of price support programs or at competitive world prices. The Section 416(b) program is authorized under the Agricultural Act of 1949.

Food for Progress—The Food for Progress Program is authorized under Section 1110 of the Food Security Act of 1985. The program authorizes the CCC to finance the sale and exportation of agricultural commodities on credit terms, or on a grant basis, to support developing countries and countries that are emerging democracies and have made commitments to introduce or expand free enterprise elements into their agricultural economies. Commodities may be provided under the authority of P.L. 480, Title I, or Section 416(b). Under certain conditions the CCC may also purchase commodities for use in Food for Progress programs if the commodities are not currently held in CCC stocks.

For additional information on USDA food aid programs please contact the Program Development Division of the Foreign Agricultural Service at 202-720-4221, or to acquire information from the Internet go to: *http://www.fas.usda.gov/food-aid.html*

Credit Guarantees:

The Foreign Agricultural Service and other government agencies offer a number of programs that help U.S. agricultural exporters finance the marketing and distribution of their products abroad. The CCC administers export credit guarantee programs for commercial financing of U.S. agricultural exports. The programs encourage exports to buyers in countries where credit is necessary to maintain or increase U.S. sales, but where financing may not be available without CCC guarantees.

Continued on page 16

GSM-102 and GSM 103—These two programs underwrite credit extended by the private banking sector in the United States (or, less commonly, by the U.S. exporter) to approved foreign banks using dollar-denominated, irrevocable letters of credit to pay for food and agricultural products sold to foreign buyers. New and experienced exporters can benefit from export guarantee and insurance programs. These programs promote exports by providing exporters greater access to credit and credit risk protection.

The Export Credit Guarantee Program (GSM-102) covers credit terms for up to 3 years. The Intermediate Export Credit Guarantee Program (GSM-103) covers longer credit terms for up to 10 years. Both programs are administered through the office of the General Sales Manager.

Supplier Credit Guarantee Program—Under the Supplier Credit Guarantee Program, the CCC guarantees a portion of payments due from importers under short-term financing (up to 180 days) that exporters have extended directly to the importers from the purchase of U.S. agricultural commodities and products. These direct credits must be secured by promissory notes signed by the importers.

For additional information on export credit programs please contact the Deputy Administrator, Export Credits, at 202-720-6301, or to acquire information from the Internet go to:
http://www.fas.usda.gov/agexport/exporter.html

Market Development Programs:

Market Access Program—The Market Access Program (MAP) uses funds from the CCC to aid in the creation, expansion, and maintenance of foreign markets for U.S. agricultural products. The MAP is authorized by Section 203 of the Agricultural Act of 1978 and is administered by the Foreign Agricultural Service. The MAP forms a partnership between non-profit U.S. agricultural trade associations, U.S. agricultural cooperatives, non-profit State-regional trade groups, small U.S. businesses, and the CCC to share the costs of overseas marketing and promotional activities such as consumer promotions, market research, trade shows, and trade servicing.

For additional information please contact the USDA-FAS Marketing Operations Staff at 202-720-4327, or to acquire information from the Internet go to:
http://www.fas.usda.gov/mos/programs/mapprog.html

Foreign Market Development Program—The Foreign Market Development (FMD) program uses funds from the CCC to aid in the creation, expansion, and maintenance of long-term export markets for U.S. agricultural products. The FMD program is authorized by Title VII of the Agricultural Trade Act of 1978 and is administered by the Foreign Agricultural Service. The program fosters a trade promotion partnership between USDA and U.S. agricultural producers and processors who are represented by nonprofit commodity or trade associations called Cooperators. Under this partnership, USDA and Cooperators pool their technical and financial resources to conduct overseas market developments.

The Cooperator program directly benefits U.S. farmers, processors, and exporters by assisting their organizations in developing new foreign markets and increasing market share in existing markets. The overseas promotions focus on generic U.S. commodities rather than individual brand-name products, and are targeted toward long-term development.

For additional information on the Market Access Program or the Foreign Market Development program please contact the Marketing Operations Staff at 202-720-4327 or to acquire information from the Internet go to: *http://www.fas.usda.gov/mos/programs/fmd.html*

Other Programs:

In addition to the three main types of programs, several other programs can assist U.S. agricultural exports. These programs include the Emerging Market Program, the Qualities Samples Pilot Program, the Cochran Fellowship Program, and Section 108.

For additional information on these additional programs please go to: *http://www.fas.usda.gov/export.html*

Record Supplies Contribute to Weaker U.S. Prices

A record 1999/2000 U.S. crop pushed total supplies up nearly 7-percent to more than 238 million cwt. All of the increase in production and supplies was for long grain rice. Medium/short grain supplies contracted on smaller production. Although exports and total domestic use were higher than a year earlier, total ending stocks rose nearly 25 percent, a major factor behind a 31-percent drop in the season-average farm price from a year earlier.

Area Expansion Pushes U.S. 1999 Crop to Record

The 1999/2000 U.S. rice crop is estimated at a record 206 million cwt, up 12 percent from a year earlier. The record crop stemmed from a more than 7-percent increase in plantings to 3.5 million acres—the second largest on record—and a 4-percent increase in average yield. This was the third consecutive year of expanding rice acreage for the Nation and the South.

Plantings in 1999 were up from a year earlier for all three grain types, with medium grain accounting for more than a third of the total 246,000-acre increase. Based on the September 2000 *Crop Production* report, medium grain plantings totaled 748,000 acres, up 13 percent from 1998, with California accounting for more than half the expansion. Long grain plantings are estimated at a record 2.73 million acres, up more than 5 percent from 1998, with all of the expansion in the South. Short grain plantings were reported at 52,000 acres, up 58 percent from a year earlier.

The area expansion was primarily due to relatively attractive returns for rice at planting compared with alternative crops, especially soybeans in the Delta. Plantings in 1999 expanded in every State except Texas and Louisiana, with record plantings reported for Arkansas and Missouri. Texas plantings dropped 6 percent from 1998. Louisiana's plantings were down fractionally from 1998.

The national average yield for 1999 is estimated to have been 5,866 pounds per acre, up from 5,663 pounds in 1998. Yields were higher in all States except Mississippi, where they were down about 3 percent. Record yields were reported in Louisiana. While California's yield is estimated to have been 6 percent higher than 1998's weather-reduced yield, it is still the second lowest since 1982.

Production was higher for all grain types. Long grain production is estimated to have been a record 151.9 million cwt, up 9 percent from 1998. Medium grain production is estimated to have been 50.5 million cwt, up 16 percent from a year earlier but still below the 1997 crop. The short grain crop—mostly grown in California—is estimated to have been 3.6 million cwt, nearly double a year earlier's crop. Production was up in every State except Texas, with record crops harvested in Arkansas and Louisiana. Missouri's 1999 crop is second only to this year's record crop and Mississippi's crop was a near-record. In contrast, the Texas crop was down almost 4 percent from 1998.

U.S. Supplies Climbed to Record High in 1999/2000

U.S. rice supplies in 1999/2000 are estimated to have been a record 238.1 million cwt, up 7 percent from a year earlier. A record-crop more than offset a smaller carryin and a slight reduction in imports. U.S. rice imports in 1999/2000 were 10 million cwt, down 5 percent from a year earlier's record.

Based on NASS survey data, beginning stocks on August 1, 1999, were estimated at 22 million cwt, down 21 percent from a year earlier. California, whose August 1 stocks were 5.1 million cwt (rough-equivalent), reported a 50-percent decrease from a year earlier and accounted for the bulk of the year-to-year contraction. Beginning stocks in Texas were reported below a year earlier as well.

The supply situation varied somewhat by grain type. Total long grain supplies rose 7 percent to a record 173.4 million cwt. A record 151.9-million-cwt crop more than offset smaller beginning stocks and weaker imports. Long grain rice stocks entering the 1999/2000 marketing year were 14.1 million cwt, 3 percent below a year earlier despite a 12-percent increase in the 1998 long grain crop from a year earlier. Imports of long grain rice are estimated at 7.5 million cwt, down 12 percent from a year earlier.

For medium/short grain rice, total supplies rose almost 7 percent in 1999/2000 to 63.2 million cwt. A 20-percent increase in production to 54.2 million cwt more than offset a major drop in beginning stocks and smaller imports. However, total medium/short grain supplies were well below levels reported for 1993/94 through 1997/98.

Combined medium/short grain stocks were just 6.8 million cwt on August 1, 1999, down 45 percent from a year earlier and the lowest since supply and use were first reported by type in 1982/83. The huge reduction was primarily due to an almost 23-percent reduction in combined medium/short grain production in 1998. Imports were estimated at 2.5 million cwt, up 25 percent from a year earlier.

Greater Exports, Stronger Domestic Use Pushed 1999/2000 Total Use to Record

Total U.S. rice use, including exports, domestic consumption, and residual (unreported losses in processing, transporting, and marketing), is forecast at a record 210.6 million cwt in 1999/2000, up 5 percent from a year earlier. Both exports and domestic use are estimated to have been higher than in 1998/99.

Total domestic disappearance (domestic use plus residual) is estimated at 121.4 million cwt, up more than 6 percent from a year earlier and a record to date. Food, industrial, and residual is estimated at 117.4 million cwt, up 7 percent from 1998/99 and a record to date also. In contrast, seed use is estimated at 4 million cwt, down almost 10 percent from a year earlier.

Long grain accounted for all of the growth in total domestic and residual use in 1999/2000. Domestic and residual use of long grain rice rose 13 percent to a record 86.7 million cwt. Some of the expansion was due to a shift to long grain from medium/short grain by processors. In contrast, domestic and residual use for medium/short grain rice is estimated at 34.7 million cwt, down 7 percent from a year earlier and the lowest in a decade. Tight supplies and relatively high price—compared with long grain rice—accounted for the weaker domestic use.

Larger Ending Stocks Contribute To Weaker U.S. Prices

Ending stocks for all U.S. rice rose more than 5.4 million cwt to 27.5 million in 1999/2000. The resulting stocks-to-use ratio rose to 13.1 percent from 11 percent a year earlier. Combined medium/short grain rice accounted for the bulk of the increase.

Ending stocks of medium/short grain rice rose 53 percent to 10.4 million cwt. However, ending stocks of combined medium/short grain rice were still well below the 5-year average of 12 million cwt. The stocks-to-use ratio rose to 19.8 percent from 13 percent a year earlier. Long grain ending stocks expanded 11 percent to 15.6 percent, the largest since 1992/93. The stocks-to-use ratio rose slightly to 9.9 percent.

The 1999/2000 season-average price is reported at $6.11 per cwt, 31 percent below a year earlier and the lowest since 1992/93. Larger U.S. supplies and a substantial drop in world prices were behind the contraction in U.S. prices. In 1999/2000, long grain prices were substantially below prices for medium grain and accounted for the bulk of the reduction in farm prices. Medium grain prices were supported most of the year by a tight supply situation in California.

Global Prices are the Lowest in More Than 7 Years

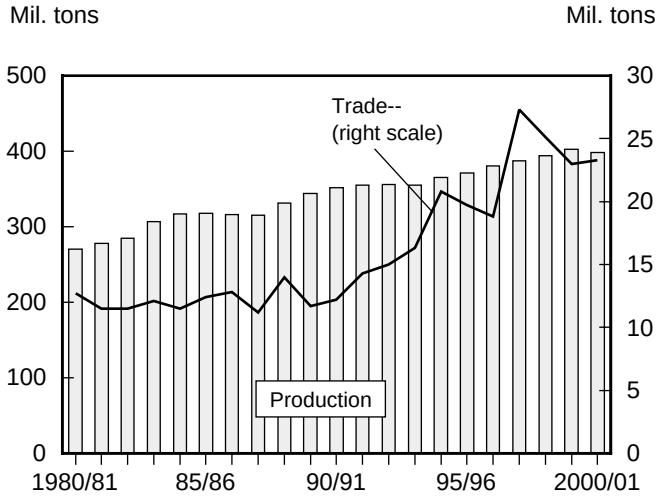
Since July, international prices have remained the lowest in more than 7 years even with problems associated with flooding in South and Southeast Asia in late summer and early fall. Although global production is projected to drop about 1 percent from the 1999/2000 record, supplies in major exporting countries are projected to increase substantially. Except for parts of the Middle East, no major importing region is currently suffering a significant weather problem.

Abundant Export Supplies Projected Despite Smaller Global Production

Global trading prices are currently the lowest in more than 7 years and have remained at these levels since July. The current low prices and lack of any price strength are the result of large supplies in nearly all exporting countries and, except for parts of the Middle East, no significant production problem in a major importing country. Global trading prices steadily declined from early 1999 through July 2000 and have not shown any sustained strength. Assuming normal weather worldwide, there is little expectation for any price strength for the remainder of the 2000/01 market year.

World rice production is projected at 397.7 million tons (milled basis) in 2000/01, down more than 1 percent from a year earlier's record. China accounts for the bulk of the reduction, with Iran, North Korea, Brazil, Argentina, Pakistan, Cambodia, and the United States projected to produce smaller crops as well. However, China is expected to have plenty of rice for both its domestic market and to expand exports. Besides China and Pakistan, the other major Asian exporters—Thailand, Vietnam, and India—are projected to produce record- or near-record crops in 2000/01.

Figure 17
Global production is projected to drop in 2000/01



Production is aggregate of local marketing years. Trade is reported on a calendar year basis. All data reported on a milled basis. 2000/01 projected.
Source: Foreign Agricultural Service, USDA.

Among the major importers, only Iran, Iraq, and North Korea are having major production problems this year. Severe drought has cut crops in Iran and Iraq in 1999/2000 and 2000/01. A combination of flooding and drought has reduced North Korea's 2000/01 rice production. In contrast, record- or near-record crops are projected for Indonesia, the Philippines, and Bangladesh. And while Brazil's production is projected to drop in 2000/01, its total rice supplies are expected to be quite large.

World consumption is projected at a record 401.2 million tons, up just fractionally from a year earlier. India and Bangladesh account for most of the increase. In contrast, consumption in China is projected to drop slightly.

With consumption exceeding production, ending stocks are projected to drop nearly 6 percent from a year earlier's record to 59.1 million tons, the smallest since 1997/98. China accounts for the bulk of the reduction in global ending stocks, with stocks expected to decline in Indonesia and Brazil as well. In contrast, India's stocks are projected to be the largest on record, a result of two consecutive bumper crops. The stocks-to-use ratio is projected at 14.7 percent, down a percentage point from a year earlier and the smallest since 1997/98. However, even with smaller stocks and a tighter stocks-to-use ratio, unless there is a major weather problem, there is little expectation of any price strength due to abundant supplies in major exporting countries.

World trade is projected at 24.6 million tons (milled-basis) in calendar year 2001, up more than 8 percent from 2000 but still nearly 10 percent below the 1998 record of 27.3 million. Asia is expected to account for the bulk of the expansion in imports, with Latin America and the Middle

Global Rice Trade Reported on a Calendar-Year Basis

In the *2000 Rice Yearbook*, all rice trade reported in the international section—both global and for individual countries—is reported on a January to December *calendar year* basis. Production, consumption, and stocks for the global rice market are reported on an aggregate of local *market year* basis. Aggregate world supply and demand estimates represent summations of numerous local marketing years that span many months. For example, global ending stocks are the summation of stocks in all countries at the end of each country's specific market year.

The *Rice Yearbook* reports production, consumption, and stocks for individual countries based on each country's specific market year. All country-specific market years are 12 months long. Market years vary by country. For example, Thailand's market year is November-October. The market year for both Indonesia and China is January to December. The United States reports on an August to July market year.

East importing more rice in 2001 as well. In contrast, little growth is projected for Africa's imports.

In 2000, global trade dropped more than 9 percent to 22.4 million tons. This was largely due to a big drop in Asia's imports, a result of large supplies in several major importing countries, especially Bangladesh and Indonesia. Latin America's imports were nearly steady in 2000, while imports by the Middle East rose substantially due to drought-related problems in the region. Africa's imports were up fractionally from 1999.

International Prices are the Lowest In More Than 7 Years

Since early 1999, with the record El Niño-driven purchases by Indonesia and the Philippines completed, international rice prices have declined. Prices for Thai 100-percent Grade B were quoted at $191 per ton in late November, nearly unchanged from mid-July. However, prices are more than $40 per ton lower than a year earlier and well below the 1998/99 season-average of $284. Prices are currently the lowest since the spring of 1993.

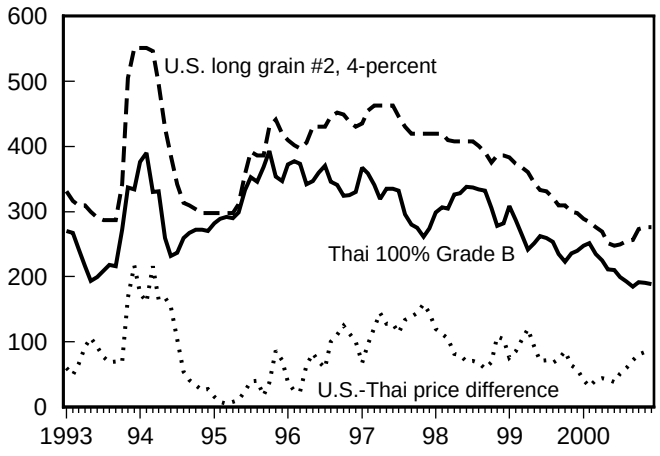
The weaker prices are due to abundant export supplies worldwide and, except for the Middle East and North Korea, no significant production problem reported in a major importing country. Prices for Vietnamese 5-percent broken rice were quoted at $175 per ton in late November, almost unchanged since April but down more than $40 per ton from a year earlier. Vietnam's prices were $5 to $10 per ton higher during the severe flooding the country experienced in late summer and early fall this year. However, supply and transportation disruptions caused by the flooding have largely subsided, and Vietnam's export pace has recovered.

Prices for similar type and quality U.S. long grain rice—No. 2, 4-percent brokens, f.o.b. Houston—declined during almost all of the 1999/2000 market year. Only in the last week of July did prices start to recover on expectations of tight U.S. long grain supplies in 2000/01 and several large food aid purchases.

Prices for U.S. long grain rice began to decline during the summer of 1997 when the Asian financial crisis erupted. However, the 1997/98 El Niño drove global trade to record levels. This boosted international prices and limited the decline in U.S. prices until early 1999. By then Indonesia and the Philippines had completed their record purchases, mostly from Thailand and Vietnam. By spring 1999, global demand had contracted and a record U.S. crop was expected. U.S. prices dropped from $375 in February 1999 to $248 by July 2000. U.S. rices were quoted at $254 by the start of the 2000/01 market year and had risen to $265 by September and $276 by October. Through late November, U.S. prices remained at $276 per ton.

Figure 18

Global rice prices are the lowest in 7 years



Monthly average of weekly quotes.

Sources: Thai prices, U.S. Embassy in Bangkok; U.S. prices, Agricultural Marketing Service, USDA.

Shipments from Asian Exporters Projected To Rise

The four largest Asian exporters—Thailand, Vietnam, China, and India—are projected to expand trade in calendar year 2001. Pakistan's exports are projected to drop slightly and U.S. exports are projected to remain unchanged from 2000. Among smaller exporters, Australia and Egypt are projected to expand shipments in 2001, while Argentina's exports are expected to contract substantially.

Major Exporters

Thailand: Thailand is expected to remain the world's largest rice exporter, shipping 6.6 million tons in 2001, up 600,000 from this year and just fractionally below the 1999 record. The increase is primarily due to a larger crop and large beginning stocks. Thailand's 2000/01 crop is projected at nearly 15.9 million tons (milled basis), a record and up 200,000 from a year earlier. Both area and yield are projected higher in 2000/01.

Thailand traditionally competes with the United States in certain high-quality long grain rice markets—primarily in the European Union (EU), the Middle East, and South Africa—and with Vietnam, India, Pakistan, and Burma in various intermediate- and low-quality long grain markets. Thailand exports mostly indica rice and smaller quantities of premium jasmine rice, an aromatic. About 20 percent of Thailand's exports are jasmine rice, with the United States a major market.

Burma, Pakistan, and Vietnam typically sell intermediate- and low-quality indica rice at significant price discounts to Thailand. India is currently priced out of most indica markets due to internal pricing policies. India also has quality problems with some of its rice and logistical problems that limit its reliability. Burma is currently exporting very little rice.

Vietnam: Vietnam is the world's second largest rice exporter and is projected to produce 20.6 million tons in 1999/2000, down 150,000 from the 1999/2000 record. A slight drop in area accounts for the projected decrease. Severe flooding in late summer and early fall is estimated to have reduced plantings of Vietnam's 10-month crop, typically planted in late summer. The flooding has delayed planting of the country's main winter-spring crop as well. Vietnam's exports are projected to increase 600,000 tons to 4 million, a result of large supplies in Vietnam and greater Asian demand. All of Vietnam's rice exports are indica rice, mostly intermediate and low quality.

Vietnam produces three major rice crops a year. The *10-month* crop typically accounts for 26 percent of production and is harvested between November and February in the South. This crop is declining in area and is the lowest yielding of Vietnam's three crops. The largest crop, the winter-spring crop, accounts for almost half of total production and is harvested in March-April.[1] The winter-spring crop has expanded more than 75 percent since 1988/89 and has the highest yield of the three crops. The winter-spring crop accounts for the bulk of Vietnam's exports. The summer-autumn crop accounts for 24 percent of annual production and is harvested July through October.

China: China's 2001 exports are projected at 3.4 million tons, up 200,000 from this year's and second only to the 1998 record of more than 3.7 million. Although China's 2000/01 crop is projected to drop nearly 2 percent to 136.5 million tons—a result of smaller plantings, China has more than enough supplies to meet domestic demand and increase exports. From 1997/98 through 1999/2000, China harvested record- or near-record crops each year, leading to a large accumulation of stocks.

China announced a new grain policy in 1999 that reduces incentives to plant low-quality early rice, which is grown mostly in the south. It is too early to know what the long-term impact of this policy will be on China's rice production and available exports. Much of the early rice crop is of poor quality and is either stored for years or used as feed.

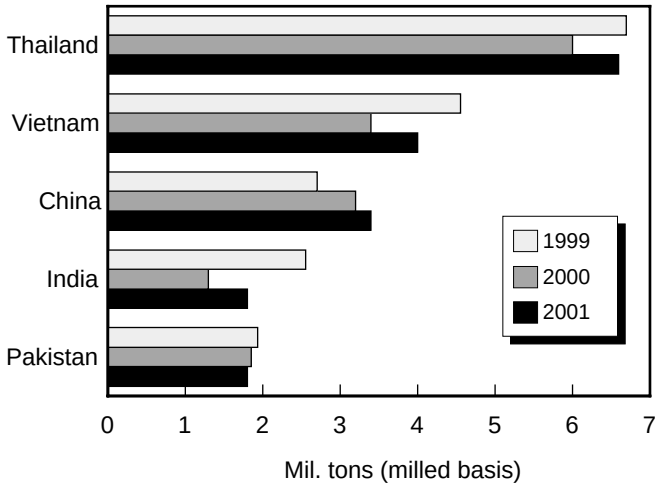
United States: The United States is projected to export 2.75 million tons of rice in 2001, unchanged from 2000 but 13 percent below the 1998 record. Tighter U.S. supplies will prevent any expansion in U.S. exports. The U.S. share of world trade is projected at 11 percent, down from 12 percent in 2000. The U.S. share of world rice trade has generally declined over the past 15 years. In 1986, the United States accounted for 22 percent of global rice exports. By 1995, the U.S. share had shrunk to 14 percent.

Southern long grain accounts for around 80 percent of U.S. rice exports, with Latin America, the EU, Saudi Arabia, Canada, and South Africa the largest markets. The United

[1] The harvest dates for producing occuring in southern Vietnam. Harvest dates differ in the north, but most rice production occurs in the south.

Figure 19

Asian rice exports projected to remain robust in 2001



2000 and 2001 projected.
Source: Foreign Agricultural Service, USDA.

States also exports smaller quantities of japonica rice, mostly to Japan, Turkey, and Jordan. California supplies most of U.S. japonica exports.

India: For 2001, India is projected to export 1.8 million tons, up 500,000 from 2000 but well below the country's 1998 record of 4.5 million. Much weaker imports by Bangladesh in 2000 and 2001, and an internal pricing policy that prices Indian rice out of the international market account for 2 years of weak exports from India.

India's 2000/01 crop is projected at a record 88.5 million tons, up fractionally from a year earlier. The larger crop is the result of a slight area expansion. This is the fifth consecutive year of record production in India. These record crops have resulted in a huge increase in ending stocks in India. In 2000/01, ending stocks are projected at a record 17.6 million tons. Stocks of this level are burdensome to the Government of India.

India exports both a premium-priced basmati to higher income countries, as well as low-quality non-aromatic long grain milled rice to developing countries. Principal markets for basmati rice are the Middle East, the EU, and the United States. Russia, South Africa, other Sub-Saharan Africa, and the Middle East are major export markets for India's non-basmati rice. Much of India's non-basmati exports to South Africa and the Middle East are parboiled.

Pakistan: Pakistan is projected to export 1.8 million tons of rice in 2001, down 50,000 from this year and almost 200,000 below the country's 1997 record. A smaller crop accounts for the decline in exports. Pakistan's 2000/01 crop is projected at 4.2 million tons, down nearly 17 percent from the 1999/2000 record, a result of weaker plantings and a lower yield. The same drought that has affected Iraq and Iran has reduced water-availability in Pakistan this year.

Like India, Pakistan exports both high-quality basmati rice—which sells at a substantial premium in high-income markets—as well as intermediate- and low-quality non-aromatic long grain rice to developing countries, many in Africa, where it competes with Thailand, Vietnam, and China. Around a third of Pakistan's production is basmati. Africa, Afghanistan, Bangladesh, Indonesia, the Middle East, and the EU were leading export markets for Pakistan in 1999/2000. The Government of Pakistan is actively trying to increase rice production through price incentives, timely availability of inputs, and technical assistance.

Australia: Australia's rice exports in 2001 are projected to increase 125,000 tons to 625,000. The substantial increase in exports is the result of a 25-percent increase in production to 972,000 tons, a result of greater area and a higher yield. In 1999/2000, a lack of water was the main factor behind a 22-percent drop in production from a year earlier's record. This year adequate water for irrigation is available.

Australia's rice farmers plant in October and harvest in April-May. The rice crop is grown primarily in New South Wales. Australia produces and exports primarily high-quality japonica rice and has captured around 16 percent of the Japanese market since WTO-required imports were first purchased in 1995/96. Papua New Guinea and certain countries in the Middle East are other major export markets for Australian rice producers. Limited supplies of water for irrigation constrain any significant expansion in Australia's rice production.

Egypt: Egypt is projected to export 450,000 tons of rice in 2001, up 30,000 from a year earlier and the largest in nearly 30 years. Virtually all of Egypt's rice exports are japonica rice, with the eastern Mediterranean a major market. With the exception of 1998/99, Egypt has harvested record- or near-record crops every year since 1997/98, a major factor behind the steady growth in exports in recent years.

Argentina: Argentina and Uruguay are the two largest rice exporters in South America. In 2001, Argentina's exports are projected to drop 50 percent to 250,000 tons, the smallest since 1994. A big drop in production is behind the bearish export forecast. Argentina's 2000/01 rice crop is forecast at 550,000 tons, down 13 percent from a year earlier—a result of smaller plantings—and the smallest since 1993/94. This is the second consecutive year of declining rice acreage in Argentina. Low prices and weaker imports by Brazil—Argentina's largest export market—account for the nearly 40-percent drop in area since 1998/99.

Uruguay: Like Argentina, rice production in Uruguay has declined since 1998/99, as weaker prices and smaller

imports by Brazil after 1998 have led to reduced plantings. In 2000/01, Uruguay's rice production is projected at 800,000 tons, down 6 percent from a year earlier. Both area and yield are projected smaller in 2000/01. While Uruguay's area is projected to drop only slightly in 2000/01, USDA is monitoring this situation given the much larger area reduction reported for neighboring Argentina. Uruguay's 2001 exports are projected at a record 700,000 tons, up 50,000 from this year. With a smaller Brazilian market, Uruguay has recently shipped rice to the Middle East.

Both Argentina and Uruguay have special trade arrangements in the Brazilian market afforded them by their membership in the MERCOSUR trade block (which includes Argentina, Brazil, Paraguay, and Uruguay).

Other Exporters

In addition to the major exporters described above, several other countries typically export smaller amounts of rice each year.

The EU: Although a net importer of rice, the EU regularly exports rice outside the region. In 2001, the EU is projected to export 350,000 tons, unchanged from a year earlier. Italy accounts for the bulk of EU exports outside the region. The EU exports japonica rice, mostly to countries in the eastern Mediterranean. The EU exports smaller amounts of rice—mostly food aid—to the former Soviet Union, North Korea, and Sub-Saharan Africa.

Burma: While once the world's largest rice exporter, Burma exported less than 100,000 tons a year from 1997 through 1999. Exports have picked up slightly since. For 2001, Burma is projected to export 250,000 tons, unchanged from this year and the largest since 1996. Larger crops are the main factor behind the greater exports. Burma's 2000/01 rice crop is estimated at 9.8 million tons, down slightly from a year earlier's 9.86 million, the first year that Burma matched its 1995/96 record crop.

Burma was the largest rice exporting country before World War II and typically ranked first or second until the mid-1960's. While Burma's exports averaged almost 1.5 million tons a year in the early and mid-1960's, they declined to an average of only 542,000 tons from 1967 to 1989. Exports continued to decline during most of the 1990's. Trade is strictly controlled by the Government of Burma.

Burma's marketing and milling infrastructure remains antiquated and is unlikely to improve in the near future. As a result, Burma continues to export low-quality, but competitively priced, long grain rice. Historically, most of Burma's rice exports are 25-percent brokens, with the remainder being parboiled and small quantities of high-quality long grain rice.

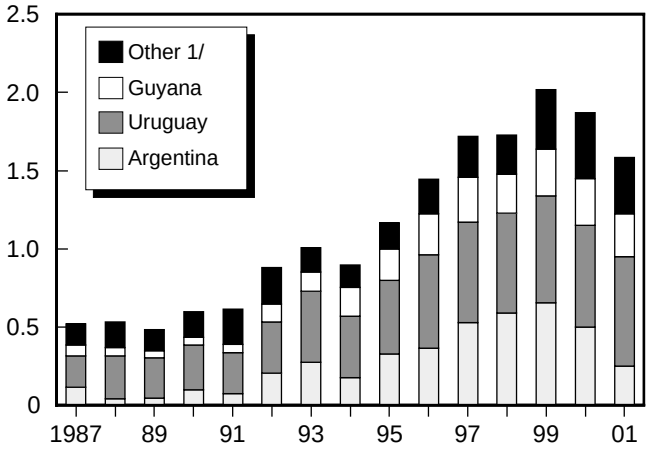
Japan: Although a net importer of rice, Japan has exported rice each year since 1998. Virtually all of this rice is shipped as food aid, mostly to Asia. In 2001, Japan is projected to export 500,000 tons of rice, with North Korea accounting for the bulk of the shipments. In 2000, Japan is estimated to have exported 150,000 tons. In 1998, it exported 642,000 tons of rice, mostly food aid to Indonesia. This was the largest amount of rice exported by Japan in a single year since 1981. Japan's rice exports are primarily the result of declining domestic consumption and large supplies. Producer prices in Japan are substantially above trading prices, a major factor behind its large supplies and high ending stocks.

Taiwan: Taiwan typically exports a small amount of rice each year, mostly as food aid. Like Japan, Taiwan faces declining rice consumption that, when combined with producer prices above international trading levels, leads to surplus rice. In 2001, Taiwan is projected to export 150,000 tons of rice, unchanged from 2000.

Cambodia: Cambodia was a regular exporter of rice through 1970 when war and political upheaval severely reduced production and disrupted marketing. By the mid-1990's, it began to export small amounts of rice as production increased sharply. In 1999 and 2000, Cambodia is estimated to have exported 125,000 tons, the largest since 1970. In 2001, Cambodia is projected to export just 10,000 tons, down from 125,000 this year. Severe flooding in late summer and early fall reduced its 2000/01 rice production.

Figure 20
South American rice exports projected to drop in 2000 and 2001

Mil. tons (milled basis)



1/ Primarily Ecuador, Surinam, and Venezuela.
2000 and 2001 projected.
Source: Foreign Agricultural Service, USDA.

Guyana: Guyana is typically the third largest rice exporting country in South America. In 2001, Guyana is projected to export 275,000 tons of rice, down 25,000 from a year earlier. Area and production expanded substantially from the early 1990's through 1997/98 but has declined since. The EU is the primary markets for Guyana's rice.

Other South America: Ecuador is projected to export 100,000 tons in 2001, down from 130,000 a year earlier. Venezuela is projected to export 110,000 tons in 2001, unchanged from a year earlier. Both Ecuador and Venezuela export almost exclusively within the Andean Region. Surinam is also a regular exporter of rice, with shipments projected at 50,000 tons in 2001, unchanged from a year earlier. Surinam's exports are well below levels shipped in the late 1980's and early 1990's. Surinam's rice production has declined sharply since the late 1980's. The EU is a major market for Surinam's rice exports.

Asia and the Middle East To Account for Bulk of Import Expansion

Global imports are projected to rise 8 percent in 2001 to 24.6 million tons. Indonesia accounts for the bulk of the expansion, with Iran, North Korea, and the Philippines projected to import more rice in 2001 as well. In contrast, Bangladesh and Malaysia are projected to reduce imports in 2001.

Major Importers

Asia

Asia is the largest market for rice in the world and is projected to import more than 8 million tons of rice in 2001, up almost 1.3 million from a year earlier. However, the region's imports remain below the 1998 record of more than 13.3 million tons. The huge expansion in imports in 1998 was largely driven by El Niño crop damage in the region.

Indonesia: Indonesia is projected to remain the world's largest rice importer, taking 3 million tons in 2001, up 1 million from this year but well below its record 6.1 million in 1998. Steady production and rising demand are behind the projected strong import growth. Indonesia's 2000/01 crop is projected at 32.1 million tons, unchanged from 1999/2000 but slightly below the 1996/97 record of 33.2 million. Use has exceeded production every year since 1991/92, causing Indonesia to regularly import large amounts of rice.

Indonesia was the world's leading rice importer during the 1970's, averaging over 1.3 million tons annually. During the mid-1980's, the Indonesian Government was able to temporarily end nearly all rice imports through a program of national self-sufficiency. However, continuous area losses from Java's prime irrigated paddy fields, rising national consumption, and already high yields by Asian standards appear to have ended Indonesia's period of self-sufficiency. Indonesia is projected to remain a major importer of rice for the foreseeable future.

The Philippines: The Philippines are projected to import 1 million tons in 2000, up 100,000 tons from this year's level but less than half the 1998 record of almost 2.2 million. Expectations of higher imports in 2001 are based on a projected slight drop in production from a year earlier's record and a steady rise in consumption. The smaller crop is the result of a slight drop in plantings.

Despite expectations of a near-record crop in 2000/01, the Philippines' food situation remains tight. Consumption, projected at a record 8.5 million tons (milled), is expected to exceed milled rice production by almost 1 million tons. This marks the tenth consecutive year that consumption has exceeded production. Lack of resources to expand rice growing areas and develop or even maintain infrastructure, slow growth in yields—which are low by developing Asian standards—and steadily increasing population indicate the Philippines will be a regular importer of rice in the foreseeable future.

Bangladesh: Two consecutive years of bumper crops have lowered Bangladesh's projected imports to 650,000 tons in 2001, down 50,000 from a year earlier and less than half the 1.4 million tons imported in 1999. Bangladesh's rice imports have declined every year since the 1998 record of 2.5 million tons. Bangladesh is projected to produce a crop of 21.3 million tons in 2000/01, down just 1 percent from a year earlier's record. The smaller crop is due to a slight drop in area to 10.5 million hectares, still one of the largest on record.

Bangladesh's constant population pressure drives an upward trend in consumption and leaves little room for error. Bangladesh has a preference for parboiled rice, although price is a limiting factor and may force imports of low-quality long grain if cheap parboiled is not available. In recent years India has supplied the bulk of the country's rice import needs. However, India is currently priced out of this market. Bangladesh is projected to remain a major importer of rice over the next decade.

China: In 2001, China is forecast to import 250,000 tons of rice, up 50,000 from this year. Most of China's imports are fragrant rice from Thailand that is bought by high-income urban consumers. China is self-sufficient in rice, given the current policy environment. For 2001, China's 3.4 million tons of exports will exceed imports by more than 3.1 million tons.

Japan and South Korea: Since 1995, these two countries have opened their rice markets to limited imports in accordance with minimum access criteria of the Uruguay Round of the General Agreement on Tariffs and Trade (UR-GATT). Both have extremely strong preferences for japonica varieties for table consumption. The United States competes with Australia and China, and to a lesser extent Italy and Egypt—for the medium grain exports into these East Asian markets.

However, because Japan and South Korea use long grain rice in certain processed uses, a portion of the import competition is open to other potential suppliers, mostly Thailand.

Under the UR-GATT, Japan's minimum access purchases were scheduled to rise from nearly 380,000 tons (milled basis) in 1995/96 to 758,000 tons by 2000/01. However, in late 1998 Japan opted for rice tariffication as part of the GATT-WTO. This allowed the rate of growth in its annual rice imports—0.8 percent of base period (1986-88) consumption—to halve to 0.4 percent in return for allowing over-quota imports. Japan imported 644,000 tons of rice in its 1999/2000 fiscal year (April-March), and is scheduled to import 682,000 tons in 2000/01 in accordance with UR-GATT minimum access import criteria. Japan's minimum access imports are expected to remain at 682,000 tons a year unless a new agreement is reached.

The tariff on over-quota imports was set at 352 yen per kilogram for 1999/2000, nearly 5 times the average price of U.S. rice imported in 1998/99. To date, there have been virtually no over-quota rice imports. Japan is estimated to have produced 8.62 million tons of rice in 2000, up 3 percent from a year earlier as higher yields offset continued contraction in area—a result of the government's rice area diversion program.

South Korea's minimum access amount is much smaller than Japan's, rising from only 57,000 tons (milled basis) in 1995/96 to 205,000 tons by 2004/05. South Korea's 2000/01 crop is estimated at 5.3 million tons, up fractionally from a year earlier, a result of slightly greater plantings. Rice area in South Korea had been declining for a decade prior to 1997. South Korea's rice consumption has been trending downward since 1979/80. At 5.0 million tons in 1999/2000, consumption will be 300,000 tons below milled production.

South Korea imported about 114,000 tons (brown rice basis) of rice under the WTO in 2000/01. China supplied about 94,000 tons and Thailand supplied the remainder. South Korea is projected to import 135,000 tons of rice in calendar year 2001, up 10,000 from a year earlier.

North Korea: North Korea is projected to import 550,000 tons in 2001, up 100,000 from this year and the largest since 1995. Japan is expected to provide the bulk of these shipments. North Korea's rice production is projected at just 1.35 million tons, down 250,000 tons from a year earlier, a result of both weaker yields and smaller plantings. Most of North Korea's rice imports will be concessional in nature.

North Korea's rice production has contracted severely since the late 1980's. Existing data suggest that during the 1980's North Korea's rice production averaged slightly more than 2 million tons (milled basis) on 642,000 hectares, with an average paddy yield of nearly 4.7 tons per hectare. From 1990 to 1999, rice production averaged 1.44 million tons on 596,000 hectares, with paddy yields of 3.5 milled tons per hectare.

The Middle East

Rice imports by the Middle East are projected to rise 9 percent in 2001 to a record 4.7 million tons. Rice production is projected to drop nearly 19 percent in 2000/01, the second consecutive year of declining production. Production in 2000/01 is nearly 30 percent below the 1998/99 record of more than 2.2 million tons. The region is traditionally the world's strongest market for high-quality rice—mostly parboiled, premium long grain varieties, and basmati—led by Iran, Iraq, and Saudi Arabia. Turkey and Jordan import smaller amounts of japonica rice.

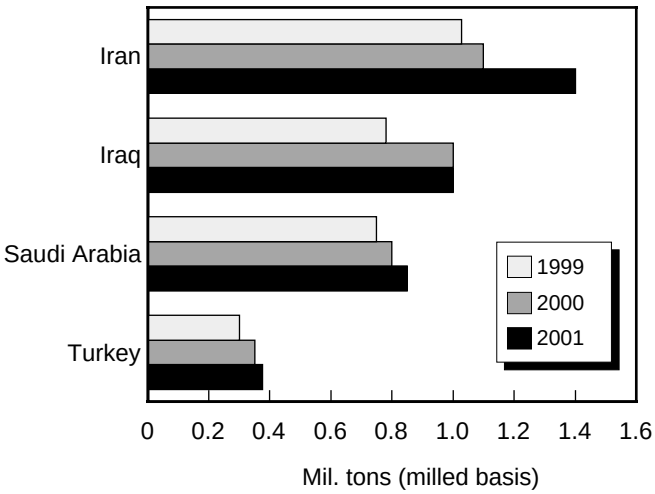
Iran: A 300,000-ton increase in Iran's imports to 1.4 million tons accounts for most of the increase. Iran's 2000/01 crop is projected to drop nearly 23 percent to 1.2 million tons—the smallest since 1988/89—on a big drop in plantings and a weaker yield. Iran is suffering from a severe drought that also reduced rice production last year.

Iraq: Iraq is projected to import 1 million tons in 2001, unchanged from a year earlier's record. Iraq imports rice under the United Nation's Oil-for-Food Program. Like Iran, Iraq's rice crop is suffering from severe drought. Iraq's 2000/01 crop is projected at 150,000 tons, down slightly from a year earlier—a result of weaker plantings—but 25 percent below 1998/99 production.

Saudi Arabia: In 2001, Saudi Arabia is projected to import 850,000 tons, up 50,000 from this year and the second

Figure 21

Rice imports are projected higher for most Middle East countries in 2001



2000 and 2001 forecasts.
Source: Foreign Agricultural Service, USDA.

largest on record. Saudi Arabia does not grow any rice. The country is a major market for U.S. parboiled rice.

Other Middle East: Turkey's imports are projected at 375,000 tons, up 25,000 from this year. Stagnant production and rising use are behind steady growth in Turkey's imports. Turkey is the second largest market for japonica rice—after Japan—with the United States, Egypt, Australia, and the EU its major suppliers. Jordan's imports are projected to remain unchanged at 90,000 tons. The United States typically supplies 30 to 40 percent of Jordan's rice imports. Jordan does not grow rice.

Sub-Saharan Africa

Imports by Sub-Saharan Africa (including the Republic of South Africa) are projected at nearly 4.6 million tons in 2000, up fractionally from a year earlier and a record. Declining rice prices in international markets have allowed Sub-Saharan Africa to purchase larger amounts of rice. In addition, fixed food aid expenditures are able to buy greater rice at lower prices. With the exception of the Republic of South Africa, most of Sub-Saharan Africa has traditionally been a low-quality rice market.

Nigeria: Nigeria is the largest market for rice in Sub-Saharan Africa, with imports projected at a record 1 million tons in 2001, up 25,000 from a year earlier. Nigeria purchases mostly parboiled rice, with Thailand supplying the bulk. Nigeria's rice production remains substantially below levels achieved in the early 1990's, a result of lower yields. Recent high oil prices have been beneficial to Nigeria's rice imports.

South Africa: The Republic of South Africa is projected to import 550,000 tons in 2001, down 25,000 from this year. The smaller imports are the result of recent stock building in South Africa. India, Thailand, and the United States supply most of South Africa's rice. South Africa does not produce rice. Parboiled rice accounts for the bulk of South Africa's imports.

Other Sub-Saharan Africa: Senegal is a major market for brokens and a growing market for rice in Sub-Saharan Africa. In 2001, Senegal is projected to import a record 730,000 tons of rice, up 30,000 from a year earlier. Imports by Senegal have risen substantially since 1995, a result of smaller production. The Ivory Coast is projected to import 575,000 tons of rice in 2001, up 25,000 from a year earlier but still below the 1999 record of 600,000 tons. Ghana is projected to import 230,000 tons in 2001, unchanged from a year earlier's record. Ghana's imports have increased substantially since the late 1980's. Guinea is projected to import a record 325,000 tons of rice in 2001, up 50,000 from a year earlier. Production cannot keep up with Guinea's rising rice consumption.

Latin America

Imports by Latin America (Mexico, the Caribbean, Central America, and South America) are projected at nearly 2.8 million tons in 2001, up about 150,000 from this year. However, imports remain well below the 1998 record of 3.5 million tons that were largely driven by El Niño crop damage to the region. Total production in the region is projected to drop 5 percent, primarily due to smaller plantings.

Latin America is primarily an indica market, with the United States a major supplier to Mexico, Central America, and much of the Caribbean. Except for the Caribbean, these are primarily rough rice markets for the United States. In South America, the bulk of milled rice imports are typically from other South American countries—mainly Argentina and Uruguay. Regional trading preferences and locational advantages account for much of the intra-regional buying within South America.

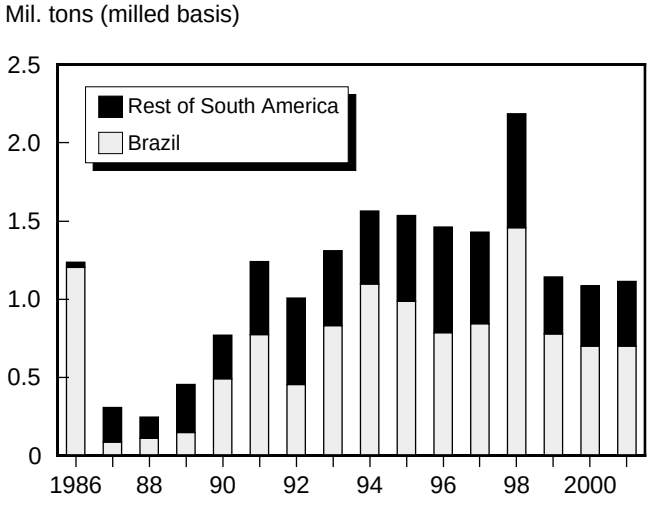
Mexico: Mexico is projected to import a record 425,000 tons in 2001, up 25,000 from this year. Stagnant production and a steady rise in use account for the continued growth in imports. The United States supplies the bulk of Mexico's rice imports. Mexico imports mostly rough rice, nearly all long grain. In addition to a locational advantage over Asian exporters, the United States is one of few rice exporting countries that allows rough rice exports. In fact, none of the major Asian exporting countries ships rough rice.

The Caribbean: The region is projected to import a record 905,000 tons in 2001, up 73,000 tons from a year earlier. Imports by the Caribbean have nearly doubled over the past decade, largely due to declining production and steadily rising use. Rice production in the Caribbean for 2000/01 is forecast at 465,000 tons, well below the 1984/85 record of 809,000. Smaller plantings account for most of the production decline.

Cuba, Haiti, and the Dominican Republic are the largest markets for rice in the Caribbean. Cuba is projected to import a record 450,000 tons of rice in 2001, up 50,000 from a year earlier. Rice production in Cuba has declined substantially since the late 1980's, with both plantings and yield well below earlier levels. In 2001, Haiti is projected to import a record 240,000 tons, up 5,000 from a year earlier. Rising consumption and stagnant production are behind the steady rise in imports. The Dominican Republic is projected to import a record 85,000 tons in 2001, up 5,000 from a year earlier. Rice production in the Dominican Republic is well below levels achieved in the early 1990's. Both Haiti and the Dominican Republic are important markets for U.S. rice.

Brazil: Brazil is Latin America's largest rice importer. Brazil is projected to import 700,000 tons in 2001, unchanged from this year. Imports remain well below the 1998 record of 1.46 million tons. Brazil's 2000/01 crop is projected at 7.4 million tons, down 6 percent from the 1999/2000 crop. However, supplies are projected to be sufficient to keep imports at this year's level.

Figure 22
Little growth is projected for South America rice imports in 2001



2000 and 2001 projected.
Source: Foreign Agricultural Service, USDA.

Rice consumption has exceeded production every year since 1988/89, making Brazil a major rice importer. Because of special trade arrangements under the MERCOSUR trade agreement, Argentina and Uruguay dominate the Brazilian market. In years when Argentina and Uruguay were unable to supply Brazil's import needs, the United States typically shipped substantial amounts to Brazil, mostly in the form of rough rice.

Central America: The region is projected to expand imports in 2001 to a record 335,000 tons, up 30,000 from a year earlier. While production is expected to increase slightly in 2000/01, it remains below the 1996/97 record. In contrast, rice consumption in the region has steadily increased and is outstripping any growth in production. The United States is the largest supplier to the region. The bulk of Central America's rice imports are rough rice, nearly all long grain. Costa Rica, Nicaragua, and Honduras are the largest rice markets in Central America.

Other Regions

The EU: The EU is projected to import 800,000 tons in 2001, unchanged from this year but below imports in the mid-1990's. The EU imports indica rice—with the United States and Thailand the largest suppliers—and basmati rice from India and Pakistan.

The EU produced bumper crops every year from 1996/97 to 1999/2000, a result of larger plantings and several years of record yields. With consumption growing at a very slow rate, these bumper crops led to a very large increase in stocks in the EU. The 2000/01 EU harvest is projected at almost 1.7 million tons, down 4 percent from a year earlier, a result of a smaller yield. Both Italy and Spain, the two largest rice producing countries in the EU, are projected to produce smaller crops in 2001. However, even with weaker production, total supplies are still projected to be quite large in the EU in 2000/01.

The former Soviet Union: The countries of the former Soviet Union are projected to import 692,000 tons of rice in 2001, up 175,000 from a year earlier and the largest since 1992. An almost 30-percent drop in production in 2000/01 is behind the substantial increase in imports.

Russia is the largest market for rice in the former Soviet Union, with imports projected at 480,000 tons in 2001, up 80,000 from a year earlier. Uzbekistan is projected to be the second largest import market in the region in 2001, taking 125,000 tons, up 95,000 from a year earlier. Production in 2000/01 is down substantially from a year earlier, a result of severe drought in the region. Turkmenistan accounts for the bulk of the remainder of imports by the former Soviet Union.

Characteristics of U.S. Rice Farming

Bill Chambers and Nathan Childs[1]

Abstract: This paper uses data from the 1997 Census of Agriculture to provide an overview of the structure of rice farming in the United States. The paper focuses on farm size and number, value of production, operator profiles, farm ownership, and the level of capital investment. Comparisons among States, other commodities, and previous Censuses are provided.

Keywords: Rice, farm size, farm numbers, operator profile, capital value, yields.

There are a variety of changes occurring in the U.S. rice industry. Many of the changes reflect broad adjustments that are happening throughout the agricultural sector. For example, average farm size and yields continue to increase for rice farming as well as for virtually every other major commodity in the United States. Other changes, including the decline in rice production along the Gulf Coast and greater rice plantings in Missouri and northern Arkansas, are also happening.

This paper uses data from the 1997 Census of Agriculture to provide an overview of the structure of the U.S. rice farming sector and highlights changes from past census reports. The paper focuses on farm size and number, the value of rice production, operator profiles, and levels of capital investment. Comparisons between States producing rice and among different commodities are also provided. Unless otherwise noted, this paper considers a rice farm to be a farm where rice is grown. The Census of Agriculture also reports information for farm enterprises using the North American Industrial Classification System (NAICS). NAICS defines a rice farm as one where 50 percent or more of the farm's total value of agricultural sales comes from rice.

U.S. Rice Crop Valued at Nearly $1.8 Billion in 1997

According to the U.S. Department of Agriculture's (USDA) National Agricultural Statistics Service, the total value of U.S. rice production in 1997 was nearly $1.8 billion, making rice the eighth most valuable field crop grown in the Nation. In 1997, there were 9,291 farms that grew rice out of slightly more than 1.9 million farms in the United States. Rice accounted for about 2 percent of the total value of field crops produced in the United States. Arkansas accounted for about 45 percent of the total value of rice production.

Almost all of the U.S. rice crop is produced in six States: Arkansas, California, Louisiana, Mississippi, Missouri, and Texas. Most of the analysis for this paper focuses on these six States. Other States that produce rice include Florida, Oklahoma, South Carolina, and Tennessee. Although rice is produced in relatively few regions, it is an important crop in those communities where it is grown. Rice is most important in Arkansas and Louisiana where in 1997 it accounted for 31 percent and 18 percent of each State's total value of crop production. Mississippi ranks a distant third, with rice accounting for more than 9.5 percent of the State's crop value, followed by Texas at about 3 percent. Rice accounts for only about 2 percent of total crop value in California and Missouri.

Based on the value of all farm sales, the largest number of farms producing rice were in the $100,000-$249,000 category (table A-1). In 1997, there were 2,939 farms in this category, and they accounted for almost 32 percent of all farms with rice. Farms with annual sales of $250,000-$499,999 ranked second, with 2,387 farms, and accounted for one-fourth of all farms with rice. Farms with annual sales below $50,000 accounted for less than 12 percent of all rice producing farms, down from more than 19 percent in 1992.

Table A-1--Distribution of U.S. farms growing rice by value of all farm sales

Value of sales	1997		1992	
	Farms	Share of total	Farms	Share of total
	Number	Percent	Number	Percent
up to $19,999	386	4.2	928	8.3
$20,000 to $49,999	675	7.3	1,234	11.0
$50,000 to $99,999	1,083	11.7	1,945	17.3
$100,000 to $249,000	2,939	31.6	3,925	35.0
$250,000 to $499,999	2,387	25.7	2,047	18.3
$500,000 to $999,999	1,278	13.8	852	7.6
$1 million or more	543	5.8	281	2.5
Total	9,291	100	11,212	100

Source: U.S. Census of Agriculture, 1997 and 1992.

[1] Agricultural economists, USDA's Economic Research Service, Washington, D.C.

The number of farms with annual sales of less than $250,000 declined nearly 37 percent between 1992 and 1997. The share of all farms with rice declined to 55 percent in 1997, from nearly 72 percent in 1992. In contrast, the number of farms in the higher sales value categories increased. The number of farms with sales values of $1 million or more increased more than 93 percent to 543 in 1997 and accounted for nearly 6 percent of all rice-producing farms. Farms with sales values of $500,000-$999,999 increased 50 percent to 1,278. Farms with sales of $250,000-$499,999 increased almost 17 percent between 1992 and 1997, rising to 2,387.

Farms with Rice Decline 17 Percent Between 1992 and 1997

A major trend in the U.S. rice industry has been a decline in the total number of farms that grow rice and an increase in average farm size. This trend is occurring throughout the agricultural sector and is a result of significant improvements in the productivity of farm operators, and the economies of size associated with agricultural production.

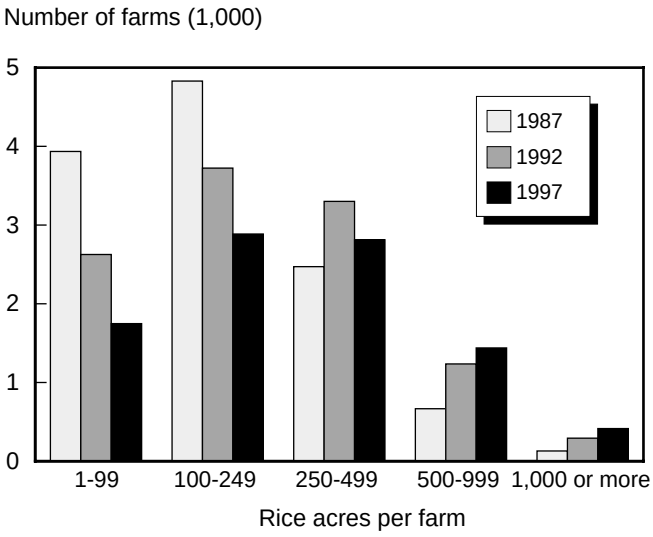
In 1997, the Census of Agriculture reported 9,291 U.S. farms that produced rice on more than 3.1 million acres (table A-2). The number of farms producing rice has declined significantly since 1987. In 1987, there were 12,013 rice-producing farms. By 1992, the number had dropped to 11,212. The reduction is more pronounced for rice than for farming in general. In 1997, there were about 1.9 million farms in the United States, down about 8 percent from 1987.

As farm numbers were declining, average rice acreage was growing. The number of rice acres on a farm that grew rice averaged 336 in 1997, up from 202 in 1987. During the same period, average farm size in the United States as a whole expanded more than 5 percent to 487 acres.

The rice sector tends to be dominated by a relatively few large producers, and large farms have become more prominent over the past decade. The number of farms with 500 acres of rice or more increased in each census since 1987. By contrast, the number of farms with less than 250 rice acres decreased over the same period. The number of rice-producing farms with 250-499 acres of rice increased between 1987 and 1992, but decreased between 1992 and 1997.

Figure A-1

The number of farms with 500 or more acres of rice have increased substantially since 1987



Source: U.S. Census of Agriculture.

Although large farms in general are increasing in number, very large farms are growing at a particularly fast rate. In 1987, the U.S. Census reported 128 farms that exceeded 1,000 acres of rice, which accounted for about 8 percent of total production. By 1997, there were 414 farms with over 1,000 acres of rice—an increase of 223 percent—that accounted for 20 percent of production. Between 1987 and 1997, farms in the 500-999 rice-acre category increased by 117 percent and farms in the 250-499 rice-acre category increased almost 14 percent.

Over the same period, the number of small farms with rice—those with fewer than 100 acres of rice—declined sharply. The 1987 Census reported 3,928 rice-producing farms with fewer than 100 acres of rice. They accounted for about 8 percent of total production. By 1992, the number of

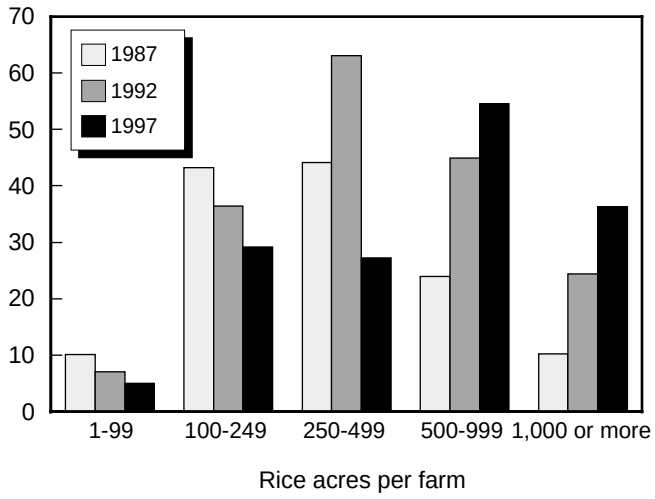
Table A-2--Farms growing rice: Number, acres, production, and yield

Harvested acres of rice	1997				1992				1987			
	Farms	Number of rice acres	Pro-duction	Avg. yield	Farms	Number of rice acres	Pro-duction	Avg. yield	Farms	Number of rice acres	Pro-duction	Avg. yield
	Number	Acres	1,000 cwt	Pounds	Number	Acres	1,000 cwt	Pounds	Number	Acres	1,000 cwt	Pounds
1-99	1,747	90,180	5,051	5,601	2,620	134,587	7,115	5,287	3,928	197,941	10,134	5,119
100-249	2,885	492,598	29,161	5,920	3,722	634,961	36,379	5,729	4,825	798,122	43,232	5,417
250-499	2,812	983,203	57,237	5,821	3,296	1,130,817	63,090	5,579	2,472	822,462	44,148	5,368
500-999	1,433	934,222	54,494	5,833	1,232	804,740	44,942	5,585	660	426,504	24,007	5,629
1,000 or more	414	621,917	36,288	5,835	292	412,613	24,415	5,917	128	179,835	10,195	5,669
Total	9,291	3,122,120	182,231	5,837	11,212	3,117,718	175,942	5,643	12,013	2,424,864	131,716	5,432

Source: U.S. Census of Agriculture, 1997, 1992, and 1987.

Figure A-2

Farms with 500 or more acres of rice account for nearly half of U.S. rice production



Source: U.S. Census of Agriculture.

rice-producing farms in the same category dropped to 2,620 and by 1997 had declined to 1,747, accounting for less than 3 percent of total production. Following a similar pattern, the number of farms in the 100-249 rice-acre category declined 40 percent between 1987 and 1997 and accounted for about 16 percent of total production.

The average yield for rice in 1997 was reported at 5,837 pounds per acre. In the 1997 Census, farms in the 100-249 rice-acre category reported the highest average yield of 5,920 pounds per acre. Farms with less than 100 acres of rice reported the lowest average yield, 5,601 pounds per acre. This pattern is somewhat different from what was reported in previous census reports. In the 1992 and 1987 Census, the largest rice-producing farms—those with 1,000 acres of rice or more—had the highest yields of any category, and the smallest farms—those with fewer than 100 acres of rice—had the lowest yields. In general, we would expect larger farms to have higher yields because they are more likely to utilize yield-enhancing technologies such as precision leveling and straight or permanent levees.

The number of farms and rate of decline in number varies among the six major rice-producing States (table A-3). In 1997, Arkansas reported 4,207 farms that grew rice, more than any other State but down 25 percent from 1987. Louisiana and California ranked next with 1,736 and 1,544 rice-producing farms. Since 1987, the number of farms that grow rice has dropped almost 7 percent in California and 24 percent in Louisiana. No other State had more than 1,000 rice-producing farms. Missouri—which reported 418 farms with rice in 1997—has the fewest, due to a limited area suitable for growing rice. Although the number of rice-producing farms in Missouri has fallen since 1987, overall production there has increased sharply over the past decade. The number of rice farms has declined as production technology has improved, enabling fewer growers to farm more land.

The average rice acreage of rice-producing farms in 1997 was 336 acres. However, average farm sizes vary among the major rice-producing States. In Mississippi, rice-producing farms averaged 442 acres of rice in 1997, up from 243 in 1987 and the highest average in the United States. The smallest average rice acreage in the country is in Missouri, where rice-producing farms averaged 281 acres of rice, up from 148 in 1987. In the four other major rice-growing States, average rice area was very similar, ranging from 329 acres in Arkansas to 334 in Louisiana.

Rice Producing Farms Are Larger Than Most Crop Farms

Rice acreage on farms that grow rice tends to be larger than the specific crop acreage of other commodity farms. Rice-producing farms averaged 336 rice acres in 1997, compared with 162 acres of corn for corn producing farms, 242 acres of wheat for wheat producing farms, and 186 acres of soybeans for soybean producing farms (table A-4). Among

Table A-3--Farms growing rice by State: Number, share, and average size

State	1997			1992			1987		
	Farms	Share of U.S. rice crop	Average size	Farms	Share of U.S. rice crop	Average size	Farms	Share of U.S. rice crop	Average size
	Number	Percent	Acres	Number	Percent	Acres	Number	Percent	Acres
Arkansas	4,207	43.3	329	4,924	42.9	277	5,613	41.5	186
Louisiana	1,736	14.5	334	2,197	15.3	268	2,273	13.6	184
Mississippi	530	7.3	442	748	8.9	362	803	7.9	243
Missouri	418	3.4	281	475	2.9	216	449	2.6	148
Texas	843	8.4	333	1,276	11.4	290	1,212	12.4	247
South	7,734	77.0	336	9,620	81.3	280	10,350	78.1	195
California	1,544	22.7	333	1,575	18.1	255	1,654	21.7	241
Total 1/	9,291	100	336	11,212	100	278	12,013	100	202

1/ Includes some rice farms in minor rice producing States, primarily Florida, Oklahoma, South Carolina, and Tennessee.

Source: U.S. Census of Agriculture, 1987, 1992, and 1997.

major field crops, only cotton—at 420 acres—reported a larger average acreage than rice.

In 1997, the average per-farm value of land and buildings for rice farms (using the NAICS farm definition) averaged nearly $1.1 million compared with $545,000 for soybeans, $590,000 for wheat, and $783,000 for corn (table A-5). Cotton production also incurs relatively high fixed costs, and these producers reported per-acre land and buildings values at about the same as rice.

Rice is a capital-intensive crop as demonstrated by the value of land, buildings, machinery, and equipment. In fact, except for cotton, among field crops rice had the highest per-farm machinery and equipment expenses. In 1997, average per-farm expenses for machinery and equipment for rice totaled $176,000 compared with $78,000 for soybeans, $101,000 for wheat, and $105,000 for corn. For cotton, expenses for machinery and equipment averaged $184,000 per farm.

Part-Owners and Tenants Account For Majority of Farms with Rice

The Census of Agriculture provide data for farms with different tenant relationships using the following definitions. Full owners only operated land they owned. Part owners operated land that they owned but also land that they rented from others. Tenants operated only land that they rented from others or worked on shares for others.

A much smaller proportion of rice producing farms are operated by full-owners as compared with both the overall farm sector and other field crops. For farms in general, full-ownership accounts for 60 percent of the total number of farms, part-owners account for 30 percent, and tenants account for just 10 percent.

This pattern is very different for both rice and other major field crops. For rice, the majority of farms are either part-owned or tenant farmed. The largest share of rice-producing farms, 42 percent, are operated by part-owners, about the same as in 1992 (table A-6). As a share of total production, part-owners accounted for 45 percent of total rice production in 1997, up slightly from 1992.

Tenant farms were the second most common type of farm operation, accounting for 37 percent of all farms with rice and 38 percent of harvested area. The share of farms operated by tenant farmers is significantly higher for rice than for other commodities, although it is slightly lower than reported in 1992.

Full-ownership is the least common tenure class among rice producers, accounting for less than 21 percent of all rice-producing farms and just over 16 percent of rice acreage. This level of full-ownership is smaller than for other major food and feed grains, although it has increased since 1992.

In 1997, tenant farmers reported the highest average rice yield of 5,939 pounds per acre, followed by full-owners at 5,902 pounds. Part-owners reported the lowest average yield among tenure classes at 5,727 pounds. The pattern was slightly different in 1992 when full-owners had the highest average yield, followed by tenant farmers and then part-owners.

Data on rice producers by principle occupation of the operator indicate that about 88 percent of rice producers were categorized as “farmers” (the operator spent 50 percent or more

Table A-4--Farm and ownership characteristics of selected commodities, 1997

	Rice	Wheat	Corn	Cotton	Soybeans	All farms
Number of farms	9,291	243,568	430,711	31,493	354,692	1,911,859
Total harvested acreage (1,000 acres)	3,122	58,836	69,797	13,235	66,148	931,795
Average acreage of specified commodity (acres)	336	242	162	420	186	487
Tenure (percent of total)						
Full-owner	21	29	35	25	32	60
Part-owner	42	57	51	51	52	30
Tenant	37	14	14	24	16	10

Source: U.S. Census of Agriculture, 1997.

Table A-5--Characteristics of farm enterprises by commodity, 1997 1/

Characteristics	Rice	Wheat	Corn	Cotton	Soybeans	All farms
			$1,000			
Per-farm value of land and buildings	1,097	590	783	1,091	545	450
Per-farm value of machinery and equipment	176	101	105	184	78	58

1/ The definition of a farm enterprise is based on the North American Industry Classification System.

Source: U.S. Census of Agriculture, 1997.

of his/her time working on the farm), virtually unchanged between 1992 and 1997 (table A-7). Operations where the farmer spent more than 50 percent of their time on the farm accounted for about 94 percent of the total acreage planted to rice, also unchanged from the previous census.

The average age of rice producers is increasing. In 1987, there were 2,821 rice growers, both part-time and full-time, in the 35-44 year-old category. This was the largest age category, accounting for over 23 percent of all rice producers. By 1997, the 45-54 year olds were the largest age category and they accounted for more than 28 percent of all rice growers. In 1987, rice producers under age 45 accounted for more than 45 percent of all farms with rice. But by 1997 only 36 percent of farmers were under age 45. In contrast, growers over age 45 accounted for 64 percent of all rice operations in 1997, up from 55 percent in 1987.

Summary

This paper provides a general overview of the U.S. rice farming sector using data from the 1997 Census of Agriculture. Economic Research Service (ERS) analysis indicates that many of the trends noted are likely to continue. It is expected that rice production will continue to decline on the Gulf Coast due to relatively high production costs and urban encroachment (data for farm costs and returns can be found on the ERS web site at *http://www.ers.usda.gov/data/costsandreturns/*). It is also expected that farm sizes will continue to increase throughout the agricultural sector as labor-saving technologies are developed and economies of scale expand.

Table A-6--Ownership characteristics of farms growing rice

Tenure	1997				1992			
	Farms	Harvested area	Annual production	Average yield	Farms	Harvested area	Annual production	Average yield
	Number	Acres	1,000 cwt	Pounds/acre	Number	Acres	1,000 cwt	Pounds/acre
Full-owner	1,940	511,070	30,165	5,902	2,186	395,154	23,212	5,874
Part-owner	3,881	1,418,707	81,256	5,727	4,550	1,352,786	74,259	5,489
Tenant	3,470	1,192,343	70,811	5,939	4,476	1,369,778	78,470	5,729
Total	9,291	3,122,120	182,231	5,837	11,212	3,117,718	175,942	5,643
				Percent				
Full-owner	21	16	17	101	19	13	13	104
Part-owner	42	45	45	98	41	43	42	97
Tenant	37	38	39	102	40	44	45	102

Source: U.S. Census of Agriculture, 1992 and 1997.

Table A-7--Farms growing rice: Numbers and size by operator age

Operator age	1997		1992		1987	
	Farms	Acreage	Farms	Acreage	Farms	Acreage
	Number	Acres	Number	Acres	Number	Acres
Primary occupation:						
Farming 1/						
Under 25	165	37,308	230	51,768	422	66,764
25 to 34	845	266,281	1,403	372,971	1,981	391,133
35 to 44	2,017	748,920	2,577	786,703	2,458	563,917
45 to 54	2,312	869,609	2,371	759,451	2,434	539,553
55 to 64	1,677	611,061	1,914	579,598	2,172	473,796
65 and over	1,166	397,612	1,346	373,128	1,143	236,766
Total	8,182	2,930,791	9,841	2,923,619	10,610	2,271,929
Non-farming 2/						
Under 25	13	888	15	1,708	39	3,053
25 to 34	108	14,224	144	20,715	172	20,621
35 to 44	238	42,733	291	35,468	363	42,225
45 to 54	333	57,185	428	62,424	346	35,854
55 to 64	224	37,153	278	40,341	284	27,315
65 and over	193	39,146	215	33,443	199	23,867
Total	1,109	191,329	1,371	194,099	1,403	152,935

1/ Operator spends 50 percent or more of their time farming. 2/ Operator spends less than 50 percent of their time farming.

Source: U.S. Census of Agriculture, 1987, 1992, and 1997.

The Census of Agriculture

In the Census of Agriculture, a farm is defined as any place from which $1,000 or more of agricultural products were produced or sold or normally would have been sold during the census year. The Census of Agriculture provides a statistical snapshot of the Nation's farming and ranching industries and is the principle source of comparable data at the county and State levels. Census statistics are used by Congress to develop and change farm programs, study historical trends, assess current conditions, and plan for the future. Many State and Federal programs are designed and evaluated using data from the Census of Agriculture. The private sector uses census data for many activities as well.

The first agricultural census was taken in 1840 as part of the Sixth Decennial Census of the population. From 1840 to 1950, the agricultural census was taken as part of each decennial census. From 1954 to 1974, a Census of Agriculture was taken for the years ending in 4 and 9. In 1976, Congress authorized the Census of Agriculture to be taken for 1978 and 1982 to adjust the data reference year so that it coincided with other economic censuses. This adjustment in timing established the agriculture census on a 5-year cycle, collecting data for years ending in 2 and 7.

The U.S. Department of Commerce, Bureau of the Census, conducted the census for more than 150 years. However, the 1997 Appropriations Act transferred the responsibility from the Bureau of the Census to the National Agricultural Statistics Service (NASS) of the U.S. Department of Agriculture. The 1997 census was the first conducted by NASS. The 1997 and 1992 censuses can be viewed on-line at *http://www.nass.usda.gov/census.*

Milled Rice Distribution Survey Shows Steady Growth in U.S. Rice Consumption

Bill Chambers and Nathan Childs[1]

Abstract: Results of the 1998/99 milled rice distribution survey indicate continued growth in domestic use of rice and rising per capita consumption. Both direct food use and processed food use rose to record levels in 1998/99, with imports accounting for a larger share of domestic consumption. In contrast, brewers' use remained flat. While shipments of regular milled rice expanded in 1998/99, shipments of domestic specialty rices—parboiled, precooked, and brown rice—declined for a second consecutive year. The Pacific Coast, South Atlantic, and Middle Atlantic remain the top markets for direct food shipments. U.S. rice consumption has increased dramatically over the past two decades, although the rate of increase has slowed since the mid-1990's.

Keywords: Rice, per capita consumption, processed foods, beer use, food service.

Summary

The annual milled rice distribution survey is conducted by the Food Research Associates and is funded by the USA Rice Federation. The survey reports shipments of milled rice from domestic millers and repackagers, and typically accounts for 95 percent or more of domestic rice shipments. The survey is conducted immediately after the market year ends and is available early in the next calendar year.

The 1998/99 milled rice distribution survey reported record total and per capita rice consumption in the United States. Survey results indicate that Americans consumed more than 72 million hundredweight (cwt)—including imports—of milled rice in the August 1998-July 1999 market year, up nearly 2 percent from a year earlier. Total consumption of rice in the United States has increased about 50 percent in the past decade, even though the rate of annual increase has slowed since the mid-1990's.

Per capita rice consumption was reported at 26.5 pounds, up slightly from a year earlier and about 38 percent higher than in 1988/89. Imports accounted for about 10 percent of total rice consumption in the United States. Since the early 1980's, imports have accounted for a growing share of U.S. rice consumption.

Direct food use and processed foods accounted for all of the reported growth in domestic consumption of rice, with processed foods reporting the strongest rate of growth. In contrast, beer use remains flat. While shipments of regular milled white rice rose nearly 6 percent in 1998/99, shipments of domestic specialty rices—parboiled, precooked, brown rice, and aromatics—declined. Package mixes and pet food accounted for most of the expansion in processed food use of rice.

The Pacific region remains the largest market for direct food use shipments, followed by the South Atlantic and Middle Atlantic. Together these three regions accounted for 64 percent of total direct food use in 1998/99.

Direct Food Use Rises to Record 45 Million Cwt

U.S. rice consumption is divided into three major categories: direct food use (or table rice), processed foods, and beer. In 1998/99, direct food use—including imports—was a record 45.2 million cwt, up nearly 3 percent from a year earlier and 63 percent larger than in 1988/89. Direct food use accounted for 63 percent of total domestic use, up slightly from a year earlier and a near-record. Direct food use includes regular milled white rice and specialty rices such as brown, parboiled, precooked, and aromatic.

Shipments from U.S. mills for direct food use were reported at a record 38.1 million cwt, up more than 1 percent from a year earlier. Regular milled white rice accounted for all of the growth, shipments of domestic specialty rices declined for the second consecutive year.

At the end of the 1998/99 market year the U.S. Department of Agriculture (USDA) projected imports at 7.1 million cwt

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Table B-1--Distribution of milled rice to principle domestic outlets 1/

Year	Direct food use 2/	Direct food use (incl. imports)	Processed foods	Beer	Total
			Million cwt		
1978/79	15.22	15.29	3.72	7.90	26.90
1980/81	18.79	18.94	4.49	8.00	31.44
1982/83	19.17	19.64	3.34	9.60	32.58
1984/85	21.20	22.32	5.44	9.67	37.43
1986/87	22.87	24.70	7.63	10.68	43.01
1988/89	25.05	27.72	8.62	11.15	47.49
1990/91	27.97	31.30	12.18	11.00	54.48
1994/95	31.51	36.61	16.13	10.71	63.45
1995/96	36.28	41.62	14.90	11.18	67.69
1996/97	35.78	42.79	14.13	10.82	67.74
1997/98	37.56	44.16	15.57	11.09	70.81
1998/99	38.10	45.22	16.15	10.70	72.06

1/ Does not include shipments to U.S. territories. 2/ Does not include imports.

Source: Direct and processed food use data from milled rice distribution surveys. For market years 1978/79 through 1990/91, survey data compiled by USDA's Economic Research Service. For market years 1994/95 through 1998/99, data compiled by the Food Research Associates for the USA Rice Federation. Beer use data from the U.S. Treasury Department. Import data from U.S. Department of Commerce. All data updated as of February 2000, when 1998/99 survey results were published.

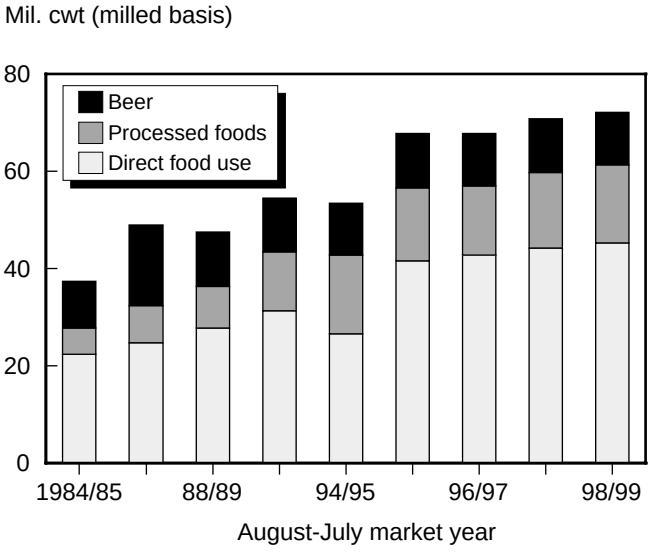
(milled basis), which was reported in the survey. Revised data indicate that imports were 7.3 million cwt for 1998/99. Virtually all imported rice is consumed as direct food use and nearly all imports are aromatic rices, primarily Jasmine from Thailand and basmati from India and Pakistan. These specific aromatic varieties are just starting to be produced in the United States. Since the early 1980's imports have grown faster than total consumption.

Rice for direct food use is primarily distributed to consumers through grocery stores, food service outlets, and warehouse clubs. In addition, very small amounts of rice are distributed through USDA domestic food assistance programs. Shipments to all four distribution categories were reported higher in 1998/99. Grocery stores accounted for almost 57 percent of all shipments of domestic rice for direct food use, about the same as a year earlier but down slightly from 1994/95. Food service outlets were the second largest outlet, accounting for more than 37 percent of shipments, about the same share as in 1994/95.

While accounting for only 5 percent of domestic shipments for direct food use, warehouse clubs reported the strongest growth of the three major outlets in 1998/99, growing about 3.5 percent. Since 1994/95, shipments to warehouse clubs have expanded about 40 percent, while shipments to grocery stores and food service outlets have each risen around 21 percent. Warehouse clubs' share of total direct food use sales has risen 1 percentage point since 1996/97. Shipments for USDA food assistance programs have been nearly flat since 1994/95, averaging about 325,000 cwt per year and accounting for less than 1 percent of direct food use shipments.

Figure B-1

U.S. rice consumption continues to expand



Includes imports but does not include shipments to U.S. territories.
Source: Milled rice distribution survey, various issues.

Domestic Specialty Rices Continue To Decline

According to the survey, shipments of domestic specialty rices for direct food use declined 24 percent to 4 million cwt in 1998/99, the lowest in nearly 20 years. Parboiled rice and precooked rice accounted for all of the decline. Shipments of parboiled rice dropped about a third to 2.5 million cwt, the lowest in nearly 20 years. In 1994/95, domestic shipments of parboiled rice were nearly 5 million cwt, the highest on record. Declining capacity in U.S. parboiling accounted for some of the reduction. Virtually all parboiled rice is southern long grain.

Table B-2--Domestic shipments of specialty rices, 1988/89 to 1998/99 1/

Year	Parboiled	Precooked 2/	Brown rice	Precooked parboiled	Precooked brown	Precooked parboiled brown	Aromatic rice	Aromatic brown	Other 3/	Total
					Million cwt					
1988/89	4.38	0.52	0.69	0.35	0.00	0.00	0.00	0.02	0.00	5.97
1990/91	3.38	0.87	0.67	0.68	0.00	0.13	0.09	0.01	0.00	5.81
1994/95	4.95	0.24	0.57	0.65	0.01	0.11	0.06	0.03	0.05	6.66
1995/96	4.02	0.26	0.53	0.76	0.01	0.15	0.07	0.03	0.11	5.95
1996/97	4.28	0.42	0.70	0.60	0.01	0.05	0.10	0.06	0.08	6.29
1997/98	3.77	0.42	0.37	0.56	0.01	0.05	0.08	0.01	0.03	5.29
1998/99	2.50	0.29	0.67	0.36	0.02	0.03	0.09	0.05	0.01	4.02

1/ Does not include imports or shipments to U.S. territories. 2/ Includes instant rice. 3/ Includes mochi-glutinous, rice blends, sweet rice, and Arborio.

Source: U.S. Rice Distribution Patterns Annual Report, various issues.

Shipments of precooked rice dropped about 30 percent in 1999/2000 to 288,000 cwt. U.S. consumption of precooked rice has steadily declined for 20 years. Long grain accounts for nearly all precooked rice. Shipments of precooked-parboiled rice dropped more than 35 percent to 359,000 cwt. Although precooked rice is quick to prepare, it is generally considered to have a less desirable taste compared with regular rice. In 1998/99, all of the precooked rice shipped in the United States was long grain.

In contrast, shipments of brown rice for direct food use rose 80 percent in 1998/99 to 669,000 cwt, about even with 1996/97. Brown rice has the hull removed but the bran layer is still attached to the kernel. Brown rice is about evenly split between long and combined medium/short grain. Health and diet attributes, including greater nutrition, are the main factors driving demand for brown rice. Brown rice consumption may rise even more with USDA's recent release of the 2000 edition of the Dietary Guidelines, which places strong emphasis on whole grains.

Shipments of domestic aromatic rices (including aromatic brown rice) were up about 60 percent to 137,000 cwt. Shipments were still less than the 1996/97 record of 159,000 cwt. U.S. aromatic rices are nearly all grown in the South, although California is starting to grow aromatic rice, including jasmine, basmati, red rice (long grain and short grain), and black japonica.

Table B-3--Domestic shipments of specialty rice by grain type, 1998/99 1/

Specialty rice type	Long	Medium	Short	Total 3/
		Million cwt		
Parboiled	2.48	0.02	0.00	2.50
Precooked 2/	0.29	0.00	0.00	0.29
Brown	0.34	0.24	0.08	0.67
Precooked parboiled	0.36	0.00	0.00	0.36
Precooked brown	0.02	0.00	0.00	0.02
Precooked parboiled brown	0.03	0.00	0.00	0.03
Aromatic	0.09	0.00	0.00	0.09
Aromatic brown	0.05	0.00	0.00	0.05
Other	0.00	0.00	0.01	0.01
Total	3.67	0.26	0.09	4.02
Share of total (percent)	91.30	6.50	2.20	100

1/ Does not include imports. 2/ Includes instant rice.

3/ Includes shipments to U.S. territories

Source: U.S. Rice Distribution Patterns Annual Report, various issues.

In contrast to shipments for direct food use, shipments of specialty rice for processed foods rose 19 percent to 2.2 million cwt in 1998/99. However, shipments are only fractionally higher than levels reported in 1996/97. Package mixes and frozen dinners account for the bulk of specialty rices—mostly parboiled rice and some brown rice—used in processed foods.

Processed Food Use Reports Strongest Rate of Growth

Use of rice in processed foods was reported at more than 16.1 million cwt in 1998/99, up nearly 4 percent from a year earlier. Processed food use of rice was a record in 1998/99, fractionally above the previous record in 1994/95.

Processed foods were the fastest growing category of domestic rice use in 1998/99. Processed foods that use rice include breakfast cereals, package mixes, pet foods, baby food, rice cakes, frozen dinners, soup, crackers and snacks, and candy. Processed food use of rice accounted for about 22 percent of total domestic use, up slightly from a year earlier but still below the 1994/95 record of 25 percent.

Package mixes, also referred to as flavored rice mixes or prepared mixes, accounted for the bulk of the increase in processed food use of rice in 1998/99. Rice use in package mixes increased about 90 percent to 2.5 million cwt. However, use remains below the record of nearly 3.3 million in 1994/95.

Use of rice in packaged mixes expanded substantially in the 1980's and early 1990's, but declined in the second half of the 1990's. Packaged mixes are easy to prepare and come in many flavors. One reason that this category has not expanded—even as demand for convenience and variety has risen—is the tremendous competition in the highly convenient food product market.

Table B-4--Distribution of milled rice to domestic processors by product use 1/

Market year	Cereal	Package mixes 2/	Pet food	Baby food	Crackers/ snacks	Rice cakes	Frozen dinners	Soup	Candy	Other 3/	Total
						Million cwt					
1978/79	2.09	1.10	0.00	0.16	0.00	0.00	0.00	0.16	0.00	0.22	3.72
1980/81	2.59	1.37	0.00	0.13	0.00	0.00	0.00	0.15	0.00	0.26	4.49
1982/83	2.50	0.22	0.00	0.15	0.00	0.00	0.00	0.18	0.00	0.29	3.34
1984/85	3.58	0.57	0.00	0.32	0.00	0.00	0.00	0.24	0.00	0.27	4.97
1986/87	4.80	1.51	0.43	0.23	0.00	0.29	0.06	0.08	0.15	0.09	7.63
1988/89	3.94	1.71	1.34	0.17	0.00	0.71	0.09	0.12	0.22	0.33	8.62
1990/91	4.42	3.17	2.07	0.45	0.00	0.41	0.24	0.12	0.11	1.22	12.19
1994/95	5.93	3.27	4.51	0.28	0.46	0.44	0.29	0.16	0.21	0.58	16.13
1995/96	4.95	2.52	4.78	0.30	0.32	0.45	0.25	0.15	0.30	0.89	14.90
1996/97	5.24	1.93	4.83	0.29	0.48	0.41	0.57	0.10	0.12	0.15	14.13
1997/98	5.68	1.32	5.64	1.11	0.39	0.36	0.63	0.10	0.17	0.17	15.57
1998/99	4.92	2.51	6.07	0.57	0.42	0.32	0.68	0.05	0.27	0.33	16.15

1/ Does not include imports or shipments to U.S. territories. 2/ Includes package mixes shipped directly by mills.

3/ Includes minor products not listed separately and unspecified products.

Source: U.S. Rice Distribution Patterns Annual Report, various issues.

About 40 percent of the rice used in packaged mixes is high quality southern long grain and about 20 percent is medium grain. The bulk of the remaining rice used in package mixes is specialty rices, mostly parboiled and brown rice.

Pet Food is the Largest Category of Processed Food Use of Rice

Pet food became the largest category of processed food use of rice in 1998/99, accounting for 38 percent of total processed food use. *Pet food* reported the second largest increase in rice use among processed foods, rising 430,000 cwt to almost 6.1 million, a record.

Rice is a relatively expensive ingredient for pet food, and pet foods that contain rice are generally premium lines. In recent years pet food companies have marketed products that have ingredients similar to what humans consume, which helped to open a niche for rice in the pet food market.

There was very little use of rice in pet foods prior to the mid-1980's. However, use of rice in pet foods has steadily increased since the mid-1980's and by 1998/99 was almost 3 times the 1990/91 level. No other processed food category has shown this much growth over the past decade. Brokens account for almost 90 percent of the rice used in pet foods. Brokens occur during the milling process when some whole kernels are broken. Brokens sell at a steep discount to whole kernel rice. Pet foods have been a major market for brokens since the early 1990's when beer manufacturers shifted away from buying mostly brokens to buying primarily whole kernel rice.

Rice use in *cereal*, the second largest processed food category, was reported at 4.9 million cwt, down 13 percent from 1997/98 and about 1 million cwt below the 1994/95 record. Breakfast cereals containing rice are mainly the ready-to-eat types, including rice flakes, puffed rice, shredded rice, and multi-grain cereals. Rice consumption in cereal increased substantially between 1980/81 and 1994/95 but has shown no sustained growth since then.

The recent decline in rice used for cereal is primarily the result of weaker sales of breakfast cereals overall. Cereal consumption has dropped as consumers seek even more convenient breakfasts. More and more consumers are either skipping breakfast or consuming more convenient products that can be eaten while commuting. Also, many of the new breakfast cereals do not contain any rice.

Medium grain rice makes up about 70 percent of the rice used in cereal. Common medium grain varieties used for cereal are Cal-Rose from California and Bengal from the South. Other classes of rice used to make cereal include brokens (16 percent), rice flour (8 percent), and short grain (4 percent). Long grain accounts for only 1 percent of rice used in breakfast cereals.

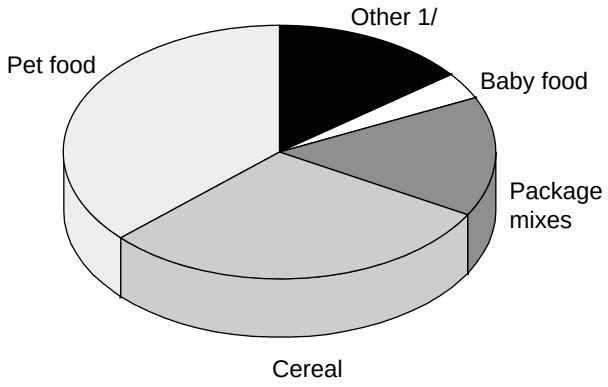
Another growing processed food use of rice are *frozen dinners*. Use of rice in frozen dinners was reported at a record 683,000 cwt in 1998/99, up almost 8 percent from a year earlier. Rice used in frozen dinners was virtually non-existent until the mid-1980's, but it has grown significantly since then. Frozen dinners use mostly specialty rices, primarily parboiled.

Baby food is another major category of U.S. rice consumption. Rice consumption in baby food has been expanding since the late 1980's. In 1998/99, baby foods used around 567,000 cwt of rice, virtually all of it rice flour. Although down substantially from a year earlier, it was still the second largest on record. Baby food is the largest user of rice flour, accounting for about 50 percent of total reported rice flour consumption in 1998/99. Rice-based baby foods are also an important substitute food for children who are allergic to wheat gluten.

Figure B-2

Pet food is the largest category of processed food use of rice

Processed food use of rice totaled 16.1 mil. cwt in 1998/99



1/ Primarily soup, candy, rice cakes, crackers, and frozen dinners.

Other processed foods that use rice include crackers/snacks, rice cakes, candy, and soup. Consumption of these products totaled almost 1.1 million cwt of rice in 1998/99. *Crackers and snacks* combined used 418,000 cwt of rice in 1998/99, up about 7 percent from a year earlier but still below the 1996/97 record. Crackers and snacks use mostly brokens. Use of rice in *rice cakes*—mostly long grain—was reported at 316,000 cwt, down 12 percent from 1997/98. Rice cakes were introduced in the mid-1980's but consumption has declined substantially since the latter part of that decade.

Use of rice in *candy* was reported at 271,000 cwt, up significantly from a year earlier, but 9 percent lower than the peak in 1995/96. Most of the rice used in candy is specialty rice or brokens, and the remainder (about 18 percent) is regular milled medium grain. Use of rice in soup was about 54,000 cwt in 1998/99, down 50 percent from a year earlier and one of the lowest on record. There has been no long-run growth in rice used in soup since the mid-1970's. Most soups use parboiled rice, which exhibits superior cooking qualities and increased longevity in cans. Soup category sales, like cereal, have been in decline in recent years as consumers seek more convenient and portable foods.

Beer Use Remains Flat; Share of Domestic Use Declines

The U.S. Department of Agriculture reported 10.7 million cwt of milled rice was used in beer in 1998/99, down fractionally from a year earlier and slightly below the record levels reported in the late 1980's. The USDA uses monthly data from the U.S. Treasury Department to make annual estimates of beer use. Currently, data are available through October 1998.

The milled rice distribution survey also reports rice use in beer. The survey reports 10.4 million cwt of rice used in beer in 1998/99, up from 9.5 million reported a year earlier. However, the milled rice survey has historically under reported the amount of rice used in beer compared with data from the U.S. Treasury Department. When the survey was published, the U.S. Treasury Department reported 11.1 million cwt used in beer in 1997/98 and 10.7 million cwt in 1998/99.

In contrast to other domestic uses for rice, the amount of rice used in beer has been nearly stagnant since the late 1980's. Beer use accounted for almost 15 percent of total domestic rice consumption, down slightly from a year earlier and just one-half the record share reported in 1978/79. Brewers use both long and medium grain whole kernel rice as well as small amounts of brokens.

Beer use has steadily declined as a share of total domestic use of rice since the late 1970's. Greater popularity of imported, microbrewery, and "lite" beers have accounted for the lack of expansion in beer use of rice. From the late-1960's through the mid-1970's, beer accounted for the bulk of the growth in domestic use of rice. During that period, food use was virtually stagnant.

Growth in Rice Consumption Has Slowed Since the Mid-1990's

Total and per capita rice consumption have been increasing since the late 1970's, but the rate of increase slowed after the mid-1990's. From the late 1960's until the mid-1970's, Americans consumed about 22 million cwt of rice a year, with per capita use actually declining. However, beginning in 1978/79, total rice consumption began to increase significantly, with the rate accelerating during the 1980's.

Survey results reported total consumption more than doubled between 1978/79 and 1990/91. In fact, during the 1980's, total domestic consumption averaged a 5-percent annual growth rate. By the late 1990's, growth had slowed to less than 3 percent a year.

Growth in per capita consumption followed a similar trend. Between 1978/79 and 1994/95, total per capita rice consumption—food use plus brewers' use—more than doubled to 24.2 pounds. However, from 1994/95 to 1998/99, per capita consumption expanded slightly more than 2 percent a year. The slowdown in growth of both total and per capita rice consumption is likely due to a greater demand for foods that are already prepared and, typically, can be eaten on the run. Also, the popularity of high-protein diets has had a negative impact on the entire grain industry. Relative prices of rice and other grains may also have had an impact.

USDA's long-term baseline forecast published in February 2000 projected total rice consumption to expand a little more

than 2 percent a year for the next decade, with food use accounting for nearly all of the growth. USDA projects slow but steady growth in per capita consumption of rice over the next decade as well. Most of the expected growth in food purchases over the next decade is expected to come from products that are easy to prepare and very convenient. Rice is increasingly moving to the *center of the plate* as people turn to one-dish meals at dinnertime. While convenience will be the driver, existing trends indicate that there is growing consumer awareness and demand for different varieties of rice that offer unique colors, textures, and flavors.

Pacific and South Atlantic Report Strongest Growth in Rice Consumption

Total and per capita consumption of rice varies substantially among States and regions and depends on a variety of factors, particularly the ethnic makeup of the region and whether it contains major urban centers. Because of these factors, both total and per capita rice consumption are the highest on the Pacific, Atlantic, and Gulf Coasts.

Immigration—a major factor in increased rice consumption—offers an explanation as to why this pattern has emerged. Many of the immigrants—particularly when they first arrive—live in large cities near the coast, which has increased rice consumption in these areas. In addition, immigration alters the diets and food preferences of the broader community, which has further increased rice consumption in the coastal parts of the United States. These impacts have affected the interior of the country to a lesser degree, partly explaining the much lower per capita rice consumption in these regions.

Regional data are reported only for direct food use, and therefore the figures cited are lower than if they included all uses of rice, including processed foods and beer. The *Pacific* (California, Oregon, Washington, Hawaii, and Alaska) is the largest market for rice in the United States. The region received 9.1 million cwt of rice for direct food use in 1998/99, up from a year earlier. The region accounted for about 24 percent of total direct food use shipments. The Pacific's share of direct food use shipments has declined slightly in recent years.

The second largest market for direct food use is the *South Atlantic* (Delaware, Maryland, Virginia, Washington, DC, West Virginia, North Carolina, South Carolina, Georgia, and Florida). More than 8 million cwt of rice was shipped to the South Atlantic in 1998/99, accounting for 21 percent of total direct food shipments. The South Atlantic's share of direct food use has increased every year since 1994/95. Reported shipments to the South Atlantic have risen about 45 percent since 1994/95, the strongest rate of growth for any region.

The *Middle Atlantic* (New York, Pennsylvania, and New Jersey) ranked third, taking more than 7.2 million cwt of rice and accounting for about 19 percent of the direct food use shipments. Both total shipments and share of direct food use have declined for the Middle Atlantic since 1996/97. The South Atlantic overtook this region as the number two market in 1997/98.

The six remaining regions account for about 36 percent of total direct food use shipments. Among these six, the *West South Central* (Texas, Arkansas, Louisiana, and Oklahoma) has shown the strongest growth. Direct food use shipments to the West South Central rose 38 percent from 1994/95 to 1998/99, reaching nearly 4.6 million cwt. The region accounted for 12 percent of total shipments that year, up from a little more than 10 percent in 1994/95. Substantial immigration from Latin America is a major factor driving growth in this region.

Although shipments to the *East South Central* (Mississippi, Alabama, Tennessee, and Kentucky) have risen since 1994/95, the region's share of total direct food use has declined about 1 percentage point to less than 6 percent. Shipments to the *West North Central* (Minnesota, North Dakota, South Dakota, Nebraska, Iowa, Kansas, and Missouri) have expanded since the mid-1990's, although the region's share of total direct food use has remained about 4 percent. The *Mountain* region (Montana, Idaho, Wyoming,

Table B-5--Milled rice shipments for direct food use by region 1/

Census region	1995/96	1996/97	1997/98	1998/99
		Million cwt		
Pacific (CA, OR, WA, HI, AK)	9.43	8.49	8.84	9.10
Middle Atlantic (NY, PA, NJ)	7.37	7.65	7.25	7.24
South Atlantic (DE, MD, VA, WV, NC, SC, GA, FL, DC)	6.64	6.74	7.82	8.04
West South Central (TX, OK, AR, LA)	3.96	4.00	4.55	4.57
East North Central (OH, IN, IL, MI, WI)	3.08	2.78	2.78	2.77
East South Central (KY, TN, AL, MS)	1.81	2.06	2.22	2.21
New England (ME, VT, NH, RI, CT)	1.96	1.79	1.72	1.77
West N. Central (MN, ND, SD, NE, IA, KS, MO)	1.31	1.49	1.53	1.54
Mountain (MT, ID, WY, NV, UT, CO, AZ, NM)	0.73	0.80	0.86	0.88
Total direct food shipments	36.28	35.80	37.56	38.10

1/ Does not include imports; includes package mixes.

Source: U.S. Rice Distribution Patterns Annual Report, various issues.

Nevada, Utah, Colorado, Arizona, and New Mexico) is the smallest market for rice in the United States. Although shipments have increased since 1994/95, the region still accounts for only about 2 percent of direct food use shipments.

In contrast, shipments to the *East North Central* (Ohio, Indiana, Illinois, Michigan, and Wisconsin) have declined slightly since 1995/96, dropping to 2.8 million in 1998/99. Shipments to the region have generally declined since 1995/96. The region's share of direct food use has declined from almost 9 percent in 1995/96 to 7 percent in 1998/99. Shipments to *New England* have declined since 1995/96 as well. New England accounted for about 4.6 percent of total direct food use in 1998/99, down from more than 5 percent in 1995/96.

Per capita consumption is also the highest in coastal areas. The Pacific region had the largest per capita consumption of rice for direct food use, nearly 21 pounds. Per capita consumption was almost 19 pounds in the Middle Atlantic, more than 16 pounds in the South Atlantic, and about 15 pounds in the West South Central. Per capita consumption in the East South Central region and New England were over 13 pounds.

Per capita consumption is much lower in the interior of the United States. In the West North Central region, per capita consumption was reported at just over 8 pounds and just over 6 pounds in the East North Central. The lowest reported level of per capita consumption was 5.16 pounds in the Mountain States.

Developing Supply and Utilization Tables For the U.S. Rice Market

Andy Aaronson and Nathan Childs[1]

Abstract: Each month, USDA releases supply and utilization tables for the U.S. rice market. The tables are used by both the private sector in making market decisions and by government agencies in estimating expenditures. The tables are developed by an interagency committee that is referred to as the rice Interagency Commodity Estimates Committee (ICEC). The ICEC uses all available data and information to develop both *start-of-year* forecasts and final or *end-of-year* estimates. This article explains the procedures and methods utilized to develop monthly forecasts and gives sources of data used in forecasting and end-of-year estimates.

Keywords: Rice, supply, use, exports, imports, stocks, prices, milling rates.

Each month the U.S. Department of Agriculture (USDA) provides supply and utilization tables for the domestic rice market. The tables are a product of an interagency committee that utilizes both reported data from various sources as well as provides short-term forecasts. The committee is named the Interagency Commodity Estimates Committee, or ICEC.

This article explains the methods and procedures used by the ICEC to develop monthly supply and use tables for the U.S. rice market. In addition, the article describes the data sources utilized by the rice ICEC in developing monthly supply and use tables for the U.S. rice market, including dates of release. The article focuses on explaining how both *start-of-year* forecasts and *final-year* estimates are developed. In addition, the rice ICEC revises historic or *back-year* supply and use tables when new information or data become available.

Interagency Committee Develops Supply and Use Tables

The primary agencies involved in the interagency estimating process are the National Agricultural Statistics Service (NASS), the Foreign Agricultural Service (FAS), the Farm Services Agency (FSA), and the Economic Research Service (ERS). The World Agricultural Outlook Board (WAOB) chairs the ICEC and works with these agencies to develop objective, reliable, and timely estimates and forecasts.

NASS provides estimates of U.S. crop production, stocks, and monthly farm prices. FAS is the Department's prime source for commodity information and market developments in foreign countries. FSA provides a great deal of the information related to farm programs and their influence on U.S. production. ERS is the analytical agency of the Department of Agriculture and provides basic economic analysis of world and U.S. supply and demand conditions, including country and regional analysis.

The WAOB releases the short-term supply and use estimates for grains, oilseeds, cotton, sugar, dairy, livestock, and poultry each month in the *World Agricultural Supply and Demand Estimates* report (WASDE). The *WASDE* report is typically released between the 9th and 12th of the month. The Board reviews and clears all publications of the Department's related to market outlook. ERS produces monthly outlook reports that provide in-depth analysis of the information reported in the WASDE. The ERS reports are released electronically the first and second business days after the release of the WASDE.

Methods and Procedures

Each month the rice ICEC develops estimates or forecasts for seven categories (or elements) of supply and use: Beginning stocks; imports; production; domestic food, industrial, and residual; seed use; exports; and ending stocks. In addition, the U.S. season-average farm price is projected.

The tables are balanced, that is total supply—the sum of beginning stocks, imports, and production—equals total utilization—the sum of total domestic disappearance, exports,

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and ending stocks. The supply and use tables are reported on a rough basis for an August-July market year.

Except for planting intentions, no actual supply and use data are available in May when the first projections for the new market year are released. Instead, the ICEC relies on various forecasting techniques to develop *start-of-year* supply and use tables. As the market year progresses, actual data are used in developing estimates and to eventually replace forecasts. When data for the full market year have been reported, the supply and use table become an *end-of-year* table. There is significant difference between developing *start-of-year* projections and *final-year* estimates.

Start-of-Year Supply & Use Tables Rely on Forecasts

The first USDA supply and use forecast for the next market year is released in May, less than 4 months prior to the start of the new market year on August 1. At the time of the release there is no actual data for the upcoming market year. At this time the majority of the elements in the supply and use table are forecasts by the ICEC. All available information pertaining to the various supply and use elements are used by the ICEC in constructing the forecasts. The following is a description of how the various supply and use elements are projected by the ICEC at the start of the forecast year in May.

Production is forecast using area data from NASS' March *Prospective Plantings* report combined with an ICEC yield projection. A national yield is developed using various statistical procedures that evaluate trends by State and type of rice. One such approach that was used to establish the national yield for the 2000/01 crop utilized a 5-year Olympic average (drop high and low) yield by State and grain type, weighted by expected plantings. In some years longer term analysis is used to develop an average yield if special circumstances warrant it. For example, in 2000 a 10-year Olympic average was used for forecasting yields for California long, medium, and short grain rice due to several recent years of bad weather in the State that severely reduced yields.

The *Prospective Plantings* report released in March provides the ICEC with an estimate of producers' planting intentions by State and grain type. The recent 5-year average of harvested-to-planted ratio is used to estimate harvested area from the reported planting intentions.

The production forecast developed by the ICEC in May is revised in July based on a survey of planted and harvested area reported in the June *Acreage* report. In addition, the forecasted yield is revised based on new weightings due to changes in area by State and grain type. In August, the first production forecast is reported by NASS, which includes the first survey-based yield forecast and a revised area forecast.

In September, October, and November, NASS provides revised yield forecasts that are adopted by the ICEC. Typically, area is not revised in September, October, and November. In January, year-end area, yield, and production estimates are reported by NASS.

Imports are forecast by the ICEC using short-term and long-term trend analysis. Typically, the ICEC places more weight on the short-term than long-term trend analysis in developing the import forecast. The ICEC uses historical import data supplied by the Bureau of the Census to develop import forecasts. Throughout the year the rice ICEC re-evaluates the annual forecast as monthly import data become available.

Beginning stocks are carried over from the previous marketing year. In September, the ICEC incorporates the August 1 rice stocks estimate reported in the August *Rice Stocks*. NASS-reported milled rice stocks are converted to a rough basis by the rice ICEC and added to the NASS-reported rough rice stocks to yield total stocks. Prior to September, beginning stocks is an ICEC forecast that is calculated by subtracting a year earlier's total use from total supply.

The *domestic and residual use* is forecast using methods similar to forecasting imports. Two elements make up the domestic use and residual category: *food, industrial, and residual and seed use*. The ICEC uses short- and long-term trend analysis in developing forecasts for the food, industrial, and residual element. In constructing a forecast for food, industrial, and residual, expectations regarding food use, brewers' use, and the residual are considered, although the ICEC does not report these elements separately. The ICEC uses data from the USA Rice Federation's annual milled rice distribution survey, as well as analysis of per capita consumption data to develop forecasts for food use. Historic data from the Bureau of Alcohol, Tobacco, and Firearms on rice use in beer are used to develop projections for brewers' use. Recent 5-year averages are utilized to forecast the residual. *Seed use* is forecast by multiplying a per-acre seeding rate obtained from NASS, times the number of acres expected to be planted next season.

Exports are forecast based on a number of factors, including expectations regarding U.S. competitiveness in the international market, available funding for the U.S. export assistance programs (primarily PL 480 and GSM credit), global import demand, and available supplies among major competitors. U.S. competitiveness is evaluated based on the expected difference between U.S. prices and trading prices of major competitors, primarily Thailand. Prior to making the export forecast, the ICEC reviews and evaluates the export sales activity reported in the FAS weekly *U.S. Export Sales* report, any pertinent information from Attache reports, foreign travel, and other commodity analysts.

To assist in developing accurate forecasts, the ICEC examines the U.S. export market type of rice—long, medium, and short as well as for rough, brown, and milled. The expected

global supply and demand situation for each market is considered. The rice ICEC continually revises the export forecast throughout the year based on shipment data reported by the Bureau of the Census. *Ending stocks* are computed by subtracting the forecast for total use from the forecast for total supply.

The *season-average market price* is forecast based on analysis of expected global prices, available U.S. supplies, and expected ending stocks. In May, the rice ICEC forecasts a season-average price range. The price range is typically $1 to $2 per hundredweight (cwt), depending on the variability expected in the domestic and global markets.

The ICEC employs several forecasting models developed by ERS to project the season-average farm price. Most of these models use the U.S. ending stocks-to-use ratio and various international prices—such as the announced world price or Thai 5 percent—to project a season-average U.S. price. The ICEC uses the price model results plus more subjective techniques to arrive at the forecast price range.

The ICEC refines its forecast range each month using monthly prices reported by NASS in *Agricultural Prices*. The forecast range is narrowed during the year as more monthly price data are available from NASS. In January, NASS reports the season-average farm price in *Agricultural Prices*.

End-of-Year Estimates Use Data from Several Sources

With the exception of the food, industrial, and residual element, all elements of the *end-of-year* supply and use table are based on actual reported data. NASS provides final estimates of acreage, yield, and production as well as stocks and the season-average farm price. The Bureau of the Census provides final estimates for total market year imports and exports. The USA Rice Federation provides final estimates on the amount of rough rice milled and milled rice produced. The average milling rate is calculated from this data.

While seed use is not actually reported by NASS or any other agency, estimates of average seeding rates by State have been developed by the ICEC. Thus, multiplying the seeding rate times next year's expected plantings, yields an estimate of total seed use. This estimate is adjusted as information in next year's plantings are reported. Seeding rate estimates are re-evaluated annually based on any changes resulting from changes in farming practices.

For *end-of-year* tables to balance, the *food, industrial, and residual* category becomes the equation "balancer" and is computed by subtracting the sum of exports, seed use, and ending stocks from total supply. By definition, total supplies must equal total use plus ending stocks. Errors in estimates of beginning stocks, production, imports, seed use, exports, and ending stocks will be reflected in the food, industrial, and residual category. The average milling rate is used to convert supply and use elements that are reported on a brown or milled basis to a rough basis. An error in the average milling rate will be reflected in the food, industrial, and residual category as well.

Information Sources

In developing supply and utilization tables, the ICEC uses a variety of data sources. The sources of the data vary according to the time of year the forecast is made. The following is a description of the sources of data for developing supply and use tables for rice.

NASS Provides Estimates for Area, Yield, and Production…

In March, NASS develops an estimate of intended rice plantings by State and grain type based on a survey of producers completed during the first 2 weeks of March. The expected plantings are developed using a statistically representative sample stratified by type (or class)—i.e., long, medium, and short grain. NASS releases these intended plantings estimates in its March 31 *Prospective Plantings* report. The bulk of U.S. rice plantings occur during April and May.

In June, an estimate of actual planted and harvested acreage by State and grain type is reported by NASS in the *Acreage* report that is released the last working day in June. This is the first survey-based estimate of actual rice plantings for the new market year. NASS develops State-level area estimates using a representative area frame sample technique combined with a list frame that identifies producers by farm size. Other sources of data are used by NASS to check the validity of the area estimates, including FSA data on program enrollment.

The first survey-based yield forecast for the new crops are released by NASS in the August *Crop Production* report. Yields are reported by State but not by grain type. Yield forecasts are developed by asking a representative sample of producers at the first of the month what they expect their yields will be. The information is typically gathered by mail. NASS also revises planted and harvested area by State in August, producing revised production forecasts by State. NASS also provides revised forecasts for total production by grain type. However, area and yield forecasts by grain type are not reported in August.

In September, October, and November, NASS revises its yield and production forecasts for the United States and by State and provides new forecasts for U.S. production by class. This information is reported in the *Crop Production* report released during each of these months. Typically, NASS does not revise its area estimates during these 3 months.

However, only on rare occasions has NASS resurveyed past-year plantings and released new area estimates and provided

revised estimates for the past 2 years. This occurred in September 2000 when NASS decided to re-evaluate production and stocks in the September *Crop Production* report because the August 1 *Rice Stocks* report indicated a much larger residual component in the 1998/99 and 1999/2000 supply and use tables than expected. NASS actually only revised area, yield, and production for 1998 and 1999. Stocks were not revised. The 2000 area, yield, and production were revised as is typically done in September.

Area and yield estimates by State and grain type are reported by NASS in the January *Crop Production* report. In addition, the January report provides revised area and yield estimates for the two previous years. For example, in January 2000, NASS provided revised area, yield, and production data for the 1997, 1998, and 1999 crops. Typically, production for back-years is not revised again until the next January.

…As Well As Data on Stocks, Prices, and Marketings

Rough and milled rice stocks on and off farms are reported by NASS in March, August, October, and December in *Rice Stocks*. The October *Rice Stocks* report data for California only. All stocks are estimated as of the first of the reporting month.

Estimates of off-farm rice stocks are developed from a complete enumeration of facilities that store rice. On-farm stocks are estimated using a sample of farmers known to produce rice.

Each month, NASS reports the monthly average price received by farmers and monthly marketings in the *Agricultural Prices* report. Revised monthly prices and marketings, as well as preliminary State prices, are reported in the July *Agricultural Prices, Annual Summary*. The season-average price for the United States and for each rice-producing State are reported in the January *Agricultural Prices*.

NASS estimates the monthly average price using a complete census of marketings that occurred during the reporting month. Prices are weighted by marketings to yield monthly average cash prices. Monthly prices are not reported by State or type of rice. Transactional prices and marketing volumes are obtained by State from both independent mills and cooperatives. Thus, NASS prices include contracted sales and pooled sales by co-ops. Initial payments by co-ops are typically only partial payments. Thus, the NASS monthly prices may not reflect final cash payment to producers.

Monthly Trade Data Are Reported by the Bureau of the Census

Monthly import and export data are reported by the Bureau of the Census. Data are reported by destination (or origin for imports) and by class and type. Thus, import and export data are reported by length of grain (long, medium, and short) and by type of rice (rough, brown, parboiled, milled, and brokens).

There is a 2-month lag in the reporting of U.S. trade data. For example, August U.S. rice import and export data are reported in mid-October shortly after the October WASDE is released. Thus, total U.S. rice exports and imports for the

Conversion Factors for Milled and Brown Rice

USDA's monthly supply and use tables are reported on a rough basis. Thus, some supply and use data, such as milled rice exports and milled rice stocks, must be converted to a rough basis for inclusion in monthly tables.

The rice ICEC uses a variety of milling rates to convert milled and brown rice data to a rough basis. U.S. data reported on a milled basis are converted to a rough basis by dividing by the estimated milling rate for the appropriate year. For example, 1999/2000 U.S. milled rice exports are converted to a rough basis by dividing by .691, the estimated milling rate for 1999/2000. Similarly, U.S. milled rice stocks are converted to a rough basis by dividing by the appropriate year's milling rate. For example, 1999/2000 milled rice ending stocks are converted to a rough basis by dividing by the estimated milling rate for 1999/2000.

For brown rice, the rice ICEC assumes a conversion factor of .80 each year. Thus, U.S. brown rice exports are converted to a rough basis by dividing by .80. To convert milled rice to a brown basis, the ICEC assumes a conversion factor of .88. Thus, divide data reported on a milled basis by .88 to convert it to a brown basis.

For U.S. rice imports, the rice ICEC assumes a conversion factor of .70 each year to convert milled imports to a rough rice basis and .80 each year to report brown rice imports on a rough basis.

The ICEC uses actual U.S. millings provided by the USA Rice Federation to develop estimated annual milling rates for the United States. Basically, total milled rice produced during the market year—including both head rice and brokens—is divided by total rough rice milled. Until actual milling data are available, the average milling rate of the past 5 years is used. Milling rates vary by year depending on weather, varieties grown, and shifts in production between regions.

past August-July market year are reported in the November WASDE. The import and export data reported by the Bureau of the Census are considered the final data.

The monthly trade data reported by Census are on a product-weight basis (actual shipping weight) and are converted to a rough rice basis by the ICEC. U.S. milled rice exports are converted to a rough basis by using the estimated milling rate for that year. For U.S. rice imports, the ICEC uses a conversion factor of .70 each year. For both U.S. exports and imports, a conversion factor of .80 is used each year to report brown rice shipments on a rough basis.

FSA and FAS Provide Critical Data and Information

Throughout the year both FAS and FSA provide useful data and analysis to the ICEC. FAS maintains data on food aid shipments and allocations, export credit sales, weekly export sales, and information on events in foreign countries that could impact the U.S. rice market. Weekly exports and sales data are reported by FAS in *U.S. Export Sales*. The *U.S. Export Sales* report does not include food aid donations that are included in Census trade data. The rice ICEC monitors data from the *U.S. Export Sales* report in its monthly analysis.

In addition to data on U.S. export sales, each month FAS releases full supply and utilization tables for nearly every country in the world plus a global total. These estimates and forecast are developed jointly with the WAOB and ERS during monthly meetings in preparation for the release of the WASDE. The global supply and use table is included in the WASDE. Select country and regional supply and use data are released 2 days after the WASDE in *Grains: World Markets and Trade*. The full production, supply, and utilization tables by country are available about a week later on the Internet at *http://www.ers.usda.gov/data/psd.*

FSA provides information to the ICEC on any policy change that may impact the U.S. rice market. Updated information on loan activity, disaster assistance, and production flexibility contract payments are all provided by FSA. In addition, FSA, FAS, and the WAOB jointly calculate the announced world market price by grain type that is released every Tuesday afternoon. The announced world price is used to determine marketing loan benefits.

Information Sources for U.S. Rice Supply and Use Tables

Area:

Planting intentions—Reported by NASS in the March 31 *Prospective Plantings*. Reports planting intentions by State and grain type.

First survey of actual plantings—Reported by NASS in the June 30 *Acreage* report.

First estimates—Reported by NASS in the January *Crop Production, Annual Summary*. Reports area, yield, and production estimates by State by grain type.

Yield:

First objective yield forecast—Reported by NASS in the August 30 *Crop Production*. Reports average yield by State and for total U.S. rice.

Revisions—Reported by NASS in the September, October, and November issues of *Crop Production*. Reports yield and crop revisions by State and total rice.

First estimates— Reported by NASS in the January *Crop Production, Annual Summary.* Reports area, yield, and production estimates by State by grain type.

Production:

First survey-based forecast—Reported by NASS in the August *Crop Production*.

Revisions—Reported by NASS in the September, October, and November issues of *Crop Production*. Reports yield and crop revisions by State and total rice.

First estimates—Reported by NASS in the January *Crop Production, Annual Summary*. Reports area, yield, and production estimates by State by grain type.

Stocks:

August 1—Reported by NASS in the August *Rice Stocks* by State and by grain type.

October 1—Reported by NASS in October *Rice Stocks* by State and grain type for California only.

December 1—Reported by NASS in January *Rice Stocks* by State and by grain type.

March 1—Reported by NASS in March *Rice Stocks* by State and by grain type.

Please note that NASS area, yield, and production data can be accessed on the Internet at *http://www.usda.gov/nass/pubs/rptscal.htm*

Imports:

Monthly imports—Quantity and value reported by the Bureau of the Census, Department of Commerce on product-weight basis. Can access from Foreign Agricultural Trade of the United States (FATUS) at the ERS Web Page (*www.ers.usda.gov*). Reported data are lagged two months. Can access monthly U.S. imports by type of rice and source.

Exports:

Monthly shipments—Quantity and value reported by the Bureau of the Census, Department of Commerce on product-weight basis. Can access from Foreign Agricultural Trade of the United States (FATUS) at the ERS Web Page (*www.ers.usda.gov*). Can access monthly U.S. imports by type of rice and source.

Weekly commercial sales and exports—Reported by FAS in *U.S. Export Sales* released on Thursday mornings. Reports combined brown/rough category and milled for both long grain and combined medium/short. Separate reporting of rough rice sales and shipments included in the *Highlights* section. All data are on product-weight basis. Food donations are not included. The *U.S. Export Sales* report can be accessed weekly at *http://www.fas.usda.gov/export-sales/esrd1.html*.

Farm Prices:

Monthly cash prices—Reported by NASS the last day of every month in *Agricultural Prices*. Prices are national averages of all types of rice weighted by marketings.

Annual State prices—First projection for 1998/99 annual State prices were reported in the July 1999 *Agricultural Prices Annual* report by NASS. Final estimate for 1998/99 State prices were reported by NASS in the January 2000 *Agricultural Prices*.

Annual prices by type —Final annual prices by grain type (long and combined medium/short) reported by NASS in January *Agricultural Prices.* In January 2000, NASS reported final prices by grain type for 1997/98 and 1998/99.

Marketings:

Monthly marketings—Total monthly marketings reported by NASS in *Agricultural Prices*. Note reported marketings are lagged one month.

Final monthly marketings—Revised monthly marketings for current and previous 2 years reported by NASS in the July *Agricultural Prices Annual*.

Crop Values:

Reported by NASS in the February *Crop Values*. In February 1999, reported preliminary crop values by State and total for 1998/99 and any revisions for 1996/97 and 1997/98.

Please note that NASS price, marketing, and value data can all be accessed from the Internet at *http://www.usda.gov/nass/pubs/rptscal.htm*.

The U.S. Rice Export Market

Nathan Childs and Amy Burdett[1]

Abstract: The United States is a leading exporter of high-quality rice in the international market, shipping rough, brown, and milled rice. This article breaks up the United States' rice export market by type of rice exported and describes recent trends within each market. While the United States has lost market share in the combined brown and milled rice market, it is a leading supplier of rough rice, with Latin America accounting for the bulk of shipments. In 1999/2000, rough rice accounted for almost 30 percent of total U.S. rice exports, a near-record share. In contrast, since the mid-1990's, the United States has steadily lost market share in the global milled rice market, primarily to lower cost Asian exporters. The U.S. milled rice market could benefit from recent legislation ending unilateral sanctions on exports of food and medicine to Iran and Cuba.

Keywords: Rice, exports, rough, brown, milled, market share, trade liberalization.

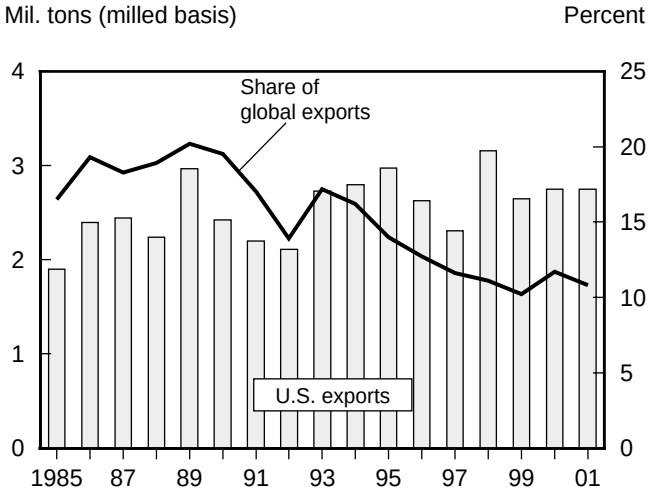
The United States is a leading exporter of rice in the international market, accounting for about 12 percent of global rice trade. The United States currently ranks fourth among major exporters, behind Thailand, Vietnam, and China. In some years India has exported more rice than the United States. More than 40 percent of the U.S. rice crop is exported each year, making the U.S. market sensitive to movements in international prices.

The United States is regarded as a reliable year-round shipper of high-quality rice to numerous and varied markets worldwide. However, the United States has much higher production costs than the major Asian exporters, making the United States uncompetitive in some markets.

The total volume of U.S. exports ranged from 2.5 million tons to 2.8 million (milled basis) from 1995/96 to 1999/2000. However, this is well below the 1994/95 record of 3.3 million tons. The U.S. Department of Agriculture's (USDA) long-term baseline forecasts project U.S. rice exports to slowly decline over the next decade, a result of rising domestic use, near-steady U.S. production, and strong price competition in the international market.

The United States was the largest exporter of rice most years from the late 1960's through 1980, with Thailand occasionally out-shipping the United States. However, Thailand has been the leading exporter of rice every year since 1981, largely due to expanded area. This made the United States the second largest exporter. By the mid-1990's, Vietnam had recovered enough from decades of war and political upheavals to become the second largest exporter. The country had returned as an exporter only in the late 1980's after a 30-year absence. In the mid-1990's, India emerged as a major exporter, typically ranking fourth or fifth each year. Declining per capita consumption and several years of bumper crops allowed China to expand exports, making the country the third largest exporter by the late-1990's.

Figure D-1
The U.S. share of global rice exports has declined since 1989



2000 and 2001 projected.
Source: Foreign Agricultural Service, USDA.

[1] Amy Burdett is a grain market analyst with USDA's Foreign Agricultural Service. Nathan Childs is an agricultural economist with USDA's Economic Research Service. Both authors are located in Washington, D.C.

The Global Rice Market Is Stratified by Type and Quality

The global rice market is severely segregated by type and quality, with little substitution among buyers. In fact, tastes and preferences are so strong that prices for various types of rice can move in opposite directions. There is little substitution in production among the various types of rice either, as soil and climate often dictate the type of rice that can economically be grown in any particular area. As a result, global rice prices are typically more volatile than prices for other grains.

There are four types of rice traded globally: indica, japonica, aromatic, and glutinous. *Indica rice* is the dominant type of rice traded worldwide, accounting for almost 80 percent of global trade. Indica rice cooks dry, separate, and fluffy. It is grown mostly in tropical and sub-tropical areas. U.S. southern long and medium grain rices are considered indica. *Japonica rice*, which cooks moist and sticky, accounts for more than 10 percent of global trade and is typically grown in temperate climates. Japonica rice has a more rounded grain than indica. California medium grain rice is a japonica.

Aromatic rices, primarily Thai jasmine and basmati from India and Pakistan, account for almost 10 percent of global trade and sell at a premium to indica and japonica. Aromatic rices are also called fragrant rices. And finally, *glutinous rice* (or sweet rice), grown mostly in Southeast Asia, accounts for almost all of the remainder. Glutinous rices lose almost all of their shape during cooking and are typically used in ceremonial dishes and in pastes. Like aromatic rices, they sell at a premium to indica and japonica. The bulk of glutinous rice is grown in Southeast Asia. The United States grows a very small amount of glutinous rice, mostly in California.

Thailand, Vietnam, China, the United States, and Pakistan are the primary exporters of indica rice. Argentina, Uruguay, Guyana, Burma, and Surinam export smaller amounts of indica as well. Australia, Egypt, China, the EU and the United States are the primary exporters of japonica rice. Thailand, India, and Pakistan export the bulk of the aromatic rices, with the United States exporting a very small amount. Thailand accounts for most of the glutinous rice traded. In addition, the United States exports a very small amount of glutinous rice, grown mostly in California, to Japan.

Southeast Asia, South Asia, Sub-Saharan Africa, and Latin America are the primary import markets for indica rice. Northeast Asia and the Eastern Mediterranean are the major import markets of japonica rice. Europe, the Middle East, and the United States account for the bulk of basmati imports. China, the United States, Hong Kong, and Singapore are the primary markets for jasmine rice. Southeast Asia and Japan are the major import markets for glutinous rice.

Rice Is Traded in Three Forms: Rough, Brown, and Milled

Rice is traded in three primary forms: fully milled, brown, and rough. Rough rice is rice that has not been milled, thus both the hull and the bran layer remain attached to the kernel. Brown rice is rice that has the hull removed but the bran layer is still attached. Fully milled rice has both the hull and bran layer removed. The more of the bran layer that is removed the greater the degree of milling and typically the higher the price. In addition, the fewer broken kernels, the higher the price.

Milled rice accounts for the bulk of global rice trade, with brown rice ranking second. Very little rough rice is exported, as most countries prefer to capture the value added from the additional processing. In fact, the United States is the only major exporter that ships rough rice. Argentina and Uruguay ship small amounts of long grain rough rice within Latin America. Australia has recently started shipping some medium grain rough rice to Turkey.

In addition, rice can be parboiled, a process whereby rough rice is soaked in water and steamed under intense pressure. Parboiling makes the rice less likely to break during milling and pushes nutrients from the bran layer into the kernel. Parboiled rice typically sells at a premium to non-parboiled rice. Rough, brown, and milled rice can all be exported as parboiled. The major exporters of parboiled rice are Thailand, India, and the United States. The Middle East, Western Europe, and South Africa are the main markets for parboiled rice.

The United States exports rice in all three forms: paddy, brown, and rough. However, since the mid-1990's, only rough rice has shown any sustained growth. This has prevented total U.S. rice exports from dropping substantially in the face of greater global competition in the milled and brown rice markets.

Since 1997/98, rough rice has accounted for almost 30 percent of U.S. rice exports, a record share. While slowly rising since the early 1990's, U.S. rough exports expanded rapidly in the mid-1990's and have exceeded 1.1 million tons a year

since 1997/98. Although the 1997/98 El Niño contributed to greater U.S. rough rice exports, shipments to regular buyers have shown steady growth during the past decade.

Long grain accounts for the bulk of U.S. rough rice exports, with Mexico and Central America the top markets. In addition, when Argentina and Uruguay—who supply most of Brazil's rice imports—have weak crops, the United States typically ships substantial amounts of rough rice to Brazil. And while the Andean region is typically self-sufficient in rice, the United States has exported large quantities of long grain rough rice to Ecuador and Colombia when the region had weak crops.

In contrast to expanding rough rice exports, combined milled and brown U.S. rice exports have declined almost steadily since 1995/96, primarily due to strong competition from Asian exporters. In fact, combined milled and brown U.S. rice exports are projected at just 2.5 million tons (rough basis) in 2000/01, the lowest in at least 15 years. Larger supplies and improved quality in Asian exporting countries, plus greater price competition, are the main factors behind the decline in U.S. milled rice shipments since the mid-1990's. Trade embargoes with Iraq and Iran, once major buyers of U.S. milled rice, accounted for some of the decline in the 1990's.

Unless stated otherwise, U.S. rice exports are reported on a product-weight basis in this article.

The U.S. Rough Rice Export Market

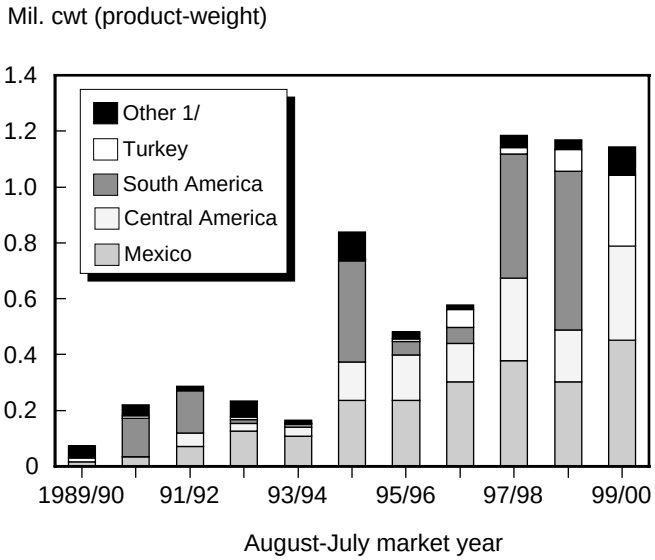
Mexico is the Largest Market For U.S. Rough Rice

Mexico is the largest single-country market for U.S. rough rice. In 1999/2000 Mexico imported a record 450,000 tons of U.S. rough rice, up almost 50 percent from a year earlier. Mexico accounted for nearly 40 percent of total U.S rough exports in 1999/2000. Low U.S. prices, rising consumption, and stagnant production in Mexico are behind the recent strong growth in U.S. shipments to Mexico. U.S. rough rice exports to Mexico have grown substantially since the late 1980's and have almost doubled since 1994/95.

Policy reform in Mexico is a major factor behind the long-term growth in Mexico's rice imports. Market liberalization, which began in the late 1980's, reduced government support for rice production. As a result, Mexico's rice production began a long-term decline. With consumption growing, imports steadily rose.

About 90 percent of U.S. rice exports to Mexico is rough rice. This is due to substantial excess milling capacity in Mexico and lower tariffs for rough than for brown or milled rice imports. The North American Free Trade Agreement, implemented in 1994, will phase out tariffs on all rice from the United States over a 10-year period. It is unclear if Mexico will remain predominately a rough rice market or shift to milled rice once all tariffs are removed.

Figure D-2
Mexico is the largest market for U.S. rough rice exports



1/ Primarily the EU.
Source: Bureau of the Census, USDC.

Mexico ceased to import Asian rice after the early 1990's, a result of phytosanitary restrictions. The United States has supplied the bulk of Mexico's rice imports since 1993, with Argentina and Uruguay accounting for nearly all of the reminder. Even without phytosanitary restrictions, the United States faces lower tariffs and a substantial freight advantage compared with Asian exporters. In addition, the United States has established a viable market for U.S. origin rice with Mexico's consumers.

Central America is a Major Market for U.S. Rough Rice

Central America has become a major market for U.S. long grain rough rice over the past decade. In 1999/2000, Central America imported a record 338,400 tons of U.S. rough rice, more than double imports from the United States in 1996/97 and 10 times the level imported in 1993/94. Market reforms that began in the late 1980's led to a decline in rice plantings in Central America. Expanding consumption outpacing production and more open trade policies have promoted substantial import growth. The United States was quick to expand exports to this growing market.

Like Mexico, the region had excess milling capacity and typically provided lower tariffs for rough than milled rice imports. Phytosanitary restrictions severely limit Asian

imports. However, Argentina and Uruguay have shipped small amounts of rough rice to Central America.

Over the last decade, Costa Rica has been the largest market for U.S. rough rice in Central America, taking more than 100,000 tons in 1997/98, a record. Nicaragua and Honduras are also major buyers and have expanded imports of U.S. rough rice in recent years. Honduras imported 93,000 tons in 1999/2000, a record and nearly three times a year earlier's level. Nicaragua's imports of U.S. rough rice expanded substantially in 1999/2000. The country imported a record 75,000 tons, up from 53,000 a year earlier. In both countries, rice area has declined substantially in recent years, while consumption continues to rise.

Although smaller markets, El Salvador and Guatemala have increased imports of U.S. rough rice in recent years as well. El Salvador imported a record 47,000 tons and Guatemala a record 37,000 tons of U.S. rough rice in 1999/2000. Production has declined in both countries since the mid-1990's. While Panama is a large consumer of rice, the country is nearly self-sufficient in rice. Belize is a very small market for rice.

The 1997/98 El Niño Caused Record South American Imports

While typically not a big market for U.S. rice, *Brazil* has at times imported substantial amounts of U.S. rough rice, a result of poor harvests. In 1998/99, Brazil imported a record 543,000 tons of U.S. rough rice, largely due to El Niño crop damage in the region. With recent bumper crops and duty-free imports available from Argentina and Uruguay, Brazil is currently out of the U.S. market. Brazil, Argentina, Uruguay, and Paraguay are members of MERCUSOR, a regional trading block.

While the *Andean* typically imports little U.S. rice, weak crops in the region caused U.S. exports to rise substantially in some years. In 1997/98, difficulties stemming from El Niño were responsible for record rough rice imports by Ecuador and Colombia, with Colombia taking 290,000 tons and Ecuador 128,000 tons of U.S. rough rice. Regional trading blocks give Venezuela preferences to import markets within the Andean Region.

Italy and Spain are small but steady markets for U.S. long grain rough rice. In fact, the European Union (EU) has purchased small amounts of U.S. rough rice for many years and was the main market for U.S. rough rice prior to market liberalization in Latin America. In 1999/2000, Italy and Spain imported a combined total of 65,000 tons of U.S. rough rice, almost all long grain.

While the bulk of rice production in the European Union is japonica, both Italy and Spain produce some indica rice. Consumption of indica rice has grown faster than for japonica rice in the EU. U.S. rough rice exports to the EU are largely driven by the indica supply situation in Italy and Spain.

Turkey is the only significant market for U.S. medium grain rough rice. Turkey, the second largest market for U.S. japonica rice after Japan, has shifted from primarily a milled to a rough rice market for the United States since the mid-1990's. In 1999/2000, Turkey imported a record 254,000 tons of U.S. medium grain rough rice, up from 78,000 a year earlier and accounting for more than 90 percent of U.S. rice exports to Turkey.

However, total U.S. exports to Turkey remain well below the 1994/95 record of more than 333,000 tons (product-weight), even as Turkey's total rice imports have risen. The United States faces stiff competition from Australia and Egypt in Turkey. While the United States was once the sole exporter of rough rice to Turkey, since the late 1990's Australia has also exported rough rice to Turkey.

The U.S. Brown Rice Export Market

The EU is the Largest Market For U.S. Brown Rice

The EU is typically the largest market for U.S. brown rice, taking more than 230,000 tons—including parboiled-brown rice—in 1999/2000, and accounting for nearly 60 percent of total U.S. brown rice exports. Nearly all of this rice is long grain and is shipped to northern Europe where it is fully milled. Much of the rice is then re-exported, mostly to other EU countries. The United Kingdom and the Netherlands account for the bulk of EU brown rice imports.

A significant share of U.S. brown rice exports to the EU is parboiled, all long grain from the South. U.S. parboiled exports to the EU have declined substantially in recent years, a result of smaller parboiling capacity in the United States and greater imports of Asian specialty rices.

The major reason the bulk of U.S. exports to the EU is brown rice is that import duties for brown rice are substantially lower than for fully milled rice. This allows the EU to import brown rice, complete the milling in the EU, then ship the milled rice to markets both in and outside the EU. In late October 2000, the import duty on milled long grain rice was 416 EURO per ton compared with 199.5 EURO for brown rice.

In addition to brown rice, the EU imports almost 39,000 tons of U.S. milled rice each year under a tariff-rate quota (TRQ) implemented to compensate exporters for the accession of Finland, Austria, and Sweden into the EU in 1995. In addition to the 39,000 tons of milled rice, about 8,000 tons of U.S. brown rice and around 7,000 tons of brokens are imported under the TRQ.

For the past decade the United States has faced increasing competition for the EU market from Asian exporters, especially Thailand and India. These two countries ship primarily aromatic rice to the EU—basmati from India and jasmine from Thailand. Larger production of indica rice in Spain and Italy has limited growth in the EU import market as well. U.S. rice exports to the EU are substantially below levels in the 1980's due to a partial shift to indica from japonica production, first in Spain and then in Italy.

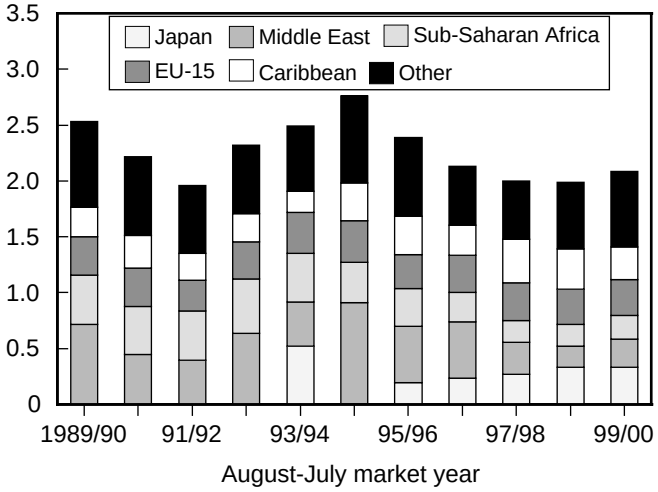
The EU is considering changing its rice policy regime. Currently the EU relies on intervention purchases and import tariffs to protect domestic producers from much lower world prices. A major problem with this policy has been a tremendous increase in EU intervention (or government held) stocks in recent years. One policy option being considered is eliminating intervention buying, increasing tariffs, and providing greater direct income support to producers. Under the current policy, tariffs are bound to intervention prices. It is unclear how this potential change would impact EU producers or U.S. exports.

Besides the EU, markets for U.S. brown rice are rather small and not expanding. Canada and Mexico each typically import around 15,000 tons of long grain brown rice each year. The bulk of Canada's rice imports are milled. In past years, Cote d'Ivoire, Haiti, and Jamaica have taken significant amounts of U.S. brown rice. However, in recent years these countries have imported little U.S. brown rice. Haiti has taken greater amounts of milled rice and Jamaica has imported some rough rice along with milled rice.

Figure D-3

U.S. milled/brown rice exports to the Middle East and Sub-Saharan Africa have declined since the mid-1990's 1/

Mil. tons (product-weight)



1/ Includes both milled and brown rice.
Source: Bureau of the Census, USDC.

Japan is the Largest Market For Medium Grain Brown Rice

Japan accounts for the bulk of U.S. medium grain brown rice exports. In 1999/2000, Japan imported nearly 150,000 tons of medium grain brown rice from the United States, down from a year earlier's record 250,000 tons. Japan divides its minimum access purchases between milled (including brokens) and brown rice, with each type's share varying each year. The United States typically supplies half of Japan's total annual minimum access purchases. This is the last year of any scheduled increase in Japan's rice imports under the World Trade Organization (WTO) agreement. Japan's minimum access levels are expected to remain at the 2000/01 level unless a new agreement is signed.

In addition to Japan, Canada imports about 20,000 tons of U.S. medium grain brown rice a year. Haiti, taking 5,000 to 6,000 tons a year, is the only other significant importer of U.S. medium grain brown rice.

The United States exports about 10,000 to 14,000 tons of short grain brown rice each year. Japan accounts for two-thirds, most of it sold under the Simultaneous-Buy-Sell (SBS) portion of their total WTO minimum access imports. In 2000/01, SBS is expected to account for about a fifth of Japan's total minimum access imports. The United States has recently lost substantial market share in the SBS to Australia and China. Canada is the only other significant market for short grain brown rice, taking a few thousand tons a year.

The U.S. Milled Rice Export Market

The U.S. Faces Stiff Competition in the Long Grain Milled Rice Market

It is in the milled rice export market that the United States faces its strongest competition from Asian exporters. U.S. milled rice exports declined every year from 1995/96 to 1998/99, and the milled rice share of total U.S. exports declined as well. Excluding parboiled shipments, U.S. milled rice exports declined from 1.5 million tons in 1994/95 to 872,000 in 1998/99. In 1999/2000, U.S. milled rice exports rose slightly. This was due to greater medium grain milled rice shipments to Japan and Jordan and large food aid shipments—almost entirely long grain—to Indonesia, the Philippines, and Russia.

The top commercial markets for U.S. long grain milled rice are Saudi Arabia, South Africa, and Haiti. Saudi Arabia and South Africa are almost entirely parboiled markets. Smaller commercial markets for long grain milled rice include Canada, Ghana, the Dominican Republic, the EU, Mexico, and Peru. Peru occasionally imports larger amounts of U.S. long grain milled rice when supplies in the Andean region are tight.

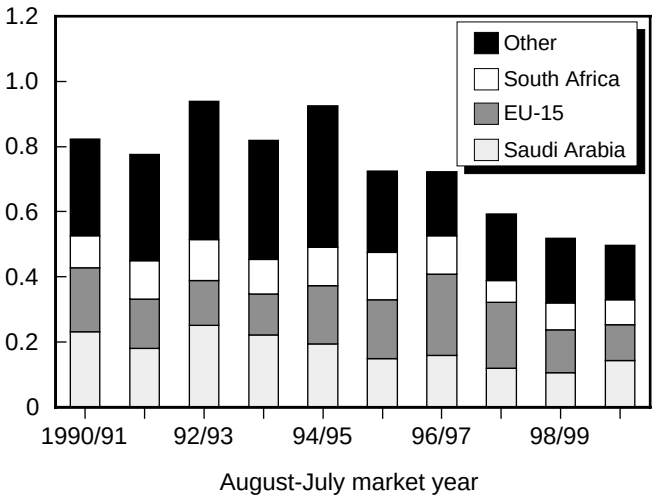
Nearly all of the EU's milled rice imports from the United States are purchased under a tariff-rate quota implemented to compensate exporters for Finland, Sweden, and Austria joining the EU. Mexico imports mostly rough rice. While the United States supplies nearly all of Haiti's and the Dominican Republic's rice imports, lack of purchasing power severely limits their import growth. Both of these countries typically receive food aid donations from the United States. In past years Haiti also imported brown rice, although the country is currently importing mostly milled rice. The United States accounts for 35 to 40 percent of Ghana's rice imports, with some U.S. rice shipped as food aid. U.S. exports to Ghana have expanded in recent years as the country's rice imports have increased.

Saudi Arabia and South Africa Account for Bulk of Decline in U.S. Milled Exports

Saudi Arabia and South Africa account for much of the recent decline in U.S. long grain milled rice exports. Both are top global markets for high-quality long grain rice, mostly parboiled. Neither country produces any rice.

In 1982, the United States accounted for nearly two-thirds of Saudi Arabia's total rice imports of 471,000 tons (milled basis). By 1993, the U.S. share had shrunk to 23 percent and by 1999 had dropped to just 16 percent, even though total imports by Saudi Arabia had risen to 750,000 tons. India accounts for the bulk of the reduction in U.S. market share in Saudi Arabia. In 1998 and 1999, India shipped about 500,000 tons of rice to Saudi Arabia, mostly basmati and some parboiled rice.

Figure D-4
U.S. parboiled rice exports have declined since 1994/95 1/



1/ Includes both milled and brown rice.
Source: Bureau of the Census, USDC.

The United States has lost substantial market share in South Africa as well. In the 1960's and 1970's the United States supplied 80 to 90 percent of South Africa's rice imports. However, by the early 1980's, the U.S. market share began to drop, falling to less than 40 percent by 1990 and to 14 percent by 1999. Since the mid-1990's U.S. rice exports to South Africa have generally declined even as this market has expanded.

South Africa's rice imports more than doubled from the late 1980's to the late 1990's, reaching almost 600,000 tons by 1999. Thailand has increased exports to South Africa sharply over the past decade. South Africa transships small amounts of rice to neighboring countries. Both Saudi Arabia and South Africa are projected to remain major exporters.

Iran, Iraq, and Cuba Are Potential Markets for U.S. Rice

Iran, Iraq, and Cuba are three large global markets for long grain milled rice that U.S. exporters had been prevented from trading with due to U.S.-imposed sanctions. Iran imports more than a million tons of rice a year, primarily from Thailand. Iraq is currently taking almost a million tons, with Vietnam supplying the bulk. Both countries are consistent buyers of high-quality long grain rice. Cuba imports around 400,000 tons a year, nearly all low-quality long grain rice, mostly from Vietnam and China. Prior to the sanctions—imposed in 1962 for Cuba, in 1990 for Iraq, and in 1995 for Iran—each of these countries was a major market for U.S. long grain milled rice.

In October 2000, President Clinton signed legislation eliminating unilateral embargoes on exports of food and medicine to Cuba, Iran, Libya, Sudan, and North Korea. The embargo exemptions become effective 120 days after the President signed the bill. The legislation permits the President to allow private and government financing assistance for sales to Iran, Libya, Sudan, and North Korea if the President determines it is in the interest of the United States or for humanitarian needs. However, there are restrictions with trade to Cuba, including no U.S. financing.

In April 1995, the United Nations Security Council adopted Resolution 986 which, subject to certain conditions, established a program to allow the Government of Iraq to sell a limited amount of oil for food and medicine. U.S. exporters were allowed to sell rice to Iran under the UN's Oil-for-Food program if licensing were provided by the U.S. Department of the Treasury.

However, the United States did not sell any rice under the Oil-for-Food program until this year. In July 2000, the United States sold more than 30,000 tons of rice to Iraq, the first sales since 1990 when trade was embargoed. To date, there have been no additional sales of U.S. rice to Iraq.

While each of these three countries is a potential market for U.S. long grain milled rice, it is unclear if these countries will return as major markets for U.S. rice. Although the United States has a freight advantage in shipments to Cuba, the country is currently a low-quality importer. And while Iran and Iraq are high quality markets, U.S. prices are currently much higher than prices for comparable grades of rice from Thailand and Vietnam.

Japan is the Top Market for U.S. Medium Grain Milled Rice

Japan is the largest market for both medium and short grain milled rice. Virtually all of Japan's rice imports are purchased under minimum access requirements of the WTO. In 1999/2000, Japan imported more than 67,000 tons of U.S. medium grain milled rice, virtually all from California, and accounted for more than a third of total U.S. medium grain milled rice exports.

Jordan and Turkey accounted for the bulk of the remainder. These two countries prefer California medium grain rice but will import southern medium grain if California supplies are tight. The U.S. share of Turkey's market has varied between a third and two-thirds for the past few years, depending on the competition from Egypt and Australia. Jordan imports mostly medium grain milled rice, with the United States supplying 35 to 40 percent. Jordan is a relatively small market for rice with limited potential for growth. Canada is a small, but consistent, market for U.S. medium grain milled rice.

Japan accounts for the bulk of U.S. exports of short grain milled rice, taking nearly 23,000 tons in 1999/2000. Nearly all were purchased under the SBS program as part of Japan's WTO minimum access purchases. The United States has lost exports and market share in the SBS to Australia and China in recent years. Liberia is the only other significant market for short grain milled rice.

Economic Analysis of Adopting Liberty Link Rice

Mamane M. Annou, Eric J. Wailes, and Gail L. Cramer[1]

Abstract: Although not yet commercially available, the medium grain Liberty Link Bengal currently being developed may be the first biotech rice variety available to U.S. rice farmers. Liberty Link rice technology can assist farmers in controlling red rice, a severe problem in much of the southern rice growing area. Red rice both raises costs to growers and lowers product value. The net benefits of adopting Liberty Link rice are estimated, as well as the potential distribution of benefits of adoption between farmers and seed companies. Yields, production costs, and farm practices are the main factors determining the net benefit—and hence adoption—of Liberty Link technology.

Keywords: Biotechnology, red rice, herbicide-tolerance, yields, adoption rates, technology fees.

Production costs for rice are high compared with most alternative crops. Although not yet commercially available, biotech rice has the potential to both reduce production costs and increase product value. This paper examines the potential farm level effects on profitability of adopting one of the recently developed herbicide-tolerant rice varieties.

A major factor contributing to higher production costs for rice is weed control, especially for red rice, a weed that cannot be controlled easily with conventional herbicides in rice fields. Consequently, much of rice in the southern United States is produced in rotation with soybeans. Even with herbicide applications to kill the red rice in soybeans, red rice survives into the following rice rotation due to the survivability of the red rice seeds over several years.

In an effort to reduce the red rice problem, biotech rice seeds have been developed that resist the wide spectrum herbicide, *Liberty glufosinate*. If successful, this technology would enable U.S. farmers to produce higher valued rice at lower costs. It would also permit farmers more flexibility in crop rotation, enabling continuous rice rotations in response to market returns.

Higher productivity would improve U.S. competitiveness in the global rice market, provided that biotech rice is accepted in the market place. Unlike earlier biotech field crops such as soybeans and corn, Liberty Link rice has not yet been released for commercial production and is not yet approved for use in major export markets.

Several challenges face the release of herbicide-tolerant rice varieties. First, there is the potential for cross-pollination of the genetically modified rice with red rice. Expression of the semi-dwarf characteristic in red rice is a known example of the cross-pollination effect. A second challenge is related to the growing resistance by consumers and food processors to genetically-modified crops and the difficulty of maintaining adequate segregation as the crop moves through market channels.

This paper measures the potential economic benefits to rice farmers of adopting the Liberty Link rice technology. Three important assumptions are made. First, it is assumed that the technology is acceptable to consumers, and therefore, market prices will not differ for conventional and biotech rice with similar end-use characteristics. Second, a farmer's decision to adopt biotech rice is based on the net benefit associated with the technology. And third, the market price and trade effects are assumed to be negligible and are not analyzed in this paper.

If the technology becomes available in a broader set of rice varieties, it would likely lead to lower market prices. The extent of price drop would depend upon the extent of adoption and acceptance in the market place. That analysis is beyond the scope of this paper. The following section describes the problem of red rice in the United States and presents an overview of herbicide-resistant biotech rice varieties. A farm-level analysis of the economics of adopting Liberty Link glufosinate technology follows.

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Red Rice Raises Production Costs And Lowers Product-Value

Red rice is a weed that infests much of the southern rice growing area in the United States. It is a wild rice type that competes with cultivated rice for nutrients, water, and space. Currently, any herbicide that would kill red rice would harm the cultivated rice. While California appears virtually red rice free, all southern rice producing States—Arkansas, Louisiana, Mississippi, Missouri, and Texas—have infestations that have endured since rice was first introduced.

Although red rice is an annual plant, it persists in rice fields because of the long dormancy of its seeds. Once in the soil, red rice seeds may readily germinate or stay latent for a long time before germinating. Red rice exhibits an uneven development period and produces seeds that shatter upon reaching maturity. Because selective weed control between red rice and cultivated rice is difficult, herbicides have not been able to successfully control red rice.

Farmers currently control red rice by depleting the seed bank through an integrated weed management program that combines preplant-incorporated herbicide applications, continuous or pinpoint flooding, and crop rotations. In Arkansas, farmers typically grow soybeans for 2 years and plant rice the third year. This program has severe drawbacks because it seldom completely eradicates red rice. In fact, if just 5 percent of the red rice survive, a seed bank can be restored. In addition, in the last few years returns to soybeans have been, on average, lower than for rice production.

The costs associated with controlling red rice depend on the weed management practices employed. Current systems are expensive and time consuming because several herbicides are required to manage various grasses and none can selectively kill red rice without injuring commercial rice. Controlling red rice also involves flooding and crop rotations. In addition, red rice plants can grow tall and may lodge when mature. This can cause the cultivated rice to lodge as well as increase harvesting and drying costs. Without better weed control, red rice will continue to reduce farm yields and lower grain value.

Red rice also raises milling costs. Red rice produces seeds with either black or straw-colored hulls. When harvested, they mingle with commercial white rice. Removing the red seeds from the commercial rice is necessary but raises costs to the miller, who in turn discount the price to the farmer (see special article box titled—Red Rice Cuts Farmers' Yields and Lowers Price). Red rice removal requires additional milling and separation through a sorting machine. The additional milling decreases the milling yield because of greater breakage and damage to the rice kernel. The higher content of broken grains reduces the value of the milled rice.

Red Rice Cuts Farmers' Yields and Lowers Price

Two approaches have been used to estimate the impact of red rice on farmers' returns. The first approach used yield differences to estimate the impact of red rice on farm productivity. Pantone and Baker (1991) demonstrated the correlation between yield loss and red rice density in Louisiana. They found that it takes up to three cultivated rice plants to offset the yield loss caused by a single red rice weed. Smith (1981) reported that red rice densities of three plants per square meter reduced rice yields 10 percent; 19 plants per square meter reduced rice yields 50 percent. Similarly, Fisher and Ramirez (1993) reported that a 5-percent red rice density per square meter decreased yields 50 percent, and a 20-percent red rice density decreased yields 60 percent.

The second approach analyzed how red rice affects the market value of rice. Brorsen et al. (1984) applied a hedonic pricing model to rough rice markets to analyze the role of quality factors in rice prices. They found that the impact of red rice on the price of rice was twice as high as rice grades alone indicated. Hence, the grading system alone is an inadequate representation of price differences. Using 1981-82 rice data, they found that the presence of red rice decreased the price of rice by 6 cents per hundredweight (cwt) in Texas. Assuming a yield of 60 cwt per acre, this would lower returns $3.60 per acre.

In another study, Brorsen et al. (1988) estimated the effects of quality factors on the value of rice in Texas. Using data from 1982-84, they found that the discount for red rice was relatively stable for all markets and years, ranging from $0.17 to $0.23 per cwt of rough rice. They found the presence of red rice in commercial rice cost farmers $7.38 to $10.41 per acre. This implies that farmers experiencing red rice problems are more likely to adopt biotech rice than farmers not suffering red rice problems. Brorsen et al. also found that when red rice was unchecked it caused harvest quality to decline, resulting in a price discount of 0.9 to 3.2 percent[1].

[1] Using the 1983-84 average price of rough rice ($7.13 per cwt) the price discount is 0.23/$7.13 or 3.2 percent.

Weed Control and Higher Nutrition are Objectives of Rice Biotech Development

Several improved rice varieties are currently being developed that have enhanced qualities for consumers or are her-

bicide-tolerant. These varieties include Golden Rice, Clearfield IMI (*Imidazolinone*) rice by American Cyanamid, and Liberty Link rice by Aventis.

Golden Rice was developed when two genes from a daffodil and a gene from a bacterium were inserted into the rice germplasm. The combination resulted in a new variety of rice with a higher vitamin A content. A variant of Golden Rice is being developed using three other genes in an effort to provide not only vitamin A, but also an iron supplement. These rice varieties are important because of their enhanced value to consumers.

Clearfield IMI, tolerant to imidaziolinone herbicide, is a conventionally mutated rice variety rather than transgenic. Thus IMI rice is not considered a biotech variety and may not face the challenges of public resistance to genetically modified food. Liberty Link rice contains a gene that triggers an enzyme to confer it special traits to survive nonselective herbicides. Clearfield IMI and Liberty Link are important from the perspective of producers and the environment, because they can reduce the cost and quantity of herbicides used to control red rice. However, whether the overall production costs will be reduced depends on the technology fee and the prices of seeds and herbicides. Some biotech varieties have the potential to produce higher quality rice, resulting in a price premium to the producer.

Liberty Link rice was deregulated by the U.S. Department of Agriculture's Animal and Plant Health Inspection Service in 1999 and may become the first biotech rice on the seed market. Liberty Link rice was developed by the insertion of the bar gene encoding *Phosphinothricin acetyl transferase* (pat) derived from the bacterium *Streptomyces Hygroscopicus*, into Bengal rice, a popular southern medium grain variety. Bengal is an early-maturing medium grain variety developed by Louisiana State University (LSU) and released in 1992. Based on this experience, LSU initiated the development of a biotech variety with a herbicide tolerance. It is expected that early-maturing varieties such as Bengal provide a partial barrier to the hybridization of red rice with pollen flow from cultivated rice.

The pat gene was inserted into the rice tissue to eliminate glutamine synthetase, which causes a fatal accumulation of ammonia in normal plants. The tissues were used to regenerate a transgenic rice variety, which was evaluated in greenhouses and field trials for tolerance to herbicides. The new variety is resistant to glufosinate ammonium, an herbicide that controls several weeds, including red rice.

Glufosinate ammonium controls red rice and other weeds in fields sown to Liberty Link rice. Research by the University of Arkansas at the Rice Research Experiment Station in Stuttgart reported that efficient weed control was achieved with two applications of glufosinate ammonium at 0.375 pounds per acre during the growing season (Wheeler et al.). The first treatment occurred when young rice seedlings had less than three leaves. The second application was made when rice plants reached five or six leaves. In Arkansas, where drill seeding is common, regular rice typically undergoes three herbicide applications by ground or air, plus two post-plant applications of propanil by air.

Budgeting Framework Utilized To Measure Impact of Liberty Link Rice

In order to assess the economics of adoption of Liberty Link rice, a partial budgeting scenario was developed. The scenario was used to construct a baseline and alternative scenario of adoption. The baseline scenario estimates the net benefit from adopting the Liberty glufosinate technology. The net benefit is the difference between the returns per acre of Liberty Bengal and the returns per acre of regular (or non-biotech) Bengal.

The Arkansas Cooperative Extension crop budgets for 2000 were used to measure the net benefit on silt loam and on clay soils under both till and no-till production systems in eastern Arkansas. Three factors are considered in estimating the benefit of Liberty glufosinate technology: costs, yields, and farm price.

Cost Saving:

Liberty Link technology could potentially change input use for seeds, herbicides, labor, and equipment. Direct production costs for conventional rice are estimated at $269.49 per acre on silt loam soils and $289.74 per acre on clay soils. On silt loam, farm expenses include seeds (5.3 percent), herbicide (16.9 percent), labor and custom work (40.3 percent), fungicide and fertilizer (14.4 percent), machinery and custom work (18.2 percent), and interest (3.3 percent). Clay soil farms involve higher costs for seeds, herbicide, irrigation labor, and machinery than silt loam farms. However, they use less fertilizer and custom work.

Liberty Link technology could require fewer applications of glufosinate ammonium (Liberty herbicide) than needed when using a combination of several selective herbicides. If adopted, Liberty Link rice would require two herbicide applications of 0.22 gallon per acre on silt loam and 0.3 gallon per acre on clay soil. No-till rice involves three applications, including one treatment prior to seeding. Liberty herbicide costs $80 per gallon plus a custom fee of $4.50 per application per acre. At harvest, rice is hauled and dried at 42 cents per bushel.

Finally, because the technology has not been released commercially, the technology fee has not been established. In order to identify the range within which the fee is likely to be set, we first evaluate the total rent generated by the technology. To do this we set the technology fee at zero and the price of the Liberty Link seeds equivalent to seeds for conventional Bengal. This is necessary in order to conduct a

sensitivity analysis using a reasonable estimate for the technology fee.

Yield Effect:

Under weed-free conditions, Liberty Link Bengal yields 5 to 10 percent less than regular Bengal. However, under moderate to severe weed infestation, conditions in which Liberty Link Bengal would be considered as an alternative variety, yields are 20 percent or more higher, depending upon the degree of red rice and other weed infestation and other cultural conditions and practices (Johnson). Studies on red rice have found that adequate control of red rice improved yields on highly infested plots (Smith; Fisher and Ramirez). With a mild infestation, Liberty Bengal can experience a yield drag similar to the drag observed on biotech soybeans. In 1998, the yield drag on Roundup Ready soybeans was 0 to 10 percent, with a 6-percent average (Benbrook). The baseline scenario assumes the yield of Liberty Link Bengal is equal to the yield of regular Bengal. Thus, both are set at 6,800 pounds (or more than 150 bushels) per acre to represent the average rice yield in eastern Arkansas.

Price Effect:

Rice quality affects the price received by farmers because prices typically include a discount based on the percent of red rice. Liberty Link rice can significantly decrease the number of red rice seeds in rice and improve the quality of the crop. The base scenario assumes a U.S. Grade Number 2 for Liberty Link Bengal and a U.S. Grade Number 3 for regular (or non-biotech) Bengal. The price of medium grain rice is set at $6.50 per cwt. A 30-cent premium per bushel is paid for medium grain U.S. Grade 2 over U.S. Grade 3 in Arkansas. (See special article box—Red Rice Cuts Farmers' Yields and Lowers Price).

Net Benefit of Adoption Higher for Farms With High Red Rice Infestation

In the scenario, the net benefit associated with adopting Liberty Link technology with baseline assumptions was found profitable on all types of soils, with no-till farming generating the highest return. The net benefit per acre was estimated to be $32.62 on clay soils, $31.56 on silt loam, and $40.87 on silt loam under no-till, suggesting that farming practice is an important factor in deciding to adopt

Table E-1--Cost and quality effects are estimated to be top benefits of adopting Liberty Link Bengal 1/

	Non-biotech Bengal			Liberty Link Bengal		
		Silt loam			Silt loam	
Direct costs	Silt Loam	no-till	Clay	Silt Loam	no-till	Clay
			$/acre			
Rice seed	14.30	15.73	17.88	14.30	15.73	17.88
Custom work	89.13	98.30	86.83	87.38	87.55	87.38
Fertilizer and lime	32.19	32.19	24.49	32.19	32.19	24.49
Fungicide and seed treatment	9.30	13.52	10.40	9.30	13.52	10.40
Herbicides	45.58	63.34	61.48	35.93	53.89	48.50
Irrigation	1.45	1.45	1.45	1.45	1.45	1.45
Operator labor	10.44	5.83	10.59	10.44	5.83	10.59
Irrigation labor	8.97	8.97	11.96	8.97	8.97	11.96
Diesel fuel	23.51	19.36	28.33	23.51	19.36	28.33
Repair and maintenance	25.63	18.07	26.66	25.63	18.07	26.66
Subtotal	260.50	276.76	280.07	249.10	256.56	267.64
Interest on operating capital	8.99	9.76	9.67	8.72	8.98	9.37
Total direct cost	269.49	286.52	289.74	257.82	265.54	277.01
			$/cwt			
Farm price	6.50	6.50	6.50	6.50	6.50	6.50
			Cwt /acre			
Yield	68.00	68.00	68.00	68.00	68.00	68.00
			$/acre			
Quality discount	-19.89	-19.89	-19.89	0.00	0.00	0.00
Total revenue	422.11	422.11	422.11	442.00	442.00	442.00
Returns on direct costs	152.62	135.59	132.38	184.18	176.46	164.99
Net benefit of Liberty Link Bengal				31.56	40.87	32.62
Cost effect				11.67	20.98	12.73
Quality effect				19.89	19.89	19.89

1/ Cost and revenue data for non-biotech rice from 2000 Arkansas Cooperative Extension Crop Budgets. For Liberty Link Bengal, all cost and revenue estimates developed by authors. Liberty Link Bengal is not yet commercially available.

Liberty Link rice. Assuming a yield of 150 bushels per acre, the scenario indicates that Liberty Link rice could increase returns $0.21 to $0.27 per bushel to be distributed between the rice producer and the technology owner. Since no technology fee was assumed in the base scenario, the net benefit is also a measure of the technology rent.

The net benefit includes a quality effect of $19.89 per acre that results from a price premium of 30 cents per bushel for Liberty Link rice over regular rice. In addition to the price premium, there is a cost saving of $20.98 per acre on no-till silt loam, a $11.67 per acre savings on silt loam, and a $12.73 per acre savings on clay. The cost saving consists of reduced herbicide use and a reduction in custom work. The baseline scenario does not include a yield effect.

Distributional Benefits

The distribution of benefits between the farmer and the technology owner (the seed company) is largely a function of the technology fee. The baseline scenario assumes that the technology is free in order to estimate the total rent creation. This scenario is expanded to estimate the farmer's net gain and the returns to the seed company given various levels of technology fees. It is assumed that Liberty products have no substitutes and the lack of competition is important in the company's pricing decision.

No attempt was made to determine how or if a technology fee will be set for Liberty Link rice seeds and herbicide. Liberty Link rice is a single-gene-technology similar to the Roundup Ready soybeans (RRS) for which farmers pay a technology fee built into the price of seeds. Therefore, RRS is used as a reference for setting a reasonable cost of the Liberty Link technology. The retail price of RRS seeds is $23.95 per 50-pound bag, including an $8.00 technology fee. Assuming a seeding rate of 60 pounds per acre, RRS seeds cost $28.75 per acre, including a technology fee of $9.60 per acre. With a retail price for conventional soybean seeds of $15.00 per 50-pound bag, a farmer planting RRS is required to pay a technology fee 60 percent higher than the cost of regular seeds.

The retail price of regular Bengal seeds in Arkansas is $6.50 per bushel. The seeding rate is 2.2 bushels per acre on silt loam soil and 2.42 bushels under no-till. On clay soil the seeding rate is 2.75 bushels per acre. Hence, seed cost varies from $14.30 to $17.88 per acre. A 60-percent price increase in seed price would put the price of Liberty Link seed at $22.88 to $28.81 per acre, including a technology fee of $9 to $11 per acre. This is within the range of $31 to $40 per acre estimated for the total rent generated by the technology. The impact of a technology fee between $5 and $25 per acre on adoption is measured. In addition, the scenarios assume a yield improvement of 5 percent and 10 percent on farms that experience a serious red rice problem and a yield drag of 5 percent and 10 percent on other farms.

Yield Drag and Higher Seed Costs Reduce Benefits to Liberty Link Rice

The net benefit of Liberty Link rice is dependent on yield, technology fee, and land characteristics. With no yield change following adoption, farmers earn $28.19 per acre on silt loam under no-till when the company sets a technology fee of $10 per acre. The farmer's net benefit decreases to $9.37 per acre when yield drag is 5 percent and drops to -$9.46 with a yield drag of 10 percent. The overall results show that a yield gain (drag) of 5 percent increases (decreases) the profitability of Liberty Link rice $18.83 per acre. In other words, a 1-percent increase (decrease) in yield results in a $3.77-increase (decrease) in the farmer's net benefit.

In this scenario, Liberty Link rice is profitable if the technology fee is below $15 per acre and the yield drag does not exceed 5 percent. With a technology fee of $15 to $25 per acre, the net benefit is still positive if there is no yield drag. Liberty Bengal is unprofitable for any technology fee if the yield drag reaches 10 percent. The results show that the farmer's net benefit is negatively correlated with the cost of the technology. A $5-increase in the technology fee reduces the net profit of Liberty Link rice $5.18 per acre, including 18 cents of savings on interest.

The results demonstrate that the technology fee and yield drag could be the main factors limiting adoption. On average, the lower the yield drag the higher the net benefit to the farmer and the more likely adoption becomes. For any technology fee level, Liberty Link would be more profitable if it improves yields. Liberty Link would not be profitable if the

Table E-2--Technology fee and yield drag reduce estimated net benefits of adopting Liberty Link Bengal 1/

	Yield change after adoption of Liberty Link Bengal 2/				
Technology fee	-10 %	-5 %	No change	+5 %	+10 %
$/acre	Net benefit of adopting Liberty Link Bengal ($/acre)				
5	-4.29	14.54	33.37	52.20	71.02
10	-9.46	9.37	28.19	47.02	65.85
15	-14.64	4.19	23.02	41.85	60.67
20	-19.81	-0.98	17.84	36.67	55.50
25	-24.99	-6.16	12.67	31.50	50.32

1/ Analysis based on budgeting scenario developed by the authors. Liberty Link rice is not yet commercially available.

2/ Silt loam soil, no-till farming.

yield drag is 10 percent or higher. Similarly, the lower the technology fee the higher the net benefit and more likely the adoption of the Liberty Link technology.

Longer Term Impacts Need To Be Included in Analysis

While this paper provides some insight on the potential profitability of Liberty Link technology, caution is necessary in interpreting and generalizing its results. While the analysis indicates direction and magnitude for changes in profitability due to adopting Liberty Link technology, three limitations are apparent.

First, costs and revenues are analyzed only in the first year of Liberty Link release using Arkansas rice budgets. Agricultural regions experiencing the red rice problem are more diverse. The paper did not account for heterogeneity of rice regions, nor does it consider the relationship between crop rotations and adoption. A longer planning horizon and a whole farm approach would better determine how benefits evolve over time and the producer strategy to maximize farm income rather than rice income alone.

The *second* limitation comes from the ex-ante framework of the study and its hypothesis that adoption solely depends on net benefit. A study of net benefits in an ex-post framework will allow testing the validity of this hypothesis and identifying the role of other factors in the adoption decision.

And *finally*, the paper used a partial equilibrium approach to estimate net benefits and hence, ignored potential changes in the demand for seeds and herbicides. In practice, a general equilibrium approach would include the substitution effects between Liberty Link seed and non-biotech seeds, price and substitution effects for other herbicides, and price and trade effects from supply shifts.

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List of Appendix Tables

Appendix table 1--Estimated supply, disappearance, and price, by type of rice, U.S. (rough equivalent of rough and milled rice), 1993/94-2000/01 1/

Item	Unit	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00 2/	2000/01 3/
Total rice:									
Area planted	Mil. acres	2.92	3.35	3.12	2.82	3.13	3.29	3.53	3.11
Area harvested	"	2.83	3.32	3.09	2.80	3.10	3.26	3.51	3.09
Yield	Pounds/acre	5,510	5,964	5,621	6,120	5,897	5,663	5,866	6,236
Beginning stocks 4/	Mil. cwt	39.44	25.77	31.28	25.04	27.24	27.91	22.08	27.52
Production	"	156.11	197.78	173.87	171.60	182.99	184.44	206.03	192.39
Imports	"	6.91	7.54	7.68	10.49	9.21	10.53	10.02	10.25
Total supply 4/	"	202.46	231.08	212.82	207.13	219.45	222.89	238.12	230.15
Domestic & residual 5/	"	101.44	100.48	104.55	101.58	103.30	113.97	121.40	122.90
Exports	"	75.26	99.33	83.24	78.31	88.24	86.84	89.21	80.00
Total use	"	176.70	199.80	187.79	179.88	191.53	200.81	210.61	202.90
Ending stocks 6/	"	25.77	31.28	25.04	27.24	27.91	22.08	27.52	27.25
CCC	"	0.00	0.10	0.00	0.00	0.00	0.00	0.00	NA
Free	"	25.77	31.18	25.04	27.24	27.91	22.08	27.52	27.25
Average market price 7/	$/cwt	7.98	6.78	9.15	9.96	9.70	8.89	6.11	5.75-6.25
Long grain:									
Area harvested	Mil. acres	2.03	2.38	2.31	1.97	2.31	2.57	2.72	NA
Yield	Pounds/acre	5,082	5,609	5,265	5,777	5,391	5,426	5,587	NA
Beginning stocks	Mil. cwt	21.61	15.06	14.41	10.12	14.14	14.52	14.06	15.64
Production	"	103.06	133.45	121.73	113.63	124.49	139.33	151.86	130.58
Total supply 8/	"	130.57	154.99	142.65	133.01	146.63	162.37	173.44	155.27
Domestic & residual 5/	"	59.88	59.57	67.02	61.50	59.78	76.86	86.70	80.00
Exports	"	55.64	81.01	65.51	57.37	72.33	71.45	71.10	62.00
Total use	"	115.51	140.58	132.53	118.87	132.11	148.30	157.80	142.00
Ending stocks	"	15.06	14.41	10.12	14.14	14.52	14.06	15.64	13.27
Average market price 7/	$/cwt	7.93	6.87	9.37	10.60	10.20	8.79	NA	NA
Medium/short grain:									
Area harvested	Mil. acres	0.81	0.94	0.78	0.84	0.79	0.69	0.79	NA
Yield	Pounds/acre	6,590	6,866	6,676	6,926	7,369	6,548	6,822	NA
Beginning stocks	Mil. cwt	15.84	9.98	15.78	14.29	12.13	12.32	6.82	10.43
Production	"	53.05	64.33	52.14	57.97	58.51	45.12	54.16	61.81
Total supply 8/	"	71.16	75.01	69.55	73.14	71.75	59.36	63.24	73.44
Domestic & residual 5/	"	41.56	40.91	37.53	40.08	43.52	37.16	34.70	42.90
Exports	"	19.62	18.32	17.73	20.93	15.91	15.39	18.11	18.00
Total use	"	61.18	59.23	55.26	61.01	59.42	52.55	52.81	60.90
Ending stocks	"	9.98	15.78	14.29	12.13	12.32	6.82	10.43	12.54
Average market price 7/	$/cwt	8.09	6.70	8.82	8.37	8.52	9.18	NA	NA

NA = Not available.

Note: Totals might not add because of rounding.

1/ August 1 to July 31 marketing year. 2/ Estimated. 3/ Projected as of November 2000. 4/ Includes broken kernel rice not included in estimates by type. 5/ Residual is the sum of unreported use, processing losses, and estimating errors. 6/ Includes the following quantities of broken kernel rice (type undetermined) not included in estimates of ending stocks by type: 1993/94, 0.73 million; 1994/95, 1.09 million; 1995/96, 0.63 million, 1996/97, 0.98 million; 1997/98, 1.07 million; 1998/99, 1.20 million; 1999/00, 1.45 million; 2000/01, 1.44 million cwt. 7/ Marketing year weighted average price received by farmers. 8/ Includes imports.

Source: National Agricultural Statistics Service and Economic Research Service, USDA.

Appendix table 2--Rough and milled rice (rough equivalent): Marketing year supply and disappearance, 1962/63-2000/01

Year beginning Aug. 1	Supply				Disappearance					Ending stocks--July 31		
					Domestic use							
	Beginning stocks	Production	Imports	Total	Food, industrial and residual	Seed	Total	Exports	Total disappearance	CCC inventory	Free	Total
	Million cwt											
1962/63	5.3	66.0	0.0	71.4	25.8	2.4	28.2	35.5	63.7	1.8	5.9	7.7
1963/64	7.7	70.3	0.0	78.0	26.2	2.5	28.7	41.8	70.5	1.4	6.1	7.5
1964/65	7.5	73.2	0.5	81.2	28.5	2.5	31.0	42.5	73.5	1.1	6.6	7.7
1965/66	7.7	76.3	0.7	84.7	30.5	2.7	33.2	43.3	76.5	0.6	7.6	8.2
1966/67	8.2	85.0	0.1	93.3	30.5	2.7	33.2	51.6	84.8	0.2	8.3	8.5
1967/68	8.5	89.4	0.0	97.9	31.0	3.2	34.2	56.9	91.1	0.1	6.7	6.8
1968/69	6.8	104.1	0.0	110.9	35.7	2.9	38.6	56.1	94.7	5.5	10.7	16.2
1969/70	16.2	91.9	0.2	108.3	32.5	2.5	35.0	56.9	91.9	6.4	10.0	16.4
1970/71	16.4	83.8	1.4	101.6	34.0	2.5	36.5	46.5	83.0	9.5	9.1	18.6
1971/72	18.6	85.8	1.1	105.5	34.7	2.5	37.2	56.9	94.1	2.7	8.7	11.4
1972/73	11.4	85.4	0.5	97.3	35.2	3.0	38.2	54.0	92.2	0.1	5.0	5.1
1973/74	5.1	92.8	0.2	98.1	37.0	3.6	40.6	49.7	90.3	0.0	7.8	7.8
1974/75	7.8	112.4	0.0	120.2	39.6	4.0	43.6	69.5	113.1	0.0	7.1	7.1
1975/76	7.1	128.4	0.0	135.5	38.6	3.5	42.1	56.5	98.6	18.7	18.2	36.9
1976/77	36.9	115.6	0.0	152.5	43.2	3.2	46.4	65.6	112.0	18.6	21.9	40.5
1977/78	40.5	99.2	0.1	139.8	35.3	4.3	39.6	72.8	112.4	10.8	16.6	27.4
1978/79	27.4	133.2	0.1	160.7	49.1	4.3	53.4	75.7	129.1	8.3	23.2	31.6
1979/80	31.6	131.9	0.1	163.6	50.5	4.8	55.3	82.6	137.9	1.7	24.0	25.7
1980/81	25.7	146.2	0.2	172.1	59.1	5.1	64.2	91.4	155.6	0.0	16.5	16.5
1981/82	16.5	182.7	0.4	199.6	64.2	4.4	68.6	82.0	150.6	17.5	31.5	49.0
1982/83	49.0	153.6	0.7	203.3	59.7	3.2	62.9	68.9	131.8	22.3	49.2	71.5
1983/84	71.5	99.7	0.9	172.1	51.6	3.3	54.9	70.3	125.2	25.0	21.9	46.9
1984/85	46.9	138.8	1.6	187.3	57.4	3.1	60.5	62.1	122.6	44.3	20.4	64.7
1985/86	64.7	134.9	2.2	201.8	62.9	2.9	65.8	58.7	124.5	43.6	33.7	77.3
1986/87	77.3	133.4	2.6	213.3	74.7	2.9	77.6	84.2	161.8	9.1	42.3	51.4
1987/88	51.4	129.6	3.0	184.0	76.8	3.6	80.4	72.2	152.6	0.0	31.4	31.4
1988/89	31.4	159.9	3.8	195.1	79.0	3.4	82.4	85.9	168.3	0.0	26.7	26.7
1989/90	26.7	154.5	4.4	185.6	78.6	3.6	82.2	77.1	159.3	0.0	26.3	26.3
1990/91	26.3	156.1	4.8	187.2	87.6	3.6	91.2	71.4	162.6	0.1	24.5	24.6
1991/92	24.6	159.4	5.3	189.3	91.2	4.1	95.3	66.5	161.9	0.4	27.0	27.4
1992/93	27.4	179.7	6.2	213.2	91.0	3.6	94.6	79.2	173.8	0.1	39.3	39.4
1993/94	39.4	156.1	6.9	202.5	96.2	4.1	100.3	76.4	176.7	0.0	25.8	25.8
1994/95	25.8	197.8	8.0	231.6	97.6	3.9	101.5	98.8	200.3	0.1	31.2	31.3
1995/96	31.3	173.9	7.7	212.8	101.1	3.5	104.5	83.2	187.8	0.0	25.0	25.0
1996/97	25.0	171.6	10.5	207.1	97.7	3.9	101.6	78.3	179.9	0.0	27.2	27.2
1997/98	27.2	183.0	9.2	219.4	99.2	4.1	103.3	88.2	191.5	0.0	27.9	27.9
1998/99	27.9	184.4	10.5	222.9	109.5	4.4	114.0	86.8	200.8	0.0	22.1	22.1
1999/00 1/	22.1	206.0	10.0	238.1	117.4	4.0	121.4	89.2	210.6	0.0	27.5	27.5
2000/01 2/	27.5	192.4	10.3	230.2	119.0	3.9	122.9	80.0	202.9	N/A	N/A	27.3

N/A = Not available.

1/ Estimated. 2/ Projected as of November 2000.

Source: National Agricultural Statistics Service and Economic Research Service Service, USDA.

Appendix table 3--Long grain rough and milled rice (rough equivalent): Marketing year supply and disappearance, 1982/83-2000/01

Year beginning August 1	Supply 1/ Beginning stocks	Production	Total 2/	Disappearance Domestic and residual	Exports	Total	Ending stocks 1/ Total
				Million cwt			
1982/83	17.6	93.4	111.5	38.7	47.0	85.7	25.8
1983/84	25.8	64.3	90.7	29.5	44.8	74.3	16.4
1984/85	16.4	96.0	113.8	34.1	42.0	76.1	37.7
1985/86	37.7	100.4	140.1	48.8	42.0	90.8	49.3
1986/87	49.3	96.8	148.5	51.2	69.9	121.1	27.4
1987/88	27.4	89.0	119.1	49.5	50.5	100.0	19.1
1988/89	19.1	119.4	141.9	55.5	71.0	126.5	15.4
1989/90	15.4	109.2	128.6	54.5	60.8	115.3	13.2
1990/91	13.2	107.8	125.3	52.2	61.6	113.7	11.5
1991/92	11.5	109.1	125.3	56.7	55.6	112.3	13.0
1992/93	13.0	128.0	146.4	55.0	69.8	124.8	21.6
1993/94	21.6	103.1	130.6	58.5	57.0	115.5	15.1
1994/95	15.1	133.4	155.5	59.7	81.4	141.1	14.4
1995/96	14.4	121.7	142.6	67.0	65.5	132.5	10.1
1996/97	10.1	113.6	133.0	61.5	57.4	118.9	14.1
1997/98	14.1	124.5	146.6	59.8	72.3	132.1	14.5
1998/99	14.5	139.3	162.4	76.9	71.4	148.3	14.1
1999/00 3/	14.1	151.9	173.4	86.7	71.1	157.8	15.6
2000/01 4/	15.6	130.6	155.3	80.0	62.0	142.0	13.3

1/ Stocks and total supply by grain size do not sum to total rice stocks or supply due to the exclusion of broken kernel rice in estimates of stocks by grain size. 2/ Includes imports. 3/ Estimated. 4/ Projected as of November 2000.

Source: National Agricultural Statistics Service and Economic Research Service, USDA.

Appendix table 4--Medium/short grain rough and milled rice (rough equivalent): Marketing year supply and disappearance, 1982/83-2000/01

Year beginning August 1	Supply 1/ Beginning stocks	Production	Total 2/	Disappearance Domestic and residual	Exports	Total	Ending stocks 1/ Total
				Million cwt			
1982/83	30.2	60.2	90.6	24.2	21.9	46.1	44.7
1983/84	44.7	35.4	80.2	26.0	25.4	51.4	28.8
1984/85	28.8	42.8	73.5	27.7	20.1	47.8	25.7
1985/86	25.7	34.5	61.7	18.8	16.7	35.5	26.2
1986/87	26.2	36.6	61.8	26.4	14.3	40.7	21.1
1987/88	21.1	40.6	63.5	31.0	21.7	52.7	10.8
1988/89	10.8	40.5	50.8	26.9	14.9	41.8	9.0
1989/90	9.0	45.3	55.6	27.7	16.3	44.0	11.6
1990/91	11.6	48.3	60.5	39.0	9.8	48.8	11.7
1991/92	11.7	50.2	62.4	38.6	10.9	49.5	12.9
1992/93	12.9	51.6	64.9	39.6	9.5	49.0	15.8
1993/94	15.8	53.0	71.2	41.8	19.4	61.2	10.0
1994/95	10.0	64.3	75.0	41.8	17.5	59.2	15.8
1995/96	15.8	52.1	69.5	37.5	17.7	55.3	14.3
1996/97	14.3	58.0	73.1	40.1	20.9	61.0	12.1
1997/98	12.1	58.5	71.7	43.5	15.9	59.4	12.3
1998/99	12.3	45.1	59.4	37.2	15.4	52.5	6.8
1999/00 3/	6.8	54.2	63.2	34.7	18.1	52.8	10.4
2000/01 4/	10.4	61.8	73.4	42.9	18.0	60.9	12.5

1/ Stocks and total supply by grain size do not sum to total rice stocks or supply due to the exclusion of broken kernel rice in estimates of stocks by grain rice. 2/ Includes imports. 3/ Estimated. 4/ Projected as of November 2000.

Source: National Agricultural Statistics Service and Economic Reasearch service, USDA.

Appendix table 5--Rough rice milled, total milled produced, and milling yields, United States, 1978/79-1999/2000

Year beginning August 1	Rough rice milled	Total milled rice produced 1/	Total milling yields	Total heads produced 1/	Head rice milling
	---1,000 cwt---		Lb/cwt	1,000 cwt	Lb/cwt
1978/79	117,961	83,427	70.7	68,749	58.3
1979/80	123,993	89,071	71.8	78,327	63.2
1980/81	141,016	102,278	72.5	89,513	63.5
1981/82	131,841	95,129	72.2	82,022	62.2
1982/83	118,726	84,517	71.2	73,713	62.1
1983/84	111,151	79,012	71.1	68,237	61.4
1984/85	107,195	74,580	69.6	64,063	59.8
1985/86	115,542	81,808	70.8	69,347	60.0
1986/87	140,804	100,257	71.2	83,760	59.5
1987/88	130,818	91,481	69.9	76,863	58.8
1988/89	145,639	104,119	71.5	86,820	59.6
1989/90	136,994	99,453	72.6	85,188	62.2
1990/91	132,523	95,431	72.0	79,993	60.4
1991/92	129,796	91,521	70.5	76,685	59.1
1992/93	139,553	97,707	70.0	82,182	58.9
1993/94	144,602	107,564	74.4	92,618	64.0
1994/95	161,040	119,261	74.1	102,374	63.6
1995/96	146,428	104,488	71.4	91,003	62.2
1996/97	141,345	99,026	70.1	86,776	61.4
1997/98	140,096	97,042	69.3	84,528	60.3
1998/99 2/	142,737	98,915	69.3	85,795	60.1
1999/00 3/	153,708	106,944	69.6	91,735	59.7

1/ Includes brown rice. 2/ Revised. 3/ Preliminary.

Source: Rice Millers' Association.

Appendix table 6--Rice milling yields, 1974/75-1999/2000 1/

Year beginning August 1	South 2/	California	United States
		Lb/cwt	
1974/75	71.15	74.60	71.92
1975/76	69.31	73.88	70.38
1976/77	71.95	72.80	72.11
1977/78	69.28	69.56	69.33
1978/79	70.50	71.69	70.72
1979/80	70.88	74.43	71.80
1980/81	70.78	77.61	72.50
1981/82	71.56	74.99	72.20
1982/83	71.07	69.21	71.20
1983/84	71.07	71.62	71.10
1984/85	70.50	66.90	69.57
1985/86	70.44	71.90	70.80
1986/87	71.71	65.38	71.20
1987/88	70.96	67.37	69.93
1988/89	72.07	69.40	71.49
1989/90	72.66	72.36	72.60
1990/91	72.38	70.59	72.01
1991/92	70.80	69.53	70.51
1992/93	70.53	68.17	70.01
1993/94	74.78	73.32	74.39
1994/95	75.24	69.76	74.06
1995/96	71.53	71.90	71.36
1996/97	70.45	69.61	70.06
1997/98	69.80	67.76	69.27
1998/99 3/	69.58	68.63	69.30
1999/00 4/	69.96	68.11	69.57

1/ Milled rice--head rice and brokens--produced per 100 pounds of rough rice milled. 2/ Arkansas, Louisiana, Mississippi, Missouri, and Texas.
3/ Revised. 4/ Preliminary.

Source: Rice Millers' Association.

Appendix table 7--Rice stocks: Rough and milled, 1983-2000 1/

Date	Rough					Milled			
	On farms or in farm warehouses	At mills and in attached warehouses	In warehouses (not attached to mills)	In ports or in transit	Total all positions	At mills and in attached warehouses	In warehouses (not attached to mills)	In ports or in transit	Total all positions
					1,000 cwt				
December 1:									
1986	36,264	18,739	90,153	384	145,540	4,578	461	650	5,689
1987	29,789	13,648	71,902	81	115,420	4,841	617	1,232	6,690
1988	39,581	12,741	79,245	121	131,688	4,813	550	915	6,278
1989	40,040	10,084	66,166	83	116,373	4,254	782	720	5,756
1990	37,662	9,548	65,905	52	113,167	4,046	605	1,180	5,831
1991	37,249	9,630	66,857	54	113,790	3,564	495	351	4,410
1992	39,966	14,434	76,887	196	131,483	3,580	855	1,882	6,317
1993	24,164	13,624	70,789	668	109,245	3,849	192	840	4,881
1994	41,223	15,682	83,713	693	141,311	3,290	511	1,044	4,845
1995	32,936	12,561	74,951	883	121,331	4,368	331	1,010	5,709
1996	32,719	13,228	72,321	801	119,069	4,056	280	1,315	5,651
1997	33,470	13,505	76,302	1,066	124,343	4,144	101	1,437	5,682
1998	35,584	10,631	74,532	231	120,978	3,861	128	1,427	5,416
1999	50,762	11,112	78,012	67	139,953	3,679	185	721	4,585
April 1:									
1983	23,778	22,307	62,649	299	109,033	3,295	492	3,165	6,952
1984	15,802	17,432	46,515	17	79,766	3,838	464	2,999	7,301
1985	18,709	16,438	60,188	707	96,042	3,538	481	2,101	6,120
1986	22,232	19,371	73,700	914	116,217	2,818	425	208	3,451
March 1:									
1987	19,561	15,962	70,780	483	106,786	3,881	561	117	4,559
1988	10,104	28,905	36,464	125	75,598	5,680	1,233	1,059	7,972
1989	27,266	12,704	49,439	641	90,050	5,589	189	1,502	7,280
1990	15,965	10,390	51,381	218	77,954	5,259	327	410	5,996
1991	19,345	9,404	43,554	124	72,427	4,002	408	858	5,268
1992	20,658	8,283	46,631	211	75,783	3,888	837	952	5,677
1993	22,397	11,900	57,197	187	91,681	3,474	643	1,075	5,192
1994	11,703	15,056	52,697	147	79,603	4,232	1,010	563	5,805
1995	23,239	12,793	59,271	622	95,925	4,078	349	1,192	5,619
1996	20,520	11,102	53,283	941	85,846	3,072	148	479	3,699
1997	16,003	13,112	49,519	1,510	80,144	3,590	381	640	4,611
1998	21,205	11,736	54,449	661	88,051	4,453	344	1,082	5,879
1999	22,290	9,745	47,409	806	80,250	3,700	172	472	4,344
2000 2/	27,212	11,787	50,969	269	90,237	3,526	128	916	4,570
August 1:									
1983	6,032	11,190	45,899	36	63,157	2,843	223	2,830	5,896
1984	1,250	11,017	27,425	14	39,706	3,976	50	1,095	5,121
1985	697	13,398	44,402	653	59,150	3,023	304	515	3,842
1986	2,031	15,432	52,476	1,008	70,947	3,033	398	1,099	4,530
1987	984	9,986	30,718	115	41,803	5,044	632	1,168	6,844
1988	1,242	7,714	14,789	3	23,748	4,461	189	679	5,329
1989	1,176	7,296	10,084	31	18,587	4,178	752	902	5,832
1990	599	5,370	13,133	51	19,153	3,650	548	998	5,196
1991	852	5,149	12,636	58	18,695	3,569	217	457	4,243
1992	1,109	6,166	13,179	77	20,531	3,833	486	529	4,848
1993	1,708	7,055	21,786	35	30,584	4,179	658	1,365	6,202
1994	517	5,601	14,674	115	20,907	2,710	188	697	3,595
1995	862	6,578	15,279	45	22,764	4,225	1,028	1,055	6,308
1996	486	5,542	13,818	125	19,971	3,296	269	49	3,614
1997	428	7,256	13,647	462	21,793	3,269	474	76	3,819
1998	1,136	6,401	13,287	167	20,991	3,598	329	868	4,795
1999	1,560	5,516	9,432	118	16,626	3,230	103	444	3,777
2000 2/	1,141	5,909	14,899	21	21,970	3,129	155	548	3,832

1/ Does not include stocks located in areas outside the major rice producing States of Arkansas, California, Louisiana, Mississippi, Missouri, and Texas. 2/ Preliminary.

Source: National Agricultural Statistics Service, USDA.

Appendix table 8--State and U.S. rice production by class, 1987-2000

	1987	1988	1989	1990	1991	1992	1993
				1,000 cwt			
Long grain:							
Arkansas	45,259	57,447	57,458	53,034	58,328	66,912	53,928
California	2,592	4,200	2,250	1,314	1,168	1,200	1,145
Louisiana	12,079	17,538	13,128	14,805	12,500	19,278	14,648
Mississippi	10,098	13,275	13,395	14,250	12,320	15,675	12,985
Missouri	3,420	4,080	4,056	3,713	4,641	5,328	4,557
Texas	15,547	22,824	18,874	20,690	20,180	19,622	15,801
United States	88,995	119,364	109,161	107,806	109,137	128,015	103,064
Medium grain:							
Arkansas	7,656	7,236	6,322	6,912	8,392	8,940	8,007
California	22,496	22,050	26,315	28,215	28,399	31,342	34,112
Louisiana	7,031	6,542	8,360	11,664	12,235	9,568	9,460
Mississippi	1/	505	1/	1/	1/	1/	1/
Missouri	144	102	52	47	51	48	1/
Texas	324	456	392	490	400	735	294
United States	37,651	36,891	41,441	47,328	49,477	50,633	51,873
Short grain:							
Arkansas	110	52	60	54	60	62	159
California	2,847	3,590	3,825	900	693	948	1,014
United States	2,957	3,642	3,885	954	753	1,010	1,173
Total grains:							
Arkansas	53,025	64,735	63,840	60,000	66,780	75,914	62,094
California	27,935	29,840	32,390	30,429	30,260	33,490	36,271
Louisiana	19,110	24,080	21,488	26,469	24,735	28,846	24,108
Mississippi	10,098	13,780	13,395	14,250	12,320	15,675	12,985
Missouri	3,564	4,182	4,108	3,760	4,692	5,376	4,557
Texas	15,871	23,280	19,266	21,180	20,580	20,357	16,095
United States	129,603	159,897	154,487	156,088	159,367	179,658	156,110

State	1994	1995	1996	1997	1998	1999	2000 2/ 3/
				1,000 cwt			
Long grain:							
Arkansas	68,160	61,218	55,055	65,192	73,644	79,417	NA
California	567	600	360	693	537	340	NA
Louisiana	19,413	21,022	22,687	24,731	26,727	29,050	NA
Mississippi	18,467	15,552	12,480	13,804	15,544	18,250	NA
Missouri	6,396	5,936	5,162	6,095	7,280	9,828	NA
Texas	20,442	17,402	17,885	13,970	15,596	14,978	NA
United States	133,445	121,730	113,629	124,485	139,328	151,863	130,581
Medium grain:							
Arkansas	12,666	11,682	16,770	13,908	12,400	15,513	NA
California	39,827	33,972	36,150	40,557	29,218	32,850	NA
Louisiana	10,035	5,187	3,290	2,250	1,380	1,775	NA
Mississippi	1/	1/	1/	1/	1/	1/	NA
Missouri	52	1/	111	106	156	108	NA
Texas	810	400	580	270	250	294	NA
United States	63,390	51,241	56,901	57,091	43,404	50,540	59,375
Short grain:							
Arkansas	114	120	120	120	80	124	NA
California	830	780	949	1,296	1,631	3,500	NA
United States	944	900	1,069	1,416	1,711	3,624	2,430
Total grains:							
Arkansas	80,940	73,020	71,945	79,220	86,124	95,054	85,305
California	41,224	35,352	37,459	42,546	31,386	36,690	43,840
Louisiana	29,448	26,209	25,977	26,981	28,107	30,825	24,651
Mississippi	18,467	15,552	12,480	13,804	15,544	18,250	13,080
Missouri	6,448	5,936	5,273	6,201	7,436	9,936	9,975
Texas	21,252	17,802	18,465	14,240	15,846	15,272	15,535
United States	197,779	173,871	171,599	182,992	184,443	206,027	192,386

NA = Not available.

1/ No grain estimates. 2/ Projected as of November 2000. 3/ State production by grain type not available.

Source: National Agricultural Statistics Service, USDA.

Appendix table 9--State and U.S. rice acreage, yield, and production, by class, 1997-99

State	Area harvested			Yield			Production		
	1997	1998	1999	1997	1998	1999	1997	1998	1999
	1,000 acres			Pounds/acre			1,000 cwt		
Long grain:									
Arkansas	1,160	1,283	1,374	5,620	5,740	5,780	65,192	73,644	79,417
California	9	9	5	7,700	5,970	6,800	693	537	340
Louisiana	533	590	581	4,640	4,530	5,000	24,731	26,727	29,050
Mississippi	238	268	323	5,800	5,800	5,650	13,804	15,544	18,250
Missouri	115	140	182	5,300	5,200	5,400	6,095	7,280	9,828
Texas	254	278	253	5,500	5,610	5,920	13,970	15,596	14,978
United States	2,309	2,568	2,718	5,391	5,426	5,587	124,485	139,328	151,863
Medium grain:									
Arkansas	228	200	249	6,100	6,200	6,230	13,908	12,400	15,513
California	491	418	450	8,260	6,990	7,300	40,557	29,218	32,850
Louisiana	50	30	35	4,500	4,600	5,070	2,250	1,380	1,775
Missouri	2	3	2	5,300	5,200	5,400	106	156	108
Texas	5	5	6	5,400	5,000	4,900	270	250	294
United States	776	656	742	7,357	6,616	6,811	57,091	43,404	50,540
Short grain:									
Arkansas	2	2	2	6,000	4,000	6,200	120	80	124
California	16	31	50	8,100	5,260	7,000	1,296	1,631	3,500
United States	18	33	52	7,867	5,185	6,969	1,416	1,711	3,624
Total grains:									
Arkansas	1,390	1,485	1,625	5,700	5,800	5,850	79,220	86,124	95,054
California	516	458	505	8,250	6,850	7,270	42,546	31,386	36,690
Louisiana	583	620	616	4,630	4,530	5,000	26,981	28,107	30,825
Mississippi	238	268	323	5,800	5,800	5,650	13,804	15,544	18,250
Missouri	117	143	184	5,300	5,200	5,400	6,201	7,436	9,936
Texas	259	283	259	5,500	5,600	5,900	14,240	15,846	15,272
United States	3,103	3,257	3,512	5,897	5,663	5,866	182,992	184,443	206,027

Sources: Annual Crop Production 1999 Summary, January 2000; Crop Production, September & November 2000; National Agricultural Statistics Service, USDA.

Appendix table 10--State and U.S. rice area planted, by class, 1990-2000

State	Area planted					
	1990	1991	1992	1993	1994	1995
	1,000 acres					
Long grain:						
Arkansas	1,110	1,149	1,249	1,115	1,218	1,148
California	18	16	15	14	7	8
Louisiana	310	290	410	325	400	460
Mississippi	255	225	280	250	315	290
Missouri	91	96	116	105	130	119
Texas	345	337	338	293	340	310
United States	2,129	2,113	2,408	2,102	2,410	2,335
Medium grain:						
Arkansas	129	150	150	162	220	200
California	370	332	369	413	470	449
Louisiana	245	270	220	220	225	115
Mississippi	1/	1/	1/	1/	1/	1/
Missouri	1	1	1	1/	1	1/
Texas	10	8	15	7	15	10
United States	755	761	755	802	931	774
Short grain:						
Arkansas	1	1	1	3	2	2
California	12	9	12	13	10	10
United States	13	10	13	16	12	12
Total grain:						
Arkansas	1,240	1,300	1,400	1,280	1,440	1,350
California	400	357	396	440	487	467
Louisiana	555	560	630	545	625	575
Mississippi	255	225	280	250	315	290
Missouri	92	97	117	105	131	119
Texas	355	345	353	300	355	320
United States	2,897	2,884	3,176	2,920	3,353	3,121

State	Area planted					2000 as share
	1996	1997	1998	1999	2000 2/	of 1999
Long grain:						
Arkansas	918	1,168	1,293	1,378	1,142	83
California	5	9	9	5	5	100
Louisiana	465	535	595	585	480	82
Mississippi	210	240	270	325	220	68
Missouri	95	120	142	184	178	97
Texas	290	255	280	254	235	93
United States	1,983	2,327	2,589	2,731	2,260	83
Medium grain:						
Arkansas	260	230	205	250	275	110
California	484	493	420	455	515	113
Louisiana	70	50	30	35	20	57
Mississippi	1/	1/	1/	1/	1/	1/
Missouri	2	2	3	2	2	100
Texas	10	5	5	6	5	83
United States	826	780	663	748	817	109
Short grain:						
Arkansas	2	2	2	2	3	150
California	13	16	31	50	30	60
United States	15	18	33	52	33	63
Total grain:						
Arkansas	1,180	1,400	1,500	1,630	1,420	87
California	502	518	460	510	550	108
Louisiana	535	585	625	620	500	81
Mississippi	210	240	270	325	220	68
Missouri	97	122	145	186	180	97
Texas	300	260	285	260	240	92
United States	2,824	3,125	3,285	3,531	3,110	88

1/ No medium grain estimated. 2/ As estimated in the September 2000 *Crop Production* report.

Sources: 1990 to 2000, *Crop Production*, various issues, NASS, USDA.

Appendix table 11--U.S. rice acreage, yield, and production, 1958-2000

Crop year 1/	Planted	Harvested	Yield	Production
	---1,000 acres---		Lb/acre	1,000 cwt
1958	1,439	1,415	3,164	44,760
1959	1,608	1,586	3,382	53,647
1960	1,614	1,595	3,423	54,591
1961	1,618	1,589	3,411	54,198
1962	1,789	1,773	3,726	66,045
1963	1,785	1,771	3,968	70,269
1964	1,797	1,786	4,098	73,166
1965	1,804	1,793	4,255	76,281
1966	1,980	1,967	4,322	85,020
1967	1,982	1,970	4,537	89,379
1968	2,367	2,353	4,425	104,142
1969	2,141	2,128	4,318	91,904
1970	1,826	1,815	4,618	83,805
1971	1,826	1,818	4,718	85,768
1972	1,824	1,818	4,700	85,439
1973	2,181	2,170	4,274	92,765
1974	2,550	2,531	4,440	112,386
1975	2,833	2,818	4,558	128,437
1976	2,489	2,480	4,663	115,648
1977	2,261	2,249	4,412	99,223
1978	2,993	2,970	4,484	133,170
1979	2,890	2,869	4,599	131,947
1980	3,380	3,312	4,413	146,150
1981	3,827	3,792	4,819	182,742
1982	3,295	3,262	4,710	153,637
1983	2,190	2,169	4,598	99,720
1984	2,830	2,802	4,954	138,810
1985	2,512	2,492	5,413	134,913
1986	2,381	2,360	5,651	133,356
1987	2,356	2,333	5,555	129,603
1988	2,933	2,900	5,514	159,897
1989	2,731	2,687	5,749	154,487
1990	2,897	2,823	5,529	156,088
1991	2,884	2,781	5,731	159,367
1992	3,176	3,132	5,736	179,658
1993	2,920	2,833	5,510	156,110
1994	3,353	3,316	5,964	197,779
1995	3,121	3,093	5,621	173,871
1996	2,824	2,804	3/ 6,120	171,599
1997	3,125	3,103	3/ 5,897	182,992
1998	3,285	3,257	3/ 5,663	184,443
1999	3,531	3,512	3/ 5,866	206,027
2000 2/	3,110	3,085	3/ 6,236	192,386

1/ August 1 to July 31 crop year. 2/ Preliminary. 3/ Eliminated in the 1996 farm act.

Sources: 1958 to 1997; *Crop Production, Annual Summary*, NASS, USDA, various issues. 1998-1999; *Crop Production*, NASS, USDA, September 2000; *Crop Production*, NASS, USDA, November 2000.

Appendix table 12--U.S. and State average rice yields per harvested acre, 1959-2000

Crop year	United States	Arkansas	California	Louisiana	Mississippi	Missouri	Texas
				Pounds			
1959	3,382	3,400	4,650	2,850	2,700	3,400	3,150
1960	3,423	3,525	4,775	2,850	2,950	3,400	3,075
1961	3,411	3,500	4,800	2,925	3,300	3,300	2,900
1962	3,726	3,850	4,950	3,050	3,200	4,200	3,550
1963	3,968	4,300	4,325	3,325	3,900	4,200	4,125
1964	4,098	4,300	5,050	3,300	3,800	4,300	4,150
1965	4,255	4,300	4,900	3,550	3,700	4,500	4,600
1966	4,322	4,300	5,500	3,700	4,300	4,400	4,200
1967	4,537	4,550	4,900	3,900	4,300	4,600	5,000
1968	4,425	4,300	5,325	3,850	4,400	4,500	4,550
1969	4,318	4,750	5,525	3,500	4,450	4,600	3,950
1970	4,618	4,800	5,700	3,900	4,500	4,400	4,500
1971	4,718	5,050	5,200	3,800	4,600	4,800	5,100
1972	4,700	4,975	5,700	3,825	4,559	4,449	4,727
1973	4,274	4,770	5,616	3,451	4,306	4,346	3,740
1974	4,440	4,610	5,290	3,650	4,180	3,886	4,494
1975	4,558	4,540	5,750	3,810	3,900	4,210	4,560
1976	4,663	4,770	5,520	3,910	4,200	4,200	4,810
1977	4,412	4,230	5,810	3,670	4,000	3,700	4,670
1978	4,484	4,450	5,220	3,820	4,250	4,330	4,700
1979	4,599	4,320	6,520	3,910	4,050	3,810	4,220
1980	4,413	4,110	6,440	3,550	3,840	4,180	4,230
1981	4,819	4,520	6,900	4,060	4,390	4,080	4,700
1982	4,710	4,290	6,700	4,160	4,120	4,480	4,690
1983	4,598	4,280	7,040	3,820	4,000	4,090	4,340
1984	4,954	4,600	7,120	4,150	4,350	4,600	4,940
1985	5,414	5,200	7,300	4,370	5,350	4,810	5,490
1986	5,651	5,300	7,700	4,550	5,400	5,120	6,250
1987	5,555	5,250	7,550	4,550	5,100	5,400	5,900
1988	5,514	5,350	7,020	4,500	5,300	5,100	6,000
1989	5,749	5,600	7,900	4,430	5,700	5,200	5,700
1990	5,529	5,000	7,700	4,860	5,700	4,700	6,000
1991	5,731	5,300	8,500	4,850	5,600	5,100	6,000
1992	5,736	5,500	8,500	4,650	5,700	4,800	5,800
1993	5,510	5,050	8,300	4,550	5,300	4,900	5,400
1994	5,964	5,700	8,500	4,750	5,900	5,200	6,000
1995	5,621	5,450	7,600	4,600	5,400	5,300	5,600
1996	6,120	6,150	7,490	4,870	6,000	5,550	6,200
1997	5,897	5,700	8,250	4,630	5,800	5,300	5,500
1998	5,663	5,800	6,850	4,530	5,800	5,200	5,600
1999	5,866	5,850	7,270	5,000	5,650	5,400	5,900
2000 1/	6,236	6,050	8,000	4,980	6,000	5,700	6,500

1/ Preliminary as of November 2000.

Sources: 1959 to 1997; *Crop Production, Annual Summary*, NASS, USDA, various issues. 1998-1999; *Crop Production*, NASS, USDA, September 2000; *Crop Production*, NASS, USDA, November 2000.

Appendix table 13--Proportional distribution of rice production, by class, United States, 1959-2000

Crop year	Long grain	Medium grain	Short grain	Total production
		---Percent---		1,000 cwt
1959	50.5	29.1	20.4	53,647
1960	48.2	35.2	16.6	54,591
1961	45.3	38.4	16.3	54,198
1962	43.7	41.8	14.5	66,045
1963	36.8	48.7	14.5	70,269
1964	37.5	50.2	12.3	73,166
1965	43.0	45.6	11.4	76,281
1966	41.6	46.5	11.9	85,020
1967	48.5	42.3	9.2	89,379
1968	46.8	42.1	11.1	104,142
1969	49.0	40.3	10.7	91,904
1970	49.3	40.4	10.3	83,805
1971	52.6	37.2	10.2	85,768
1972	50.0	40.0	9.9	85,439
1973	47.2	42.4	10.4	92,765
1974	53.3	36.8	9.8	112,386
1975	49.5	40.7	9.8	128,437
1976	60.6	31.8	7.6	115,648
1977	62.7	26.5	10.8	99,223
1978	63.7	27.4	9.0	133,170
1979	61.2	30.6	8.2	131,947
1980	59.4	35.2	5.4	146,150
1981	60.4	33.7	5.9	182,742
1982	60.8	33.4	5.8	153,637
1983	64.5	27.5	8.0	99,720
1984	69.2	25.4	5.4	138,810
1985	74.4	21.1	4.5	134,913
1986	72.6	24.2	3.3	133,356
1987	68.7	29.1	2.3	129,603
1988	74.7	23.1	2.3	159,897
1989	70.7	26.8	2.5	154,487
1990	69.1	30.3	0.6	156,088
1991	68.5	31.0	0.5	159,367
1992	71.3	28.2	0.6	179,658
1993	66.0	33.2	0.8	156,110
1994	67.5	32.1	0.5	197,779
1995	70.0	29.5	0.5	173,871
1996	66.2	33.2	0.6	171,599
1997	68.0	31.2	0.8	182,992
1998	75.5	23.5	0.9	184,443
1999	73.7	24.5	1.8	206,027
2000 1/	67.9	30.9	1.3	192,386

1/ Estimated.

Sources: 1959 to 1997; *Crop Production, Annual Summary*, NASS, USDA, various issues. 1998-1999; *Crop Production*, NASS, USDA, September 2000; *Crop Production*, NASS, USDA, November 2000.

Appendix table 14--Use and ending stocks for rice, United States, 1959-2000

Crop year	Food, industrial and residual 1/	Seed	Exports	Total use 2/	Ending stocks	Stocks-to-use ratio
			---Mil. cwt---			Percent
1959	26.7	2.1	29.2	58.0	12.1	20.9
1960	25.3	2.1	29.5	56.9	10.1	17.8
1961	27.9	2.3	29.2	59.4	5.3	8.9
1962	25.8	2.4	35.5	63.7	7.7	12.1
1963	26.2	2.5	41.8	70.5	7.5	10.6
1964	28.5	2.5	42.5	73.5	7.7	10.5
1965	30.5	2.7	43.3	76.5	8.2	10.7
1966	30.5	2.7	51.6	84.8	8.5	10.0
1967	31.0	3.2	56.9	91.1	6.8	7.5
1968	35.7	2.9	56.1	94.7	16.2	17.1
1969	32.5	2.5	56.9	91.9	16.4	17.8
1970	34.0	2.5	46.5	83.0	18.6	22.4
1971	34.7	2.5	56.9	94.1	11.4	12.1
1972	35.2	3.0	54.0	92.2	5.1	5.5
1973	37.0	3.6	49.7	90.3	7.8	8.6
1974	39.6	4.0	69.5	113.1	7.1	6.3
1975	38.6	3.5	56.5	98.6	36.9	37.4
1976	43.2	3.2	65.6	112.0	40.5	36.1
1977	35.3	4.3	72.8	112.4	27.4	24.4
1978	49.1	4.3	75.7	129.1	31.6	24.5
1979	50.5	4.8	82.6	137.9	25.7	18.6
1980	59.1	5.1	91.4	155.6	16.5	10.6
1981	64.2	4.4	82.0	150.6	49.0	32.5
1982	59.7	3.2	68.9	131.8	71.5	54.2
1983	51.6	3.3	70.3	125.2	46.9	37.5
1984	57.4	3.1	62.1	122.6	64.7	52.8
1985	62.9	2.9	58.7	124.5	77.3	62.1
1986	74.7	2.9	84.2	161.8	51.4	31.8
1987	76.8	3.6	72.2	152.6	31.4	20.6
1988	79.0	3.4	85.9	168.3	26.7	15.9
1989	78.6	3.6	77.1	159.3	26.3	16.5
1990	87.6	3.6	71.4	162.6	24.6	15.1
1991	91.2	4.1	66.5	161.9	27.4	16.9
1992	91.0	3.6	79.2	173.8	39.4	22.7
1993	96.2	4.1	76.4	176.7	25.8	14.6
1994	97.6	3.9	98.8	200.3	31.3	15.6
1995	101.1	3.5	83.2	187.8	25.0	13.3
1996	97.7	3.9	78.3	179.9	27.2	15.1
1997	99.2	4.1	88.2	191.5	27.9	14.6
1998	109.5	4.4	86.8	200.8	22.1	11.0
1999	117.4	4.0	89.2	210.6	27.5	13.1
2000 3/	119.0	3.9	80.0	202.9	27.3	13.4

1/ Includes shipments to U.S. territories. 2/ Includes residual. 3/ Forecast.

Sources: Food, industrial, and residual and seed data reported in the monthly *World Agricultural Supply and Demand Estimates*, World Agricultural Outlook Board, USDA; last update was November 2000. Export data from Bureau of the Census, U.S. Department of Commerce. Ending stocks, August *Rice Stocks*, NASS/USDA, various issues.

Appendix table 15--U.S. rice distribution patterns, 1955/56-1998/99 1/

Crop year	Direct food use 2/	Imports	Direct food use plus imports	Processed foods	Total food use 3/	Brewers' use	Total domestic use 4/
				Million cwt (milled)			
1955/56	8.1	0.1	8.3	1.5	9.8	4.2	13.9
1956/57	8.7	0.0	8.7	1.6	10.3	3.6	13.8
1960/61	10.3	0.2	10.5	2.2	12.7	3.5	16.1
1961/62	11.3	0.3	11.6	2.3	13.9	3.4	17.2
1966/67	11.1	0.0	11.1	3.0	14.1	3.8	17.8
1969/70	13.0	0.1	13.1	3.0	16.1	5.1	21.2
1971/72	12.8	0.8	13.6	3.5	17.1	5.4	22.5
1973/74	13.2	0.1	13.3	3.4	16.7	5.9	22.6
1974/75	12.6	0.1	12.7	2.5	15.2	6.0	21.2
1975/76	13.0	0.0	13.0	2.9	15.8	6.4	22.2
1978/79	15.2	0.1	15.3	3.7	19.0	7.9	26.9
1980/81	18.8	0.2	18.9	4.5	23.4	8.0	31.4
1982/83	19.2	0.5	19.7	3.3	23.0	9.6	32.6
1984/85	21.2	1.1	22.3	5.4	27.7	9.7	37.4
1986/87	22.9	1.9	24.7	7.6	32.4	10.7	43.0
1988/89	25.1	2.7	27.7	8.6	36.3	11.2	47.5
1990/91	28.0	3.5	31.5	12.2	43.7	11.0	54.7
1994/95	31.5	5.1	36.6	16.1	52.7	10.7	63.4
1995/96	36.3	5.3	41.6	14.9	56.5	11.2	67.7
1996/97	35.8	7.0	42.8	14.1	56.9	10.8	67.7
1997/98	37.6	6.6	44.2	15.6	59.7	11.1	70.8
1998/99	38.1	7.1	45.2	16.1	61.4	10.7	72.1

1/ Does not include shipments to U.S. territories or seed use. 2/ Does not include imports. 3/ Includes direct food use, processed foods, and imports. 4/ Includes total food use and brewers' use.

Sources: Direct food use and processed food use data are from milled rice distribution surveys reported by domestic rice mills. Survey data 1955/56 to 1990/91, Economic Research Service, USDA. Survey data 1994/95 to 1998/99 compiled by Food Research Associates for the USA Rice Federation. Import data are from the U.S. Department of Commerce. Brewers' use data from the U.S. Treasury Department. All data updated February 2000 when reported in *U.S. Rice Distribution Patterns 1998-99* report. The 1999/2000 survey results will be available in early 2001.

Appendix table 16--Per capita rice consumption, United States, 1955/56-1998/99 1/

Crop year	Direct food use 2/	Imports	Direct food use plus imports	Processed foods	Total food use 3/	Brewers' use	Total domestic use 4/
				Pounds--milled basis			
1955/56	4.9	0.1	5.0	0.9	5.9	2.5	8.4
1956/57	5.1	0.0	5.1	0.9	6.0	2.1	8.1
1960/61	5.7	0.1	5.8	1.2	7.0	1.9	8.9
1961/62	6.1	0.2	6.3	1.2	7.5	1.8	9.3
1966/67	5.6	0.0	5.6	1.5	7.1	1.9	9.1
1969/70	6.4	0.1	6.5	1.5	7.9	2.5	10.4
1971/72	6.2	0.4	6.6	1.7	8.2	2.6	10.8
1973/74	6.2	0.1	6.3	1.6	7.9	2.8	10.7
1974/75	5.9	0.0	5.9	1.2	7.1	2.8	9.9
1975/76	6.0	0.0	6.0	1.3	7.3	3.0	10.3
1978/79	6.8	0.0	6.8	1.7	8.5	3.5	12.1
1980/81	8.2	0.1	8.3	2.0	10.3	3.5	13.8
1982/83	8.2	0.2	8.4	1.4	9.9	4.1	14.0
1983/84	8.9	0.5	9.4	2.3	11.7	4.1	15.8
1986/87	9.4	0.8	10.2	3.1	13.4	4.4	17.8
1988/89	10.1	1.1	11.2	3.5	14.7	4.5	19.2
1990/91	11.1	1.4	12.5	4.9	17.4	4.4	22.0
1994/95	12.0	2.1	14.1	6.2	20.3	4.1	24.3
1995/96	13.7	2.0	15.7	5.6	21.4	4.2	25.6
1996/97	13.4	2.6	16.0	5.3	21.3	4.1	25.4
1997/98	13.9	2.6	16.4	5.8	22.2	4.0	26.3
1998/99	14.0	2.4	16.6	5.9	22.6	3.9	26.5

1/ Does not include shipments to U.S. territories or seed use. 2/ Does not include imports. 3/ Includes direct food use, processed foods, and imports.
4/ Includes total food use and brewers' use.

Sources: Direct food use and processed food use data are from milled rice distribution surveys reported by domestic rice mills. Survey data 1955/56 to 1990/91, Economic Research Service, USDA. Survey data 1994/95 to 1998/99 compiled by Food Research Associates for the USA Rice Federation.
Import data are from the U.S. Department of Commerce. Brewers' use data from the U.S. Treasury Department. All data last updated February 2000 when reported in *U.S. Rice Distribution Pattern 1998-99* report. The 1999/2000 survey results will be available in early 2001.

Appendix table 17--Prices and ending stocks for rice, 1955-2000

Crop year 1/	Ending stocks	Farm price	Loan rate	Target price	Announced world price	Direct payment
	Mill. cwt			---$/cwt---		
1955	34.60	4.81	4.66	---	---	---
1956	20.00	4.86	4.57	---	---	---
1957	18.20	5.11	4.72	---	---	---
1958	15.70	4.68	4.48	---	---	---
1959	12.10	4.59	4.38	---	---	---
1960	10.10	4.55	4.42	---	---	---
1961	5.30	5.14	4.71	---	---	---
1962	7.70	5.04	4.71	---	---	---
1963	7.50	5.01	4.71	---	---	---
1964	7.70	4.90	4.71	---	---	---
1965	8.20	4.93	4.50	---	---	---
1966	8.50	4.95	4.50	---	---	---
1967	6.80	4.97	4.55	---	---	---
1968	16.20	5.00	4.60	---	---	---
1969	16.40	4.95	4.72	---	---	---
1970	18.60	5.17	4.86	---	---	---
1971	11.40	5.34	5.07	---	---	---
1972	5.10	6.73	5.27	---	---	---
1973	7.80	13.80	6.07	---	---	---
1974	7.10	11.20	7.54	---	---	---
1975	36.90	8.35	8.52	---	---	---
1976	40.50	7.02	6.19	8.25	---	0.00
1977	27.40	9.49	6.19	8.25	---	0.00
1978	31.60	8.16	6.40	8.53	---	0.78
1979	25.70	10.50	6.79	9.05	---	0.00
1980	16.50	12.80	7.12	9.49	---	0.00
1981	49.00	9.05	8.01	10.68	---	0.28
1982	71.50	7.91	8.14	10.85	---	2.71
1983	46.90	8.57	8.14	11.40	---	2.77
1984	64.70	8.04	8.00	11.90	---	3.76
1985	77.30	6.53	8.00	11.90	3.62	3.90
1986	51.42	3.75	7.20	11.90	3.51	4.70
1987	31.37	7.27	6.84	11.66	5.99	4.82
1988	26.74	6.83	6.63	11.15	6.54	4.31
1989	26.31	7.35	6.50	10.80	6.05	3.56
1990	24.59	6.70	6.50	10.71	5.46	4.16
1991	27.41	7.58	6.50	10.71	5.95	3.07
1992	39.44	5.89	6.50	10.71	4.95	4.21
1993	25.77	7.98	6.50	10.71	6.07	3.98
1994	31.28	6.78	6.50	10.71	6.10	3.79
1995	25.03	9.15	6.50	10.71	7.71	3.22
1996	27.24	9.96	6.50	3/ ---	7.66	4/ 2.77
1997	27.91	9.70	6.50	3/ ---	8.45	4/ 2.71
1998	22.08	8.89	6.50	3/ ---	7.37	4/ 2.92
1999	27.52	6.11	6.50	3/ ---	4.50	4/ 2.82
2000 2/	27.30	5.75-6.25	6.50	3/ ---	N/A	4/ 2.60

--- = Not applicable. N/A = Not available.

1/ August-July market year. 2/ Forecast. 3/ Eliminated in 1996 farm act. 4/ Does not includes supplemental AMTA payments of $1.45 per cwt in 1998, $2.82 in 1999, and $2.82 in 2000.

Sources: Ending stocks and farm price data, National Agricultural Statistics Service, USDA; CCC caryyover, target price, direct payments, and announced world price, Farm Service Agency, USDA.

Appendix table 18--Class loan rates and differentials, 1985-2000

Item	Crop year							
	1985	1986	1987	1988	1989	1990	1991	1992
	Cents/lb							
Milled rice:								
Long whole kernels	14.53	12.44	11.36	10.89	10.81	10.84	10.74	10.74
Medium and short whole kernels	10.50	10.44	10.36	9.89	9.81	9.84	9.74	9.74
Broken kernels	6.02	4.98	5.68	5.45	5.41	5.42	5.37	5.37
Differential (milled basis) 1/	4.03	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Rough rice 2/:	$/hundredweight							
Average, all classes	8.00	7.20	6.84	6.63	6.50	6.50	6.50	6.50
Average, long grain	8.68	7.52	7.03	6.75	6.68	6.68	6.65	6.66
Average, medium grain	6.49	6.36	6.54	6.33	6.13	6.21	6.11	6.13
Average, short grain	6.49	6.44	6.39	5.98	5.98	6.12	6.07	6.13

Item	Crop year							
	1993	1994	1995	1996	1997	1998	1999	2000
	Cents/lb							
Milled rice:								
Long whole kernels	10.75	10.72	10.69	10.77	10.69	10.71	10.66	10.71
Medium and short whole kernels	9.75	9.72	9.69	9.77	9.69	9.71	9.66	9.71
Broken kernels	5.37	5.36	5.35	5.38	5.35	5.35	5.33	5.35
Differential (milled basis) 1/	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Rough rice 2/:	$/hundredweight							
Average, all classes	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
Average, long grain	6.67	6.64	6.68	6.68	6.67	6.67	6.67	6.66
Average, medium grain	6.11	6.13	6.12	6.17	6.14	6.14	6.12	6.12
Average, short grain	5.89	6.02	5.99	6.02	6.07	6.04	6.04	6.16

1/ The loan differential (milled basis) is the difference between the class whole kernel loan rates for long and medium grain rice. 2/ Announced farm-stored loan rates. Loan rates per hundredweight of rough rice are based on the yields of whole and broken milled-rice kernels from the milling process. The loan rate is the total of a) the quantity of whole-kernel milled rice times the whole-kernel milled rice loan rate, plus b) the quantity of broken milled rice times broken rice loan rate.

Source: Farm Service Agency, USDA.

Appendix table 19--World market rice prices, loan rate basis, 1987-2000 1/

Date	Milled kernel rates				Rough rates		
	Long	Medium	Short	Broken	Long	Medium	Short
	---$/cwt---				---$/cwt---		
1987:							
January 20 - March 31	5.70	5.12	5.06	2.85	3.53	3.23	3.13
April 7 - April 21	5.87	5.28	5.22	2.94	3.63	3.34	3.23
April 28	5.98	5.28	5.21	2.99	3.70	3.34	3.23
May 5 - May 19	5.98	5.38	5.31	2.99	3.70	3.40	3.29
May 26 - June 23	6.11	5.52	5.45	3.06	3.78	3.49	3.37
June 30	6.00	5.39	5.32	3.00	3.71	3.41	3.30
July 7 - July 21	5.89	5.29	5.22	2.95	3.65	3.35	3.23
July 28	6.02	5.45	5.38	3.01	3.73	3.44	3.33
August 4	6.15	5.58	5.51	3.07	3.81	3.52	3.41
August 11	6.27	5.69	5.62	3.13	3.88	3.59	3.48
August 18	6.39	5.69	5.62	3.19	3.95	3.60	3.48
August 25	6.51	5.84	5.76	3.25	4.03	3.69	3.57
September 1	6.76	6.11	6.03	3.38	4.18	3.86	3.73
September 8	7.28	6.56	6.49	3.64	4.51	4.15	4.02
September 15	7.90	7.22	7.14	3.95	4.89	4.56	4.41
September 22	8.66	7.95	7.87	4.33	5.36	5.01	4.86
September 29 - October 6	9.54	8.80	8.73	4.77	5.91	5.55	5.39
October 13 - October 27	10.21	9.42	9.35	5.10	6.32	5.94	5.77
November 3 - November 10	9.88	9.05	8.99	4.94	6.12	5.71	5.55
November 17 - November 24	9.81	9.04	8.93	4.91	5.90	5.63	5.43
December 1 - December 8	9.42	8.57	8.47	4.71	5.66	5.35	5.16
December 15 - December 29	9.42	8.43	8.32	4.71	5.66	5.27	5.08
1988:							
January 5	9.42	8.43	8.32	4.71	5.66	5.27	5.08
January 12	9.90	8.84	8.73	4.95	5.95	5.52	5.34
January 19 - January 26	11.22	9.72	9.61	5.61	6.74	6.10	5.90
February 2 - March 22	11.66	10.24	10.14	5.83	7.01	6.41	6.21
March 29	11.61	10.25	10.15	5.80	6.98	6.41	6.22
April 5 - April 19	11.83	10.46	10.36	5.92	7.12	6.54	6.35
April 26	11.56	10.31	10.21	5.78	6.95	6.44	6.25
May 3 - May 10	11.02	9.97	9.88	5.51	6.63	6.22	6.03
May 17 - May 31	10.58	9.72	9.62	5.29	6.37	6.05	5.86
June 7	10.09	9.28	9.18	5.04	6.07	5.78	5.59
June 14	10.28	9.44	9.34	5.14	6.19	5.88	5.69
June 21-28	10.69	9.87	9.77	5.35	6.43	6.14	5.95
July 5-12	10.98	10.17	10.08	5.49	6.61	6.32	6.13
July 19 - August 2	11.13	10.33	10.25	5.56	6.69	6.42	6.23
August 9	10.85	9.99	9.91	5.42	6.52	6.22	6.03
August 16	10.55	9.72	9.64	5.27	6.34	6.05	5.87
August 23 - September 6	10.68	9.82	9.74	5.34	6.42	6.11	5.93
September 13	10.43	9.57	9.48	5.22	6.28	5.96	5.78
September 20 - October 4	10.30	9.43	9.34	5.15	6.19	5.87	5.69
October 11 - October 25	10.13	9.30	9.21	5.07	6.10	5.79	5.61
November 1	10.03	9.23	9.16	5.01	6.18	5.78	5.53
November 8 - December 13	9.87	9.08	9.01	4.94	6.10	5.69	5.44
December 20 - December 27	9.55	8.80	8.74	4.77	5.90	5.51	5.27
1989:							
January 3 - January 10	9.55	8.80	8.74	4.77	5.90	5.51	5.27
January 17 - January 24	9.79	9.12	9.07	4.89	6.05	5.71	5.46
January 31 - February 21	9.97	9.29	9.23	4.98	6.16	5.82	5.55
February 28 - March 7	10.11	9.46	9.38	5.06	6.25	5.92	5.64
March 14 - April 4	10.33	9.69	9.62	5.17	6.39	6.06	5.78
April 11	10.56	9.85	9.78	5.28	6.53	6.17	5.88
April 18	10.64	9.93	9.86	5.32	6.58	6.22	5.93

See footnote at end of table.

Continued--

Appendix table 19--World market rice prices, loan rate basis, 1987-2000 1/--continued

Date	Milled kernel rates				Rough rates		
	Long	Medium	Short	Broken	Long	Medium	Short
	---$/cwt---				---$/cwt---		
1989:							
April 25 - May 2	11.17	10.36	10.28	5.59	6.91	6.49	6.19
May 9 - May 16	11.41	10.69	10.60	5.71	7.05	6.69	6.37
May 23	11.60	10.83	10.74	5.80	7.17	6.78	6.46
May 30	11.91	11.09	11.00	5.96	7.36	6.94	6.62
June 6 - June 20	12.20	11.33	11.24	6.10	7.54	7.10	6.76
June 27	13.20	12.07	11.98	6.60	8.16	7.57	7.22
July 5	13.78	12.79	12.69	6.89	8.51	8.01	7.64
July 11 - August 1	14.41	13.39	13.30	7.21	8.91	8.39	8.00
August 8	14.15	12.91	12.82	7.07	8.74	8.10	7.73
August 15	13.00	11.82	11.74	6.50	8.04	7.42	7.08
August 22 - September 5	12.46	11.23	11.11	6.23	7.70	7.02	6.76
September 12	12.23	11.08	10.96	6.12	7.56	6.92	6.68
September 19 - October 10	11.74	10.57	10.45	5.87	7.26	6.61	6.38
October 17 - October 24	11.43	10.29	10.17	5.72	7.07	6.43	6.21
October 31	10.55	9.67	9.55	5.27	6.52	6.03	5.81
November 7 - November 14	10.16	9.37	9.25	5.08	6.28	5.84	5.63
November 21 - December 26	9.76	9.06	8.94	4.88	6.03	5.64	5.43
1990:							
January 2 - February 13	9.76	9.06	8.94	4.88	6.03	5.64	5.43
February 20	9.54	8.70	8.59	4.77	5.90	5.43	5.23
February 27-March 27	9.41	8.46	8.35	4.70	5.81	5.29	5.10
April 3 - April 17	9.31	8.25	8.14	4.66	5.75	5.17	4.98
April 24	9.11	8.10	7.99	4.56	5.63	5.07	4.89
May 1	8.87	7.95	7.84	4.43	5.48	4.97	4.79
May 8 - May 22	8.63	7.77	7.66	4.32	5.34	4.86	4.68
May 29	8.53	7.66	7.60	4.26	5.36	4.93	4.91
June 5 - June 19	8.45	7.58	7.52	4.22	5.31	4.88	4.86
June 26 - August 7	8.36	7.48	7.41	4.18	5.25	4.82	4.79
August 14 - August 21	8.31	7.38	7.31	4.16	5.22	4.75	4.73
August 28 - September 25	8.18	7.22	7.16	4.09	5.14	4.65	4.63
October 2 - December 18	8.28	7.32	7.27	4.14	5.20	4.72	4.70
December 26 - January 22, 1991	8.30	7.23	7.24	4.15	5.09	4.47	4.40
1991:							
January 29 - February 5	9.38	8.30	8.33	4.69	5.75	5.12	5.05
February 12 - March 5	9.39	8.36	8.37	4.70	5.76	5.15	5.07
March 12 - March 19	9.56	8.56	8.57	4.78	5.86	5.27	5.19
March 26 - April 9	9.66	8.69	8.70	4.83	5.92	5.35	5.26
April 16 - May 14	9.45	8.49	8.50	4.73	5.80	5.23	5.15
May 21 - July 30	9.63	8.64	8.65	4.81	5.90	5.32	5.24
August 6 - August 13	9.69	8.78	8.73	4.85	6.00	5.51	5.44
August 20 - November 19	9.74	8.80	8.75	4.87	6.03	5.52	5.45
November 26 - January 14, 1992	9.71	8.76	8.72	4.85	6.01	5.50	5.44
1992:							
January 21 - January 28	9.81	8.82	8.76	4.91	6.05	5.57	5.21
February 4 - March 24	9.98	9.03	8.95	4.99	6.15	5.70	5.32
March 31 - May 5	9.62	8.70	8.57	4.81	5.93	5.49	5.10
May 12 - July 14	9.43	8.46	8.32	4.71	5.81	5.34	4.96
July 21 - July 28	9.53	8.64	8.50	4.76	5.87	5.45	5.06
August 4 - August 11	9.65	8.76	8.74	4.82	5.98	5.51	5.50
August 18	9.50	8.64	8.63	4.75	5.89	5.44	5.42
August 25 - September 8	9.34	8.46	8.45	4.67	5.79	5.33	5.31
September 15 - September 22	9.15	8.25	8.24	4.57	5.67	5.20	5.18
September 29 - October 6	9.04	8.16	8.14	4.52	5.60	5.14	5.12
October 13 - November 17	8.88	7.96	7.93	4.44	5.50	5.02	4.99
November 24 - December 1	8.73	7.80	7.78	4.36	5.41	4.92	4.90

See footnote at end of table.

Continued--

Appendix table 19--World market rice prices, loan rate basis, 1987-2000 1/--continued

Date	Milled kernel rates				Rough rates		
	Long	Medium	Short	Broken	Long	Medium	Short
	---$/cwt---				---$/cwt---		
1993:							
December 8,1992-January 5, 1993	8.63	7.81	7.78	4.32	5.35	4.92	4.89
January 12	8.49	7.65	7.63	4.24	5.26	4.82	4.80
January 19 - February 9	8.38	7.54	7.51	4.19	5.27	4.76	4.73
February 16 - February 23	8.25	7.41	7.38	4.12	5.19	4.68	4.65
March 2 - March 9	8.07	7.18	7.15	4.04	5.08	4.54	4.51
March 16	7.98	7.07	7.04	3.99	5.02	4.47	4.44
March 23 - March 30	7.72	6.90	6.89	3.86	4.86	4.36	4.34
April 6 - April 13	7.50	6.76	6.75	3.75	4.72	4.27	4.25
April 20	7.36	6.63	6.61	3.68	4.63	4.19	4.16
April 27	7.07	6.42	6.39	3.54	4.45	4.05	4.02
May 4 - May 25	6.96	6.29	6.28	3.48	4.38	3.97	3.95
June 1 - July 27	6.75	6.06	6.03	3.38	4.25	3.83	3.80
August 3 - August 24	6.58	5.98	5.90	3.29	4.08	3.74	3.55
August 31 - September 21	6.80	6.17	6.09	3.40	4.22	3.86	3.67
September 28	6.69	6.06	5.98	3.35	4.15	3.79	3.60
October 5	7.43	6.76	6.68	3.72	4.61	4.23	4.02
October 12	7.95	7.21	7.12	3.97	4.93	4.51	4.29
October 19 - November 2	8.05	7.32	7.25	4.02	4.99	4.58	4.36
November 9	10.43	9.71	9.64	5.22	6.47	6.06	5.78
November 16 - November 30	11.48	10.76	10.67	5.74	7.12	6.71	6.39
December 7 - December 21	11.67	10.96	10.87	5.84	7.24	6.83	6.51
December 28	11.77	11.05	10.97	5.88	7.30	6.89	6.57
1994:							
January 4 - January 11	11.77	11.05	10.97	5.88	7.30	6.89	6.57
January 18	11.88	11.17	11.09	5.94	7.37	6.96	6.64
January 25	12.09	11.41	11.27	6.04	7.42	7.24	7.13
February 1 - March 15	12.20	11.52	11.38	6.10	7.49	7.31	7.20
March 22	11.42	11.53	11.38	5.71	7.01	7.28	7.15
March 29	11.32	11.54	11.40	5.66	6.95	7.28	7.15
April 6	10.54	11.55	11.40	5.27	6.47	7.25	7.10
April 12 - April 19	10.78	11.55	11.41	5.39	6.62	7.26	7.12
April 26	10.12	11.56	11.42	5.06	6.21	7.23	7.08
May 3	9.89	11.56	11.43	4.94	6.07	7.22	7.07
May 10 - May 24	9.76	11.57	11.43	4.88	5.99	7.22	7.06
May 31	8.94	11.36	11.20	4.47	5.49	7.06	6.88
June 7 - June 28	8.67	11.37	11.22	4.33	5.32	7.05	6.87
July 5	8.67	10.61	10.47	4.33	5.32	6.61	6.45
July 12	8.44	10.03	9.89	4.22	5.18	6.26	6.11
July 19 - July 26	8.44	9.76	9.62	4.23	5.18	6.10	5.96
August 2	8.47	9.31	9.16	4.23	5.25	5.76	5.43
August 9	8.47	9.31	9.16	4.23	5.25	5.76	5.43
August 16	8.60	8.94	8.79	4.30	5.33	5.56	5.25
August 23	8.71	8.95	8.79	4.35	5.40	5.57	5.26
August 30	8.71	8.95	8.79	4.35	5.40	5.57	5.26
September 6	9.06	8.94	8.79	4.53	5.62	5.59	5.29
September 13	9.06	9.12	8.96	4.53	5.62	5.69	5.38
September 20	9.06	9.12	8.96	4.53	5.62	5.69	5.38
September 27	9.06	9.12	8.96	4.53	5.62	5.69	5.38
October 4	9.06	9.12	8.96	4.53	5.62	5.69	5.38
October 11 - October 18	9.26	8.91	9.76	4.63	5.74	5.58	5.29
October 25 - December 13	9.43	8.91	8.77	4.72	5.79	5.59	5.31
December 20 - December 27	9.34	8.92	8.77	4.67	5.86	5.51	5.27

See footnote at end of table.

Continued--

Appendix table 19--World market rice prices, loan rate basis, 1987-2000 1/--continued

Date	Milled kernel rates				Rough rates		
	Long	Medium	Short	Broken	Long	Medium	Short
	---$/cwt---				---$/cwt---		
1995:							
January 3	9.46	8.78	8.72	4.73	5.86	5.51	5.27
January 10	9.59	8.77	8.71	4.80	5.94	5.51	5.27
January 17 - January 24	10.07	8.97	8.90	5.03	6.24	5.65	5.41
January 31 - February 21	10.20	8.95	8.91	5.10	6.41	5.68	5.64
February 28 - April 25	10.20	9.06	9.01	5.10	6.41	5.74	5.70
May 2 - May 16	10.37	9.18	9.12	5.19	6.52	5.82	5.77
May 23 - May 30	10.53	9.39	9.33	5.27	6.62	5.95	5.90
June 6 - June 13	11.69	9.54	9.48	5.82	7.35	6.10	6.06
June 20 - June 27	11.80	9.29	9.24	5.90	7.42	5.96	5.93
July 4	12.01	9.39	9.32	6.00	7.55	6.03	5.99
July 11	12.01	9.53	9.46	6.00	7.55	6.11	6.07
July 18	12.20	9.53	9.46	6.10	7.67	6.12	6.08
July 25	12.33	9.51	9.46	6.16	7.75	6.12	6.09
August 1 - August 8	12.57	9.62	9.51	6.28	7.85	6.18	6.02
August 15 - August 22	12.90	9.73	9.59	6.45	8.06	6.26	6.09
August 29 - September 5	12.50	9.74	9.61	6.25	7.81	6.24	6.07
September 12	12.71	9.73	9.60	6.36	7.94	6.25	6.08
September 19	12.92	9.73	9.59	6.46	8.07	6.26	6.09
September 26	13.22	10.00	9.86	6.61	8.26	6.43	6.26
October 3	13.37	10.23	10.11	6.68	8.35	6.57	6.40
October 10 - October 17	14.13	10.36	10.23	7.07	8.83	6.69	6.53
October 24 - October 31	14.44	10.35	10.23	7.22	9.02	6.70	6.55
November 7	14.20	10.36	10.22	7.10	8.87	6.69	6.53
November 14 - November 21	13.24	10.79	10.66	6.62	8.27	6.88	6.68
December 5	13.24	11.19	11.08	6.62	8.27	7.11	6.90
December 12 - December 26	13.03	11.34	11.22	6.52	8.14	7.18	6.96
1996:							
January 2 - January 16	13.03	11.34	11.22	6.52	8.14	7.18	6.96
January 23-January 30	13.20	11.44	11.45	6.60	8.06	7.21	7.38
February 6	13.00	11.99	11.99	6.50	7.94	7.50	7.68
February 13 - February 27	12.91	11.98	11.98	6.45	7.88	7.49	7.67
March 5 -March 12	12.91	11.76	11.77	6.45	7.88	7.37	7.55
March 19 - March 26	13.20	11.77	11.76	6.60	8.06	7.39	7.56
April 2	12.87	11.77	11.78	6.44	7.86	7.37	7.55
April 9	12.61	11.53	11.54	6.31	7.70	7.22	7.40
April 16 - May 7	12.46	11.54	11.54	6.23	7.61	7.22	7.39
May 14	11.96	11.26	11.26	5.98	7.30	7.03	7.20
May 21 - May 28	11.96	11.60	11.61	5.98	7.30	7.22	7.40
June 4	12.14	11.60	11.59	6.07	7.41	7.23	7.40
June 11 - June 18	12.64	11.70	11.70	6.32	7.72	7.32	7.49
June 25 - July 2	12.64	12.58	12.59	6.32	7.72	7.81	8.01
July 9 - July 23	12.81	12.58	12.59	6.40	7.82	7.82	8.02
July 30	12.71	12.59	12.58	6.35	7.76	7.82	8.01
August 6	12.75	12.78	12.63	6.37	7.88	8.01	7.71
August 13 - August 20	12.62	12.60	12.46	6.31	7.80	7.90	7.61
August 27 - October 1	12.39	12.61	12.48	6.19	7.66	7.89	7.60
October 8	12.29	12.62	12.47	6.15	7.60	7.89	7.59
October 15	12.18	12.61	12.47	6.09	7.53	7.88	7.58
October 22	11.99	12.40	12.25	5.99	7.41	7.75	7.45
October 29 - November 19	11.65	12.29	12.16	5.82	7.20	7.67	7.37
November 26 - December 10	11.53	12.29	12.15	5.77	7.13	7.66	7.36
December 17 - December 24	11.74	12.41	12.27	5.87	7.26	7.74	7.44
December 31	12.05	12.41	12.26	6.03	7.45	7.76	7.46

See footnote at end of table.

Continued--

Appendix table 19--World market rice prices, loan rate basis, 1987-2000 1/--continued

Date	Milled kernel rates				Rough rates		
	Long	Medium	Short	Broken	Long	Medium	Short
	---$/cwt---				---$/cwt---		
1997:							
January 7 - January 21	12.05	12.41	12.26	6.03	7.45	7.76	7.46
January 28	12.37	12.20	12.19	6.19	7.81	7.68	7.54
February 4 - March 4	12.23	12.20	12.18	6.12	7.72	7.67	7.53
March 11	11.80	12.22	12.19	5.90	7.45	7.66	7.51
March 18	11.66	12.21	12.19	5.83	7.33	7.65	7.50
March 25	11.36	11.77	11.76	5.68	7.17	7.38	7.24
April 1	11.15	11.77	11.74	5.58	7.04	7.37	7.22
April 8 - April 15	11.15	11.58	11.56	5.58	7.04	7.26	7.12
April 22	11.15	11.45	11.42	5.58	7.04	7.18	7.04
April 29	11.95	11.43	11.41	5.97	7.54	7.21	7.08
May 6 - May 20	13.28	11.41	11.39	6.64	8.38	7.27	7.15
May 27 - June 3	13.28	11.01	10.99	6.64	8.38	7.04	6.93
June 10	13.43	11.15	11.14	6.72	8.48	7.13	7.02
June 17 - July 15	13.59	11.14	11.12	6.80	8.58	7.13	7.02
July 22 - July 29	13.59	10.29	10.28	6.80	8.58	6.64	6.55
August 5	13.97	11.35	11.28	6.98	8.71	7.27	7.15
August 12 - August 19	13.50	11.36	11.31	6.75	8.42	7.25	7.13
August 26	13.26	11.26	11.21	6.63	8.27	7.18	7.06
September 2 - September 9	12.59	11.18	11.11	6.30	7.85	7.10	6.96
September 16 - September 23	12.59	12.02	11.94	6.30	7.85	7.58	7.42
September 30 - October 21	12.88	12.01	11.94	6.44	8.03	7.59	7.44
October 28	12.70	12.01	11.95	6.35	7.92	7.58	7.43
November 4 - November 18	13.07	12.01	11.94	6.54	8.15	7.60	7.45
November 25 - December 30	13.38	12.17	12.10	6.69	8.34	7.71	7.56
1998:							
January 6	13.63	12.28	12.22	6.82	8.50	7.79	7.64
January 13 - January 27	14.19	12.27	12.22	7.10	8.85	7.81	7.68
February 3 - March 10	14.94	12.42	12.32	7.47	9.41	7.88	7.72
March 17 - March 24	15.18	12.41	12.31	7.59	9.56	7.89	7.73
March 31	15.18	12.17	12.06	7.59	9.56	7.75	7.60
April 7 - April 21	15.56	12.34	12.24	7.78	9.80	7.87	7.72
April 28	15.56	12.64	12.55	7.78	9.80	8.04	7.89
May 5 - May 12	13.99	12.39	12.29	6.99	8.81	7.81	7.63
May 19	13.86	12.39	12.29	6.93	8.73	7.80	7.62
May 26	13.99	12.39	12.29	6.99	8.81	7.81	7.63
June 2 - June 23	14.56	12.51	12.41	7.28	9.17	7.91	7.74
June 30 - July 21	14.69	12.52	12.41	7.34	9.25	7.92	7.75
July 28	14.51	12.52	12.42	7.26	9.14	7.91	7.74
August 4 - August 25	14.07	12.13	12.06	7.03	8.77	7.71	7.56
September 1 - September 15	14.37	12.36	12.28	7.19	8.96	7.86	7.70
September 22	14.23	12.01	11.93	7.11	8.87	7.65	7.50
September 29	14.02	11.91	11.83	7.01	8.74	7.58	7.43
October 6	13.83	11.91	11.84	6.91	8.62	7.57	7.42
October 13 - October 20	13.43	11.91	11.83	6.71	8.37	7.55	7.39
October 27 - November 3	13.33	11.92	11.84	6.67	8.31	7.55	7.39
November 10 - November 17	12.80	11.83	11.77	6.40	7.98	7.47	7.31
November 24 - December 1	12.59	11.75	11.66	6.30	7.85	7.41	7.24
December 8	11.89	11.34	11.26	5.94	7.41	7.14	6.97
December 15 - December 29	12.00	11.35	11.26	6.00	7.48	7.15	6.98

See footnote at end of table.

Continued--

Appendix table 19--World market rice prices, loan rate basis, 1987-2000 1/--continued

Date	Milled kernel rates				Rough rates		
	Long	Medium	Short	Broken	Long	Medium	Short
		---$/cwt---				---$/cwt---	
1999:							
January 5	12.00	11.23	11.15	6.00	7.48	7.08	6.92
January 12	11.81	11.23	11.16	5.90	7.36	7.07	6.91
January 19	12.37	11.23	11.14	6.18	7.71	7.10	6.94
January 26	12.22	11.22	11.14	6.11	7.62	7.09	6.93
February 2 - February 9	11.95	11.14	11.10	5.98	7.40	7.09	7.15
February 16 - February 23	11.73	11.15	11.10	5.86	7.26	7.08	7.14
March 2	11.52	11.15	11.10	5.76	7.13	7.07	7.13
March 9	11.32	10.85	10.81	5.66	7.01	6.89	6.95
March 16	11.10	10.70	10.66	5.55	6.87	6.79	6.85
March 23 - March 30	10.68	10.72	10.66	5.34	6.61	6.78	6.83
April 6 - April 20	10.42	10.60	10.57	5.21	6.45	6.70	6.76
April 27 - May 4	10.32	10.61	10.56	5.16	6.39	6.70	6.75
May 11 - May 18	10.50	10.73	10.68	5.25	6.50	6.78	6.83
May 25 - June 15	10.60	10.73	10.67	5.30	6.56	6.78	6.83
June 22 - July 27	10.60	10.57	10.54	5.30	6.56	6.69	6.75
August 3 - August 17	8.67	8.06	7.98	4.33	5.42	5.09	4.99
August 23 - September 14	8.53	7.88	7.78	4.26	5.33	4.98	4.87
September 21	8.38	7.74	7.66	4.19	5.24	4.89	4.79
September 28 - October 12	8.19	7.51	7.43	4.09	5.12	4.75	4.65
October 19	8.00	7.51	7.43	4.00	5.00	4.74	4.64
October 26	7.74	7.20	7.12	3.87	4.84	4.55	4.45
November 2 - November 23	7.45	6.87	6.77	3.73	4.66	4.34	4.24
November 30	7.45	6.76	6.68	3.73	4.66	4.28	4.19
December 7 - December 21	7.33	6.77	6.68	3.66	4.58	4.28	4.18
2000:							
December 28, 1999 - January 11	7.60	7.03	6.94	3.80	4.75	4.44	4.34
January 18 - January 27	7.42	7.03	6.94	3.71	4.64	4.43	4.33
February 1 - February 29	7.42	6.95	7.00	3.71	4.53	4.34	4.51
March 7 - March 14	7.16	6.75	6.80	3.58	4.37	4.21	4.38
March 27 - April 18	7.01	6.46	6.52	3.51	4.28	4.04	4.21
April 25	7.01	6.20	6.25	3.51	4.28	3.90	4.05
May 2 - May 30	6.70	5.66	5.72	3.35	4.09	3.58	3.72
June 6 - July 5	6.70	5.34	5.40	3.35	4.09	3.40	3.53
July 11	6.70	5.34	5.60	3.35	4.09	3.51	3.65
July 18 - July 25	6.70	5.54	5.59	3.35	4.09	3.51	3.64
August 1 - August 22	6.53	5.38	5.34	3.26	4.06	3.43	3.43
August 29 - September 26	5.93	4.97	4.93	2.97	3.69	3.16	3.16
October 3	5.84	5.19	5.15	2.92	3.63	3.28	3.28
October 10 - October 17	5.73	5.20	5.16	2.86	3.56	3.28	3.28
October 24-November 14	5.60	5.30	5.26	2.80	3.48	3.33	3.33
November 21- November 28	5.47	5.22	5.19	2.73	3.40	3.28	3.28

1/ Reduced repayment rates for 1985 crop loans were available beginning April 15, 1986. The repayment rate was the lower of the loan rate or the prevailing world market price. For the 1986 through 1995 crops, the repayment rate was the lower of (a) the loan level for the crop, or (b) the higher of the prevailing world market price or the minimum loan repayment level. The minimum loan repayment levels were established at 50 percent of the loan level for the 1986 and 1987 crops; 60 percent of the loan level for the 1988 crop; and 70 percent for the 1989 through 1995 crops. The minimum loan repayment level has been eliminated effective for 1996-crop loans, and loans are repayable at the lower of the loan level or the prevailing world price.

Source: Farm Service Agency, USDA.

Appendix table 20--Rough rice: Average price received by farmers by month and marketing year, 1983/84-2000/01 1/

Item	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
					$/cwt				
Month:									
August	8.41	8.22	7.86	4.02	3.82	7.49	7.41	6.66	7.16
September	8.48	8.17	7.55	3.86	4.34	6.97	7.59	6.21	7.67
October	8.80	8.08	7.73	3.83	6.25	6.85	7.41	6.02	7.65
November	8.80	8.13	7.84	3.90	7.53	6.81	7.03	6.29	7.84
December	8.66	8.08	7.71	3.74	7.64	6.68	7.05	6.13	7.98
January	8.57	8.09	7.90	3.55	7.93	6.58	7.44	6.39	7.84
February	8.85	7.72	7.86	3.84	9.37	6.67	7.57	6.75	7.97
March	8.63	8.17	7.60	3.62	9.22	6.60	7.55	7.07	7.78
April	8.49	8.20	5.32	3.63	8.92	6.74	7.41	7.43	7.46
May	8.24	7.91	4.52	3.71	7.97	6.78	7.28	7.44	7.18
June	8.20	7.83	4.04	3.62	7.69	7.05	7.18	7.43	6.97
July	8.18	7.54	3.86	3.49	7.94	7.45	7.05	7.21	6.99
Season average price:									
12 months 1/	8.57	8.04	6.53	3.75	7.27	6.83	7.35	6.70	7.58
5 months 2/	8.63	8.14	7.73	3.87	5.71	6.84	7.24	6.25	7.64
State: 3/									
Arkansas	9.18	8.51	6.70	3.68	7.60	6.90	7.46	6.75	7.69
California	6.96	6.43	5.33	3.18	6.72	6.15	6.27	5.93	6.65
Louisiana	8.90	8.20	7.24	4.03	7.65	6.90	7.81	6.73	7.67
Mississippi	9.53	8.88	7.10	3.91	7.90	7.02	7.57	6.99	8.48
Missouri	9.49	8.70	7.05	3.57	7.41	7.22	7.54	7.21	7.81
Texas	9.97	8.90	7.38	4.22	8.07	7.24	8.02	7.41	8.15
Type:									
Long grain	9.36	8.66	6.75	3.82	7.77	6.96	7.59	6.94	7.83
Medium & short grain	7.13	6.66	5.87	3.55	6.36	6.47	6.71	6.19	7.00

Item	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00 4/	2000/01 5/
					$/cwt				
Month:									
August	6.60	5.14	6.87	7.77	10.10	9.94	9.01	7.62	5.60
September	6.41	5.16	6.82	8.01	10.00	9.92	9.42	6.88	5.72
October	6.40	6.01	6.52	8.84	9.66	10.00	9.31	6.23	6/ 5.86
November	6.40	7.94	6.63	9.21	9.41	9.82	9.02	6.11	
December	6.38	8.78	6.60	9.45	9.82	9.77	9.10	6.19	
January	6.35	8.92	6.83	9.36	9.95	9.57	9.09	6.03	
February	6.06	9.99	6.74	9.19	10.10	9.75	9.02	5.98	
March	5.63	10.10	6.67	9.20	10.20	9.67	8.93	5.82	
April	5.50	9.80	6.75	9.35	10.30	9.40	8.49	5.86	
May	5.23	9.90	6.87	9.73	10.20	9.38	8.21	5.56	
June	5.02	8.76	7.06	9.77	9.90	9.58	8.25	5.59	
July	4.90	7.69	7.19	9.81	10.00	9.58	8.26	5.47	
Season average price:									
12 months 1/	5.89	7.98	6.78	9.15	9.96	9.70	8.89	6.11	5.75-6.25
5 months 2/	6.44	6.73	6.65	8.62	9.74	9.83	NA	NA	NA
State: 3/									
Arkansas	5.93	7.97	6.52	9.14	10.20	9.87	8.87	6.00	NA
California	5.64	8.27	6.97	8.79	7.91	7.95	9.19	6.40	NA
Louisiana	5.88	7.65	6.71	9.09	10.60	10.20	8.87	5.90	NA
Mississippi	5.82	8.37	7.00	9.25	10.50	10.40	8.99	5.25	NA
Missouri	5.91	8.03	6.72	9.06	10.30	10.00	8.75	6.10	NA
Texas	6.17	7.69	7.12	9.73	10.80	10.90	9.32	5.65	NA
Type:									
Long grain	5.87	7.93	6.87	9.37	10.60	10.20	10.20	NA	NA
Medium & short grain	5.91	8.09	6.70	8.82	8.37	8.52	8.52	NA	NA

NA = Not available.

1/ August 1 to July 31 marketing year. 2/ First 5 months of marketing year--August-December. 3/ Marketing year for Arkansas and Mississippi--August-July, California--October-September, Louisiana and Texas--July-June. 4/ State prices are from the July 2000 Annual *Agricultural Price Summary*. Grain type prices are from the January 30, 2000, *Agricultural Prices*. 5/ Season-average farm price is from the November 9, 2000, WASDE. 6/ Preliminary.

Source: *Agricultural Prices*, National Agricultural Statistics Service, USDA.

Appendix table 21--Milled rice: Average price, f.o.b. mills, at selected milling centers, 1976/77-2000/01 1/

Year and type	Aug.	Sept.	Oct.	Nov. 4/	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Simple average
						$/cwt, bagged							
						Southwest Louisiana							
Long grain 2/:													
1976/77	14.70	13.85	14.00	13.75	13.60	13.25	13.50	13.95	15.65	16.45	16.25	16.25	14.60
1977/78	15.95	16.20	17.75	22.10	24.15	24.00	24.00	23.75	23.50	22.00	21.50	20.40	21.28
1978/79	18.75	15.75	16.15	16.25	16.40	16.30	16.75	18.60	21.50	21.50	21.50	21.50	18.41
1979/80	21.50	21.50	22.05	22.50	21.00	20.60	22.50	24.30	24.00	23.25	21.80	20.90	22.16
1980/81	20.75	22.00	23.40	25.00	26.75	27.00	27.25	27.70	28.25	28.00	27.90	27.50	25.96
1981/82	26.40	24.30	23.25	21.90	20.75	19.80	18.60	18.00	17.55	17.60	17.20	17.00	20.20
1982/83	17.50	17.40	17.50	17.55	18.40	18.35	17.50	17.50	18.50	18.50	18.60	18.75	18.00
1983/84	19.40	19.75	19.35	19.50	19.50	19.50	19.25	19.25	19.25	19.25	19.25	19.25	19.38
1984/85	18.25	18.25	17.60	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	17.75	17.99
1985/86	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	15.50	12.69	12.75	12.25	16.10
1986/87	10.63	10.25	10.25	9.94	10.13	10.13	9.88	9.93	10.38	10.44	10.50	10.50	10.25
1987/88	10.76	12.69	17.94	19.90	19.50	20.38	24.45	24.50	24.00	20.25	18.69	17.88	19.25
1988/89	16.80	16.06	14.50	14.50	14.00	14.00	14.19	13.81	13.69	15.32	15.50	16.45	14.90
1989/90	16.38	15.94	15.56	14.97	14.63	15.33	15.63	15.38	15.73	15.84	15.63	15.30	15.53
1990/91	14.69	13.94	13.75	13.94	14.00	14.15	15.44	15.75	16.25	16.50	17.25	16.95	15.22
1991/92	16.38	16.48	16.56	17.13	17.31	17.31	17.28	16.56	16.44	15.69	15.10	15.19	16.45
1992/93	14.95	14.75	14.69	14.45	14.17	13.38	13.00	12.60	12.13	11.88	11.75	11.75	13.29
1993/94	12.05	12.59	15.71	23.75	26.25	26.25	24.88	23.44	22.75	21.00	17.50	16.13	20.19
1994/95	14.30	14.63	14.15	14.00	13.25	13.35	13.75	13.88	13.88	15.03	17.03	17.28	14.54
1995/96	17.25	17.81	20.25	19.88	19.00	18.55	18.44	18.19	18.60	19.50	19.50	19.70	18.89
1996/97	20.75	20.70	20.13	19.75	19.75	19.88	20.44	20.50	20.50	20.50	20.70	20.50	20.34
1997/98	20.06	19.40	18.94	19.25	19.15	19.00	19.00	18.55	18.38	18.31	18.50	18.50	18.92
1998/99	18.35	17.50	17.50	17.63	17.63	17.50	17.06	16.52	16.13	15.56	15.13	14.91	16.79
1999/00	14.68	14.38	14.00	13.85	13.58	13.00	12.69	12.63	12.31	11.88	11.47	11.43	12.99
2000/01	11.69	11.91	12.38	12.66									
						Houston, Texas							
Long grain 2/:													
1976/77	15.50	14.50	14.75	14.80	14.10	13.85	13.90	14.00	15.45	16.25	16.25	16.25	14.97
1977/78	16.05	16.50	18.30	22.60	24.15	25.00	25.00	24.10	23.25	22.10	21.75	21.50	21.69
1978/79	19.00	16.50	16.60	16.20	16.35	16.30	16.60	18.20	21.00	21.00	21.00	21.00	18.31
1979/80	21.10	21.25	22.30	22.10	21.10	20.10	22.75	24.80	24.10	23.00	21.00	21.00	22.05
1980/81	21.00	21.70	23.10	24.75	26.55	26.55	25.75	27.10	27.75	28.00	27.40	27.00	25.55
1981/82	25.00	24.85	23.50	22.60	22.00	21.75	20.20	19.20	19.00	19.00	18.75	17.75	21.13
1982/83	18.25	18.75	18.00	18.00	18.00	19.00	19.00	19.00	19.00	19.00	19.10	19.40	18.71
1983/84	19.50	19.67	20.00	20.00	20.00	20.20	20.25	20.25	20.10	19.50	19.50	19.50	19.87
1984/85	19.38	18.69	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.80
1985/86	18.63	18.25	18.25	18.25	18.25	17.75	17.50	17.30	17.25	13.75	13.60	13.00	16.82
1986/87	13.00	13.00	13.00	13.00	13.00	11.13	10.50	10.50	10.50	10.50	10.50	10.50	11.59
1987/88	10.50	11.90	19.60	21.00	21.00	21.00	23.92	24.06	24.00	21.20	20.50	20.50	19.93
1988/89	18.20	16.00	15.25	15.00	15.00	15.00	15.00	15.00	15.00	15.13	15.50	16.50	15.55
1989/90	16.50	16.50	16.50	16.00	15.67	15.50	15.69	16.25	16.25	16.25	16.25	16.25	16.13
1990/91	15.81	14.50	14.50	14.50	14.50	14.50	16.00	16.00	16.00	16.50	17.00	17.00	15.57
1991/92	17.00	17.00	16.63	17.00	17.67	17.50	17.50	17.50	17.50	17.25	16.70	16.50	17.15
1992/93	16.50	16.50	16.50	16.10	15.75	15.25	14.92	15.00	15.00	14.31	13.60	13.50	15.24
1993/94	13.50	13.50	16.13	23.45	25.50	25.50	25.50	24.88	23.25	21.40	19.25	17.25	20.76
1994/95	15.80	15.50	13.90	13.75	13.75	13.75	13.75	13.75	13.75	14.33	16.38	17.90	14.69
1995/96	17.75	18.13	20.25	20.50	19.50	19.10	18.56	18.25	18.70	19.69	19.75	19.75	19.16
1996/97	20.94	20.75	20.44	19.94	19.75	20.06	21.19	21.75	21.75	21.75	21.75	21.38	20.95
1997/98	21.00	20.55	19.75	19.75	19.75	19.75	19.75	19.05	19.00	19.00	19.00	19.00	19.61
1998/99	18.85	18.63	18.25	18.50	18.50	18.44	18.22	18.07	17.75	17.31	17.05	17.00	18.05
1999/00	16.48	16.00	16.00	15.80	15.75	15.55	15.25	15.00	14.84	14.48	14.38	14.43	15.33
2000/01	14.50	14.56	14.95	15.00									

See footnotes at end of table.

Continued--

Appendix table 21--Milled rice: Average price, f.o.b. mills, at selected milling centers, 1976/77-2000/01 1/--continued

Year and type	Aug.	Sept.	Oct.	Nov. 4/	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Simple average
						$/cwt, bagged							
						Arkansas							
Long grain 2/:													
1976/77	16.00	15.25	15.20	15.20	14.50	14.00	14.00	14.25	15.45	16.75	16.75	16.50	15.32
1977/78	16.15	15.95	19.00	23.10	25.00	25.00	25.00	23.50	23.50	23.15	21.60	20.55	21.79
1978/79	19.55	17.10	17.00	17.00	17.00	16.70	16.90	18.75	21.50	21.50	21.50	21.50	18.83
1979/80	21.50	23.50	24.00	23.00	21.35	20.10	22.40	24.00	23.75	22.25	21.50	20.50	22.32
1980/81	20.60	22.00	23.40	24.90	26.10	26.10	25.75	26.70	27.50	28.00	27.90	27.50	25.54
1981/82	26.40	24.30	23.05	22.30	20.85	19.60	19.00	18.20	17.55	17.40	17.20	16.60	20.20
1982/83	17.10	17.00	17.00	17.55	18.40	18.35	17.50	17.50	18.00	18.40	18.50	18.50	17.82
1983/84	18.50	18.50	18.85	19.00	19.00	19.00	18.50	18.50	18.50	18.50	18.50	18.50	18.65
1984/85	18.38	18.25	18.25	18.25	18.13	18.00	18.00	17.94	17.75	17.81	17.94	17.75	18.04
1985/86	17.75	17.50	17.38	17.25	17.25	17.25	17.25	17.25	15.50	13.25	13.10	12.50	16.10
1986/87	12.00	11.55	11.75	11.88	11.88	11.88	11.88	11.88	11.59	11.50	11.75	11.75	11.77
1987/88	11.95	13.56	18.81	20.50	20.17	20.88	24.00	24.06	24.00	22.50	20.81	19.00	20.02
1988/89	18.30	16.88	15.13	15.25	15.08	14.80	14.75	14.75	14.88	15.57	15.80	17.04	15.69
1989/90	17.19	16.63	15.94	15.69	15.75	15.90	16.00	16.00	16.00	16.00	16.00	16.00	16.09
1990/91	15.38	14.75	14.50	14.63	14.75	14.75	15.75	15.75	15.88	16.81	17.25	17.25	15.62
1991/92	16.83	16.55	16.50	17.38	17.29	17.25	17.25	17.00	16.91	16.22	15.70	15.50	16.70
1992/93	15.65	15.41	15.38	15.38	14.92	13.81	13.58	13.50	13.50	12.94	12.75	12.75	14.13
1993/94	13.00	13.25	16.13	23.85	25.00	25.00	24.50	23.63	22.69	20.20	18.00	15.63	20.07
1994/95	14.30	14.25	14.05	13.63	13.50	13.50	13.63	13.50	13.69	14.70	17.00	17.40	14.43
1995/96	17.50	18.13	20.25	19.75	19.50	18.85	18.38	18.13	18.70	19.75	19.75	19.90	19.05
1996/97	21.00	21.00	20.50	19.94	19.75	20.31	21.25	21.50	21.50	21.31	21.20	20.63	20.82
1997/98	20.19	19.60	19.13	19.25	19.25	19.25	19.13	18.52	18.50	18.50	18.70	18.75	19.06
1998/99	18.60	17.75	17.75	17.88	17.88	17.81	17.31	16.48	16.22	15.66	15.15	15.13	16.97
1999/00	14.70	14.38	14.22	13.88	13.50	13.25	12.88	12.33	11.94	11.70	11.13	11.30	12.93
2000/01	11.75	12.22	12.85	12.69									
						Southwest Louisiana							
Medium grain 2/:													
1976/77	13.70	12.85	13.00	12.30	11.90	11.25	11.70	12.20	14.10	15.60	15.50	15.25	13.28
1977/78	14.60	14.95	16.30	20.75	21.85	21.50	21.50	21.00	20.50	19.00	18.75	18.50	19.10
1978/79	16.90	14.50	14.50	14.50	14.65	14.15	14.00	14.85	16.50	16.50	16.50	17.50	15.42
1979/80	19.40	20.00	20.40	20.50	19.60	20.00	22.60	23.80	24.00	23.60	21.80	20.90	21.38
1980/81	20.50	20.80	21.60	24.40	26.40	27.00	27.10	27.50	27.55	28.00	28.00	27.75	25.55
1981/82	26.40	24.20	22.90	21.15	20.00	18.75	17.75	16.10	15.95	16.40	16.20	16.00	19.32
1982/83	16.50	16.50	16.45	16.65	17.75	17.30	16.50	16.50	16.50	17.10	17.50	17.50	16.90
1983/84	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50
1984/85	16.00	16.00	15.50	15.50	15.50	15.50	15.50	16.00	16.20	16.31	16.50	16.25	15.90
1985/86	16.00	16.00	16.00	16.00	16.00	16.00	15.75	15.50	14.56	11.94	12.00	10.67	14.70
1986/87	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.50	11.25	11.13	11.21	11.18	10.44
1987/88	11.07	12.44	16.75	17.35	16.50	17.75	19.65	20.13	20.04	17.80	17.38	16.69	16.96
1988/89	16.40	16.19	14.50	14.50	14.00	13.90	13.75	13.50	13.44	14.46	14.63	15.67	14.58
1989/90	15.56	15.19	14.80	14.28	14.04	14.78	15.13	15.13	15.55	15.72	15.63	15.30	15.09
1990/91	14.75	13.88	13.56	13.50	13.50	13.65	14.94	15.06	15.88	16.25	16.50	16.35	14.82
1991/92	15.83	16.00	16.00	16.00	16.00	16.00	15.88	15.50	15.50	15.13	14.50	14.50	15.57
1992/93	14.40	14.00	14.50	14.05	13.83	13.38	13.00	12.75	12.38	11.94	12.00	12.00	13.19
1993/94	12.25	12.44	15.63	21.95	24.00	24.00	23.75	23.88	24.00	23.70	22.00	20.00	20.63
1994/95	18.30	15.88	15.00	15.00	14.00	13.80	14.16	14.38	14.38	14.70	14.75	14.55	14.91
1995/96	15.44	17.50	20.25	20.13	20.00	20.00	19.88	19.25	19.13	19.38	19.40	19.50	19.16
1996/97	19.50	19.50	19.25	19.25	19.00	18.81	19.19	19.25	19.25	19.25	18.40	19.00	19.14
1997/98	18.25	18.35	18.63	19.00	19.00	19.00	19.00	18.20	18.00	18.13	18.50	18.50	18.55
1998/99	18.35	18.75	19.00	19.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	19.59
1999/00	18.60	17.50	14.88	14.70	14.67	14.35	14.00	13.83	13.75	13.40	12.50	12.63	14.57
2000/01	12.34	12.48	12.41	12.38									

See footnotes at end of table.

Continued--

Appendix table 21--Milled rice: Average price, f.o.b. mills, at selected milling centers, 1976/77-2000/01 1/--continued

Year and type	Aug.	Sept.	Oct.	Nov. 4/	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Simple average
						$/cwt, bagged							
						Arkansas							
Medium grain 2/:													
1976/77	15.10	14.25	14.20	14.20	13.40	13.25	13.25	13.40	14.40	15.75	15.75	15.75	14.39
1977/78	15.30	15.20	17.75	21.95	23.50	23.50	23.30	22.50	22.25	21.70	20.40	19.50	20.57
1978/79	18.95	16.90	16.00	16.00	15.65	15.20	15.40	16.25	17.00	17.00	16.50	18.70	16.63
1979/80	19.50	22.25	22.50	22.40	21.50	21.40	22.60	24.00	23.90	22.25	21.55	20.50	22.03
1980/81	20.60	21.30	22.50	24.00	25.75	26.10	25.75	26.70	27.40	28.00	28.00	27.50	25.30
1981/82	26.40	24.10	22.95	21.30	19.85	18.60	17.90	17.05	16.50	16.40	15.90	15.60	19.38
1982/83	16.10	16.50	16.10	16.65	17.75	17.10	16.50	16.50	16.60	17.10	17.50	17.50	16.83
1983/84	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.15	17.00	17.00	17.00	17.35
1984/85	16.88	16.69	16.35	16.22	16.13	15.75	16.25	16.44	16.30	16.25	16.25	16.13	16.30
1985/86	16.00	16.00	16.25	16.50	16.50	16.50	16.50	16.27	14.81	12.38	12.50	12.50	15.23
1986/87	12.33	11.60	12.00	12.00	12.00	12.00	12.63	12.63	12.63	12.34	12.25	12.25	12.22
1987/88	12.25	12.88	16.69	18.00	17.83	18.44	20.50	20.50	20.50	19.00	18.88	18.00	17.79
1988/89	17.30	16.25	14.75	15.00	15.00	14.70	14.75	14.75	14.81	15.25	15.44	16.92	15.41
1989/90	17.19	16.63	15.94	15.44	15.25	15.40	15.50	15.50	15.50	15.50	15.50	15.50	15.74
1990/91	15.13	14.75	14.50	14.50	14.75	14.75	15.75	15.75	15.83	16.63	17.00	17.00	15.53
1991/92	16.58	16.10	16.09	16.69	16.63	16.63	16.63	16.34	16.38	15.81	15.35	15.25	16.21
1992/93	15.50	15.41	15.38	15.38	14.92	13.81	13.58	13.70	13.75	13.38	13.25	13.25	14.28
1993/94	13.25	13.50	16.06	23.90	25.00	25.00	24.88	24.63	24.19	23.70	21.50	18.00	21.13
1994/95	15.90	15.44	14.98	14.13	14.00	13.80	13.78	13.75	13.94	14.25	14.69	14.95	14.47
1995/96	15.63	16.94	20.00	19.69	19.50	19.50	19.38	18.75	19.13	20.13	20.13	20.15	19.08
1996/97	20.13	19.95	18.75	18.50	18.50	18.50	18.75	19.50	19.38	19.06	19.00	18.25	19.02
1997/98	18.00	18.20	18.56	18.50	18.50	18.50	18.50	17.70	17.50	17.56	18.05	18.13	18.14
1998/99	18.13	18.69	19.00	19.00	19.38	19.50	19.38	19.00	19.00	19.00	19.25	19.13	19.04
1999/00	18.70	17.50	15.50	15.25	14.75	14.50	14.50	14.50	14.38	13.75	13.38	13.43	15.01
2000/01	13.50	13.06	12.50	12.56									
						California							
Medium grain 3/:													
1976/77	16.80	16.80	16.60	16.60	16.60	16.60	16.60	16.60	16.60	17.00	17.30	17.40	16.79
1977/78	17.40	17.40	18.10	20.55	23.00	23.60	23.60	23.60	23.60	23.60	23.60	23.60	21.80
1978/79	21.50	20.55	20.10	19.75	19.75	19.75	18.25	18.40	19.50	20.75	21.00	21.00	20.03
1979/80	22.50	23.00	23.00	23.00	23.00	23.00	25.10	24.70	23.00	23.00	23.00	23.00	23.28
1980/81	23.00	23.20	24.75	25.00	26.75	30.00	30.00	30.00	30.00	30.00	30.00	30.00	27.73
1981/82	30.00	27.60	24.50	22.80	21.40	20.50	19.10	18.45	16.90	16.90	16.70	16.40	20.94
1982/83	16.25	16.10	15.55	15.50	15.50	16.50	16.00	16.00	16.00	15.90	15.95	15.75	15.92
1983/84	15.65	15.50	15.70	15.50	15.50	15.50	15.50	15.38	15.25	15.25	15.25	15.25	15.44
1984/85	15.25	15.25	15.25	15.25	15.25	15.25	15.25	15.25	15.25	15.25	15.25	15.25	15.25
1985/86	15.25	15.60	16.00	15.94	15.94	16.00	15.81	15.75	15.75	15.50	15.25	15.25	15.67
1986/87	15.00	14.50	13.75	12.63	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.99
1987/88	12.50	13.30	16.13	16.83	17.00	16.90	18.50	18.50	18.50	18.00	18.00	17.97	16.84
1988/89	17.85	17.75	16.95	15.75	15.75	15.50	15.50	16.38	16.25	17.00	17.25	18.08	16.67
1989/90	18.44	18.25	17.60	16.56	16.00	15.75	15.75	15.69	15.45	14.81	14.94	15.25	16.21
1990/91	14.81	14.88	14.35	15.25	15.25	15.42	16.25	16.25	16.25	18.13	18.25	17.92	16.08
1991/92	17.63	17.50	17.00	17.81	18.00	18.00	18.06	18.25	18.25	18.25	18.35	18.50	17.97
1992/93	18.25	18.25	18.25	18.25	18.25	18.25	18.25	18.10	17.50	17.50	17.30	17.00	17.93
1993/94	16.80	16.22	16.25	19.00	22.50	22.50	22.75	23.63	26.75	27.50	26.75	24.25	22.08
1994/95	21.10	19.44	18.50	18.31	18.13	17.03	16.75	16.63	16.63	16.63	16.63	16.63	17.70
1995/96	17.06	18.13	20.40	21.00	23.00	23.25	22.44	22.13	21.90	21.50	21.50	20.75	21.09
1996/97	20.75	20.50	20.13	20.00	19.88	19.25	19.00	19.00	19.00	19.00	19.00	19.00	19.54
1997/98	19.00	19.00	19.00	19.00	19.00	18.81	18.75	18.25	18.00	18.00	18.70	19.00	18.71
1998/99	19.80	20.69	21.88	21.20	21.75	21.69	21.50	21.60	26.25	22.25	24.32	25.25	22.35
1999/00	25.10	24.50	22.38	20.60	20.75	20.75	20.75	20.75	20.75	20.75	20.75	20.55	21.53
2000/01	20.25	20.00	17.90	16.25									

See footnotes at end of table.

Continued--

Appendix table 21--Milled rice: Average price, f.o.b. mills, at selected milling centers, 1976/77-2000/01 1/--continued

Year and type	Aug.	Sept.	Oct.	Nov. 4/	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Simple average
						$/cwt, bagged							
						California							
Short grain 3/:													
1976/77	15.15	15.15	14.85	14.75	14.75	14.75	14.75	14.75	14.95	15.50	16.05	16.25	15.14
1977/78	16.25	16.25	16.65	19.20	22.00	22.00	22.00	22.00	22.00	22.00	22.00	22.00	20.36
1978/79	20.25	19.00	18.20	17.40	17.50	17.50	16.75	16.80	18.20	19.00	19.00	19.00	18.22
1979/80	20.50	21.00	21.00	21.00	21.00	21.00	23.00	23.00	23.00	23.00	23.00	23.00	21.96
1980/81	23.00	23.20	24.75	25.00	26.75	30.00	30.00	30.00	30.00	30.00	30.00	30.00	27.73
1981/82	30.00	28.25	25.75	23.90	22.00	22.00	20.25	19.50	18.25	18.25	18.25	18.10	22.04
1982/83	17.20	16.70	15.55	15.50	15.50	16.90	16.00	16.00	16.00	16.00	16.00	16.00	16.11
1983/84	15.80	15.50	15.70	15.50	15.50	15.50	15.50	15.38	15.25	15.25	15.25	15.25	15.45
1984/85	15.25	15.25	15.25	15.25	15.25	15.25	15.25	15.25	15.25	15.25	15.25	15.25	15.25
1985/86	15.25	15.60	16.00	15.94	15.94	16.00	15.81	15.75	15.75	15.50	15.25	15.25	15.67
1986/87	15.00	14.50	13.75	12.56	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.98
1987/88	12.50	13.30	16.13	16.83	17.00	16.90	18.50	18.50	18.50	18.00	18.00	18.00	16.85
1988/89	17.85	17.75	16.95	15.75	15.75	15.50	15.50	16.25	16.25	17.00	17.25	18.08	16.66
1989/90	18.19	18.25	17.60	16.56	16.00	15.60	15.75	15.69	15.45	14.81	14.94	15.25	16.17
1990/91	14.81	14.88	14.35	15.25	15.25	15.42	16.25	16.25	16.25	18.13	18.25	17.92	16.08
1991/92	17.63	17.40	17.00	17.81	18.00	18.00	18.06	18.25	18.25	18.25	18.25	18.25	17.93
1992/93	18.25	18.25	18.25	18.25	18.25	18.25	18.25	18.10	17.50	17.50	17.30	17.00	17.93
1993/94	16.80	16.22	16.25	19.00	22.50	22.50	22.75	23.63	26.75	27.50	26.75	24.25	22.08
1994/95	21.10	19.44	18.50	18.31	18.13	18.13	18.22	18.25	18.25	18.25	18.25	18.25	18.59
1995/96	18.75	20.13	21.80	23.00	24.17	24.75	24.75	23.63	23.50	23.50	23.50	22.00	22.79
1996/97	22.00	22.00	21.81	21.69	21.50	21.50	21.00	20.75	21.00	20.88	20.75	20.75	21.30
1997/98	20.75	20.75	20.75	20.75	20.75	20.56	20.50	19.80	19.50	19.50	20.20	20.50	20.36
1998/99	21.30	22.19	23.50	22.90	23.25	23.19	23.00	23.10	23.63	23.69	25.70	26.50	23.50
1999/00	26.50	26.00	23.63	21.60	21.75	21.75	21.75	21.75	21.75	21.75	21.75	21.55	22.63
2000/01	21.25	21.25	18.90	17.25									

1/ Monthly average of the midpoint for reported weekly low and high quotes. 2/ U.S. No. 2--broken not to exceed 4 percent. 3/ U.S. No. 1. 4/ Preliminary.

Source: Rice Market News, Agricultural Marketing Service, USDA.

Appendix table 22--Rice byproducts: Monthly average price, Southwest Louisiana, 1975/76-2000/01 1/

Year and type	Aug.	Sept.	Oct.	Nov. 2/	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Simple average
						$/cwt, bagged 3/							
Milled second head:													
1975/76	9.25	9.75	9.75	9.00	8.10	6.90	6.95	6.75	7.75	8.00	8.25	8.45	8.25
1976/77	7.00	6.80	7.05	6.80	6.75	6.15	6.20	6.25	6.50	6.95	7.25	7.25	6.75
1977/78	6.75	6.95	7.15	7.95	8.50	8.50	9.00	9.50	9.50	9.25	9.25	9.25	8.45
1978/79	8.90	8.50	8.50	8.50	8.50	8.15	7.90	8.00	8.25	8.25	8.25	8.25	8.35
1979/80	8.25	8.45	9.00	9.50	9.50	10.10	11.00	11.90	12.50	12.50	12.50	12.25	10.60
1980/81	11.05	10.70	11.00	11.15	12.45	12.90	12.75	13.55	13.40	14.45	14.55	14.10	12.65
1981/82	13.00	11.90	11.00	11.00	11.00	10.60	10.00	8.60	9.25	10.00	10.00	10.00	10.55
1982/83	10.00	9.75	9.75	9.75	9.75	9.75	9.75	9.75	9.75	9.75	9.75	9.75	9.75
1983/84	9.75	10.25	10.25	10.25	10.25	10.25	10.25	10.81	10.20	10.00	10.00	10.00	10.20
1984/85	8.50	8.75	8.80	8.00	8.00	8.00	9.00	9.19	9.25	10.00	10.25	10.25	9.00
1985/86	10.25	10.25	10.17	10.00	10.00	10.00	10.25	10.25	8.81	7.75	7.75	7.75	9.45
1986/87	7.75	7.75	7.75	7.63	7.75	7.75	7.75	7.70	7.63	7.63	5.83	5.63	7.40
1987/88	5.73	6.05	7.00	7.54	7.50	7.63	7.65	7.75	7.75	7.75	7.88	8.25	7.40
1988/89	8.15	8.13	8.50	8.00	8.00	8.00	10.06	9.73	10.01	10.70	10.63	10.40	9.15
1989/90	9.94	9.63	9.01	8.09	8.00	8.00	8.25	8.50	8.50	8.50	8.50	8.40	8.65
1990/91	7.75	7.50	7.50	7.50	7.50	7.50	7.88	7.50	8.40	8.63	9.00	9.15	8.00
1991/92	8.75	8.50	9.19	9.50	9.50	9.50	9.13	8.75	8.78	8.75	9.00	9.00	9.00
1992/93	9.00	9.00	8.91	8.88	8.75	8.38	7.38	7.75	7.63	7.43	7.35	7.35	8.15
1993/94	7.35	7.35	7.71	8.05	8.25	8.25	8.13	8.19	9.00	8.70	9.00	9.00	8.25
1994/95	9.30	9.50	9.50	9.50	9.50	9.55	9.88	10.25	10.25	10.25	10.25	10.65	9.85
1995/96	11.00	11.13	11.80	12.00	12.17	13.10	13.44	13.25	13.00	13.00	13.13	13.65	12.55
1996/97	13.75	13.75	14.25	14.33	14.50	15.19	15.25	15.25	15.00	14.75	14.55	14.50	14.59
1997/98	13.94	13.75	13.50	13.00	13.00	13.00	13.00	13.00	13.13	14.25	14.25	14.25	13.51
1998/99	14.25	14.25	14.25	13.50	13.38	13.31	13.13	13.00	12.50	12.06	10.40	10.00	12.84
1999/00	10.00	9.63	8.75	8.75	8.50	8.50	8.50	8.50	8.38	7.55	7.50	7.70	8.52
2000/01	8.00	8.00	8.00	7.63									
						$/ton 4/							
Rice bran, f.o.b. mills:													
1975/76	64.00	68.00	60.60	69.40	87.00	92.50	71.50	68.00	62.00	54.85	60.50	62.50	68.40
1976/77	68.50	71.00	68.00	73.10	73.30	71.20	74.75	66.10	54.00	51.75	45.50	44.50	63.45
1977/78	42.10	33.10	31.90	51.90	62.50	58.00	53.25	51.90	38.75	41.50	60.90	61.60	48.95
1978/79	47.60	34.40	38.50	64.50	72.85	67.50	65.60	52.80	38.90	41.60	52.50	62.50	53.25
1979/80	58.00	61.50	79.80	85.90	88.85	94.15	60.75	51.60	52.00	62.75	65.50	66.75	68.95
1980/81	76.90	84.70	86.40	95.50	N.Q.	101.90	73.60	59.10	57.50	60.00	71.60	69.15	76.05
1981/82	51.50	49.60	52.75	59.90	73.65	82.50	64.35	50.40	55.50	57.50	61.10	NQ	59.90
1982/83	52.80	53.00	54.00	77.65	85.00	77.50	52.15	47.25	59.65	70.30	61.25	NQ	62.80
1983/84	62.14	70.00	94.00	108.35	120.85	98.50	57.50	50.00	67.50	60.00	60.00	59.50	75.70
1984/85	69.17	49.50	45.13	53.75	68.75	85.00	67.50	53.25	40.50	45.67	45.00	47.50	55.90
1985/86	43.33	40.00	20.00	42.50	65.00	88.75	65.00	51.67	NQ	25.75	20.00	17.50	43.60
1986/87	16.25	23.80	26.50	34.00	53.13	50.00	35.63	28.38	23.50	20.63	18.80	17.00	29.00
1987/88	20.60	29.25	46.50	54.90	53.33	68.13	49.63	47.25	60.00	40.90	47.25	85.00	50.25
1988/89	64.00	58.13	63.50	63.75	70.67	71.40	52.25	64.13	54.63	45.71	47.00	49.17	58.70
1989/90	55.75	57.38	60.25	69.00	76.17	84.40	51.88	49.63	58.00	72.50	75.25	75.90	65.50
1990/91	72.00	52.38	51.50	51.88	55.67	66.70	51.75	48.63	56.30	46.75	50.25	57.50	55.10
1991/92	42.83	36.80	43.00	54.50	72.00	75.00	56.50	44.63	41.38	40.88	42.20	45.38	49.60
1992/93	42.80	38.25	41.13	60.70	75.50	79.25	52.83	51.50	49.38	31.50	40.00	43.88	50.55
1993/94	37.10	41.88	49.25	62.50	76.00	87.40	93.50	76.71	56.38	59.60	58.88	48.25	62.30
1994/95	52.30	49.13	46.30	49.38	52.00	53.50	41.38	34.13	31.63	31.20	34.88	45.70	43.45
1995/96	60.63	55.75	68.00	86.00	105.67	123.00	103.13	90.75	106.60	111.00	88.63	103.25	91.85
1996/97	95.75	93.00	85.13	82.25	94.00	101.63	80.13	57.70	57.25	64.00	78.50	67.50	79.74
1997/98	50.50	45.80	62.00	80.63	79.50	72.50	71.63	63.10	65.13	38.25	45.60	64.63	61.61
1998/99	53.20	32.50	32.63	32.60	48.00	60.25	45.50	30.40	39.63	37.00	28.40	26.25	38.86
1999/00	27.40	23.13	36.50	47.40	53.33	59.00	49.75	46.83	43.00	42.30	42.25	36.90	42.32
2000/01	25.38	25.88	36.00	38.75									

See footnotes at end of table.

Continued--

Appendix table 22--Rice byproducts: Monthly average price, Southwest Louisiana, 1975/76-2000/01 1/--continued

Year and type	Aug.	Sept.	Oct.	Nov. 2/	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Simple average
							$/ton 4/						
Rice millfeed, f.o.b. mills:													
1975/76	24.65	32.20	30.50	28.25	40.25	48.10	41.25	28.10	17.50	17.85	23.70	33.35	30.50
1976/77	23.90	22.10	22.50	30.90	38.35	25.25	25.25	19.10	14.50	11.25	11.00	9.50	21.15
1977/78	9.85	8.90	7.00	15.50	18.50	15.75	12.40	12.40	9.90	11.70	15.50	15.50	12.75
1978/79	13.25	6.40	8.10	19.50	24.15	24.10	23.00	18.15	8.50	N.Q.	N.Q.	17.15	16.25
1979/80	20.35	19.25	25.90	30.25	40.65	45.65	18.15	13.50	11.00	11.25	11.10	15.25	21.85
1980/81	29.50	37.40	35.00	36.90	48.40	54.00	15.00	11.00	14.95	17.00	27.00	31.40	29.80
1981/82	22.60	10.90	17.75	22.00	30.65	29.75	16.50	13.15	13.40	15.40	19.40	N.Q.	19.25
1982/83	16.00	16.75	15.25	26.15	35.00	45.00	13.50	15.25	19.35	23.60	22.10	23.00	22.60
1983/84	24.00	25.38	33.30	42.13	61.67	66.25	22.50	24.75	31.20	21.25	25.50	27.20	33.75
1984/85	23.50	18.75	18.63	19.50	23.75	31.75	31.50	22.00	17.00	16.88	15.00	14.50	21.05
1985/86	13.00	13.00	8.00	15.38	21.88	35.38	NQ	19.50	20.83	8.50	5.00	4.25	15.00
1986/87	5.13	10.00	10.00	11.25	15.00	13.75	8.00	6.13	4.50	3.50	3.60	4.25	7.95
1987/88	8.50	10.38	22.25	22.90	21.50	28.25	17.38	18.83	22.50	16.00	19.50	40.00	20.70
1988/89	21.50	17.88	18.60	15.75	24.00	23.60	20.00	19.00	19.33	15.50	16.00	16.00	18.95
1989/90	17.13	16.75	14.00	22.63	23.67	27.70	14.50	14.63	16.70	23.63	25.00	25.00	20.10
1990/91	28.63	19.00	19.13	19.50	21.50	24.90	17.00	18.50	17.80	13.75	14.25	16.30	19.20
1991/92	12.17	11.20	13.38	19.88	39.50	37.13	17.50	14.63	14.75	14.13	14.90	16.13	18.80
1992/93	14.15	13.63	14.50	18.00	30.33	37.13	23.83	18.70	17.00	8.88	8.80	8.75	17.80
1993/94	10.50	11.75	12.63	19.70	26.67	44.00	50.63	40.63	27.13	26.20	25.88	21.13	26.40
1994/95	19.60	18.25	17.50	17.75	19.17	20.20	16.38	13.00	13.25	12.40	12.25	13.50	16.10
1995/96	15.63	15.38	20.70	35.13	48.67	66.00	50.50	35.88	42.70	43.50	33.75	41.38	37.45
1996/97	43.50	44.00	43.00	41.13	42.70	45.88	41.00	28.30	20.25	25.63	29.80	22.50	35.64
1997/98	20.75	20.00	24.88	29.50	31.60	32.00	30.50	26.20	24.63	15.00	14.00	18.13	23.93
1998/99	17.60	14.63	10.75	10.50	13.31	20.13	18.25	12.00	16.88	11.63	9.00	8.13	13.57
1999/00	6.30	6.50	8.00	12.00	15.50	15.00	14.13	11.50	10.38	10.10	10.13	8.80	10.70
2000/01	7.00	7.75	9.90	10.50									

NQ = Not quoted.

1/ Monthly average of the midpoint for reported weekly low and high quotes. 2/ November 2000 data are preliminary. 3/ U.S. No. 4 or better. 4/ Prices quoted as bulk.

Source: Rice Market News, Agricultural Marketing Service, USDA.

Appendix table 23--Brewers' prices: Monthly average price for Arkansas brewers' rice and New York brewers' corn grits, 1974/75-2000/01

Year & State	Aug.	Sept.	Oct.	Nov. 1/	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Simple average
							$/cwt						
Arkansas 2/:													
1974/75	8.50	9.10	9.50	9.50	9.50	11.25	9.95	9.40	9.00	8.75	8.00	7.35	9.15
1975/76	7.10	7.40	7.50	6.60	6.20	6.25	5.75	5.80	5.80	5.85	5.85	5.75	6.30
1976/77	5.75	5.75	5.75	5.75	5.65	5.40	5.10	5.10	5.60	6.00	6.00	5.50	5.60
1977/78	5.50	5.50	5.50	5.50	6.50	6.90	8.00	9.55	9.10	9.00	9.00	8.70	7.40
1978/79	7.40	7.10	7.50	7.40	7.10	6.80	6.75	6.60	6.75	6.90	7.00	7.00	7.05
1979/80	7.05	7.30	7.90	8.25	8.50	9.00	9.40	9.65	9.75	9.75	9.75	9.75	8.85
1980/81	9.75	9.75	9.80	10.10	10.00	10.00	10.00	10.00	10.00	10.00	9.60	9.50	9.90
1981/82	9.30	9.00	8.55	8.25	8.25	8.20	7.60	7.40	7.30	7.00	7.00	6.80	7.90
1982/83	6.55	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
1983/84	6.50	6.75	7.00	7.00	6.90	6.76	6.63	6.50	6.62	6.70	6.85	7.10	6.80
1984/85	7.25	7.30	7.30	7.30	7.30	7.30	7.30	7.30	7.15	7.00	6.81	6.75	7.15
1985/86	6.75	6.70	6.50	6.50	6.50	6.25	6.00	6.00	5.75	5.50	5.50	5.50	6.10
1986/87	5.19	5.00	4.81	4.75	4.63	4.63	4.20	4.20	4.20	4.20	4.11	3.75	4.45
1987/88	4.00	4.25	6.19	6.28	6.10	6.10	6.97	7.25	7.25	6.93	7.48	8.38	6.45
1988/89	8.50	8.69	8.75	8.75	8.75	8.60	10.43	10.20	10.40	11.00	11.00	10.54	9.65
1989/90	9.64	9.00	8.50	7.97	7.75	7.75	7.75	7.43	6.80	6.60	6.60	7.05	7.75
1990/91	7.01	6.11	6.10	6.45	6.23	6.04	6.65	7.10	7.93	8.00	8.00	8.00	7.00
1991/92	8.00	8.40	8.70	9.00	9.00	8.88	8.50	8.66	8.25	8.25	8.25	8.25	8.50
1992/93	8.25	8.25	8.25	7.70	7.29	7.19	6.96	6.88	6.41	6.25	6.00	6.04	7.10
1993/94	6.00	6.02	6.49	6.73	6.88	6.88	6.98	7.39	7.50	7.20	7.19	7.25	6.90
1994/95	7.35	7.22	7.15	7.25	7.25	7.80	9.59	8.94	8.29	8.16	8.56	9.71	8.10
1995/96	10.22	10.09	9.78	10.25	10.96	12.80	12.66	12.59	12.80	12.66	12.59	12.80	11.70
1996/97	12.88	13.13	13.50	14.56	15.50	15.47	15.19	15.03	14.84	14.41	14.40	14.16	14.40
1997/98	13.91	13.49	11.91	10.88	11.31	11.41	12.01	13.13	13.75	14.25	14.32	14.34	12.89
1998/99	14.18	13.75	13.25	13.10	12.88	12.88	13.00	12.75	11.56	10.84	8.80	8.06	12.09
1999/00	6.84	6.67	6.88	7.03	7.21	7.88	8.25	7.71	6.94	6.20	6.13	6.05	6.98
2000/01	6.00	6.00	5.65	5.38									
New York 3/:													
1974/75	9.40	9.28	10.41	9.42	9.48	9.17	8.87	8.64	8.69	8.49	9.06	9.23	9.20
1975/76	9.88	9.77	8.77	8.28	8.17	7.94	8.04	8.46	8.76	8.95	9.14	9.20	9.80
1976/77	8.97	8.91	8.28	7.62	7.80	7.80	7.92	8.05	8.02	7.72	7.59	7.11	8.00
1977/78	7.06	6.80	6.99	7.18	7.27	7.16	7.32	7.39	7.94	8.13	8.38	8.00	7.45
1978/79	7.63	7.47	7.43	7.59	7.76	8.10	NA	NA	NA	NA	NA	NA	7.65
1979/80	NA	9.65	9.89	9.69	9.99	9.90	10.10	10.05	10.10	10.24	10.27	11.20	10.10
1980/81	11.60	12.11	12.26	12.74	12.42	12.44	12.60	12.64	12.72	12.42	12.57	12.85	12.45
1981/82	12.22	10.45	10.16	9.96	9.97	9.97	10.28	10.48	10.82	10.75	10.66	10.43	10.50
1982/83	9.91	9.75	9.60	9.74	9.78	10.07	10.52	10.82	11.35	11.32	11.58	12.06	10.55
1983/84	12.85	13.06	12.77	12.64	11.96	11.81	11.95	12.58	12.99	12.95	13.19	13.01	12.65
1984/85	12.90	12.64	11.49	11.33	11.03	11.20	11.50	11.86	11.42	11.45	11.54	11.46	11.65
1985/86	11.40	11.59	10.62	10.83	11.11	10.91	10.71	10.81	10.75	11.12	11.26	10.98	11.00
1986/87	10.30	9.84	9.85	9.84	9.46	9.40	9.20	9.42	9.60	10.02	9.97	9.48	9.70
1987/88	9.22	9.34	9.51	9.56	9.52	9.66	9.76	9.78	9.81	9.82	11.42	12.23	9.95
1988/89	11.67	11.50	11.56	11.37	11.54	11.47	11.32	11.56	11.37	11.99	11.47	11.54	11.55
1989/90	11.23	11.35	11.50	11.55	11.47	11.49	11.51	11.66	12.01	12.19	12.17	12.09	11.70
1990/91	11.83	11.61	11.62	11.63	11.60	11.61	11.71	11.70	11.78	11.52	11.39	11.29	11.60
1991/92	11.71	11.50	11.55	11.41	11.45	11.44	11.75	11.77	11.51	11.56	11.84	11.48	11.60
1992/93	11.25	11.30	11.21	11.29	11.25	11.20	11.18	11.44	11.65	11.63	11.49	11.77	11.40
1993/94	11.72	11.68	12.27	12.91	13.22	13.34	13.06	12.86	12.75	12.69	12.82	11.15	12.55
1994/95	11.05	11.08	11.07	11.06	11.11	11.18	11.18	11.27	11.31	11.36	11.73	11.99	11.30
1995/96	11.94	12.48	12.90	13.01	13.29	14.60	14.95	15.46	17.05	17.88	17.77	18.04	14.95
1996/97	19.31	17.95	14.78	14.37	13.77	13.97	14.28	14.61	14.53	14.26	13.97	13.79	14.97
1997/98	14.00	14.13	14.32	14.09	13.85	13.61	13.69	13.68	13.33	13.28	13.26	12.86	13.68
1998/99	12.21	12.17	12.48	12.66	12.50	12.72	12.83	13.06	12.81	12.77	12.79	12.31	12.61
1999/00	12.71	12.50	12.48	12.01	12.16	12.71	12.76	12.98	12.85	13.49	10.25	12.92	12.49
2000/01	12.21	12.51	13.19	13.73									

NA = Not available. 1/ November 2000 data are preliminary. 2/ Rice Marketing News, Agricultural Marketing Service, USDA. 3/ Milling and Baking News.

Appendix table 24--U.S. monthly retail prices, long grain milled white rice, 1980-2000 1/

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Annual average 2/
							Cents per pound						
1980	48.4	48.8	48.9	51.1	51.0	52.1	52.3	51.8	51.7	51.9	52.0	53.9	51.2
1981	55.1	55.4	56.3	57.2	57.5	57.2	57.4	57.7	56.7	55.6	55.0	54.5	56.3
1982	54.5	54.7	51.6	50.4	50.8	49.9	49.6	49.4	49.1	48.8	49.7	48.2	50.6
1983	48.6	47.3	46.8	47.0	46.8	46.9	47.5	46.8	47.5	47.3	47.4	47.9	47.3
1984	48.4	48.5	47.6	47.1	47.1	47.7	48.4	47.9	47.8	48.0	47.9	47.2	47.8
1985	47.5	47.2	47.6	47.5	47.2	46.7	47.1	47.3	47.3	46.8	46.6	45.0	47.0
1986	45.6	45.5	45.3	45.3	45.1	44.6	45.3	44.3	43.4	43.6	43.2	43.4	44.6
1987	41.6	41.1	39.4	39.8	39.5	39.3	39.1	40.3	39.5	39.5	40.5	42.2	40.2
1988	44.6	46.2	46.8	48.8	49.7	49.2	50.7	50.6	50.3	47.5	48.5	48.4	48.4
1989	48.9	49.5	48.8	48.2	48.5	48.6	51.4	50.9	52.0	51.3	49.7	50.4	49.9
1990	50.1	47.6	50.2	49.7	49.6	49.4	49.4	49.7	50.5	49.7	50.7	49.1	49.6
1991	49.4	49.2	49.8	50.2	50.2	50.6	50.3	49.4	50.6	50.8	51.7	51.7	50.3
1992	51.6	51.5	51.5	52.2	52.4	52.0	53.2	53.7	54.2	54.3	53.6	52.5	52.7
1993	52.6	53.0	52.5	52.2	51.8	51.8	52.7	50.7	49.4	49.5	49.0	49.5	51.2
1994	51.5	54.3	55.6	57.5	56.2	55.5	56.6	54.6	53.4	53.4	54.1	53.4	54.7
1995	52.3	51.8	51.1	51.5	51.8	51.8	51.9	52.6	52.3	53.5	53.5	55.3	52.5
1996	55.2	55.2	55.6	53.8	54.8	53.7	53.7	54.1	54.0	55.5	55.2	54.6	54.6
1997	56.0	56.5	56.4	55.8	56.3	55.8	56.4	56.9	56.4	56.8	57.2	57.5	56.5
1998	54.6	54.7	54.5	54.4	54.1	53.6	54.0	53.6	54.4	54.2	53.9	54.3	54.2
1999	55.1	54.0	54.4	54.8	55.1	55.3	55.0	55.7	54.7	51.1	48.8	50.2	53.7
2000	49.9	49.2	48.1	49.0									

1/ Weighted average retail price for U.S. uncooked long grain rice, various package sizes and locations. 2/ Simple average.

Source: Bureau of Labor Statistics, U.S. Department of Labor.

Appendix table 25--Thailand milled rice prices, f.o.b. Bangkok, 1985/86-2000/01 1/

Month	100 percent Grade B	5 percent parboiled	5 percent broken	15 percent broken	35 percent broken	A.1 Special 2/
			$/metric ton			
1985/86:						
August	193	179	NA	NA	NA	NA
September	197	181	NA	NA	NA	NA
October	213	180	NA	NA	NA	NA
November	202	176	NA	NA	NA	NA
December	202	175	NA	NA	NA	NA
January	191	158	NA	NA	NA	98
February	188	142	NA	NA	NA	97
March	186	139	NA	NA	NA	100
April	178	131	NA	NA	NA	97
May	177	135	NA	NA	NA	98
June	179	140	NA	NA	NA	101
July	185	153	NA	NA	NA	107
Average	191	157	NA	NA	NA	NA
1986/87:						
August	191	173	186	173	NA	122
September	179	161	173	161	NA	113
October	180	162	175	161	NA	113
November	180	157	174	159	136	105
December	172	153	167	154	132	100
January	178	153	173	162	137	107
February	193	168	187	176	153	120
March	204	179	198	189	167	131
April	204	183	199	189	167	133
May	202	189	198	187	166	136
June	198	189	196	186	167	142
July	196	187	191	180	164	148
Average	190	171	185	173	154	122
1987/88:						
August	208	207	204	193	181	168
September	255	257	250	240	223	195
October	272	268	267	257	228	210
November	260	247	254	242	224	189
December	261	236	256	242	216	168
January	297	279	292	276	253	207
February	311	295	306	294	262	214
March	299	285	294	282	256	213
April	294	282	288	276	256	220
May	262	252	257	247	235	211
June	273	262	269	259	248	226
July	279	268	274	265	252	232
Average	273	261	267	256	236	204

See footnotes at end of table.

Continued--

Appendix table 25--Thailand milled rice prices, f.o.b. Bangkok, 1985/86-2000/01 1/--continued

Month	100 percent Grade B	5 percent parboiled	5 percent broken	15 percent broken	35 percent broken	A.1 Special 2/
			$/metric ton			
1988/89:						
August	274	264	269	260	NA	217
September	279	268	273	261	246	221
October	279	266	273	263	249	226
November	278	265	272	263	248	227
December	265	259	260	251	237	223
January	268	259	264	255	243	231
February	276	353	271	262	251	235
March	282	264	277	267	253	233
April	298	273	293	283	266	239
May	316	294	311	299	281	246
June	337	309	331	314	NA	244
July	359	332	351	329	289	246
Average	292	284	287	275	256	232
1989/90:						
August	337	314	332	309	NA	221
September	328	290	321	302	257	205
October	314	275	304	279	234	183
November	279	248	270	240	207	166
December	279	253	272	252	219	174
January	284	258	276	256	218	170
February	307	266	300	276	229	176
March	297	259	289	271	215	169
April	284	255	276	253	210	164
May	268	231	260	239	196	151
June	264	226	255	234	184	140
July	265	229	256	235	183	142
Average	292	259	284	262	214	172
1990/91:						
August	268	243	260	236	192	149
September	269	251	259	237	192	150
October	290	265	281	256	210	163
November	280	255	272	248	202	153
December	272	243	264	239	194	147
January	311	277	303	273	222	165
February	336	301	326	297	242	186
March	321	285	311	281	232	175
April	295	272	286	263	221	176
May	298	365	288	262	219	231
June	302	280	293	262	212	163
July	313	287	303	275	225	174
Average	296	277	287	261	213	169

See footnotes at end of table.

Continued--

Appendix table 25--Thailand milled rice prices, f.o.b. Bangkok, 1985/86-2000/01 1/--continued

Month	100 percent Grade B	5 percent parboiled	5 percent broken	15 percent broken	35 percent broken	A.1 Special 2/
			$/metric ton			
1991/92:						
August	309	286	298	273	228	184
September	300	277	290	271	225	193
October	284	265	277	253	223	191
November	283	262	274	253	218	185
December	276	258	268	250	218	184
January	286	266	277	258	226	188
February	287	267	278	259	224	189
March	286	263	277	258	225	186
April	287	262	279	262	226	186
May	282	251	272	253	217	178
June	278	243	268	249	216	171
July	289	251	279	260	224	173
Average	287	263	278	258	222	184
1992/93:						
August	279	249	270	250	221	182
September	266	244	255	238	212	176
October	260	247	250	233	204	172
November	262	245	253	235	206	172
December	265	240	256	238	207	162
January	270	238	262	240	208	166
February	267	234	254	233	203	172
March	243	229	230	211	189	161
April	216	211	206	191	175	153
May	194	188	185	172	158	145
June	199	190	189	177	162	147
July	209	205	201	186	171	149
Average	244	227	234	217	193	163
1993/94:						
August	218	214	210	196	179	156
September	216	213	206	192	177	158
October	272	222	257	237	207	162
November	337	264	323	288	242	167
December	330	272	315	281	234	156
January	376	272	354	305	241	151
February	390	266	363	313	238	155
March	330	248	274	240	207	155
April	331	238	269	242	205	157
May	259	235	235	213	190	160
June	232	228	216	200	186	165
July	237	251	226	211	197	178
Average	294	244	271	243	209	160

See footnotes at end of table.

Continued--

Appendix table 25--Thailand milled rice prices, f.o.b. Bangkok, 1985/86-2000/01 1/--continued

Month	100 percent Grade B	5 percent parboiled	5 percent broken	15 percent broken	35 percent broken	A.1 Special 2/
			$/metric ton			
1994/95:						
August	259	271	250	237	222	200
September	267	265	260	246	233	210
October	272	262	262	249	238	216
November	272	263	264	249	236	215
December	270	259	262	250	237	222
January	282	264	275	265	252	232
February	289	266	282	270	255	226
March	292	269	285	272	253	222
April	290	269	282	271	254	226
May	299	274	291	279	262	239
June	333	305	326	314	297	276
July	353	341	347	335	321	297
Average	290	276	282	270	255	232
1995/96:						
August	346	343	340	327	310	288
September	368	354	360	346	322	285
October	393	373	386	372	340	293
November	354	342	346	334	315	296
December	347	337	340	326	307	278
January	372	355	364	350	321	271
February	377	357	367	348	307	256
March	373	350	360	344	301	260
April	342	316	328	310	272	245
May	347	318	331	312	272	244
June	360	339	342	322	275	240
July	370	347	358	335	281	229
Average	362	344	352	335	302	265
1996/97:						
August	346	330	336	314	265	213
September	341	331	332	311	264	216
October	324	330	313	293	250	208
November	325	327	315	293	248	206
December	330	325	320	298	253	205
January	367	334	356	332	277	218
February	359	321	347	320	270	226
March	341	315	328	302	261	231
April	319	301	306	285	252	220
May	335	315	324	300	257	215
June	335	324	323	299	256	221
July	332	327	321	296	256	215
Average	338	323	327	304	259	216

See footnotes at end of table.

Continued--

Appendix table 25--Thailand milled rice prices, f.o.b. Bangkok, 1985/86-2000/01 1/--continued

Month	100 percent Grade B	5 percent parboiled	5 percent broken	15 percent broken	35 percent broken	A.1 Special 2/
			$/metric ton			
1997/98:						
August	296	314	285	265	237	209
September	280	304	271	254	231	203
October	275	280	266	249	224	192
November	261	261	252	237	213	181
December	274	269	267	255	228	193
January	299	279	294	278	236	186
February	307	290	297	279	235	187
March	306	284	296	278	235	193
April	326	296	316	296	249	199
May	328	299	318	299	248	197
June	338	315	330	311	256	209
July	337	315	324	304	255	211
Average	302	292	293	275	237	197
1998/99:						
August	334	318	323	305	264	229
September	332	317	322	304	269	241
October	306	298	298	282	264	252
November	278	275	271	260	248	234
December	282	281	275	261	245	232
January	308	303	300	283	252	234
February	287	279	280	263	234	212
March	263	254	256	239	213	197
April	242	240	236	221	199	184
May	252	249	244	229	202	184
June	262	251	254	240	217	200
July	259	248	253	241	220	209
Average	284	276	276	261	236	217
1999/00:						
August	253	249	246	237	216	204
September	235	256	229	217	198	186
October	223	257	217	205	186	170
November	236	268	229	216	194	172
December	240	252	234	221	192	155
January	248	248	241	220	194	158
February	252	248	242	225	191	158
March	235	238	225	209	180	152
April	225	229	214	200	173	148
May	211	219	199	186	164	144
June	210	218	196	183	161	140
July	199	216	190	178	161	142
Average	231	242	222	208	184	161
2000/01:						
August	193	208	187	175	160	144
September	185	189	179	169	158	143
October	192	199	187	175	156	136
November 3/	191	189	185	173	153	128
Average 3/	190	196	185	173	157	138

NA=Not available. 1/ Simple average of weekly price quotes. Includes cost of bags. 2/ 100-percent brokens. 3/ Preliminary.

Source: Weekly price reports, U.S. Embassy, Bangkok.

Appendix table 26--Milled rice export prices, major exporters, 1997/98-2000/01 1/

Country/month	5 percent brokens	10 percent brokens	15 percent brokens	20 percent brokens	25 percent brokens	35 percent brokens	5 percent parboiled
				$/metric ton			
Vietnam:							
1997/98:							
August	253	241	231	NQ	223	NQ	NQ
September	253	245	233	NQ	225	NQ	NQ
October	237	233	224	NQ	211	203	NQ
November	241	236	231	NQ	218	211	NQ
December	270	260	255	NQ	243	235	NQ
January	262	256	248	NQ	236	231	NQ
February	255	250	245	NQ	233	225	NQ
March	280	271	262	NQ	249	242	NQ
April	295	290	280	NQ	270	260	NQ
May	NQ	NQ	NQ	NQ	NQ	NQ	NQ
June	304	299	294	NQ	259	254	NQ
July	305	298	291	NQ	258	250	NQ
Average 2/	269	262	254	NQ	239	235	NQ
1998/99:							
August	315	305	295	NQ	270	NQ	NQ
September	311	301	291	NQ	279	NQ	NQ
October	295	288	281	NQ	271	NQ	NQ
November	278	273	265	NQ	126	NQ	NQ
December	258	253	245	NQ	238	NQ	NQ
January	245	240	230	NQ	220	NQ	NQ
February	239	233	228	NQ	215	NQ	NQ
March	228	223	217	NQ	204	NQ	NQ
April	221	216	211	NQ	196	NQ	NQ
May	229	224	219	NQ	204	NQ	NQ
June	238	231	226	NQ	215	NQ	NQ
July	230	225	220	NQ	214	NQ	NQ
Average 2/	257	251	244	NQ	221	NQ	NQ
1999/00:							
August	230	225	220	NQ	215	NQ	NQ
September	218	211	206	NQ	198	NQ	NQ
October	201	196	191	NQ	186	NQ	NQ
November	217	212	207	NQ	195	NQ	NQ
December	227	222	213	NQ	198	NQ	NQ
January	229	224	219	NQ	199	NQ	NQ
February	210	205	200	NQ	188	NQ	NQ
March	194	189	183	NQ	173	NQ	NQ
April	175	170	164	NQ	159	NQ	NQ
May	173	167	159	NQ	149	NQ	NQ
June	175	170	162	NQ	148	NQ	NQ
July	183	178	173	NQ	155	NQ	NQ
Average 2/	203	197	191	NQ	180	NQ	NQ
2000/01:							
August	183	178	173	NQ	158	NQ	NQ
September	176	171	165	NQ	152	NQ	NQ
October	179	174	168	NQ	158	NQ	NQ
November	176	171	164	NQ	154	NQ	NQ
Average 2/	179	174	168	NQ	156	NQ	NQ

See footnotes at end of table.

Continued--

Appendix table 26--Milled rice export prices, major exporters, 1997/98-2000/01 1/--continued

Country/month	5 percent brokens	10 percent brokens	15 percent brokens	20 percent brokens	25 percent brokens	35 percent brokens	5 percent parboiled
				$/metric ton			
India:							
1997/98:							
August	300	283	271	NQ	255	NQ	315
September	300	280	270	NQ	255	NQ	315
October	290	274	248	NQ	233	NQ	308
November	280	270	250	NQ	235	NQ	290
December	278	268	250	NQ	238	NQ	290
January	273	263	250	NQ	238	NQ	285
February	270	260	250	NQ	235	NQ	280
March	277	272	257	NQ	242	NQ	280
April	280	275	260	NQ	245	NQ	268
May	280	275	260	NQ	245	NQ	280
June	283	274	260	NQ	249	NQ	280
July	288	278	265	NQ	254	NQ	283
Average 2/	286	276	263	NQ	252	NQ	282
1998/99:							
August	290	280	265	NQ	250	NQ	285
September	290	280	265	NQ	250	NQ	285
October	290	280	265	NQ	250	NQ	285
November	281	271	255	NQ	244	NQ	283
December	268	260	246	NQ	231	NQ	274
January	264	253	244	NQ	228	NQ	280
February	276	263	255	NQ	238	NQ	290
March	283	270	258	NQ	243	NQ	287
April	274	263	250	NQ	236	NQ	278
May	268	260	250	NQ	240	NQ	270
June	263	256	243	NQ	231	NQ	263
July	260	255	240	NQ	230	NQ	260
Average 2/	276	266	253	NQ	239	NQ	278
1999/00:							
August	261	255	240	NQ	230	NQ	260
September	265	255	240	NQ	230	NQ	260
October	265	255	240	NQ	230	NQ	265
November	269	259	248	NQ	238	NQ	270
December	270	260	250	NQ	240	NQ	270
January	270	260	250	NQ	240	NQ	270
February	270	260	250	NQ	240	NQ	270
March	270	260	250	NQ	240	NQ	270
April	270	260	250	NQ	240	NQ	270
May	268	258	248	NQ	238	NQ	252
June	270	260	250	NQ	240	NQ	250
July	270	260	250	NQ	240	NQ	250
Average 2/	268	259	247	NQ	237	NQ	263
2000/01:							
August	264	257	249	NQ	237	NQ	246
September	265	255	245	NQ	225	NQ	240
October	260	250	240	NQ	222	NQ	240
November	243	233	223	NQ	213	NQ	233
Average 2/	258	249	239	NQ	224	NQ	240

See footnotes at end of table.

Continued--

Appendix table 26--Milled rice export prices, major exporters, 1997/98-2000/01 1/--continued

Country/month	5 percent brokens	10 percent brokens	15 percent brokens	20 percent brokens	25 percent brokens	35 percent brokens	5 percent parboiled
				$/metric ton			
Pakistan:							
1997/98:							
August	NQ	NQ	NQ	NQ	NQ	NQ	NQ
September	240	NQ	NQ	220	NQ	NQ	NQ
October	234	228	NQ	NQ	210	NQ	NQ
November	NQ	230	224	219	214	NQ	NQ
December	265	255	245	240	233	NQ	NQ
January	265	256	243	238	231	NQ	NQ
February	NQ	256	243	240	234	NQ	NQ
March	272	272	254	254	246	NQ	NQ
April	NQ	285	260	260	255	NQ	NQ
May	NQ	NQ	NQ	NQ	NQ	NQ	NQ
June	NQ	NQ	NQ	NQ	NQ	NQ	NQ
July	NQ	NQ	NQ	NQ	NQ	NQ	NQ
Average 2/	255	255	245	239	232	NQ	NQ
1998/99:							
August	NQ	NQ	NQ	NQ	NQ	NQ	NQ
September	NQ	255	NQ	252	245	NQ	NQ
October	NQ	273	258	258	250	NQ	NQ
November	NQ	255	239	239	230	NQ	NQ
December	NQ	246	229	229	223	NQ	NQ
January	NQ	240	215	215	210	NQ	NQ
February	NQ	NQ	220	220	215	NQ	NQ
March	NQ	NQ	222	216	208	NQ	NQ
April	NQ	NQ	213	208	203	NQ	NQ
May	NQ	NQ	223	219	211	NQ	NQ
June	NQ	248	238	225	221	NQ	NQ
July	NQ	250	240	230	225	NQ	NQ
Average 2/	NQ	252	230	228	222	NQ	NQ
1999/00:							
August	NQ	250	240	230	225	NQ	NQ
September	NQ	241	231	221	213	NQ	NQ
October	220	209	198	194	188	NQ	NQ
November	205	195	190	185	180	NQ	NQ
December	205	200	182	177	172	NQ	NQ
January	206	201	181	176	171	NQ	NQ
February	210	202	185	179	174	NQ	NQ
March	NQ	198	180	176	171	NQ	NQ
April	NQ	187	177	167	161	NQ	NQ
May	NQ	186	176	166	158	NQ	NQ
June	NQ	191	180	172	162	NQ	NQ
July	NQ	198	188	183	178	NQ	NQ
Average 2/	209	205	192	186	179	NQ	NQ
2000/01:							
August	NQ	202	188	182	176	NQ	NQ
September	NQ	194	176	169	162	NQ	NQ
October	NQ	190	176	166	156	NQ	NQ
November	NQ	166	160	154	148	NQ	NQ
Average 2/	NQ	188	175	168	161	NQ	NQ

NQ = No quote.

1/ Simple average of weekly price quotes. 2/ Simple average of monthly prices. All prices F.O.B. vessel, corresponding home port.

Source: All weekly prices reported in the Creed Rice Market Report, Creed Rice Co., Inc., Houston, Texas.

Appendix table 27--ARAG price quotes, 1984/85 - 2000/01 1/

Monthly/ marketing year	Milled white rice		Brown rice	Parboiled	
	U.S. no. 2 4 percent container, FAS 2/	Thai 100 percent Grade B, bulk 3/	U.S. no. 2 brown, 4/73	U.S. no. 1 brown, 4/88	Thai milled premium quality 3/
			$/metric ton		
1984/85:					
August	500	333	348	NA	NA
September	485	317	344	NA	NA
October	493	301	343	NA	NA
November	496	272	344	NA	NA
December	496	265	344	NA	NA
January	NA	NA	NA	NA	NA
February	496	255	338	NA	NA
March	496	253	338	NA	NA
April	496	241	339	NA	NA
May	496	244	342	NA	NA
June	495	244	340	NA	NA
July	490	228	338	NA	NA
Average	495	268	341	NA	NA
1985/86:					
August	478	237	328	NA	NA
September	475	240	323	NA	NA
October	475	245	320	NA	NA
November	473	253	318	NA	NA
December	463	243	315	NA	NA
January	450	238	315	NA	NA
February	455	235	323	NA	NA
March	455	234	325	NA	NA
April	383	223	236	259	NA
May	325	222	212	254	NA
June	291	229	186	218	NA
July	286	230	190	215	NA
Average	417	236	282	236	NA
1986/87:					
August	296	241	193	215	NA
September	285	230	192	215	NA
October	300	226	192	219	NA
November	303	219	191	220	NA
December	249	215	183	211	NA
January	224	221	179	205	NA
February	224	233	176	203	NA
March	224	244	172	201	NA
April	224	246	176	203	243
May	255	241	191	210	255
June	270	238	198	220	245
July	277	235	195	220	240
Average	261	232	186	212	246
1987/88:					
August	327	251	215	231	280
September	NA	294	266	290	325
October	441	315	361	386	365
November	417	299	368	405	371
December	411	309	364	391	355
January	446	340	397	424	NA
February	496	360	499	521	420
March	450	340	474	507	NA
April	417	339	443	476	365
May	331	312	343	387	353
June	339	317	338	381	NA
July	353	328	347	372	383
Average	402	317	368	398	357

See footnotes at end of table.

Continued--

Appendix table 27--ARAG price quotes, 1984/85 - 2000/01 1/--continued

Monthly/ marketing year	Milled white rice		Brown rice	Parboiled	
	U.S. no. 2 4 percent container, FAS 2/	Thai 100 percent grade B, bulk 3/	U.S. no. 2 brown, 4/73	U.S. no. 1 brown, 4/88	Thai milled premium quality 3/
			$/metric ton		
1988/89:					
August	313	319	313	336	360
September	299	326	298	319	290
October	309	321	292	305	NA
November	310	320	287	299	NA
December	288	310	283	291	NA
January	289	321	278	282	NA
February	292	326	281	286	NA
March	294	329	283	291	NA
April	312	349	299	320	NA
May	328	357	324	346	NA
June	356	389	341	367	NA
July	360	403	364	387	NA
Average	313	339	303	319	325
1989/90:					
August	351	381	343	380	NA
September	363	370	325	369	NA
October	324	359	307	369	NA
November	314	331	284	346	NA
December	312	322	283	338	NA
January	338	328	313	336	NA
February	356	350	336	352	NA
March	348	343	327	346	NA
April	341	325	315	338	NA
May	338	309	309	331	318
June	336	313	309	331	314
July	333	307	303	325	308
Average	338	336	313	347	313
1990/91:					
August	306	311	295	317	320
September	289	310	276	300	325
October	287	330	271	294	325
November	318	321	280	300	319
December	317	304	282	314	315
January	331	358	305	327	400
February	350	384	334	384	401
March	364	363	325	397	383
April	373	335	321	397	360
May	380	344	333	400	359
June	389	347	345	397	370
July	378	350	344	397	373
Average	340	338	309	352	354
1991/92:					
August	364	357	338	395	382
September	373	341	333	391	369
October	379	323	335	395	350
November	381	322	354	401	346
December	380	319	347	397	345
January	379	322	342	394	350
February	378	325	325	375	344
March	363	326	321	362	342
April	343	324	308	350	336
May	333	327	325	331	342
June	313	320	278	317	319
July	328	329	274	314	335
Average	359	328	323	369	347

See footnotes at end of table.

Continued--

Appendix table 27--ARAG price quotes, 1984/85 - 2000/01 1/--continued

Monthly/ marketing year	Milled white rice		Brown rice	Parboiled	
	U.S. no. 2 4 percent container, FAS 2/	Thai 100 percent grade B, bulk 3/	U.S. no. 2 brown, 4/73	U.S. no. 1 brown, 4/88	Thai milled premium quality 3/
			$/metric ton		
1992/93:					
August	332	328	279	318	330
September	336	319	301	320	321
October	333	307	277	321	315
November	316	302	287	319	315
December	305	304	275	317	307
January	288	307	264	313	315
February	276	313	252	306	314
March	263	289	239	298	305
April	248	269	230	284	288
May	243	246	240	277	266
June	245	242	219	273	268
July	261	250	253	281	280
Average	287	290	260	302	302
1993/94:					
August	272	255	289	283	280
September	290	258	265	292	285
October	375	311	335	378	NA
November	525	375	446	492	390
December	551	365	463	518	395
January	506	417	442	506	384
February	503	426	437	498	394
March	476	389	401	485	365
April	416	360	354	446	375
May	380	322	329	409	329
June	355	272	282	366	303
July	312	272	270	318	318
Average	413	335	359	416	347
1994/95:					
August	299	298	261	288	338
September	325	306	287	311	343
October	312	308	278	305	343
November	312	315	279	303	345
December	313	317	280	305	345
January	310	315	279	300	342
February	310	328	274	323	345
March	303	338	268	298	346
April	306	331	273	296	345
May	336	338	300	304	345
June	395	378	335	350	NA
July	380	402	340	364	NA
Average	325	331	288	312	344
1995/96:					
August	375	406	339	358	NA
September	382	407	358	379	NA
October	442	439	399	421	NA
November	419	418	378	402	NA
December	398	393	353	389	NA
January	391	414	357	382	NA
February	386	417	353	378	NA
March	393	415	357	384	NA
April	400	385	371	400	NA
May	408	384	378	413	NA
June	420	401	386	423	NA
July	432	412	390	434	NA
Average	404	407	368	397	NA

See footnotes at end of table.

Continued--

Appendix table 27--ARAG price quotes, 1984/85 - 2000/01 1/--continued

Monthly/ marketing year	Milled white rice		Brown rice	Parboiled	
	U.S. no. 2 4 percent container, FAS 2/	Thai 100 percent grade B, bulk 3/	U.S. no. 2 brown, 4/73	U.S. no. 1 brown, 4/88	Thai milled premium quality 3/
			$/metric ton		
1996/97:					
August	440	391	402	440	NA
September	427	383	374	435	NA
October	414	367	387	430	NA
November	408	363	383	424	NA
December	412	360	382	388	NA
January	419	397	389	437	NA
February	438	405	419	460	NA
March	435	391	419	457	NA
April	435	363	416	455	395
May	435	378	410	452	NA
June	441	386	405	448	NA
July	431	379	393	439	NA
Average	428	380	398	439	395
1997/98:					
August	411	346	380	430	375
September	409	316	366	419	NA
October	422	321	375	406	NA
November	424	306	384	406	NA
December	429	325	376	412	NA
January	424	346	384	413	NA
February	NA	NA	NA	NA	NA
March	410	NA	361	395	NA
April	408	NA	357	391	NA
May	415	373	368	397	385
June	419	382	377	395	395
July	412	389	360	382	391
Average	417	345	372	404	387
1998/99:					
August	389	385	353	375	383
September	397	385	350	371	385
October	397	356	347	370	374
November	395	316	347	374	333
December	396	329	347	380	336
January	389	348	346	379	345
February	375	347	342	375	343
March	361	325	323	365	330
April	346	292	314	364	314
May	329	296	309	363	312
June	321	309	305	356	317
July	321	310	293	354	310
Average	368	333	331	369	340

See footnotes at end of table.

Continued--

Appendix table 27--ARAG price quotes, 1984/85 - 2000/01 1/--continued

Monthly/ marketing year	Milled white rice		Brown rice	Parboiled	
	U.S. no. 2 4 percent container, FAS 2/	Thai 100 percent grade B, bulk 3/	U.S. no. 2 brown, 4/73	U.S. no. 1 brown, 4/88	Thai milled premium quality 3/
			$/metric ton		
1999/00:					
August	317	301	279	358	312
September	309	287	266	359	326
October	296	269	269	359	324
November	288	282	262	358	331
December	276	283	256	358	328
January	267	288	249	358	325
February	265	305	241	355	330
March	262	288	236	355	328
April	254	273	222	353	324
May	245	259	216	351	321
June	237	260	207	336	322
July	247	246	211	313	295
Average	272	278	243	351	322
2000/01:					
August	254	242	239	300	288
September	256	234	241	281	281
October	278	242	247	276	261
November	282	242	253	278	248
Average 4/	267	240	245	284	269

NA = Not available.

1/ ARAG = composite of ports near Rotterdam. 2/ FAS, container, Gulf port quote. All other prices are C & F ARAG. 3/ Thailand prices changed to bulk quote on May 15, 1985. Prior to this date Thai prices were quoted by the bag. 4/ Preliminary.

Source: Rice Market News, Agricultural Marketing Service, USDA.

Appendix table 28--World rice supply and utilization, 1961/62-2000/01

Year	Area harvested	Yield 1/	Production 2/		Exports 3/	Total use 4/	Ending stocks 5/	Stocks-to-use ratio 6/
	Million hectares	Mt/ha	Rough	Milled	---Million metric tons---			
1961/62	115.8	1.9	215.6	147.3	6.3	149.3	8.5	5.7
1962/63	119.7	1.9	228.1	155.1	7.3	151.1	12.5	8.3
1963/64	121.6	2.0	248.3	169.0	7.7	165.3	16.3	9.8
1964/65	125.4	2.1	265.5	180.7	8.2	179.8	17.2	9.6
1965/66	124.0	2.0	253.5	172.9	7.9	172.0	18.1	10.5
1966/67	125.7	2.1	262.1	179.0	7.8	178.5	18.6	10.4
1967/68	127.0	2.2	276.9	188.9	7.2	186.1	21.3	11.4
1968/69	128.6	2.2	285.8	194.9	7.5	191.6	24.5	12.8
1969/70	131.4	2.2	295.2	201.1	8.2	199.2	26.4	13.3
1970/71	132.7	2.4	312.5	213.0	8.6	210.6	28.8	13.7
1971/72	134.8	2.3	316.6	215.8	8.7	216.5	28.0	12.9
1972/73	132.7	2.3	306.2	208.9	8.4	213.2	23.8	11.2
1973/74	136.3	2.4	333.8	227.6	7.7	222.6	28.8	12.9
1974/75	137.8	2.4	331.1	225.7	7.3	226.5	28.0	12.3
1975/76	142.9	2.5	357.4	243.1	8.4	232.3	38.8	16.7
1976/77	141.4	2.5	346.8	235.8	10.6	236.8	37.8	16.0
1977/78	143.4	2.6	368.7	250.6	9.6	244.2	44.2	18.1
1978/79	143.6	2.7	385.4	262.4	11.9	252.5	54.1	21.4
1979/80	141.2	2.7	376.6	256.8	12.5	257.2	53.7	20.9
1980/81	144.4	2.7	397.0	270.0	12.7	275.0	48.5	17.7
1981/82	144.4	2.8	408.3	277.9	11.5	283.1	43.3	15.3
1982/83	140.5	3.0	418.3	285.0	11.5	284.8	43.5	15.3
1983/84	144.6	3.1	450.9	306.9	12.1	302.6	47.9	15.8
1984/85	144.1	3.2	464.9	316.7	11.5	309.0	55.6	18.0
1985/86	144.8	3.2	467.2	318.0	12.4	319.1	54.4	17.1
1986/87	144.8	3.2	464.6	316.0	12.8	319.8	50.7	15.9
1987/88	141.6	3.3	464.0	314.6	11.2	320.5	44.8	14.0
1988/89	146.1	3.4	489.7	331.4	14.0	327.4	48.8	14.9
1989/90	146.6	3.5	508.1	343.9	11.7	338.2	54.5	16.1
1990/91	146.7	3.5	520.5	352.0	12.2	347.4	59.2	17.0
1991/92	147.5	3.6	525.2	354.7	14.3	356.7	57.2	16.0
1992/93	146.4	3.6	527.0	355.7	15.0	357.7	55.2	15.4
1993/94	144.9	3.6	527.0	355.4	16.3	358.2	52.5	14.6
1994/95	147.4	3.7	540.2	364.5	20.8	366.6	50.4	13.7
1995/96	148.1	3.7	551.3	371.4	19.7	371.4	50.4	13.6
1996/97	149.8	3.8	563.7	380.4	18.8	379.6	51.2	13.5
1997/98	151.2	3.8	574.2	386.8	27.3	383.3	54.7	14.3
1998/99	152.3	3.8	585.5	394.0	25.1	388.7	60.0	15.4
1999/00 7/	153.9	3.9	598.4	402.5	22.7	399.9	62.6	15.7
2000/01 8/	151.7	3.9	591.3	397.7	24.6	401.2	59.1	14.7

1/ Yields are based on rough production. 2/ Production is expressed on both rough and milled basis; stocks, exports, and utilization are on a milled basis.
3/ Exports quoted on calendar year basis. Trade data have been adjusted since July 1993 to exclude Intra-EC trade for the years 1980 to the present.
4/ For countries for which stock data are not available, utilization estimates represent apparent utilization, i.e., they include annual stock level adjustments.
5/ Stocks data are based on an aggregate of different market years and should not be construed as representing world stock levels at a fixed point in time. Stocks data are not available for all countries and exclude the former USSR, North Korea, parts of Eastern Europe, and Vietnam. China's reported rice stocks are government-held stocks only and exclude privately-held stocks. 6/ Stocks-to-use represents the ratio of marketing year ending stocks to total utilization.
7/ Preliminary. 8/ Forecast as of November 2000.

Source: World Grain Situation and Outlook, Foreign Agricultural Service, USDA.

Appendix table 29--World rice production and stocks: Selected countries and regions, 1988/89-2000/01 1/

Country and region	Crop year 2/ 1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01 3/
	Million metric tons												
Production:													
Bangladesh	23.3	26.8	26.8	27.4	27.5	27.1	25.3	26.5	28.3	28.3	29.8	32.3	31.9
Burma	12.5	13.5	13.7	12.8	13.4	15.1	16.0	17.0	15.5	15.3	16.0	17.0	16.9
China	169.1	180.1	189.3	183.8	186.2	177.7	175.9	185.2	195.1	200.7	198.7	198.5	195.0
India	105.7	110.4	111.4	112.0	109.3	120.5	121.8	119.4	122.0	123.8	129.0	132.4	132.8
Indonesia	44.7	45.2	44.7	48.2	48.2	46.6	49.7	51.1	49.4	49.2	50.8	50.8	50.8
Japan	12.4	12.9	13.1	12.0	13.2	9.8	15.0	13.4	12.9	12.5	11.2	11.5	11.8
Pakistan	4.8	4.8	4.9	4.9	4.7	6.0	5.2	6.0	6.5	6.5	7.0	7.7	6.5
Philippines	9.2	8.9	9.9	9.1	9.5	9.9	10.5	11.2	11.2	10.0	10.3	12.0	11.7
South Korea	8.4	8.1	7.7	7.4	7.3	6.4	6.9	6.4	7.1	7.4	6.8	7.0	7.1
Taiwan	2.3	2.4	2.3	2.3	2.1	2.2	2.1	2.1	1.9	2.0	1.9	2.0	2.0
Thailand	21.3	20.6	17.2	20.4	19.9	19.2	21.4	21.8	20.7	23.5	23.0	23.7	24.0
Vietnam	18.2	19.4	18.8	22.2	21.2	24.3	24.6	26.8	27.3	28.9	30.5	31.4	31.2
Subtotal	431.9	453.1	459.8	462.5	462.5	464.8	474.2	486.9	497.9	508.2	515.0	526.2	521.7
Australia	0.8	0.8	0.8	1.1	1.0	1.1	1.1	1.0	1.4	1.3	1.4	1.1	1.4
Brazil	11.1	8.0	10.0	10.1	9.9	10.5	11.2	10.0	9.5	8.6	11.6	11.5	10.9
Egypt	2.1	2.1	3.2	3.4	3.9	4.2	4.6	4.4	4.9	5.4	4.2	5.4	5.4
European Union	2.0	2.1	2.4	2.3	2.2	2.0	2.2	2.1	2.6	2.7	2.7	2.7	2.6
All others	34.5	34.9	37.2	38.6	39.4	37.3	37.9	39.0	39.7	39.7	42.2	42.1	40.6
Total non-U.S.	482.4	501.0	513.4	518.0	518.9	519.9	531.2	543.4	555.9	565.9	577.1	589.0	582.6
United States	7.3	7.0	7.1	7.2	8.1	7.1	9.0	7.9	7.8	8.3	8.4	9.4	8.7
World total	489.7	508.1	520.5	525.2	527.0	527.0	540.2	551.3	563.7	574.2	585.5	598.4	591.3
Ending stocks 4/:													
Total foreign	48.0	53.6	58.4	56.3	53.9	51.6	49.3	49.6	50.3	53.8	59.3	61.8	58.3
United States	0.9	0.9	0.8	0.9	1.3	0.9	1.1	0.8	0.9	0.9	0.7	0.9	0.9
World total	48.8	54.5	59.2	57.1	55.2	52.4	50.4	50.4	51.2	54.7	60.0	62.6	59.1

1/ Production is rough basis, but ending stocks are milled basis. 2/ World rice harvest stretches almost 18 months and timing varies widely across countries and hemispheres. 3/ Projected as of November 2000.
4/ Stocks are based on an aggregate of different local marketing years, and should not be construed as representing world stock levels at a fixed point in time. In addition, stocks data are not available for all countries.

Source: World Grain Situation and Outlook and World Agricultural Production, Foreign Agricultural Service, USDA.

Appendix table 30--World rice trade (milled basis): Exports and imports for selected countries and regions, 1990-2001

Country and region	Calendar year											
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000 1/	2001 1/
	Thousand metric tons											
Exports:												
Argentina	97	75	207	276	203	327	365	530	589	654	500	250
Australia	470	450	511	540	570	519	562	641	542	661	550	625
Burma	186	176	185	222	587	645	265	15	94	57	250	250
China	326	689	933	1,374	1,519	32	265	938	3,734	2,708	3,200	3,400
Egypt	85	159	209	135	268	160	328	201	422	320	420	450
European Union	271	391	376	153	185	323	318	372	346	348	350	350
Guyana	51	54	115	124	182	201	262	286	250	300	300	275
India	514	711	577	609	615	4,179	3,549	1,954	4,491	2,554	1,300	1,800
Indonesia	50	0	60	469	225	0	0	0	0	0	0	0
Pakistan	904	1,297	1,358	937	1,399	1,592	1,677	1,982	1,800	1,837	1,850	1,800
Taiwan	79	229	188	101	117	200	92	71	55	114	150	150
Thailand	3,938	3,988	4,876	4,971	4,720	5,891	5,281	5,216	6,367	6,679	6,000	6,600
United States	2,420	2,199	2,112	2,725	2,793	2,993	2,625	2,304	3,156	2,648	2,750	2,750
Uruguay	288	260	351	451	410	451	597	640	639	685	650	700
Vietnam	1,670	1,048	1,914	1,594	2,222	2,315	3,040	3,327	3,776	4,555	3,400	4,000
Other	351	474	328	319	285	972	474	341	1,000	938	1,023	1,168
World total	11,700	12,200	14,300	15,000	16,300	20,800	19,700	18,818	27,261	25,058	22,693	24,568
Imports:												
Bangladesh	127	24	34	0	159	1,567	655	44	2,499	1,400	700	650
Brazil	493	772	456	831	1,098	987	786	845	1,457	778	700	700
Canada	154	186	175	182	190	214	225	239	239	240	240	250
China	57	67	93	112	959	1,964	832	326	261	174	200	250
Cuba	238	264	198	397	252	318	389	267	334	400	400	450
Eastern Europe	173	168	238	230	187	224	218	245	244	285	300	310
European Union 2/	500	481	480	444	725	762	952	844	787	784	800	800
Hong Kong	363	418	418	456	342	333	346	331	300	296	315	330
Indonesia	77	192	534	22	1,120	3,011	1,029	808	6,081	3,900	2,000	3,000
Iran	867	599	1,122	1,161	584	1,583	1,344	973	475	1,027	1,100	1,400
Iraq	388	268	548	647	64	96	234	744	610	781	1,000	1,000
Ivory Coast	263	169	309	386	187	341	291	470	520	600	550	575
Japan	11	34	17	229	2,264	29	446	546	479	633	750	775
Malaysia	298	367	569	385	317	402	573	645	593	633	600	550
Mexico	154	173	377	275	269	239	307	289	295	360	400	425
Nigeria	224	296	440	382	300	450	350	731	900	950	975	1,000
North Korea	27	194	10	112	53	683	195	272	250	300	400	550
Peru	233	340	360	337	220	287	437	208	236	125	125	150
Philippines	538	91	6	215	0	277	768	814	2,187	1,000	900	1,000
Russia	100	100	500	128	50	129	405	284	200	465	400	480
Saudi Arabia	547	559	783	877	724	638	814	660	775	750	800	850
Senegal	333	434	333	399	252	406	604	575	600	700	700	730
South Africa	295	360	360	431	415	448	481	573	525	595	575	550
Sri Lanka	139	208	338	267	39	25	394	349	168	200	100	100
Syria	101	124	86	141	140	236	158	228	160	200	220	220
Turkey	210	146	314	314	268	416	341	274	232	300	350	375
U.A. Emirates	65	64	137	78	88	87	88	102	90	225	225	225
United States	150	164	177	206	265	228	279	317	300	357	325	350
Yemen	NA	NA	169	131	173	78	158	184	121	207	210	215
Other	3,342	3,455	3,443	3,286	3,005	3,416	3,818	4,010	4,039	4,895	5,056	5,215
Unaccounted 3/	1,233	1,483	1,276	1,939	1,591	926	1,783	1,621	1,304	1,498	1,277	1,093
World total	11,700	12,200	14,300	15,000	16,300	20,800	19,700	18,818	27,261	25,058	22,693	24,568

NA = Not available.

1/ Projected as of November 2000. 2/ EU rice trade has been adjusted since July 1993 to exclude intra-EU trade for the years 1980 to the present. 3/ This represents exports not accounted for in reports from importing countries. Because this is recurring, it is taken into account in the assessment of the year ahead.

Source: World Grain Situation and Outlook, Foreign Agricultural Service, USDA.

Appendix table 31--U.S. rice exports by type, 1977-78-1999/2000 1/

Crop year	Regular milled 2/	Brown	Par-boiled	Brokens	Rough	Products 2/	Total 3/
				1,000 metric tons			
1977/78	1,315.2	264.5	502.5	87.1	184.1	NA	2,353.4
1978/79	1,416.6	313.7	627.1	20.8	125.8	NA	2,504.0
1979/80	1,537.4	540.3	598.4	40.1	75.8	NA	2,792.0
1980/81	1,011.7	1,366.7	781.7	18.0	18.8	NA	3,196.9
1981/82	976.9	571.1	1,000.9	12.7	262.4	NA	2,823.9
1982/83	993.2	402.7	846.5	5.9	26.0	NA	2,274.3
1983/84	972.7	379.4	821.8	37.6	146.8	NA	2,358.4
1984/85	1,010.0	192.0	630.8	46.8	145.3	NA	2,024.9
1985/86	950.7	308.8	523.8	80.1	75.2	NA	1,938.6
1986/87	1,541.9	277.9	659.7	5.7	371.9	NA	2,857.1
1987/88	1,280.4	201.6	642.9	152.9	52.6	NA	2,330.4
1988/89	1,424.1	356.2	834.4	81.4	179.3	1.4	2,876.8
1989/90	1,164.6	353.9	943.9	65.3	72.3	0.8	2,600.8
1990/91	872.5	480.9	823.3	42.7	218.5	1.5	2,439.3
1991/92	751.9	357.2	776.5	74.4	287.2	2.4	2,249.7
1992/93	924.3	375.8	937.8	147.2	248.2	3.0	2,636.4
1993/94	1,047.1	482.9	816.7	127.7	165.7	3.4	2,643.5
1994/95	1,415.1	307.2	924.1	73.0	839.1	3.8	3,562.2
1995/96	1,203.5	412.7	725.2	46.8	484.6	4.9	2,877.8
1996/97	936.9	420.4	723.5	51.1	577.5	4.2	2,713.6
1997/98	848.7	491.3	594.1	61.7	1,184.4	4.4	3,184.5
1998/99	817.5	600.0	519.1	54.3	1,168.1	9.4	3,168.5
1999/00	957.2	467.7	496.7	137.9	1,144.2	9.7	3,213.4

1/ Shipments reported on a product-weight basis. 2/ Not reported separately until 1988/89. 3/ Categories may not sum to totals due to overlapping classifications.

Source: Foreign Agricultural Service, USDA.

Appendix table 32--U.S. rice exports by program, 1975-2000 1/

Fiscal year	PL 480 2/	Section 416(b)	Food for Progress	CCC African relief exports	Total food aid shipments	CCC/ credit guarantees programs	EEP 3/	Export programs 4/	Exports outside specified export programs	Total U.S. rice exports	Export programs as a share of total exports
					---1,000 metric tons---						Percent
1975	747	0	0	0	747	48	0	795	1,419	2,214	36
1976	509	0	0	0	509	60	0	569	1,315	1,883	30
1977	676	0	0	0	676	15	0	691	1,570	2,261	31
1978	502	0	0	0	502	50	0	552	1,645	2,197	25
1979	442	0	0	0	442	42	0	484	1,849	2,333	21
1980	500	0	0	0	500	168	0	668	2,191	2,859	23
1981	320	0	0	0	320	452	0	772	2,225	2,997	26
1982	332	0	0	0	332	14	0	346	2,430	2,776	12
1983	429	0	0	0	429	328	0	757	1,452	2,209	34
1984	366	0	0	49	415	571	0	986	1,226	2,212	45
1985	500	0	0	5/ 180	680	359	0	1,039	869	1,908	54
1986	411	0	0	0	411	476	23	887	1,350	2,237	40
1987	370	60	0	0	430	636	28	1,066	1,346	2,412	44
1988	338	29	0	0	367	443	120	810	1,315	2,125	38
1989	355	0	0	0	355	826	20	1,181	1,069	2,250	52
1990	276	0	0	0	276	663	0	939	1,562	2,501	38
1991	210	4	0	0	214	183	76	397	2,020	2,416	16
1992	382	0	22	0	404	220	358	623	1,656	2,279	27
1993	421	0	173	0	594	235	278	832	1,878	2,710	31
1994	315	0	6	0	321	155	46	476	1,958	2,434	20
1995	131	0	11	0	142	321	113	463	3,300	3,763	12
1996	200	0	12	0	212	141	23	353	2,473	2,826	12
1997	204	0	14	0	218	80	0	298	2,262	2,560	12
1998	184	0	11	0	195	499	0	694	2,616	3,310	21
1999	536	0	48	0	584	192	0	777	2,299	3,076	25
2000 6/	221	141	40	0	401	225	0	626	2,673	3,299	19

1/ Exports (program and non-program) reported on a product-weight basis. Program shipements are based on information supplied by the export trade and may not completely reflect actual exports made under these programs. 2/ Titles I, II, and III. 3/ Sales, not actual shipments.
4/ Adjusted for estimated overlap between CCC export credits and EEP shipments. 5/ Estimated. 6/ Preliminary. Based on program announcements as of October 2000.

Sources: Food aid data for fiscal years 1975 through 1991 are from the Economic Research Service "Data Base". Food aid data from fiscal 1992 through 2000 are from the Foreign Agricultural Service. Export credit guarantee data are from the Farm Services Agency and the Foreign Agricultural Service, both with USDA.

Appendix table 33--Top 10 U.S. rice export markets, 1994/95-1999/2000 1/

	1999/00		1998/99		1997/98		1996/97		1995/96		1994/95	
Rank	Country	Exports	Country	Exports	Country	Exports	Country	Exports	Country	Exports	Country	Exports
						1,000 metric tons						
1	Mexico	373.0	Brazil	398.0	Mexico	318.9	Mexico	266.8	Mexico	262.0	Turkey	331.7
2	Japan	282.9	Japan	298.3	Japan	249.7	Turkey	227.6	Turkey	220.6	Brazil	311.7
3	Turkey	212.8	Mexico	250.0	Colombia	207.1	Japan	220.5	Japan	193.0	Mexico	259.8
4	Haiti	200.6	Haiti	222.5	Haiti	178.7	Canada	165.2	Haiti	178.1	Iran	179.4
5	Canada	179.6	Canada	171.7	Canada	172.8	Saudi Arabia	160.3	Canada	165.3	Saudi Arabia	173.6
6	Saudi Arabia	154.3	Peru	119.3	Saudi Arabia	121.3	Haiti	146.6	Republic of South Africa	153.0	Haiti	165.8
7	United Kingdom	125.9	Saudi Arabia	106.4	Peru	119.8	Republic of South Africa	119.2	Saudi Arabia	149.5	Canada	156.5
8	Ghana	81.3	United Kingdom	102.7	Ecuador	112.6	United Kingdom	101.9	Netherlands	108.7	Netherlands	156.3
9	Republic of South Africa	75.0	Turkey	89.3	Dominican Republic	108.7	Jordan	87.9	Iran	85.8	Republic of South Africa	125.3
10	Philippines	72.2	Republic of South Africa	81.2	Turkey	101.3	Switzerland	79.6	Costa Rica	84.4	Peru	82.0
	Sub-total	1,757.6	Sub-total	1,839.4	Sub-total	1,690.9	Sub-total	1,575.6	Sub-total	1,600.3	Sub-total	1,942.1
	Total exports	2,825.4	Total exports	2,757.8	Total exports	2,782.1	Total exports	2,495.7	Total exports	2,687.7	Total exports	3,282.0

1/ August-July crop year. Exports are reported on a milled basis. Note: Major revisions on historical data.

Source: Foreign Agricultural Service, USDA.

Appendix table 34--U.S. rice imports by origin, market years 1990/91-1999/2000

Country of origin	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00
						Mertic tons				
Thailand	134,359	154,452	170,704	183,349	194,037	208,598	239,293	219,853	242,902	239,617
India	13,287	9,122	17,466	15,361	17,783	23,646	24,434	32,151	32,329	38,793
Pakistan	1,208	1,398	3,528	4,685	6,587	4,820	4,809	8,543	8,462	8,944
Vietnam	0	0	0	3,032	16,204	40	44,577	20,116	1,324	41
China	86	12	13	7,460	103	1,654	668	94	12,979	25,041
Italy	768	1,552	1,167	2,445	3,752	3,365	3,516	3,842	4,061	4,509
Argentina	0	0	0	0	0	0	10,409	41	0	137
Uruguay	0	0	0	0	0	0	1,830	5,489	0	0
Egypt	0	10	0	0	0	0	6	0	5,290	52
Other 1/	2,224	2,754	3,643	4,083	1,783	2,551	4,575	4,137	29,162	3,721
Total	151,932	169,300	196,521	220,415	240,249	244,674	334,116	294,266	336,509	320,855

Product-weight basis.

1/ Primarily Spain, Guyana, Singapore, and Hong Kong. May include some transshipments.

Source: Bureau of the Census, Department of Commerce.