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Rice

Situation and Outlook Report

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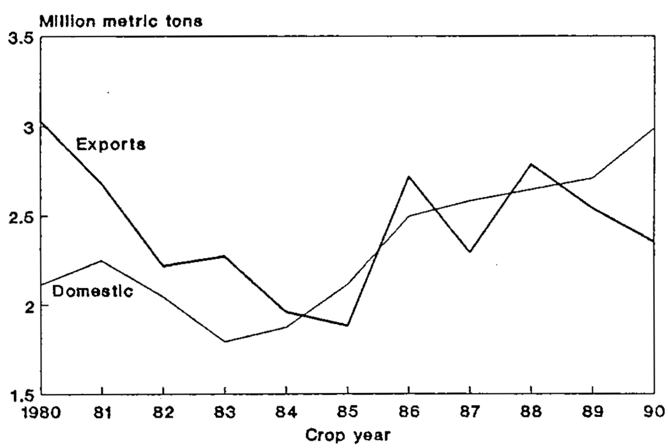
U.S. Domestic and Export Rice Markets



Rice Situation and Outlook. Commodity Economics Division, Economic Research Service, U.S. Department of Agriculture, October 1991, RS-62.

Contents

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Rice Conversions
1 cwt = 100 pounds = 2.22 bushels = .0454 metric tons
1 metric ton = 2,204.6 pounds = 22.046 cwt = 48.992 bu.
1 cwt rough rice = .032 metric ton milled
1 metric ton milled = 31 cwt rough

[redacted]

Summary

U.S. 1991 rice production is forecast up 2 percent from a year earlier to 157.7 million cwt, based on USDA's Crop Production Report released October 10. This is due to projected small increases in harvested acreage and yields. Output of long grain rice is forecast up 4 percent, while combined medium and short grain output is expected to fall 3 percent.

Yields for 1991 are currently forecast at 5,571 pounds per acre, up 1 percent from 1990 but well below the record 5,749 reached two years earlier. Harvested acreage is forecast at 2.83 million acres, 18,000 acres more than in 1990.

Overall, U.S. rice supplies in 1991/92 are forecast to increase less than 1 percent to 187.3 million cwt. Carryin stocks were down from a year earlier. However, imports are expected to be up. With a projected 3 percent increase in domestic use, but slightly lower exports, total use will about equal production plus imports. Thus carryout stocks are projected at 24.5 million cwt, slightly below a year earlier. This would be the fourth consecutive year with the stocks-to-use ratio below 17 percent.

Domestic use continues to grow as per capita use increases. Food use for 1991/92 is forecast up 5 percent, based on trend increases. Brewers' use, currently around 18 percent of total-domestic use, is projected up slightly.

Historically, exports have accounted for about 50 percent of total U.S. rice use. However, in the last few years, domestic use has surged ahead of exports. Relatively tight supplies, strong growth in the domestic market, and higher domestic prices have limited U.S. rice available for export and have pressured prices above those of foreign rice exporters.

U.S. exports are projected at 70 million cwt in 1991/92, down slightly from 1990/91 and substantially below the near record 85.9 million cwt in 1988/89. Continued tight U.S. supplies are likely to keep U.S. prices well above those of Asian exporters. World trade is projected to expand slightly over the next year, creating a very competitive environment for U.S. exports.

U.S. rough rice prices are currently projected to range between \$6.75 and \$7.75 per cwt in 1991/92, compared with an estimated range of \$6.60 to \$6.80 for 1990/91. Tighter U.S. supplies and strong domestic demand are currently bolstering U.S. prices.

World rice production in 1991/92 is forecast at 344 million tons (milled), 2.4 percent below 1990/91. Global consumption is projected down marginally, the first decline since 1987/88, but will still exceed output. Thus world ending stocks are projected down 4 percent. Trade is projected to expand 3 percent to 12.9 million tons.

U.S. Outlook for 1991/92

U.S. Production Up Slightly; Arkansas Production Up Substantially

U.S. 1991 rice production is forecast to increase 1.8 percent from a year earlier to 157.7 million cwt, based on USDA's Crop Production report released October 10. Yields should modestly exceed last year's reduced level, but fall far below the 1989 record. Harvested acreage is forecast to increase slightly.

Although U.S. output is expected to change little this year, substantial shifts in production by State and by type are expected. Arkansas output, forecast to increase 18 percent, would boost that State's share of total production to 45 percent, compared with 39 percent in 1990 and 41 percent in 1989. Arkansas and Missouri are the only rice-producing States projected to increase both harvested acreage and yields.

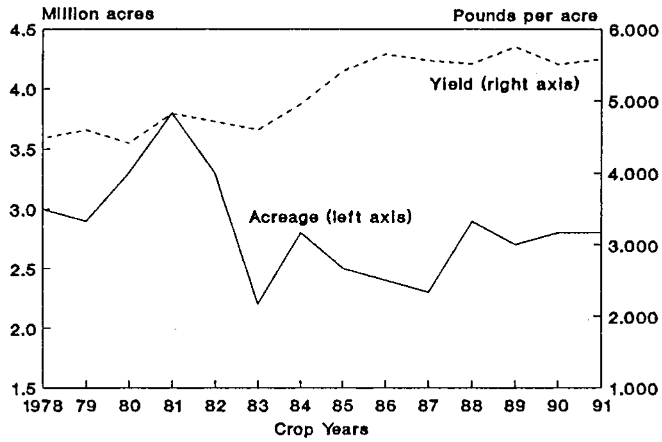
The projected gain in Arkansas' output more than offsets a forecast 16 percent drop in California's production. California's share of total rice output has slipped from 21 percent in 1989 to 19 percent in 1990 to a projected 16 percent in 1991, mostly because of the drought and resulting reduced availability of irrigation water.

Production of long grain rice is forecast up 3.9 percent for 1991, while combined medium and short grain output is expected to fall 3.0 percent. Long grain rice output as a percent of total production is forecast to rebound to 71.3 percent compared to 69.8 in 1990 and 70.1 in 1989. Arkansas, where rice production is expected to rise substantially this year, grows 50 percent or more of U.S. long grain rice. Over half of medium grain rice and virtually all short grain rice is grown in California, where 1991 acreage was sharply reduced. Medium grain production in the Delta will partly offset the expected drop in California's output.

Yields Slightly Higher

Yields for 1991 are currently projected at 5,571 pounds per acre, up 1 percent from 1990 but well below the record 5,749 reached two years earlier. Disease problems and unfavorable weather have caused yields to remain relatively flat in recent years except for the record high in 1989. During the mid-1980's, substantial yield increases occurred when new higher-yielding varieties were being adopted. Unfortunately, many of these varieties are very susceptible to diseases such as blast that can cause severe yield loss. Also, yield potential has not been achieved because of difficulties controlling red rice and less productive land being brought back into rice production as acreage limitations eased.

Figure 1
U.S. Rice Acreage and Yields



1991 forecast

Yields are forecast to increase 6 percent in Arkansas, 4 percent in Missouri, and 3 percent in California. Texas yields, however, are projected to drop 5 percent because of blast and lower ratoon crop yields. Mississippi yields are expected to remain flat, while those in Louisiana should increase slightly.

Acreage Slightly Higher

Harvested acreage is projected at 2.83 million acres in 1991, 18,000 acres more than in 1990. All of this increase is expected to occur in Arkansas and Missouri. Last year, harvested acreage in Arkansas and Missouri was held down because heavy winds and rain caused some lodging.

Whereas 1991 harvested acreage is expected to be slightly higher than a year ago, planted acreage is estimated to be down to 2.87 million acres. All of the planted acreage increase occurred in Arkansas and Missouri, nearly offsetting reductions in California, Louisiana, Mississippi, and Texas. Lower acreage in California largely reflects the reduced availability of irrigation water. Delta acreage may have been limited by rotations necessary to combat disease and control red rice and by persistent rainfall, in some areas, at planting time.

Reduced rice plantings in 1991 also indicated that many producers expected that market prices would not be strong enough to cover production costs on acreage not under target price protection. Although the acreage reduction program was reduced from 20 percent in 1990 to 5 percent in 1991, maximum acres for deficiency payments remained at 80 percent of base.

In the 1990 farm bill, 15 pecent of rice base is designated as normal flexible acres (NFA). Deficiency payments are not paid on NFA acres. Another 10 percent of rice base is designated as optional flexible acres (OFA). Deficiency payments are paid on OFA acres if the base crop is grown. However, producers have the option of growing alternative crops on their OFA acres, without losing rice base, if they are willing to give up deficiency payments on those acres. A maximum of 25 percent of enrolled base (15 percent NFA + 10 percent OFA) can be flexed.

The program enrollment report released in August 1991 shows that 38 percent of total flex acres for rice was flexed out of rice. A larger percentage of rice base was flexed than what occurred for most other commodities. In addition, the report indicates that about 33 percent of enrolled base was registered under the 50/92 program.

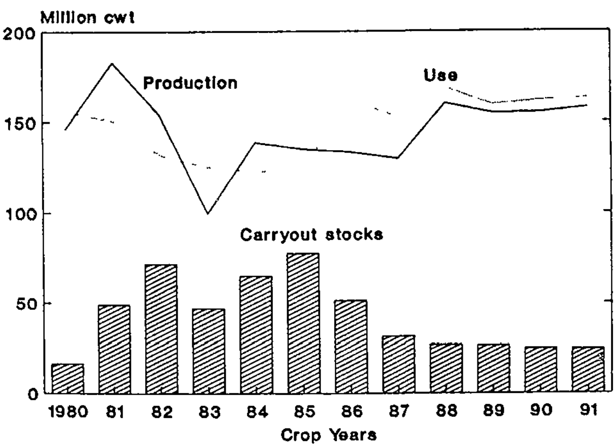
Harvest Lags Historic Average

This year's rice harvest is proceeding quicker than last year, but lagging behind the historic average. Overall, rice harvest was 82 percent complete as of mid-October. First-crop harvest was finished in Texas, nearly over in Louisiana, and 83 percent complete in Arkansas. Mississippi's harvest was only 65 percent finished, due to late planting. This was nearly 26 points behind the historic average. California's harvest was 50 percent complete, 5 points ahead of the historic average.

Rice Supplies Remain Tight

Carryin stocks for 1991/92 are down 1.7 million cwt from a year ago, partly offsetting the expected production increase of 2.8 million cwt. Imports are expected to be up 4 percent and will contribute 5 million cwt to domestic supplies. Overall, U.S. rice supplies in 1991/92 are forecast to increase less than 1 percent to 187.3 million cwt. With a projected 2.5 percent increase in domestic use, but slightly lower exports, carryout stocks are projected to be about the same as a year earlier. This would be the fourth consecutive year with the stocks-to-use ratio below 17 percent.

Figure 2
U.S. Rice Production, Use, and Stocks



1990 estimate. 1991 forecast.

Domestic Use Continues To Exceed Exports

Domestic use continues to grow as per capita use increases. Food use for 1991/92 is forecast up 5 percent, based on trend increases. Brewers' use, currently around 18 percent of total domestic use, is projected up slightly.

Historically, exports have been a larger market for U.S. rice than domestic use. However, in the last few years, domestic use has surged ahead of exports. Relatively tight supplies, strong growth in the domestic market, and higher prices offered by domestic users have limited U.S. rice available for export and have pressured prices above those of foreign rice exporters.

Exports Forecast Lower in 1991/92

U.S. exports are forecast at 70 million cwt in 1991/92, down slightly from 1990/91. Continued tight U.S. supplies are likely to lead to export prices well above those of Asian exporters. World trade is projected to expand slightly over the next year, creating a very competitive environment for U.S. exports.

Latin America is likely to remain the largest customer for U.S. rice in 1991/92. Competition in the high quality markets in the EC and Middle East will remain strong. As of October 10, commitments for this marketing year are running about 14 percent behind the same time last year. Commitments to Latin American markets, particularly Brazil, are ahead of last year, but those to other destinations have fallen behind.

The Export Enhancement Program (EEP) will likely remain an important tool in several markets. While the EEP initiative for Eastern Europe has expired, Turkey's remaining balance is 53,000 tons. P.L. 480 and GSM credit guarantee allocations for rice for fiscal 1992 have not yet been announced.

U.S. Prices Forecast Higher Than a Year Ago

U.S. rough rice prices are currently forecast to range between \$6.75 and \$7.75 per cwt in 1991/92, compared with an estimated range of \$6.60 to \$6.80 for 1990/91, and \$7.35 in 1989/90. Tighter U.S. supplies and strong domestic demand are currently bolstering U.S. prices.

Figure 3
U.S. Rough Rice Prices

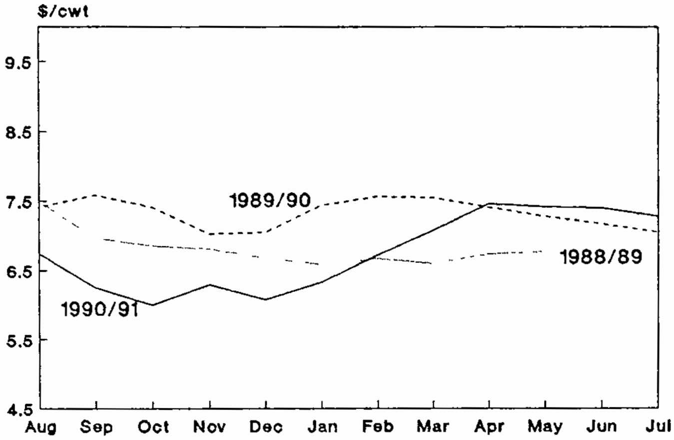
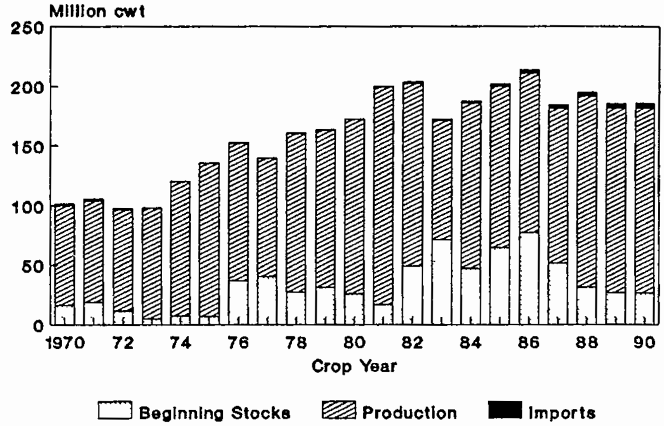


Figure 4
U.S. Rice Supply



Summary of 1990/91

U.S. Production Remained Virtually Unchanged

U.S. rice production in 1990/91 is estimated at 154.9 million cwt, about the same as the previous year. Yields declined 4.2 percent from the 1989/90 record, offsetting a 4.5 percent increase in harvested acres and keeping production virtually unchanged. Excessive moisture in the Mississippi Delta region, where more than half of U.S. production occurs, hampered seeding of conventional rice varieties and forced many producers to grow short-season, lower-yielding varieties. The largest rice growing State, Arkansas, had lodging problems due to heavy rain and wind. Yields were also down in California, which produces more than half of U.S. medium grain output.

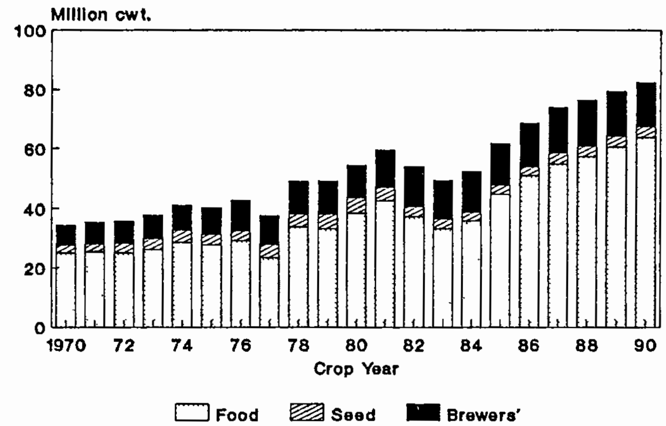
Imports Continued To Increase

Imports continued to climb, reaching a record 4.8 million cwt in 1990/91. Generally, monthly imports tend to rise during the marketing year, with the highest quantities imported during the second half of each year. However, 1990/91 rice imports were unusually high during the second quarter and dropped significantly during the fourth quarter. Although imports reached a record level in 1990/91, they still represent a very small proportion (about 2.6 percent in 1990/91) of total supply. However, imports continue to account for a growing share of U.S. domestic use (See "U.S. Rice Imports and Domestic Use").

Domestic Use Was Record High

Domestic use continued to grow as per capita use increased. Food use for 1990/91 was up about 6.3 percent from the previous year, at 63.9 million cwt. Other components of domestic use are brewers' use and seed use. Brewers' use accounted for 18 percent of total domestic use in 1990/91,

Figure 5
U.S. Rice Domestic Use



compared to 19 percent in 1989/90. In terms of year-to-year change, brewers' use fell 2.6 percent in 1990/91 to 15 million cwt. Seed use did not change from the previous year's level of 3.6 million cwt. Seed use is based on an average seeding rate and expected plantings for the next year's crop.

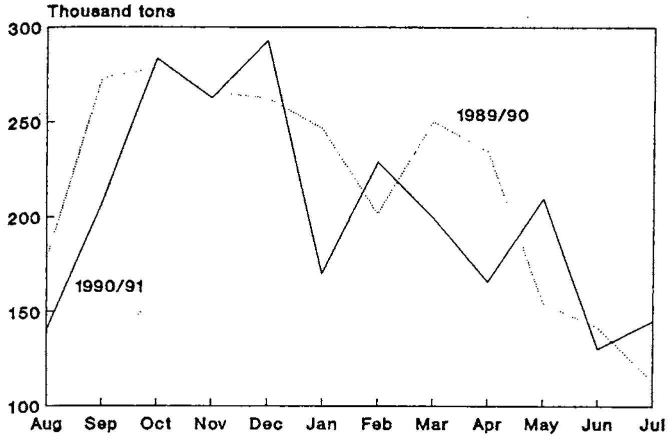
U.S. Exports Were Lower

U.S. exports in 1990/91, estimated at 70.9 million cwt, were down 8 percent from 1989/90. Sharp declines in sales to the Middle East, particularly Iraq, were offset to some extent by increased shipments to Latin America, but the total export value was lower because Iraq imported high quality, milled rice and the largest Latin American importers preferred U.S. rough rice.

Brazil was the largest customer for U.S. rice, followed by the EC, Saudi Arabia, Turkey, and Canada. However, sales to other major destinations, including Mexico and South Africa, declined.

Figure 6

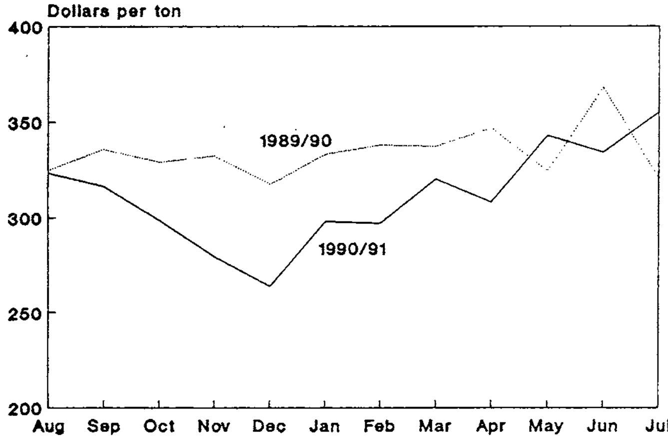
Monthly U.S. Rice Exports



Source: U.S. Department of Commerce

Figure 7

Monthly U.S. Rice Export Unit Values



Source: U.S. Department of Commerce

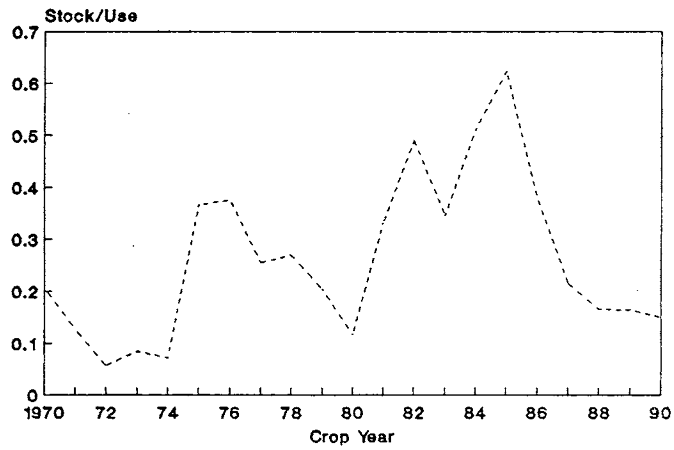
Government programs helped maintain U.S. exports, although much less use was made of GSM credit guarantees than earlier expected. GSM-102 credit allocations in fiscal 1991 for rice reached $91 million compared to $213.8 in fiscal 1990, when Iraq accounted for 45 percent of the total. In fiscal 1990, 85 percent of the allocations were acually used. However, in fiscal 1991, only 39 percent of the allocated credit was used. Hungary, Kuwait, and Turkey received GSM-102 credit guarantee allocations but chose not to take advantage of them. One reason might be that in some markets subsidized prices offered by competitors, such as the EC, made competitors' rice more attractive than U.S. rice bought with credit. In fiscal 1990, 85 percent of the allocated credit was used. The major purchasing markets in fiscal 1991 were Mexico, Senegal, and Trinidad and Tobago. For GSM-103, fiscal year 1991 allocations reached $10 million compared to $25.8 million at the same time in fiscal year 1990. Jordan, the only country to receive a GSM-103 allocation, used the entire amount.

As of September 19, P.L. 480 Title I allocations for fiscal year 1991 reached 120,000 tons compared to 65,000 tons under Title I/III programs at approximately the same time in fiscal 1990. In addition, about 4,000 tons of rice have been allocated under the Food for Progress program. Actual P.L. 480 Title I sales reached 117,700 tons as of September 19, about 92,000 tons less than the sales registered under Title I/III a year ago. About 256,000 tons of rice were programmed under Title II.

The Export Enhancement Program (EEP) has assisted U.S. exporters to counter subsidized EC sales of rice in Eastern Europe and Turkey in fiscal 1991. In fiscal 1991, U.S. exporters sold 28,560 tons of rice to Czechoslovakia, Hungary and Poland. Bonuses averaged $84 per ton. Turkey has also purchased 47,000 tons of rice under EEP in fiscal 1991. Bonuses for EEP sales to Turkey averaged $36 per ton.

Figure 8

U.S. Stocks-to-Use Ratio



Ending Stocks Remained Tight

With no change in production and an increase in utilization, rice ending stocks fell to 24.6 million cwt, a decline of 6.5 percent from a year earlier. The stocks-to-use ratio remained below 17 percent for the third consecutive year.

Stocks-to-Use Ratio Remains Low

The stocks-to-use ratio indicates the ability to fulfill market needs, especially if there is an unexpected surge in demand or reduction in supply. This ratio is especially important in determining when the Acreage Reduction Program (ARP) needs to be changed. Over the past 20 years this ratio varied from a low of 5.5 percent for 1972/73 to a high of 62.1 percent for 1985/86. Since 1985/86 the stocks-to-use ratio has dropped precipitously, reaching 15.2 percent in 1990/91. During this same period, the ARP has been reduced from 35 to 5 percent.

According to the 1990 farm bill, if the Secretary of Agriculture establishes an ARP, it must be at such a level as to achieve an ending stocks-to-use ratio of 16.5 to 20 percent. This ratio is calculated as the ending stocks of the current year divided by the average total use of the previous three years.

International Outlook for 1991/92

World Production Down Slightly

World rice production in 1991/92 is forecast at 344 million tons (milled), about 2 percent below 1990/91. While declines in China and India account for much of the decrease, adverse weather in Southeast Asia is also contributing to production shortfalls. Global consumption is forecast down marginally, the first decline since 1987/88. World ending stocks are expected to tighten, projected down 4 percent from 1990/91.

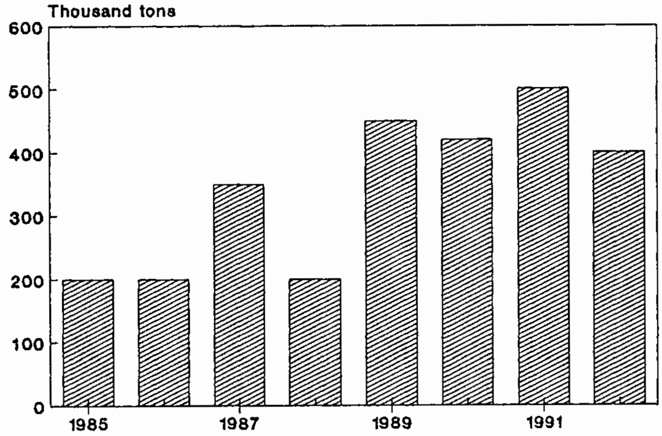
Trade is expected to expand 3 percent to 12.9 million tons. Despite the forecast decline in global ending stocks and increased imports, world prices might not increase significantly above calendar 1991. Upward price pressure resulting from higher import demand will likely be dampened by increased exportable supplies, particularly in Thailand. Additionally, export prices in India and Vietnam are well below Thailand's.

Declines Expected in China and India

China's production is forecast at 127.4 million tons, down 4 percent from the 1990/91 record. Area is projected down slightly, as are yields, but the 1991/92 crop is still expected to be the second largest on record. Flooding in the lower Yangtze river valley damaged the early rice crop and disrupted the planting of the fall-harvested crop. However, the prolonged rain and cool weather in July and August reduced yields and affected output much more than damage from the flooding. Scattered dryness in northern China is also contributing to the decline. However, recent reports indicate that some areas in the flooded provinces were replanted with short-season varieties, similar to those used in Thailand. Those varieties are lower yielding than rice normally planted in China, but their use is expected to help offset some of the flood losses.

The floods also damaged grain storage facilities and destroyed grain stored in open areas. Reports indicate that approximately 4 million tons of stored grain has been lost. At least one quarter of that loss is thought to have been rice. China's rice exports and imports are not expected to be affected by the flood losses. Large stocks of rice remain and the large 1991/92 crop will likely allow China to maintain exports at 500,000 tons and limit imports to 50,000 tons in calendar 1992, although additional amounts are reportedly smuggled in from Vietnam.

Figure 9
India's Rice Exports



1991 forecast; 1992 projected.

India's 1991/92 production is forecast at 71.5 million tons, down 4 percent from 1990/91. Weak monsoons in northern parts of the country delayed or prevented planting in some regions. While the irrigated rice crop in the Punjab remains relatively unaffected, rainfed areas in Bihar, Uttar Pradesh, and West Bengal are suffering from drought. Late summer rains allowed some farmers in those provinces to plant a late crop, although October rains will be necessary for a good outturn.

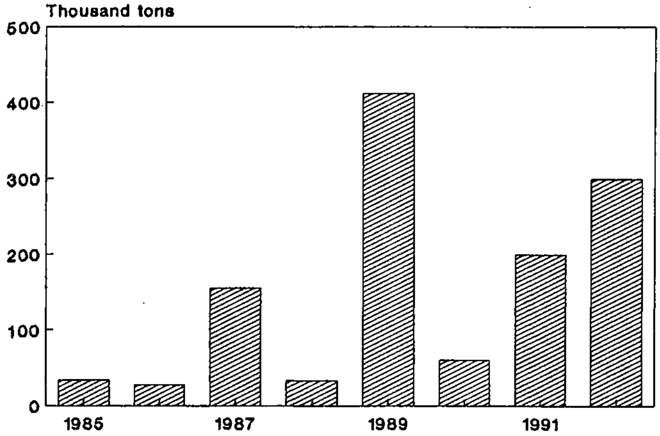
Good crops in southern India are likely to offset some losses in the north. Stocks remain relatively high. In July, India devalued its currency, increasing the incentive to export rice and giving India's rice a competitive edge in the world market. Calendar 1991 exports are forecast at 500,000 tons, including both basmati and ordinary rice. However, calendar 1992 exports, forecast at 400,000 tons, will depend on the impact of the reduced 1991/92 crop, on domestic prices, on government stocks, and on the import demand for basmati rice. Policy makers will need to balance the need for foreign exchange earnings against the risk of higher domestic food prices.

World Imports Expected to Rise

Production Down Among Southeast Asian Importers

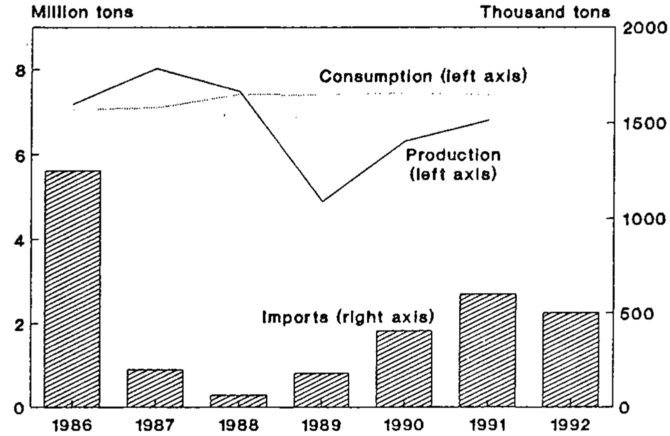
Countries in Southeast Asia have also been affected by adverse weather. Indonesia's minor second-season 1991/92 crop has been reduced by dry conditions in Java. Rainfed areas were particularly affected. Production is forecast at 28.9 million tons, down 2 percent from 1990/91. There is concern

Figure 10
Indonesia's Rice Imports



1991 forecast; 1992 projected

Figure 11
Brazil's Rice Situation



1991 forecast; 1992 projected

that continuing dry weather will have a negative impact on the 1992/93 main season crop, which is now being planted.

The Indonesian government announced that it will import rice to replenish stocks. The National Logistics Agency (BULOG) has been releasing rice into the domestic market to stabilize prices and assist farmers in drought-stricken areas. At the same time, its recent procurement efforts have been slow due to the reduced crop. BULOG stocks are reported to be the lowest since mid-1988. Imports are forecast at 200,000 tons for calendar 1991, twice as much as in 1990. Imports are projected to increase to 300,000 tons in calendar 1992.

Increased support prices encouraged area expansion in the Philippines, somewhat offsetting dry conditions that are likely to reduce yields. Rice production in the Philippines is forecast at 6.0 million tons, 6 percent below 1990/91. Calendar 1991 imports are forecast at 175,000 tons, down over 450,000 tons from 1990. Calendar 1992 imports are projected at 300,000 tons.

Dry weather in Malaysia has also reduced area planted to rice. Malaysia normally imports the equivalent of about 25 percent of its consumption. However, in calendar 1991, imports are forecast to rise over 30 percent to 470,000 tons, the equivalent of 30 percent of Malaysia's consumption. Next year, imports are projected to return to a more normal level of 350,000 tons.

The 1991/92 rice crop in Cambodia and Laos has been damaged by extensive flooding. Production in Laos is only expected to match last year's poor crop. In Cambodia, production is forecast down 15 percent. No increase in imports is projected.

Latin American Imports Projected Down

Latin American 1992 imports are forecast down 5 percent from calendar 1991, mostly because of a decline in Brazilian imports. Brazil is the world's largest rice producer outside of Asia and, in some years, is one of the largest importers. In 1991/92, Brazil is projected to produce 6.8 million tons of rice, 8 percent above last year's poor crop, but still well below the levels achieved between 1986 and 1988.

Limited credit availability and economic uncertainty is preventing further production expansion. In October, the government announced that it would make additional credit available for summer crops, including rice. Since the program does not favor any particular crop and rice is being planted now, it remains unclear whether this late announcement will encourage farmers to substitute rice for other crops. Brazil is forecast to import 600,000 tons in calendar 1991 and is projected to import 500,000 tons in calendar 1992. A significant proportion of Brazil's imports is rough, rather than milled rice.

Like Brazil, Mexico imports rough rice to support its domestic mills. In 1991/92, production is forecast down again from the much reduced 1990/91 crop. Imports in calendar 1991 areto nearly double from a year earlier in calendar 1991 and are projected to rise to 300,000 tons in calendar 1992. Adverse weather and lack of incentives are likely to reduce Peru's crop for the fourth consecutive year. Calendar 1992 imports are projected to match 1991 at 350,000 tons.

Middle Eastern Imports to Increase

Calendar 1992 imports by Middle Eastern countries are forecast at 3 million tons, up 13 percent from 1991. Iran's imports are forecast at 1 million tons, up 25 percent from 1991.

Other Middle Eastern countries, including Turkey and the United Arab Emirates, are also forecast to increase rice imports.

Iraq's imports are forecast up 50 percent from 1991 to 300,000 tons in calendar 1992, but still well below the 556,000 tons annual average imported between 1987 and 1989. The U.N. has lifted the prohibition on exports of food and medicine to Iraq. However, despite reports of sales agreements with several exporters and small shipments of rice from Thailand, Iraq has been unable to make adequate financing arrangements to import rice at its pre-embargo pace. The U.N. decision which allows Iraq to sell oil and use the funds for food and medicine is likely to open the door for further deliveries.

African Imports Forecast Up

Rice imports by North African countries in calendar 1992 are forecast at 138,000 tons, down slightly from 1991. Libya is the largest rice importer, followed by Algeria. Egypt is the only significant rice producer in North Africa. Price and procurement policy changes have encouraged area expansion and yields have been increasing. Egypt is forecast to produce 2.1 million tons in 1991/92 and export 125,000 tons, mostly to Middle Eastern destinations, in calendar 1992.

In Sub-Saharan Africa, 1991/92 production is forecast down 3 percent, and calendar 1992 imports are forecast up 7 percent to 3 million tons. Late rains in the East African countries of Tanzania, Mozambique, and Madagascar account for much of the production decline. Imports are forecast up in the Ivory Coast, Nigeria, Kenya, Madagascar, and South Africa.

EC Imports Forecast Down; Soviet Imports Projected Up

The European Community production is forecast at 1.5 million tons in 1991/92, down 3 percent from the 1990/91 record, but still the second largest on record. Long grain rice production is expanding in the EC, reducing the need for long grain imports from outside the Community. Exports are forecast up 12 percent as the EC continues to pursue an aggressive export program, particularly in Eastern Europe and Mediterranean countries.

East European imports in calendar 1992 are projected at 310,000 tons, up 3 percent from calendar 1991. Czechoslovakia is the largest importer, projected to match 1991 imports of 100,000 tons in calendar 1992. Hungary and Poland are also projected to increase rice imports slightly.

The EC has been a major supplier of rice to East Europe since 1985. However, in 1991, the EC stepped up rice exports to Eastern European countries by selling out of intervention stocks at subsidized prices. EC exports primarily displaced China from the East European market. The United States, however, has been able to expand its exports to Eastern Europe with the help of the Export Enhancement Program. Between January and October 1991 the United States exported nearly 20,000 tons of rice to Czechoslovakia, Poland, and Hungary, exceeding U.S rice exports to Eastern Europe in all of calendar 1990.

The Soviet Union is forecast to import 400,000 tons of rice in calendar 1991 and is projected to increase imports to 500,000 tons in calendar 1992. Reports indicate that the EC has sold 130,000 tons of subsidized rice out of Italian intervention stocks to the USSR in calendar 1991. During the last year, most Soviet grain imports have been bought on credit or with barter arrangements. Thailand has provided credit to the USSR for rice purchases and Vietnam has bartered rice for Soviet products, including oil and fertilizer.

Competitors' Exports Forecast Up 3 Percent

Thailand's 1991/92 main season rice crop was planted between June and September. Total rice production for 1991/92 is forecast at 13.2 million tons, up 16 percent from 1990/91. Early season dryness and low reservoir levels created some concern early in the planting season, but recent rains in the main growing region have alleviated those concerns. In 1990/91, Thailand's crop was severely damaged by adverse weather and brown planthoppers. While brown planthoppers have reappeared in a few areas, the dryness seems to have eradicated them from the major rice regions.

Thailand's exports in calendar 1992 are projected at 4.5 million tons, up 7 percent from calendar 1991. More abundant supplies will likely allow Thailand's export prices to be more competitive than in 1991 unless the government supports domestic rice prices as it has in recent years. Thailand is likely to be very competitive with the United States in high quality markets and to take advantage of reduced Vietnamese supplies to increase market share in low quality markets.

Vietnam's production is forecast at 11.9 million tons, 5 percent below 1990/91 because of expected yield declines. Yields are not expected to be as favorable due to continued input shortages. Calendar 1992 exports are projected at 800,000, down 200,000 tons from calendar 1991. Reduced supplies and continued government concern about maintaining adequate supplies for domestic use account for the decline.

Pakistan's 1991/92 production is forecast at 3.3 million tons, up slightly from 1990/91. The government has increased price incentives for IRRI varieties more than for basmati rice, which will likely lead to some substitution in major growing regions. Calendar 1992 exports are at projected 1.2 million tons, matching calendar 1991. While the government is still advocating greater private sector participation in rice exports, private traders must still compete with the government's Rice Export Corporation, which, the private sector claims, undercuts their prices, especially for basmati rice.

Burma's production in 1991/92 is forecast at 7.6 million tons, down 8 percent from 1990/91. Area is forecast down because recent flooding affected newly seeded area and farmers reportedly do not have enough seed and inputs to replant in time for the main season growing period. Yields in 1990/91 were higher than average. Given this year's early adverse weather, yields are not projected to match 1991/92. Exports in calendar 1992, however, are projected to increase to 500,000 tons. Large carryin stocks will give Burma abundant exportable supplies despite the projected crop shortfall. In addition, Burma has been more successful in marketing its 1990/91 crop than in the past and such efforts are expected to continue into 1992.

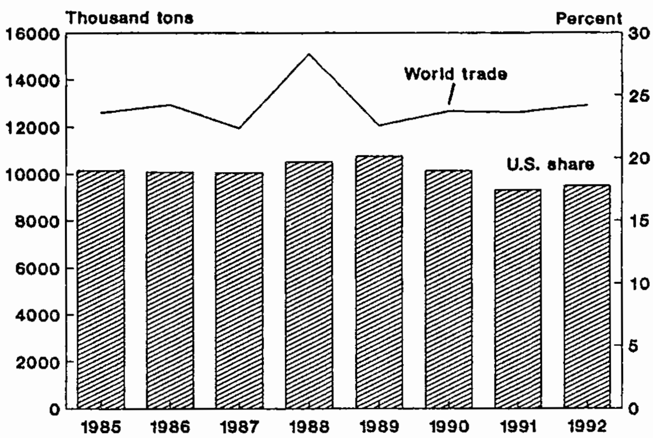
Australia is forecast to produce a record 787,000 tons in 1991/92, more than a third higher than 1990/91. Area is projected up nearly 50 percent from 1990/91 when farmers reduced area because of a voluntary acreage reduction program. However, yields are not expected to match the 1990/91 record. Calendar 1992 exports are projected at 500,000 tons, up slightly from 1991. However, there is some concern in Australia that the large crop might lead to reduced farm prices, even though world trade is forecast up and export prices are likely to strengthen in 1992.

U.S. Exports Projected Up 5 Percent in Calendar 1992

U.S. exports in calendar 1992 are projected to reach 2.3 million tons, up 5 percent for calendar 1991. U.S. market share is expected to expand marginally to 17.8 percent. The United States will likely continue to dominate the Latin American market, although ~~much of the rice demand in~~ this region, particularly in Brazil and Mexico, is for rough rice. Asian exporters are often more competitive in milled rice markets, ~~particularly in countries like Peru, which are~~ willing to accept lower quality rice because the price is less.

Figure 12

World Rice Trade and U.S. Share



1991 forecast; 1992 projected.

Maintaining exports and market share in the high quality, milled rice markets will depend on several factors. First, U.S. prices must be competitive with Asian suppliers. U.S. rice prices (No. 2 long grain, 4 percent broken, fob Gulf) have recently exceeded Thai prices (100 percent B grade, fob Bangkok) by as much as $100 per ton.

Second, demand for high quality rice must strengthen. The EC, an important customer for U.S. rice is likely to reduce long grain imports in calendar 1992 because of larger domestic production. Between 1985 and 1990, Iraq was the largest customer for U.S. rice. Iraq is unlikely to return to the U.S. market for rice in the near future and is now purchasing most of its rice from Thailand.

While Latin American exports have offset much of the volume decline in rice exports to Iraq, export unit values have fallen because such a large proportion of U.S. exports to Latin America has been rough rice. In calendar 1992, little or no growth is projected for other major high quality markets, including South Africa, Saudi Arabia, and several other Middle Eastern countries. Since Thailand is likely to have larger exportable supplies in calendar 1992, the United States will be facing an even more competitive environment than in 1991.

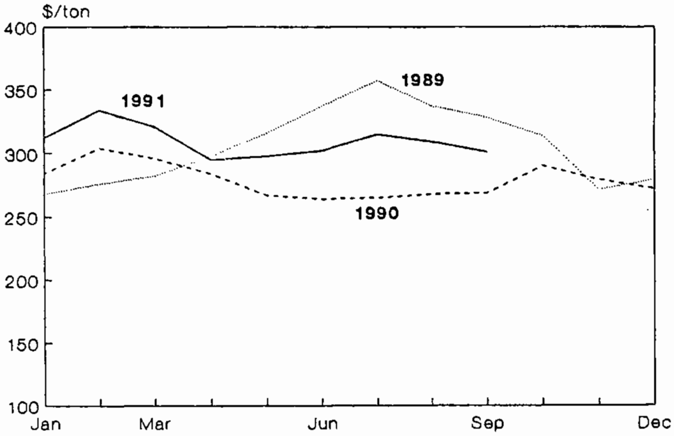
In other markets, including those in Sub-Saharan Africa, North Africa, and Eastern Europe, export programs, including P.L. 480, GSM-102, and the Export Enhancement Program will be critical to maintaining and/or expanding U.S. market share. However, since those markets are not generally high quality, export unit values are likely to remain relatively low.

International Situation for 1990/91

In 1990/91, world rice production reached a record 352 million tons. China accounted for much of the gain. World trade in calendar 1991 is forecast at 12.5 million tons, up 4 percent from calendar 1990. Larger imports by Latin American countries account for most of the increase, although gains are also expected in several Asian countries, including Indonesia, Malaysia, and North Korea.

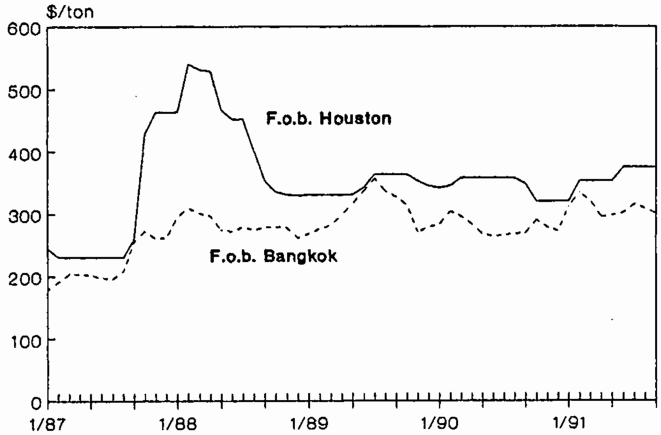
Export prices have generally been higher in calendar 1991 than 1990 because of tight exportable supplies in the United States and Thailand. Thailand's 1990/91 crop was the lowest since 1982/83 because of adverse weather and pests during

Figure 13
Rice Export Prices



F.o.b. Bangkok 100 percent B, average monthly price quotes.

Figure 14
U.S. and Thailand Rice Export Prices



F.o.b. Bangkok, Thailand, 100% B grade long grain price quotes.
F.o.b. Houston, U.S. No. 2, 4% broken, long grain price quotes.

the main growing season. Thailand's smaller dry-season crop outturn was larger than expected, about 2.5 million tons, despite early concerns of low irrigation supplies and fears of continuing problems with brown planthoppers. Much of this crop is exported. Thailand's calendar 1991 exports are forecast at 4.2 million tons, up 7 percent from 1990.

Thai export price quotes have eased in recent months for several reasons. The dry season crop was larger than expected, import demand has been slack, and prospects for the 1991/92 rice crop look favorable.

Competition for low quality markets picked up in calendar 1991. Pakistan has been aggressively marketing its IRRI rice as well as its high quality basmati supplies, likely displacing Vietnam in the low quality markets and India in the Middle Eastern basmati markets. India's large stocks have also led to an increase in ordinary rice exports. Vietnam's exports, in contrast, are forecast at 1 million tons, down a third from 1990 because of a reduced crop and government pressure to distribute a larger proportion of the crop within the country.

U.S. calendar 1991 exports are forecast at 2.2 million tons, 8 percent below calendar 1990. Tight supplies and relatively high export prices continue to keep the U.S. export pace down. According to U.S. Census and USDA's Export Sales Report, exports from January 1 through October 10 of calendar 1991 are down 11 percent from the same time in 1990. Sales have picked up recently as the U.S. harvest enters market channels. Much of the activity has been Latin American purchases of rough rather than milled rice. P.L. 480 shipments are also expected to pick up during the last quarter of the year.

U.S. Rice Imports And Domestic Use

by
Eric J. Wailes and Janet Livezey[1/]

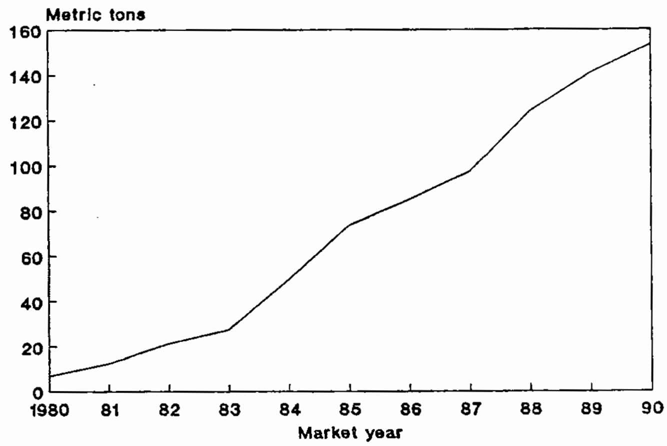
Abstract: Annual U.S. rice imports have increased from 7,000 metric tons in 1980 to over 150,000 in 1990. Analysis of the growth in imports shows that from 1988 to 1990, 22 of every additional 100 pounds of domestic rice food use has been imported. Imports are described by type and origin. Regular milled rice, including Thai jasmine rice, has accounted for the largest volume. Thailand is the primary origin of rice imports, followed by India. Seasonal import patterns, factors influencing import growth, and import restrictions are also discussed.

Keywords: Rice imports, rice consumption, specialty rice

U.S. rice imports for the 1990 market year are estimated at 4.8 million cwt.[2/] As the domestic rice market has grown relative to exports (figure A-1), imports have also increased. Rice imports in 1990 were double their 1985 level and were 22 times greater than in 1980 (figure A-2). During the past ten years, the share of imports in the domestic rice food market has increased steadily from less than 1 percent in 1980 to 7.5 percent in 1990 (figure A-3).

A comparison of the growth patterns of imports and domestic food use reveals that imports have been especially important. The import share of the annual increase in domestic rice food use has averaged 16.7 percent over the past seven years (figure A-4). Over the past three years, the data suggest that 22 of every additional 100 pounds of domestic rice food use have been imported. Consequently, it is useful to examine both the quantity and value of imports by type of rice and origin.

Figure A-2
U.S. Rice Imports, 1980 - 1990



[1/]Agricultural Economists, University of Arkansas, Fayetteville and Commodity Economics Division, ERS/USDA, respectively. The authors gratefully acknowledge the computer assistance of Valencia Mabry.

[2/]All years in this article refer to market year, August-July.

Figure A-1
U.S. Domestic and Export Rice Markets

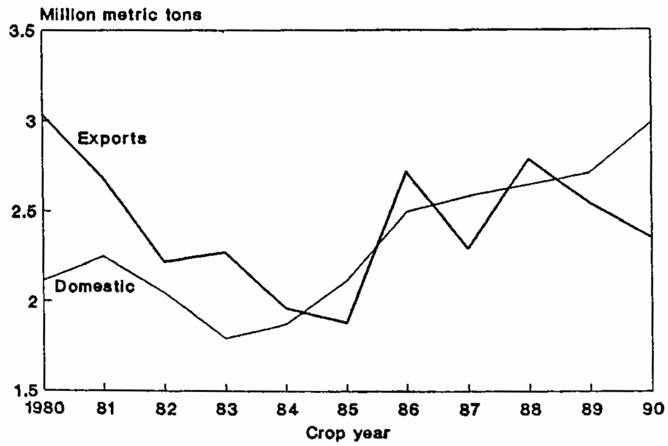
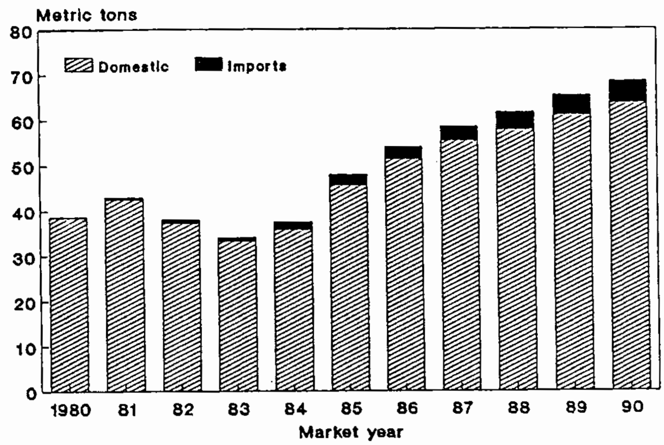


Figure A-3
Shares of U.S. Domestic Rice Market



U.S. Rice Imports by Type

Of the annual quantities of rice imported for the past eleven market years, the dominant type was milled white rice, accounting for over 90 percent of all rice imports since 1982. Basmati rice is the second most important type of rice imported since 1983, accounting for an average of approximately 5 percent. Unfortunately, the total for all aromatic rice, including basmati, is not available from the data. Jasmine, an aromatic rice exported from Thailand, is not identified in the trade data. However, most of Thailand's exports to the U.S., which are identified as milled rice, are likely jasmine. If so, then aromatic milled rice would be the largest imported category.

Rice flour and meal imports were the second largest category as recently as 1982. However, given this category's relatively stable import demand, its share of rice imports declined from 22 percent in 1980 to 2 percent by 1990. During this period, major growth has occurred in each type of rice except brokens.

The value of imports, by type, have followed the quantity patterns. The higher-priced basmati rice captured approximately10 percent of the import revenue, while milled rice accounted for less than 90 percent. Flour and meal declined from 21 percent of all import value in 1980 to only 2 percent in 1990. Unit values by type of rice are also presented. Basmati rice unit values have averaged around $1000 per ton, while the milled rice imports have averaged around $450 and flour and meal imports, $575.

U.S. Rice Imports by Origin

Thailand and India are the primary exporters to the U.S. market (table A-2). Thailand's market share has increased substantially over the decade. Pakistan, Italy, Brazil, Taiwan, and China have been relatively consistent but minor exporters. In terms of value, Thailand is also the most important, although that share is less than its volume share. Due to the higher-valued basmati rice, India's value share of the U.S. rice import market has remained above 20 percent, except in 1988. Others such as Pakistan (basmati) and Italy (risotto type) have higher-valued imports than Thailand and have maintained a value market share above 1 percent in most years.

Table A-1--U.S. rice imports by type, 1980-90

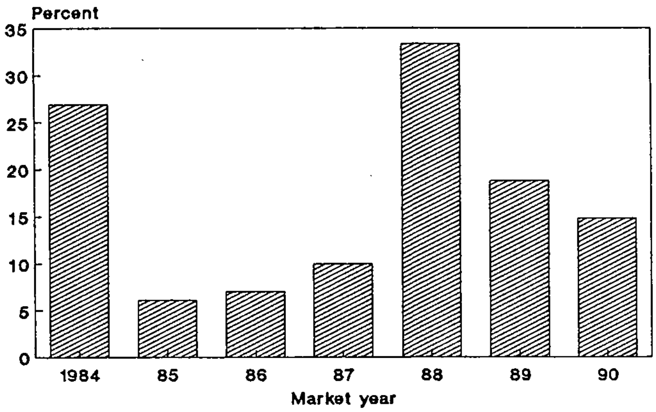
Marketing year	Rough	Brown	Basmati	Milled	Broken	Flour & Meal	Total
				Metric tons			
Quantity:							
1980	18	165	440	3,943	1,004	1,529	7,099
1981	113	131	1,013	9,995	86	1,372	12,710
1982	52	28	971	18,969	53	1,239	21,312
1983	174	277	670	24,656	19	1,821	27,617
1984	241	334	2,251	45,106	173	1,492	49,597
1985	416	395	2,276	68,101	165	2,150	73,503
1986	785	397	2,616	78,818	158	2,235	85,009
1987	565	690	5,445	88,466	121	2,043	97,330
1988	412	638	4,532	115,303	18	2,806	123,709
1989	531	752	6,306	129,632	1,431	2,124	140,776
1990	689	1,422	8,689	139,409	121	3,031	153,361
				Thousand dollars			
Value:							
1980	20	130	369	2,408	275	850	4,052
1981	67	80	838	5,785	40	846	7,657
1982	44	35	844	9,526	26	732	11,208
1983	86	166	581	12,021	13	1,087	13,954
1984	101	141	1,830	18,633	44	871	21,619
1985	186	174	2,313	26,381	47	1,240	30,343
1986	290	158	2,774	31,339	37	1,356	35,954
1987	256	293	6,689	38,606	19	1,129	46,992
1988	133	290	5,212	52,275	11	1,416	59,337
1989	267	273	6,576	62,339	193	1,204	70,853
1990	291	642	9,151	64,310	39	1,745	76,180
				$/metric ton			
Unit value:							
1980	1,100	790	838	611	274	556	571
1981	596	613	828	579	471	617	602
1982	838	1,264	870	502	493	591	526
1983	494	598	868	488	701	597	505
1984	417	422	813	413	256	584	436
1985	448	441	1,016	387	286	577	413
1986	369	398	1,060	398	236	607	423
1987	454	424	1,228	436	159	553	483
1988	322	454	1,150	453	632	505	480
1989	503	364	1,043	481	135	567	503
1990	423	451	1,053	461	324	576	497

Source: U.S. Dept of Commerce, Customs Bureau.

Analysis by Type and Origin

Cross-tabulation of the import data by type and origin reveals that the market is relatively well-segmented (table A-3). Thailand dominated the milled rice market (most likely jasmine, aromatic type) with a 93 percent market share by 1990. India was a distant second. However, India was the primary exporter of basmati, with an average market share of around 85 percent. Pakistan has supplied most of the remainder of this market. In rough, brown, and broken markets, Thailand's share was at least 50 percent in most years.

Figure A-4
Import Share of Growth in U.S. Rice Food Use



Seasonal Patterns of Imports

Of interest for outlook analysis is the identification of consistent patterns of imports within the year. The average monthly imports for the past 11 years reveal a general pattern of increase through the marketing year. The bulk of imports were received during the second half of each marketing year, which corresponds with the new rice harvest in the South Asian countries. Averages for the periods 1980-85, 1986-90, 1980-90, and 1988-1990 are depicted in figure A-5. The seasonal pattern appears to be more level and smooth for the more recent periods.

Factors Influencing the Growth in Rice Imports

Rice imports have increased with the overall growth in the domestic market. Domestic rice use has eclipsed the once

Table A-2--U.S. rice imports by origin, 1980-90

Market year	Thailand	India	Pakistan	Italy	Others	1/
	----------Quantity market share----------					
1980	61.6	11.1	8.2	1.0	18.1	China, Canada, Mexico
1981	69.0	14.1	3.6	1.4	11.9	China, Canada
1982	77.7	15.6	1.7	0.8	4.2	Hong Kong
1983	80.3	11.4	1.0	0.8	6.5	Philippines, Canada
1984	79.9	15.0	0.3	0.3	4.5	Taiwan
1985	86.5	8.6	0.1	0.2	4.6	Taiwan
1986	83.5	9.6	0.1	0.4	6.4	Taiwan, Hong Kong, Brazil
1987	84.7	10.9	0.7	0.3	3.4	Taiwan, Brazil
1988	89.8	6.7	0.6	0.4	2.5	Taiwan, Brazil
1989	87.7	9.4	0.7	0.5	1.7	
1990	87.8	9.2	0.8	0.5	1.7	Brazil
	-----------Value market share-----------					
1980	57.6	20.0	14.1	2.5	5.8	China, Taiwan
1981	60.3	22.0	5.3	3.3	9.1	China, Taiwan
1982	63.4	28.5	2.6	2.4	3.1	
1983	70.7	21.3	1.8	2.1	4.1	
1984	66.1	27.9	0.5	0.9	4.6	Taiwan
1985	71.5	22.7	0.3	0.7	4.8	Taiwan, Brazil
1986	67.7	24.6	0.3	1.3	6.1	Taiwan, Brazil
1987	66.1	27.6	1.6	1.1	3.6	Taiwan, Brazil
1988	76.4	17.9	1.4	1.0	3.3	Brazil
1989	72.7	22.7	1.2	1.1	2.3	Brazil
1990	73.2	21.2	1.4	1.4	2.8	Brazil, United Kingdom

1/ These countries had approximately 1% share and are included in data for Others.

Source: U.S. Dept. of Commerce, Customs Bureau.

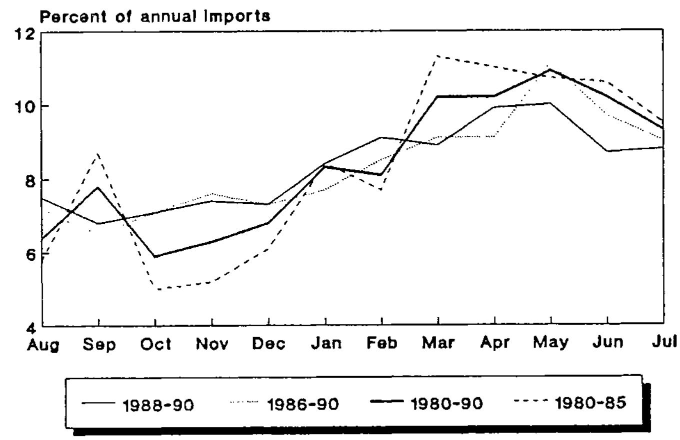
dominant export market. The high-value U.S. market has shown a growing interest in rice products including specialty rices (1,2,6). Varieties with special characteristics, which are not produced domestically, such as the Indian basmati and Thai jasmine, contribute to market growth. Imports of high-quality milled rice, which is produced domestically, are competitive and reflect the likelihood that lower-priced imports have displaced domestic supplies. As reported in table A-1, over 90 percent of imports are of this type. However, the extent of displacement is uncertain since the volume of milled jasmine rice from Thailand is unknown. [3/]

As U.S. rice producers attempt to increase their production of aromatic rice, the aromatic imports will be directly competitive. Current U.S. production of a jasmine variety (Jasmine 85) is believed to account for as much as 50 percent of land planted to special varieties, or 10,000 acres in 1990 (3). Its introduction in the U.S. is recent and production expansion will hinge upon producing and merchandizing competitively relative to Thailand imports.

[3/]No specific tariff schedule code exists to identify this aromatic variety in the trade data, however, it is believed that much of the milled rice imports from Thailand are this type.

Figure A-5

Seasonal Pattern of U.S. Rice Imports



The premium between the U.S. price and the world price has widened more recently. One of the reasons may be due to the higher quality demands in the U.S. relative to the rice market in the rest of the world. As long as the premium provides an attractive margin, other exporters are expected to continue finding the U.S. a desirable market. As imports increase however, they could play the role of arbitrage, keeping U.S. prices more in line with world prices.

Import Restrictions

Based upon the growth of imports, it is clear that border policy measures are not prohibitive. U.S. import restrictions on rice include small fixed tariffs on rough, brown, broken, and milled rice. A more prohibitive barrier in the form of an ad valorem tariff is applied to parboiled rice imports (table A-4).

Outlook for Rice Imports

The increase in U.S. rice imports reflects the growth in demand for more carbohydrates in the U.S. diet, an increased demand for foreign, especially Asian food and meals, and a more sophisticated awareness of alternative rice types. These factors have given rise to a growing market niche, which U.S. production generally has not supplied.

Recent introduction of the Jasmine 85 variety in the southern States, and high-quality Japanese-style japonica, M401, in California reflect the beginning of a U.S. response to the growing demand for specialty rices. While these market niches are still comparatively small, their growth should provide the basis for further investigation into the potential for U.S.production of specialty rices that can be competitively produced, milled, and processed in the U.S. Until this occurs, the growth in rice imports would be expected to follow the

Table A-3--Market leader and share by rice market type, 1980-90

Market	----Milled----		----Basmati----		----Brown----		----Rough----	
year	Leader	Share	Leader	Share	Leader	Share	Leader	Share
1980	Thailand	69.2	India	90.0	Thailand	81.2	Pakistan	72.2
1981	Thailand	77.3	India	97.0	Thailand	83.9	Thailand	58.4
1982	Thailand	82.0	India	82.9	India	57.1	Thailand	34.6
1983	Thailand	84.4	India	74.6	Thailand	55.5	Thailand	31.0
1984	Thailand	84.3	India	84.6	Thailand	44.0	Thailand	88.7
1985	Thailand	89.4	India	86.7	Thailand	70.8	Thailand	76.6
1986	Thailand	86.1	India	87.6	Thailand	80.8	Thailand	93.7
1987	Thailand	89.9	India	90.1	Thailand	73.6	Thailand	87.0
1988	Thailand	93.4	India	83.8	Thailand	65.0	Thailand	64.1
1989	Thailand	92.0	India	85.5	Thailand	61.1	Thailand	88.6
1990	Thailand	93.1	India	86.9	Thailand	84.9	Thailand	99.5

Source: U.S. Dept. of Commerce, Customs Bureau.

Table A-4--U.S. tariffs on rice imports

Article description	Unit	Rates of duty General	Special	Other 1/
Rice in the husk (Paddy or rough)	Kg.	2.8 cents	Free (E,IL) 2/ 2.2 cents (CA)	2.8 cents
Husked (brown)				
Basmati	Kg.	1.3 cents	Free (CA,E,IL)	3.3 cents
Other	Kg.	3.3 cents	Free (E,IL)	3.3 cents
Semi-milled or wholly milled rice, whether or not polished or glazed				
Parboiled	Kg.	17.5 %	Free (A,E,IL)	35.0 %
Other	Kg.	2.2 cents	Free (E,IL)	5.5 cents
Broken rice	Kg.	0.69 cents	Free (E,IL) 0.4 cents (CA)	1.4 cents
Rice flour	Kg.	0.2 cents	Free (A*,E,IL) 0.1 cent (CA)	1.4 cents
Rice meal	Kg.	0.2 cents	Free (A*,CA,E,IL)	1.4 cents

1/ Rate of duty applies to set of countries identified in Section 401 of Tariff Classification Act of 1962, Section 231 or 257(e)(2) of Trade Expansion Act of 1962, Section 404(a) of the Trade Act of 1974. More recently this list included Eastern Europe, USSR, Mongolia, North Korea, Cuba and Vietnam.
2/ Programs under which special tariff treatment is provided:
A or A* Generalized System of Preferences
CA United States-Canada Free-Trade Agreement
E Caribbean Basin Economic Recovery Act
IL United States-Israel Free Trade Area

Source: Harmonized Tariff Schedule of the United States, 1990.

trend from 1980 to 1990, which implies that 10 percent of domestic rice food use would be imported by 1995.

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List of Tables

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

Item	Unit	1987/88	1988/89	1989/90	1990/91	1991/92 2/ (as of October 1991)
Total rice:						
Area planted	Mil. acre	2.36	2.93	2.73	2.89	2.87
Area harvested	"	2.33	2.90	2.69	2.81	2.83
Yield	Pounds/acre	5,555	5,514	5,749	5,507	5,571
Beginning stocks 3/	Mil. cwt	51.40	31.40	26.70	26.30	24.60
Production	"	129.60	159.90	154.50	154.90	157.70
Imports	"	3.00	3.80	4.40	4.80	5.00
Total supply	"	184.00	195.10	185.60	186.00	187.30
Domestic & residual 4/	"	80.40	82.50	82.10	90.50	92.80
Exports	"	72.20	85.90	77.20	70.90	70.00
Total use	"	152.60	168.40	159.30	161.40	162.80
Ending stocks	"	31.40	26.70	26.30	24.60	24.50
CCC	"	0.00	0.00	0.00	0.00	0.00
Free	"	31.40	26.70	26.30	24.60	24.50
Average market price 5/	$/cwt	7.27	6.83	7.35	(6.60-6.80)	(6.75-7.75)
Long:						
Area harvested	Mil. acres	1.70	2.23	2.00	2.07	NA
Yield	Pounds/acre	5,241	5,345	5,464	5,225	NA
Beginning stocks	Mil. cwt	27.40	19.10	15.40	13.20	11.50
Production	"	89.00	119.40	109.20	108.20	112.40
Total supply 6/	"	119.40	142.10	128.90	126.20	128.90
Domestic & residual 4/	"	49.80	55.60	54.90	58.60	61.00
Exports	"	50.50	71.20	60.80	56.00	55.00
Total use	"	100.30	126.80	115.70	114.60	116.00
Ending stocks	"	19.10	15.40	13.20	11.50	12.90
Average market price 5/	$/cwt	7.77	6.96	7.59	NA	NA
Medium/short:						
Area harvested	Mil. acres	0.64	0.67	0.69	0.74	NA
Yield	Pounds/acre	6,395	6,077	6,579	6,294	NA
Beginning stocks	Mil. cwt	21.10	10.80	9.00	11.60	11.70
Production	"	40.60	40.50	45.30	46.70	45.30
Total supply 6/	"	61.70	51.40	54.30	58.50	57.00
Domestic & residual 4/	"	29.20	27.80	26.30	31.90	31.80
Exports	"	21.70	14.70	16.40	14.90	15.00
Total use	"	50.90	42.50	42.70	46.80	46.80
Ending stocks	"	10.80	9.00	11.60	11.70	10.20
Average market price 5/	$/cwt	6.36	6.47	6.71	NA	NA

NA = Not available.
Note: Totals may not add because of rounding.
1/ Marketing year beginning August 1. 2/ Projected. 3/ Includes the following quantities of broken kernel rice (type undetermined) not included in estimates of beginning stocks by type (in mil. cwt.): 1987/88, 2.9; 1988/89, 1.5; 1989/90, 2.4; 1990/91, 1.4; 1991/92, 1.4. 4/ Residual: unreported use, processing losses, and estimating errors. Use by type does not add to total rice use because of the difference in brokens between beginning and ending stocks. 5/ Marketing year weighted average price received by farmers. 6/ Includes imports.

Appendix table 2--Rough and milled rice (rough equivalent): Marketing year supply and disappearance, 1970/71-1991/92

Year beginning Aug. 1	Supply				Disappearance						
					Domestic use						
	Beginning stocks	Production	Imports	Total	Food	Seed	Brewers	Total	Exports	Residual	Total disappearance
	Million cwt										
1970/71	16.4	83.8	1.5	101.7	25.1	2.5	6.8	34.4	46.5	2.2	83.1
1971/72	18.6	85.8	1.1	105.5	25.5	2.5	7.4	35.4	56.9	1.8	94.1
1972/73	11.4	85.4	0.6	97.4	25.1	3.0	7.7	35.8	54.0	2.5	92.3
1973/74	5.1	92.8	0.2	98.1	26.1	3.6	8.1	37.8	49.7	2.7	90.2
1974/75	7.8	112.4	0.1	120.3	28.6	4.0	8.4	41.0	69.5	2.7	113.2
1975/76	7.1	128.4	0.0	135.5	27.7	3.5	9.1	40.3	56.5	1.8	98.6
1976/77	36.9	115.6	0.1	152.6	29.2	3.2	10.3	42.7	65.6	3.8	112.1
1977/78	40.5	99.2	0.1	139.8	23.5	4.3	9.9	37.7	72.8	1.9	112.4
1978/79	27.4	133.2	0.1	160.7	33.7	4.3	11.2	49.2	75.7	4.2	129.1
1979/80	31.6	131.9	0.1	163.6	33.2	4.8	11.2	49.2	82.6	6.1	137.9
1980/81	25.7	146.2	0.2	172.1	38.4	5.1	11.0	54.5	91.4	9.7	155.6
1981/82	16.5	182.7	0.4	199.6	42.5	4.4	12.7	59.6	82.0	9.0	150.6
1982/83	49.0	153.6	0.7	203.3	37.6	2.9	13.5	54.0	68.9	8.9	131.8
1983/84	71.5	99.7	0.9	172.1	32.7	3.8	12.8	49.3	70.3	5.6	125.2
1984/85	46.9	138.8	1.6	187.3	35.2	3.4	13.9	52.5	62.1	8.0	122.6
1985/86	64.7	134.9	2.2	201.8	45.2	3.0	14.1	62.3	58.7	3.5	124.5
1986/87	77.3	133.4	2.6	213.3	52.8	2.9	15.0	70.7	84.2	7.0	161.9
1987/88	51.4	129.6	3.0	184.0	54.9	3.6	15.4	73.9	72.2	6.5	152.6
1988/89	31.4	159.9	3.8	195.1	57.5	3.4	15.6	76.5	85.9	6.0	168.4
1989/90	26.7	154.5	4.4	185.6	60.1	3.6	15.4	79.1	77.2	3.0	159.3
1990/91 1/	26.3	154.9	4.8	186.0	63.9	3.6	15.0	82.5	70.9	8.0	161.4
1991/92 2/	24.6	157.7	5.0	187.3	67.0	3.8	15.5	86.3	70.0	6.5	162.8

1/ Estimated. 2/ Projected as of October 1991.

Appendix table 3--Long grain rough and milled rice (rough equivalent): Marketing year supply and disappearance, 1982/83-1991/92

Year beginning August 1	Supply			Disappearance			Ending stocks
	Beginning stocks	Production	Total 1/	Domestic 2/ and residual	Exports	Total	Total
	Million cwt						
1982/83	17.6	93.4	111.0	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	113.3	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	148.6	51.3	69.9	121.2	27.4
1987/88	27.4	89.0	119.4	49.8	50.5	100.3	19.1
1988/89	19.1	119.4	142.1	55.6	71.2	126.8	15.4
1989/90	15.4	109.2	128.9	54.9	60.8	115.7	13.2
1990/91 3/	13.2	108.2	126.2	58.6	56.0	114.6	11.5
1991/92 4/	11.5	112.4	128.9	61.0	55.0	116.0	12.9

1/ Includes imports. 2/ Use by type does not add to total rice use because of the difference in brokens between beginning and ending stocks. 3/ Estimated. 4/ Projected as of October 1991.

Appendix table 4--Medium/short grain rough and milled rice (rough equivalent): Marketing year supply and disappearance, 1982/83-1991/92

Year beginning August 1	Supply			Disappearance			Ending stocks
	Beginning stocks	Production	Total 1/	Domestic 2/ and residual	Exports	Total	Total
	Million cwt						
1982/83	30.2	60.2	90.6	24.4	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	71.8	26.0	20.1	46.1	25.7
1985/86	25.7	34.5	60.4	17.5	16.7	34.2	26.2
1986/87	26.2	36.6	62.9	27.5	14.3	41.8	21.1
1987/88	21.1	40.6	61.7	29.2	21.7	50.9	10.8
1988/89	10.8	40.5	51.4	27.8	14.7	42.5	9.0
1989/90	9.0	45.3	54.3	26.3	16.4	42.7	11.6
1990/91 3/	11.6	46.7	58.5	31.9	14.9	46.8	11.7
1991/92 4/	11.7	45.3	57.0	31.8	15.0	46.8	10.2

1/ Includes imports. 2/ Use by type does not add to total rice use because of the difference in brokens between beginning and ending stocks. 3/ Estimated. 4/ Projected as of October 1991.

Appendix table 5--Rough rice milled, total milled produced, and milling yields, United States

Year beginning August 1	Rough milled	Total milled produced 1/	Milling yields	Total heads produced 1/	Milling yields
	-------1,000 cwt-------		Lbs./cwt	1,000 cwt	Lbs./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

1/ Includes brown rice.

Sources: Rice Miller's Association Monthly Statistical Statements.
Rice Market News, Agricultural Marketing Service, USDA.

Appendix table 6--Rice Program Provisions, 1985-91

Item	Unit	Crop year 1985	1986	1987	1988	1989	1990	1991
Target price	$/cwt	11.90	11.90	11.66	11.15	10.80	10.71	10.71
Statutory loan rate	"	8.00	7.20	6.84	6.63	6.50	6.50	6.50
Acreage reduction/paid diversion	Pct.	20/15	35	35	25	25	20	5
Participation rate	"	90	94	96	94	94	95	NA

NA = Not available.

Appendix table 7--Class loan rates and differentials, 1984-91

Item	Crop year 1984	1985	1986	1987	1988	1989	1990	1991
	$/cwt							
Milled rice:								
Long whole kernels	14.96	14.53	12.44	11.36	10.89	10.81	10.84	10.74
Medium and short whole kernels	10.81	10.50	10.44	10.36	9.89	9.81	9.84	9.74
Broken kernels	6.20	6.02	4.98	5.68	5.45	5.41	5.42	5.37
Differential (milled basis) 1/	4.15	4.03	2.00	1.00	1.00	1.00	1.00	1.00
Rough rice 2/:								
Average, all classes	8.00	8.00	7.20	6.84	6.63	6.50	6.50	6.50
Average, long grain	8.71	8.68	7.52	7.03	6.75	6.68	6.68	6.65
Average, medium grain	6.67	6.49	6.36	6.54	6.33	6.13	6.21	6.11
Average, short grain	6.65	6.49	6.44	6.39	5.98	5.98	6.12	6.07

1/ The loan differential (milled basis) is the difference between the class whole kernel loan rates.
2/ The rough rice loan rate for each class of rice is the sum of the whole kernels' loan rate weighted by its milling yield (average 56 percent) and the broken kernels' loan rate weighted by its milling yield (average 12 percent).

Appendix table 8--State and U.S. rice acreage, yield, and production, by class

State	Area harvested 1989	Area harvested 1990	Area harvested 1991 Indicated	Yield 1989	Yield 1990	Yield 1991 Indicated	Production 1989	Production 1990	Production 1991 Indicated
	-----1,000 acres-----			------Pounds/acre-----			--------1,000 cwt--------		
Long grain:									
Arkansas	1,030	1,071		5,580	4,950		57,458	53,034	
California	30	24		7,500	7,200		2,250	1,728	
Louisiana	295	304		4,450	4,870		13,128	14,805	
Mississippi	235	250		5,700	5,700		13,395	14,250	
Missouri	78	79		5,200	4,700		4,056	3,713	
Texas	330	343		5,720	6,030		18,874	20,690	
United States	1,998	2,071	NA	5,464	5,225	NA	109,161	108,220	112,434
Medium grain:									
Arkansas	109	128		5,800	5,400		6,322	6,912	
California	330	338		7,970	7,635		26,315	25,807	
Louisiana	190	241		4,400	4,840		8,360	11,664	
Mississippi	1/	1/		1/	1/		1/	1/	
Missouri	1	1		5,200	4,700		52	47	
Texas	8	10		4,900	4,900		392	490	
United States	638	718	NA	6,495	6,256	NA	41,441	44,920	44,486
Short grain:									
Arkansas	1	1		6,000	5,400		60	54	
California	50	23		7,650	7,500		3,825	1,725	
United States	51	24	NA	7,618	7,413	NA	3,885	1,779	798
Total:									
Arkansas	1,140	1,200	1,340	5,600	5,000	5,300	63,840	60,000	71,020
California	410	385	315	7,900	7,600	7,800	32,390	29,260	24,570
Louisiana	485	545	515	4,430	4,860	4,900	21,488	26,469	25,235
Mississippi	235	250	245	5,700	5,700	5,700	13,395	14,250	13,965
Missouri	79	80	98	5,200	4,700	4,900	4,108	3,760	4,802
Texas	338	353	318	5,700	6,000	5,700	19,266	21,180	18,126
United States	2,687	2,813	2,831	5,749	5,507	5,571	154,487	154,919	157,718

NA = Not Available.
1/ No medium grain estimated.

Source: Crop Production 1990 Summary, and October 1991 issue, National Agricultural Statistics Service, USDA.

Appendix table 9--State and U.S. rice area planted, by class

State	1986	1987	1988	1989	1990	1991	1991/90
	Area planted						
	1,000 acres						Percent
Long grain:							
Arkansas	944	885	1,084	1,039	1,110	1,199	108
California	20	36	60	30	24	15	63
Louisiana	310	265	395	310	310	270	87
Mississippi	200	200	255	240	255	250	98
Missouri	66	64	81	80	91	99	109
Texas	282	264	382	332	345	311	90
United States	1,822	1,714	2,257	2,031	2,135	2,144	100.4
Medium grain:							
Arkansas	85	133	135	110	129	150	116
California	288	299	320	335	343	295	86
Louisiana	120	160	150	195	245	260	106
Mississippi	1/	1/	10	1/	1/	1/	1/
Missouri	2	3	2	1	1	1	100
Texas	8	6	8	8	10	9	90
United States	503	601	625	649	728	715	98.2
Short grain:							
Arkansas	1	2	1	1	1	1	100
California	55	39	50	50	23	10	43
United States	56	41	51	51	24	11	45.8
Total:							
Arkansas	1,030	1,020	1,220	1,150	1,240	1,350	109
California	363	374	430	415	390	320	82
Louisiana	430	425	545	505	555	530	95
Mississippi	200	200	265	240	255	250	98
Missouri	68	67	83	81	92	100	109
Texas	290	270	390	340	355	320	90
United States	2,381	2,356	2,933	2,731	2,887	2,870	99.4

1/ No medium grain estimated.

Source: Crop Production and Prospective Plantings, March 1991. National Agricultural Statistics Service, USDA. Acreage, June 1991, National Agricultural Statistics Service, USDA.

Appendix table 10--Rice stocks: Rough and milled 1/

Date	Rough					Milled			
	On farms or in farm warehouses	At mills and in attached warehouses	In ware-houses (not attached to mills)	In ports or in transit	Total all positions	At mills and in attached warehouses	In ware-houses (not attached to mills)	In ports or in transit	Total all positions
					1,000 cwt				
January 1:									
1980	31,021	15,038	57,278	581	103,918	3,137	810	2,123	6,070
1981	26,179	21,111	48,817	6	96,113	3,055	929	2,556	6,540
1982	48,404	22,952	59,117	911	131,384	2,735	907	1,414	5,056
1983	34,551	24,151	76,070	200	134,972	2,960	858	2,401	6,219
1984	30,681	19,541	64,143	344	114,709	3,867	456	1,395	5,718
1985	32,426	19,535	74,514	797	127,272	3,343	524	2,058	5,925
1986	36,737	23,768	81,967	514	142,986	3,674	461	465	4,600
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
April 1:									
1980	12,030	15,581	39,224	563	67,398	3,500	402	2,888	6,790
1981	5,977	15,078	28,673	64	49,792	3,499	1,099	3,214	7,812
1982	26,807	21,289	41,773	411	90,280	4,371	725	1,689	6,785
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	39,464	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 2/	19,345	9,404	43,554	124	72,427	4,002	408	858	5,268
August 1:									
1980	563	9,248	9,940	342	20,093	2,128	403	1,504	4,035
1981	208	5,417	4,206	9	9,840	2,744	446	1,665	4,855
1982	4,453	12,544	23,906	484	41,387	3,191	409	1,877	5,477
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 2/	852	5,149	12,636	58	18,695	3,569	217	457	4,243

1/ These estimates do not include stocks located in States outside the major producing states of Missouri, Mississippi, Arkansas, Louisiana, Texas, and California. 2/ Preliminary.

Appendix table 11--World market rice prices, loan rate basis 1/

Date	Milled kernel rates				Rough rates		
	Long	Medium	Short	Broken	Long	Medium	Short
	Cents/lb.				$/cwt		
1986:							
April 11	6.78	7.36	7.36	3.40	4.19	4.47	4.53
April 18	6.78	5.86	5.86	3.39	4.18	3.65	3.70
April 29 - May 6	6.68	5.73	5.74	3.34	4.13	3.58	3.62
May 13	5.90	4.99	5.00	2.95	3.65	3.12	3.06
May 20	5.83	4.89	4.89	2.91	3.60	3.06	3.10
May 27 - June 24	5.78	4.79	4.79	2.89	3.57	3.00	3.04
July 1 - July 22	5.89	4.79	4.79	2.94	3.63	3.01	3.05
July 29 - August 5	6.07	4.96	4.96	3.04	3.75	3.11	3.15
August 12 - September 2	6.15	5.04	5.04	3.08	3.80	3.16	3.21
September 9 - September 30	5.90	4.81	4.81	2.95	3.64	3.02	3.06
October 7 - October 14	5.84	4.91	4.92	2.92	3.60	3.07	3.11
October 21 - November 18	5.85	5.06	5.07	2.93	3.62	3.15	3.20
November 25 - December 9	5.69	5.06	5.07	2.85	3.52	3.15	3.19
December 16 - December 30	5.57	4.95	4.95	2.78	3.44	3.07	3.12
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

See footnote at end of table. Continued--

Appendix table 11--World market rice prices, loan rate basis 1/--Continued

Date	Milled kernel rates				Rough rates		
	Long	Medium	Short	Broken	Long	Medium	Short
	Cents/lb.				$/cwt		
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
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
1991:							
December 26 - January 22	8.30	7.23	7.24	4.15	5.09	4.47	4.40
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 - 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 - October	9.74	8.80	8.75	4.87	6.03	5.52	5.45

1/ Repayment rates for 1985-crop loans are the world price for the specified class of rice. Repayment rates specified class of rice. Repayment rates for 1986 crop loans and 1987 crop loans are the higher of the world price or 50 percent of the loan rate for the specified class of rice. Repayment rates for 1988-crop loans are the higher of the world price or 60 percent of the loan rate for the specified class of rice. Repayment rates for 1989-1990 crop loans are the higher of the world price or 70 percent of the loan rate for the specified class of rice.

Appendix table 12--Rough rice: Average price received by farmers by month and crop year 1/

Item	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91
						$/cwt					
Month:											
August	10.60	11.80	7.31	8.41	8.22	7.86	4.02	3.82	7.49	7.41	6.74
September	10.20	10.70	7.75	8.48	8.17	7.55	3.86	4.34	6.97	7.59	6.25
October	10.90	10.20	7.73	8.80	8.08	7.73	3.83	6.25	6.85	7.41	6.00
November	11.60	9.86	7.78	8.80	8.13	7.84	3.90	7.53	6.81	7.03	6.30
December	13.10	9.34	8.06	8.66	8.08	7.71	3.74	7.64	6.68	7.05	6.08
January	13.20	9.34	8.05	8.57	8.09	7.90	3.55	7.93	6.58	7.44	6.33
February	13.00	9.46	8.26	8.85	7.72	7.86	3.84	9.37	6.67	7.57	6.72
March	13.40	8.99	7.99	8.63	8.17	7.60	3.62	9.22	6.60	7.55	7.08
April	13.80	8.54	8.23	8.49	8.20	5.32	3.63	8.92	6.74	7.41	7.46
May	13.30	8.55	8.23	8.24	7.91	4.52	3.71	7.97	6.78	7.28	7.42
June	11.90	8.54	7.88	8.20	7.83	4.04	3.62	7.69	7.05	7.18	7.40
July	12.80	8.25	7.95	8.18	7.54	3.86	3.49	7.94	7.45	7.05	7.28
Season average price:											
12 months 1/	12.80	9.05	7.91	8.57	8.04	6.53	3.75	7.27	6.83	7.35	(6.60-6.80)
5 months 2/	11.30	10.40	7.69	8.63	8.14	7.73	3.87	5.71	6.84	7.24	6.25
State:											
Arkansas	12.30	9.37	8.61	9.18	8.51	6.70	3.68	7.60	6.90	7.46	NA
California	14.10	7.35	6.65	6.96	6.43	5.33	3.18	6.72	6.15	6.27	NA
Louisiana	12.00	9.36	8.05	8.90	8.20	7.24	4.03	7.65	6.90	7.81	NA
Mississippi	12.70	9.14	8.66	9.53	8.88	7.10	3.91	7.90	7.02	7.57	NA
Missouri	12.30	9.50	8.65	9.49	8.70	7.05	3.57	7.41	7.22	7.54	NA
Texas	12.80	10.40	8.94	9.97	8.90	7.38	4.22	8.07	7.24	8.02	NA
United States	12.80	9.05	7.91	8.57	8.04	6.53	3.75	7.27	6.83	7.35	(6.60-6.80)
Type:											
Long	12.50	9.70	8.56	9.36	8.66	6.75	3.82	7.77	6.96	7.59	NA
Medium	13.30	8.06	6.91	7.13	6.66	5.87	3.55	6.36	6.47	6.71	NA

NA = Not available.
1/ Crop year--August-July. 2/ First 5 months of marketing year--August-December.

Source: Crop Values and Agricultural Prices, National Agricultural Statistics Service, USDA.

Appendix table 13--Milled rice: Average price, f.o.b. mills, at selected milling centers

Year and type	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Simple average
						$/cwt, bagged							
Long 1/:						Southwest Louisiana							
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	19.40
1984/85	18.25	18.25	17.60	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	17.70	18.00
1985/86	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	15.50	12.70	12.75	12.42	16.10
1986/87	10.60	10.25	10.25	9.90	10.10	10.10	9.95	9.90	10.40	10.40	10.50	10.50	10.25
1987/88	10.70	12.05	17.70	19.75	19.70	20.60	24.45	24.50	24.00	20.75	18.85	17.90	19.25
1988/89	16.80	16.10	14.50	14.50	14.10	14.00	14.20	13.80	13.50	15.40	15.50	15.60	14.85
1989/90	16.40	15.90	15.60	15.00	14.65	15.40	15.65	15.40	15.65	15.80	15.65	15.30	15.55
1990/91	14.65	13.95	13.75	14.00	14.00	14.15	15.45	15.75	16.40	16.50	17.25	16.95	15.25
1991/92	16.40	16.50											
						Houston, Texas							
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	21.15
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	18.70
1983/84	19.50	19.65	20.00	20.00	20.00	20.25	20.25	20.25	20.10	19.50	19.50	19.50	19.90
1984/85	19.40	18.70	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	17.40	18.70
1985/86	18.70	18.30	18.30	18.30	18.30	17.90	17.50	17.30	17.25	13.75	13.50	13.00	16.85
1986/87	13.00	13.00	13.00	13.00	13.00	11.15	10.50	10.50	10.50	10.50	10.50	10.50	11.60
1987/88	10.50	11.25	19.00	21.00	21.00	21.00	23.65	24.05	24.00	21.70	20.50	20.50	19.85
1988/89	18.20	16.00	15.25	15.00	15.00	15.00	15.00	15.00	15.00	15.15	15.50	16.50	15.55
1989/90	16.50	16.50	16.50	16.00	15.70	15.50	16.25	16.25	16.25	16.25	16.25	16.25	16.20
1990/91	15.80	14.50	14.50	14.50	14.50	14.50	16.00	16.00	16.00	16.35	17.00	17.00	15.55
1991/92	17.00	17.00											
						Arkansas							
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	17.80
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	18.40	18.25	18.25	18.25	18.00	18.00	18.00	17.94	17.75	17.80	17.95	17.75	18.00
1985/86	17.75	17.50	17.40	17.25	17.25	17.25	17.25	17.25	15.50	13.25	13.00	13.00	16.15
1986/87	11.90	11.55	11.75	11.90	11.90	11.90	11.90	11.90	11.65	11.50	11.75	11.75	11.80
1987/88	11.90	13.25	18.50	20.50	20.20	21.20	24.05	24.05	24.00	22.50	21.15	19.00	20.00
1988/89	18.30	16.90	15.10	14.75	15.10	14.80	14.75	14.75	14.75	15.60	15.85	16.95	15.65
1989/90	17.20	16.65	15.95	15.70	15.75	15.90	16.00	16.00	16.00	16.00	16.00	16.00	16.10
1990/91	15.50	15.00	14.50	14.50	14.75	14.75	15.75	15.75	15.95	16.75	17.25	17.25	15.65
1991/92	16.85	16.55											
Medium 1/:						Southwest Louisiana							
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	19.30
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	16.30	18.00	16.20	16.00
1985/86	16.00	16.00	16.00	16.00	16.00	16.00	15.70	15.50	14.60	11.90	12.00	11.35	14.75
1986/87	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.50	11.25	11.15	11.20	11.20	10.45
1987/88	11.10	11.95	16.60	17.25	16.75	18.50	19.80	20.15	20.00	18.00	17.40	16.70	17.00
1988/89	16.40	16.20	14.50	14.50	14.00	13.90	13.75	13.50	13.50	14.60	14.65	15.75	14.60
1989/90	15.55	15.30	14.80	14.30	14.04	14.80	15.13	15.13	15.50	15.75	15.65	15.30	15.10
1990/91	14.75	13.90	13.50	13.50	13.50	14.90	14.90	15.05	16.05	16.15	16.50	16.35	14.92
1991/92	15.85	16.00											
						Arkansas							
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	19.40
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	16.80
1983/84	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.20	17.00	17.00	17.00	17.35
1984/85	16.90	16.70	16.35	16.20	16.00	15.75	16.25	15.95	16.30	16.25	16.25	15.90	16.25
1985/86	16.00	16.00	16.20	16.50	16.50	16.50	16.50	16.25	14.80	12.35	12.50	12.50	15.20
1986/87	12.25	11.60	12.00	12.00	12.00	12.00	12.65	12.65	12.65	12.35	12.25	12.25	12.20
1987/88	12.25	12.65	16.70	18.00	17.85	18.70	20.50	20.50	20.50	19.00	18.90	18.00	17.80
1988/89	17.30	16.25	14.75	15.00	15.00	14.70	14.75	14.75	15.25	15.40	15.40	16.75	15.45
1989/90	17.20	16.65	15.95	15.45	15.25	15.40	15.50	15.50	15.50	15.50	15.50	15.50	15.75
1990/91	15.25	14.75	14.50	14.65	14.75	14.75	15.75	15.75	15.90	16.60	17.00	17.00	15.55
1991/92	16.60	16.10											
Medium 2/:						California							
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	20.95
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	15.90
1983/84	15.65	15.50	15.70	15.50	15.50	15.50	15.50	15.40	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	15.95	15.90	16.00	15.75	15.75	15.75	15.59	15.25	15.25	15.65
1986/87	15.00	14.50	13.75	12.65	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	13.00
1987/88	12.50	13.00	16.15	17.00	17.00	16.85	18.50	18.50	18.50	18.00	18.00	18.00	16.85
1988/89	17.85	17.75	16.25	15.75	15.75	15.50	15.50	16.45	17.25	17.25	17.25	17.90	16.70
1989/90	18.45	18.25	17.50	16.55	16.00	15.75	15.75	15.70	15.50	14.90	15.00	15.25	16.20
1990/91	14.80	14.90	14.25	15.25	15.25	15.60	16.25	16.25	16.25	18.10	18.25	17.90	16.10
1991/92	17.65	17.50											
Short 2/:													
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	22.05
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	16.10
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	15.95	15.90	16.00	15.75	15.75	15.75	15.60	15.25	15.15	15.65
1986/87	15.00	14.50	13.75	12.80	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	13.00
1987/88	12.50	13.00	16.15	17.00	17.00	16.85	18.50	18.50	18.50	18.00	18.00	18.00	16.85
1988/89	17.85	17.75	16.25	15.75	15.75	15.50	15.50	16.40	17.25	17.25	17.25	17.90	16.70
1989/90	18.20	18.25	17.50	16.55	16.00	15.60	15.75	15.70	15.50	14.90	15.00	15.25	16.20
1990/91	14.80	14.90	14.25	15.25	15.25	15.60	16.25	16.25	16.25	18.10	18.25	17.90	16.10
1991/92	17.65	17.50											

1/ U.S. No. 2--broken not to exceed 4 percent. 2/ U.S. No. 1.

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

Appendix table 14--Rice byproducts: Monthly average price, Southwest Louisiana

Year and type	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Simple average
							$/cwt, bagged 1/						
Milled second head:													
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	10.80	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	9.20	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	8.80	7.75	7.75	7.75	9.45
1986/87	7.75	7.75	7.75	7.65	7.75	7.75	7.75	7.70	7.60	7.60	5.85	5.65	7.40
1987/88	5.75	6.00	6.90	7.50	7.50	7.75	7.70	7.75	7.75	7.75	7.85	8.25	7.40
1988/89	8.15	8.10	8.50	8.00	8.00	8.00	10.05	9.70	9.70	10.70	10.60	10.45	9.15
1989/90	9.95	9.65	9.00	8.10	8.00	8.00	8.50	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	7.90	7.50	8.50	8.60	9.00	9.15	8.00
1991/92	8.65	8.50											
Rice bran, f.o.b. mills:							$/ton 2/						
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	62.15	70.00	94.00	108.35	120.85	98.50	57.50	50.00	67.50	60.00	NQ	59.00	77.10
1984/85	69.15	49.50	45.15	53.75	69.15	85.00	77.50	53.25	40.50	45.67	45.00	47.50	56.75
1985/86	43.35	40.00	20.00	42.50	62.50	86.00	65.00	51.65	NQ	25.75	20.00	18.35	43.20
1986/87	16.25	23.80	26.50	34.00	53.15	50.00	36.70	28.40	23.50	20.65	18.80	17.00	29.05
1987/88	19.50	27.40	46.70	54.50	54.20	68.35	49.65	47.25	60.00	45.00	44.20	85.00	50.15
1988/89	64.00	58.10	64.00	64.00	70.65	71.40	52.25	64.10	65.00	45.85	46.65	48.75	59.55
1989/90	55.75	55.40	60.25	69.00	76.20	84.40	51.00	49.65	51.50	71.50	75.35	75.90	64.65
1990/91	72.25	52.40	50.75	52.00	56.00	66.40	51.75	48.65	57.65	47.35	50.25	57.50	55.25
1991/92	42.85	36.10											
Rice millfeed, f.o.b. mills:							$/ton 2/						
1981/82	22.60	10.90	17.75	22.00	30.65	29.75	16.50	13.15	13.40	15.40	19.40	NQ	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	25.40	33.30	42.10	61.65	53.00	22.50	24.75	31.20	21.25	25.00	27.75	32.65
1984/85	23.50	18.75	18.65	19.40	24.50	31.75	34.70	22.00	17.00	16.90	15.00	14.50	21.40
1985/86	13.00	13.00	8.00	15.40	19.50	34.10	NQ	19.50	20.85	8.50	5.00	4.50	14.65
1986/87	5.15	10.00	10.00	11.25	15.00	13.75	8.15	6.15	4.50	3.50	3.65	4.25	7.95
1987/88	8.50	9.50	21.35	22.70	21.50	28.35	17.40	18.85	22.50	16.00	19.50	40.00	20.50
1988/89	21.50	17.90	18.00	21.50	24.00	23.60	20.00	19.00	20.00	15.00	15.65	16.00	19.35
1989/90	17.15	16.75	14.00	22.65	23.70	27.70	14.20	14.65	16.50	22.40	25.00	25.00	19.95
1990/91	28.75	19.00	19.25	19.00	21.50	25.25	17.15	18.50	17.50	13.85	14.25	16.30	19.20
1991/92	12.15	11.10											

NQ = Not quoted.
1/ U.S. No. 4 or better. 2/ Prices quoted as bulk.

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

Appendix table 15--Brewers' prices: Monthly average price for Arkansas brewers' rice and New York brewers' corn grits

Year and state	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Simple average
							$/cwt						
Arkansas:													
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	6.90	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	6.80	6.75	7.15
1985/86	6.75	6.70	6.50	6.50	6.50	6.30	6.00	6.00	5.75	5.50	5.50	5.50	6.15
1986/87	5.20	5.00	4.75	4.75	4.65	4.45	4.20	4.20	4.20	4.20	4.10	3.75	4.45
1987/88	4.00	4.15	6.00	6.20	6.10	6.10	6.95	7.25	7.25	6.90	7.40	8.35	6.40
1988/89	8.50	8.70	8.75	8.75	8.75	8.60	10.45	10.20	10.20	11.00	11.00	10.65	9.65
1989/90	9.65	9.00	8.50	8.00	7.75	7.75	7.75	7.45	6.85	6.60	6.60	7.05	7.75
1990/91	7.00	6.10	6.20	6.50	6.25	6.05	6.65	7.10	8.00	8.00	8.00	8.00	7.00
1991/92	8.00	8.40											
New York:													
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	10.51
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	10.54
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	11.01
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	9.97
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	11.53
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	11.69
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	11.61
1991/92	11.71	11.50											

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

Appendix table 16--Thailand milled rice prices, f.o.b. Bangkok 1/

Type	1987/88		1988/89		1989/90		1990/91		1991/92	
					$/metric ton					
100% 1st grade:	BOT 2/	NPQ 3/	BOT	NPQ	BOT	NPQ	BOT	NPQ	BOT 4/	NPQ
August	270	NA	355	NA	504	NA	315	NA	353	NA
September	296	NA	355	NA	390	NA	312	NA	350	NA
October	319	NA	355	NA	374	NA	318	NA		
November	318	NA	355	NA	356	NA	314	NA		
December	312	NA	340	NA	355	NA	310	NA		
January	330	NA	335	NA	355	NA	361	NA		
February	355	NA	NQ	NA	355	NA	378	NA		
March	349	NA	324	NA	343	NA	371	NA		
April	349	NA	348	NA	341	NA	343	NA		
May	348	NA	357	NA	332	NA	341	NA		
June	351	NA	383	NA	318	NA	344	NA		
July	355	NA	410	NA	310	NA	350	NA		
Average	329	NA	356	NA	361	NA	338	NA		
100% 2nd grade:										
August	238	208	315	274	373	337	285	268	325	309
September	263	255	315	279	360	328	282	269	325	301
October	287	272	315	279	344	314	288	290		
November	286	260	315	278	326	271	287	279		
December	279	261	300	265	325	279	285	272		
January	295	295	290	268	325	284	336	312		
February	320	310	285	276	325	307	353	336		
March	314	301	294	282	313	297	346	321		
April	314	297	318	302	311	284	318	295		
May	308	274	327	316	304	267	328	298		
June	311	272	353	337	288	264	319	302		
July	315	279	380	357	280	NA	325	315		
Average	294	273	317	293	323	NA	313	296		
5% brokens:										
August	222	204	305	269	363	332	274	260	315	298
September	251	250	305	274	350	320	272	259	315	291
October	277	267	305	273	334	304	278	281		
November	276	254	305	272	316	264	276	271		
December	269	256	290	260	315	272	275	264		
January	285	291	280	264	315	277	326	305		
February	310	305	275	269	315	300	343	326		
March	304	294	284	277	303	289	336	311		
April	304	288	308	298	301	276	308	286		
May	298	257	317	310	290	260	306	288		
June	301	266	343	331	278	NA	309	292		
July	305	273	370	351	270	NA	315	306		
Average	284	267	307	287	312	NA	301	287		

NA = Not available.
1/ Includes export premium, export tax, and cost of bags. Packed in bags of 100 kg net. 2/ Thailand's posted Board of Trade prices. 3/ Nominal price quotes, Bangkok. In mid-1984, price quotes began to vary significantly from the posted Board of Trade prices. Since then, the nominal quotes have appeared to be more representative of known actual prices than those posted by the Board of Trade for most grades of rice. 4/ BOT September 1991 is preliminary.

Appendix table 17--Milled rice: Average C & F ARAG quotations 1/

Type	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92 3/
				$/metric ton			
U.S. no. 2 milled, 4%, container, FAS:							
August	477	299	316	325	354	306	364
September	475	285	349	303	357	287	376
October	475	305	NQ	303	324	284	
November	475	303	415	310	314	314	
December	470	249	413	300	312	325	
January	454	224	442	292	338	333	
February	455	224	496	290	356	349	
March	455	224	493	290	348	364	
April	383	224	455	292	342	372	
May	325	240	420	317	338	380	
June	291	267	329	356	336	389	
July	286	277	355	368	333	378	
Average	418	260	408	312	338	340	
Thai SWR 100% Grade A, bulk 2/:							
August	265	303	300	380	448	401	415
September	264	297	312	380	433	395	412
October	283	292	349	378	407	402	
November	310	275	341	375	384	395	
December	290	260	338	375	376	400	
January	290	260	365	360	379	418	
February	270	262	395	360	395	439	
March	269	276	396	360	394	428	
April	258	282	383	365	371	398	
May	255	275	377	400	379	398	
June	280	273	366	412	396	391	
July	283	268	383	437	399	395	
Average	276	279	359	382	397	405	
Thai SWR 100% Grade B, bulk 2/:							
August	237	243	250	322	386	311	357
September	239	230	280	320	369	310	342
October	239	225	316	320	359	330	
November	260	219	303	320	331	321	
December	245	215	304	320	322	304	
January	240	218	328	315	328	359	
February	235	236	357	320	350	386	
March	234	244	359	325	343	365	
April	223	246	340	328	326	335	
May	222	241	340	360	309	344	
June	229	238	311	389	308	347	
July	230	235	324	402	307	350	
Average	236	232	318	337	336	339	

NQ = Not quoted.
1/ ARAG = composite of ports near Rotterdam.
2/ Thailand prices changed to bulk quote on May 15, 1985. Prior to this date Thai prices were quoted by the bag.
3/ September 1991 is preliminary.

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

Appendix table 18--World rice supply and utilization

Year	Area harvested	Yield 1/	--Production 2/-- Rough	Milled	Exports 3/	Total use 4/	Ending stocks 5/	Stocks-to-use ratio 6/
	Million hectares	Mt/ha	--------------Million metric tons--------------					Percent
1961/62	115.7	1.86	215.7	147.3	6.3	149.2	8.5	5.7
1962/63	119.6	1.91	228.2	155.2	7.3	151.3	12.4	8.2
1963/64	121.5	2.04	248.4	169.1	7.7	165.2	16.2	9.8
1964/65	125.4	2.12	265.6	180.8	8.2	179.8	17.3	9.6
1965/66	124.0	2.05	254.1	173.3	7.9	172.6	18.0	10.4
1966/67	125.7	2.09	262.5	179.3	7.8	178.7	18.6	10.4
1967/68	127.0	2.19	277.6	189.4	7.2	187.0	20.9	11.2
1968/69	128.7	2.23	286.8	195.5	7.5	191.7	24.8	12.9
1969/70	131.5	2.25	295.9	201.6	8.2	200.2	26.1	13.1
1970/71	132.7	2.36	313.4	213.6	8.6	210.9	28.8	13.7
1971/72	134.9	2.35	317.5	216.4	8.7	216.8	28.4	13.1
1972/73	132.7	2.32	307.4	209.7	8.4	214.7	23.4	10.9
1973/74	136.4	2.46	334.9	228.3	7.7	223.2	28.5	12.8
1974/75	137.9	2.41	332.3	226.5	7.3	226.8	28.2	12.4
1975/76	143.0	2.51	358.7	244.0	8.4	233.3	38.9	16.7
1976/77	141.4	2.46	348.5	237.0	10.6	238.0	37.8	15.9
1977/78	143.6	2.58	370.8	251.9	9.6	245.8	43.9	17.9
1978/79	143.8	2.69	387.4	263.7	11.9	253.5	54.1	21.3
1979/80	141.5	2.67	378.1	257.9	12.6	259.2	52.8	20.4
1980/81	144.3	2.76	398.9	271.1	13.1	276.0	48.0	17.4
1981/82	145.0	2.85	412.6	280.6	11.8	284.6	44.0	15.5
1982/83	140.6	2.99	420.6	286.5	11.9	286.6	43.8	15.3
1983/84	144.3	3.14	452.7	308.0	12.3	304.6	47.2	15.5
1984/85	144.4	3.24	468.4	319.0	11.3	310.2	56.0	18.1
1985/86	145.0	3.23	468.9	319.1	12.6	319.7	55.4	17.3
1986/87	145.4	3.22	468.9	319.0	12.9	323.0	51.4	15.9
1987/88	141.7	3.27	463.9	314.5	11.9	320.2	45.6	14.2
1988/89	145.6	3.36	489.0	331.0	15.1	328.7	47.9	14.6
1989/90	146.4	3.47	508.7	344.6	12.0	337.9	54.6	16.2
1990/91 7/	147.1	3.53	519.9	352.3	12.5	348.0	58.9	16.9
1991/92 8/	145.9	3.48	507.6	343.9	12.9	346.3	56.5	16.3

NA = Not available.

1/ Yields are based on rough production. 2/ Production is expressed on both rough and milled basis; stocks, exports, and utilization are expressed on a milled basis. 3/ Exports quoted on calendar year basis. 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 USSR, North Korea, and parts of Eastern Europe. 6/ Stocks-to-use represents the ratio of marketing year ending stocks to total utilization. 7/ Preliminary. 8/ Forecast as of October 1991.

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

Appendix table 19--World rice production and stocks: Selected countries or regions 1/

Country or region	Crop year 2/						
	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92 (as of October 1991)
	Million metric tons						
Production:							
Bangladesh	22.6	23.1	23.1	23.3	26.8	26.9	27.6
Burma	11.5	11.8	11.4	12.5	13.5	13.7	12.6
China	168.6	172.2	173.9	169.1	180.1	189.3	182.0
India	95.7	90.6	85.3	105.7	111.1	111.9	107.3
Indonesia	39.0	39.0	41.5	42.3	44.7	45.2	44.4
Japan	14.6	14.6	13.3	12.4	12.9	13.1	12.9
South Korea	7.9	7.9	7.6	8.4	8.1	7.7	7.8
Pakistan	4.4	5.2	4.9	4.8	4.8	4.9	5.0
Thailand	20.3	18.9	18.0	21.3	20.2	17.3	20.0
Subtotal	384.6	383.3	379.0	399.8	422.2	430.0	419.6
Australia	0.7	0.6	0.8	0.8	0.9	0.8	1.1
Brazil	9.8	10.6	11.8	11.0	7.2	9.3	10.0
EC-12	2.0	1.9	1.9	2.0	2.1	2.4	2.3
All others	65.7	66.5	64.5	68.2	69.3	70.4	67.5
Total non-U.S.	462.8	462.9	458.0	481.8	501.7	512.9	500.5
United States	6.1	6.0	5.9	7.3	7.0	7.0	7.2
World total	468.9	468.9	463.9	489.0	508.7	519.9	507.6
Ending stocks 3/:							
Total foreign	52.9	49.7	44.6	47.1	53.7	58.1	55.7
United States	2.5	1.7	1.0	0.9	0.9	0.8	0.8
World total	55.4	51.4	45.6	47.9	54.6	58.9	56.5

1/ Production is rough basis, but ending stocks are milled basis. 2/ World rice harvest stretches over 6-8 months. Thus, crop year represents the crop harvested in late 1990 and early 1991 in the Northern Hemisphere and the crop harvested in early 1991 in the Southern Hemisphere. 3/ 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 20--World rice trade (milled basis): Exports and imports of selected countries or regions

Country or region	1987	1988	1989	1990	1991 1/	1992 2/ (as of October 1991)
	Calendar year					
	1,000 metric tons					
Exports:						
United States	2,444	2,247	2,973	2,424	2,200	2,300
Argentina	150	160	130	70	75	60
Australia	338	417	450	470	470	500
Burma	493	368	456	186	300	500
China	1,020	698	320	300	550	500
Taiwan	240	104	68	50	200	100
EC-12	981	920	963	969	1,040	1,160
Egypt	105	108	100	32	125	125
Guyana	69	56	26	30	30	20
India	350	200	450	420	500	400
Indonesia	100	0	104	50	0	0
North Korea	154	199	175	75	0	0
Pakistan	1,226	950	779	904	1,200	1,200
Thailand	4,355	4,791	6,037	3,927	4,200	4,500
Uruguay	190	244	251	250	250	350
Vietnam	153	97	1,400	1,500	1,000	800
Other	560	371	419	387	351	404
World total	12,928	11,930	15,101	12,044	12,491	12,919
Imports:						
Bangladesh	746	187	400	100	100	100
Brazil	200	64	180	405	600	500
Canada	85	135	148	130	160	170
China	554	310	1,200	59	50	50
Cuba	150	200	200	200	150	150
Eastern Europe	320	290	273	284	300	310
EC-12	1,198	1,210	1,263	1,204	1,115	1,040
India	5	650	500	0	0	0
Indonesia	155	33	412	60	200	300
Iran	1,000	400	1,000	850	800	1,000
Iraq	524	603	542	360	200	300
Ivory Coast	445	212	305	300	325	350
North Korea	0	0	0	0	200	200
Kuwait	90	90	90	90	90	90
Madagascar	125	70	130	155	130	200
Malaysia	280	350	360	360	470	350
Mexico	0	0	189	130	250	300
Nigeria	400	240	300	200	200	250
Peru	211	17	162	246	350	350
Philippines	0	181	195	630	175	300
Saudi Arabia	500	431	525	525	530	530
Senegal	355	360	400	390	400	400
South Africa	268	237	280	300	350	375
Sri Lanka	102	180	292	200	150	200
Syria	120	120	140	140	140	140
Turkey	110	170	200	210	200	250
U.A. Emirates	222	220	220	220	220	220
USSR	598	498	600	400	400	500
Vietnam	344	175	50	0	0	0
Other	3,338	3,788	3,691	3,628	3,493	3,470
Unaccounted 3/	483	509	854	268	743	524
World total	12,928	11,930	15,101	12,044	12,491	12,919

1/ Preliminary. 2/ Forecast. 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 21--U.S. rice exports by type 1/

Crop year	Regular milled	Brown	Parboiled	Rough	Brokens	Other	Total 2/
			1,000 metric tons				
1973/74	1,080.1	165.2	345.7	0.2	11.3	1.0	1,603.6
1974/75	1,388.3	546.5	242.5	0.3	14.3	2.5	2,194.4
1975/76	777.3	535.8	406.0	0.3	11.6	0.9	1,731.8
1976/77	1,215.3	346.7	459.2	32.5	37.7	5.7	2,097.0
1977/78	1,275.8	232.7	502.5	132.5	87.1	39.4	2,270.2
1978/79	1,388.8	276.1	627.3	90.6	20.8	27.8	2,431.4
1979/80	1,461.9	475.4	598.4	54.5	40.1	75.5	2,705.9
1980/81	957.7	1,202.7	781.7	13.5	18.0	54.0	3,027.6
1981/82	941.8	502.6	1,000.9	18.7	5.9	39.1	2,681.9
1982/83	954.1	354.3	846.5	188.9	12.7	35.1	2,218.7
1983/84	882.4	334.3	821.8	104.3	37.6	89.7	2,270.2
1984/85	927.7	166.2	630.8	101.1	46.8	81.4	1,954.2
1985/86	891.6	309.6	523.8	55.7	80.1	57.7	1,918.6
1986/87	1,484.0	278.5	596.4	259.0	5.7	56.2	2,679.8
1987/88	1,289.6	178.1	652.9	36.8	132.7	0.1	2,290.3

1/ All rice is reported on a milled-equivalent basis. 2/ Numbers may not add because of rounding.

Source: U.S. Bureau of the Census.

Appendix table 22--U.S. rice exports by export program

Fiscal year	PL 480	Section 416	CCC credit programs 1/	CCC African relief exports	EEP 2/	Export programs	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	48	0	0	795	1,419	2,217	36
1976	509	0	101	0	0	610	1,340	1,953	31
1977	691	0	15	0	0	705	1,614	2,317	30
1978	530	0	50	0	0	580	1,696	2,276	25
1979	486	0	42	0	0	528	1,868	2,396	22
1980	540	0	168	0	0	708	2,247	2,955	24
1981	360	0	452	0	0	812	2,360	3,172	26
1982	374	0	14	0	0	388	2,523	2,911	13
1983	475	0	328	0	0	803	1,473	2,276	35
1984	464	0	571	49	0	1,084	1,209	2,293	47
1985	577	0	359	3/ 180	0	3/ 1,116	3/ 856	1,972	3/ 56
1986	313	0	477	0	23	813	1,569	2,382	34
1987	426	60	636	0	28	1,150	1,304	2,454	47
1988	321	29	443	0	120	913	1,220	2,173	42
1989	408	0	826	0	20	1,254	1,787	3,041	41
1990 4/	374	0	663	0	0	1,037	1,464	2,501	41

1/ Quantities and values shown are based on reports supplied by the export trade and may not completely reflect exports made under these programs. 2/ USDA/Foreign Agricultural Service. 3/ Estimated. 4/ Preliminary.

Sources: Agricultural Stabilization and Conservation Service, and Foreign Agricultural Service, USDA. Table provided by Mark Smith, and Karen Ackerman, ERS-CED, (202) 219-0822.

Appendix table 23--Top-10 U.S. rice export markets

Rank	FY 1990 Country	FY 1990 % of total exports 1/	FY 1989 Country	FY 1989 % of total exports	FY 1988 Country	FY 1988 % of total exports	FY 1987 Country	FY 1987 % of total exports	FY 1986 Country	FY 1986 % of total exports	FY 1985 Country	FY 1985 % of total exports
1	Iraq	12.1	Iraq	18.8	Iraq	21.4	Iraq	22.1	Iraq	22.2	Iraq	17.7
2	Saudi Arabia	9.5	Saudi Arabia	8.7	Saudi Arabia	14.2	Saudi Arabia	13.1	Brazil	14.4	Saudi Arabia	16.5
3	Mexico	7.5	Belgium-Luxembourg	5.1	Belgium-Luxembourg	6.3	Belgium-Luxembourg	6.0	Saudi Arabia	12.8	Belgium-Luxembourg	8.0
4	Peru	6.3	Turkey	4.4	Philippines	5.9	Haiti	4.7	Belgium-Luxembourg	6.2	Canada	6.4
5	Canada	5.4	Spain	4.3	Canada	5.3	Canada	4.4	Canada	4.9	Philippines	5.0
6	Turkey	5.3	Mexico	3.8	Republic of South Africa	4.5	Republic of South Africa	3.4	Liberia	3.2	Republic of South Africa	4.6
7	Haiti	4.3	Canada	3.5	Haiti	3.3	Guinea	2.7	Republic of South Africa	2.8	Bangladesh	3.8
8	Republic of South Africa	4.1	Switzerland	3.2	Switzerland	3.0	Netherlands	2.5	Switzerland	2.2	Switzerland	2.7
9	Belgium-Luxembourg	4.1	Haiti	3.1	Jamaica	2.9	Liberia	2.4	Jamaica	2.0	Liberia	2.7
10	Jordan	3.7	Republic of South Africa	3.1	Bangladesh	2.7	Turkey	2.4	Dominican Republic	1.9	Jamaica	2.4
	Sub-total	62.4		58.1		69.3		63.7		72.5		69.7
		Million dollars										
Value of U.S. rice exports		829		955		734		551		648		677

1/ Percent calculated as proportion of total value of U.S. rice exports.

Sources: U.S. Bureau of the Census.
FATUS, Foreign Agricultural Trade of the U.S., USDA, various issues.

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