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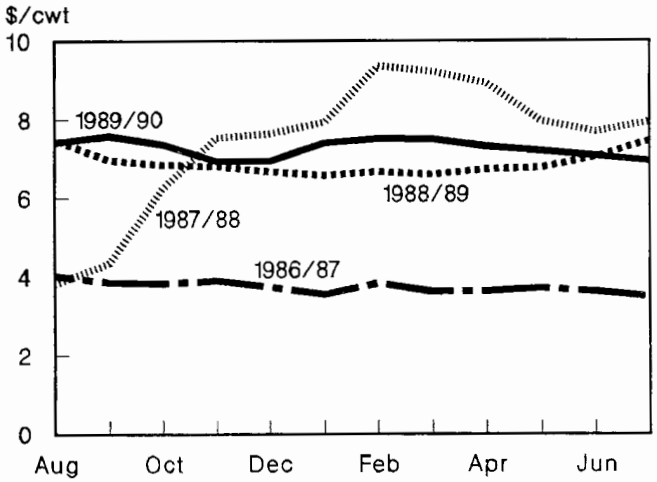
Rice

Situation and Outlook Report

Rice: Monthly U.S. Farm Prices



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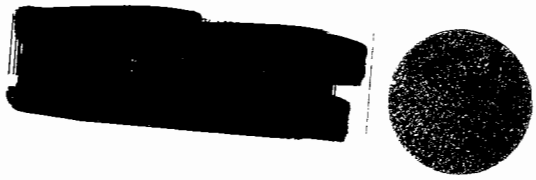

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Rice Conversions
1 cwt = 100 pounds = 2.22 bushels = .0454 metric tons
1 metric ton = 2,204.6 pounds = 22.046 cwt = 48.992 bu.
1 cwt rough rice = .032 metric ton milled
1 metric ton milled = 31 cwt rough

Summary

Total U.S. rice supply (stocks, plus production, plus imports) for 1990/91 is projected up 3.8 million cwt from 1989/90. Production, expected to be up 3.6 million cwt, accounts for most of this increase. Beginning stocks are forecast down 0.4 million cwt from a year ago, but imports are projected up 0.6 million to 4.8 million cwt.

U.S. rice production in 1990/91 is forecast at 158 million cwt, up 2.3 percent from a year earlier. The entire increase is in medium grain output. Long grain production is projected to remain near last year's output and short grain production is forecast down. The higher output resulted from a 4.5 percent acreage increase over 1989/90, to 2.81 million harvested acres. Yields for 1990/91 are projected at 5,629 pounds per acre, down 2 percent from the year earlier record of 5,749 pounds.

U.S. exports are forecast to fall 3.6 percent, from 1989/90 to 74 million cwt, as a result of reduced world trade and the U.N. sponsored general embargo against Iraq. U.S. rice exporters are searching for new markets to replace the substantial loss of the Iraqi market. Iraq has been a major destination for U.S. rice purchased through government programs and, since these programs might be used more extensively in 1990/91, other countries are likely to benefit. Eastern Europe, Africa, and Latin America are areas where U.S. exports are likely to increase.

For the fifth straight year, U.S. production is expected to fall short of use. As a result, stocks will remain tight. An increase in imports will keep stocks from falling. For the third straight year, carryout stocks are expected to remain close to 26 million cwt and the stocks-to-use ratio at around 16 percent.

World rice production is forecast to reach a record 345 million tons in 1990/91, slightly above 1989/90. Consumption is projected up 2 percent, and world ending stocks are expected to reach a record in 1990/91. Foreign production is projected up, reaching a record 340 million tons. Both consumption and stocks are forecast to rise.

Abundant Asian crops and the U.N. sponsored general trade embargo against Iraq have limited trade prospects for calendar years (cy) 1990 and 1991. World trade in cy 1990 is forecast at 12.4 million tons, down 18 percent from cy 1989. Trade in cy 1991 is projected up 6 percent to 13.2 million tons.

Since Asian imports are expected to decline, exporters are looking toward expanding trade in other regions. However, the trade embargo on Iraq has limited growth prospects in the Middle East.

Iraq, the fourth largest importer in cy 1989, accounted for 4 percent of global imports. Iraq was the largest market for U.S. rice in cy 1989, taking about 13 percent of U.S. rice exports. Total Iraqi imports in cy 1991 are now expected to be cut sharply by the U.N. sponsored general trade embargo.

World trade in cy 1990 and 1991 is likely to be supported by large imports by Latin American countries, particularly Brazil, Peru, and Mexico. Major exporters are being hampered by strong Asian production, little market expansion, and stock accumulations. Their exports will depend, in large part, on government policies adopted by Vietnam and Thailand.

This issue includes a special article, "The Role of Export Credit Programs for Rice."

U.S. Rice Outlook for 1990/91

U.S. Production Expected Up Slightly

U.S. rice production in 1990/91 is forecast at 158 million cwt, up 2.3 percent from a year earlier. The entire increase is in medium grain output. Medium grain production is forecast up 16.6 percent to 48 million cwt. Medium grain output is expected to make up 30 percent of the total compared to 27 percent a year ago and 23 percent 2 years ago. Most of the remaining production is long grain, which is forecast to remain about the same as a year ago.

Short grain output has made up less than 3 percent of total production the past 3 years and is expected to shrink to less than 1 percent of the total in 1990/91. California grows virtually all short grain rice and the major market has always been Puerto Rico. Medium grain producers in Louisiana and Arkansas have recently taken over this market because transportation is cheaper than from California.

Increased overall output is the result of a 4.5 percent increase over 1989/90 to 2.81 million harvested acres. The increase is mainly attributed to a change in the acreage reduction requirement that allowed producers to plant 80 percent of their base acreage in 1990 compared with 75 percent in 1989. However, the wet spring in the Delta kept plantings below what could have been grown.

Yields for 1990/91 are projected at 5,629 pounds per acre, down 2 percent from the year earlier record of 5,749 pounds per acre. Yields are forecast down in all rice-producing States except Louisiana and Texas. Wet weather hampered rice seeding in the Delta, where half of U.S. rice is grown, and forced some producers to switch to lower-yielding short season varieties. Also, heavy winds and rain slowed harvest and caused some lodging in Arkansas. By October 14 only 64 percent of the Arkansas crop was harvested compared to a 91 percent average. Also, the late harvest increased the risk of frost damage which could further reduce yields. Although Texas yields are not forecast to be down, higher yields would have been possible if second crop cuttings had not been decreased because of delays in planting and harvesting the first crop.

Increased Production and Imports Forecast To Elevate Supply Slightly

Total U. S. rice supply (stocks, plus production, plus imports) for 1990/91 is projected to be up 3.8 million cwt from 1989/90. Beginning stocks are forecast down 0.4 million cwt from a year ago, but imports are projected up 0.6 million to 4.8 million cwt. Production is expected to be up 3.6 million cwt, thus accounting for most of the forecast increase in supply.

Figure 1
U.S. Rice Acreage and Yields

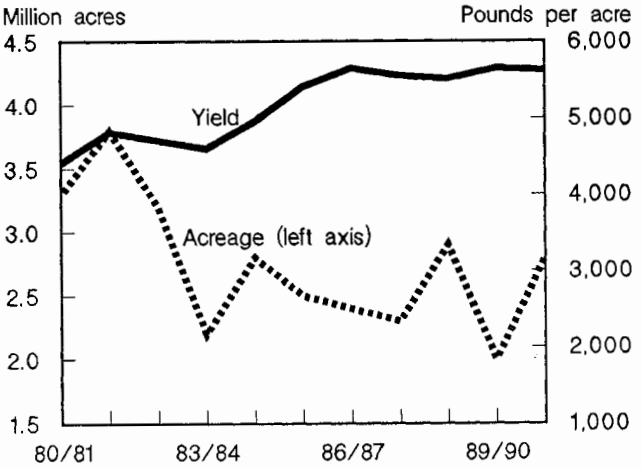
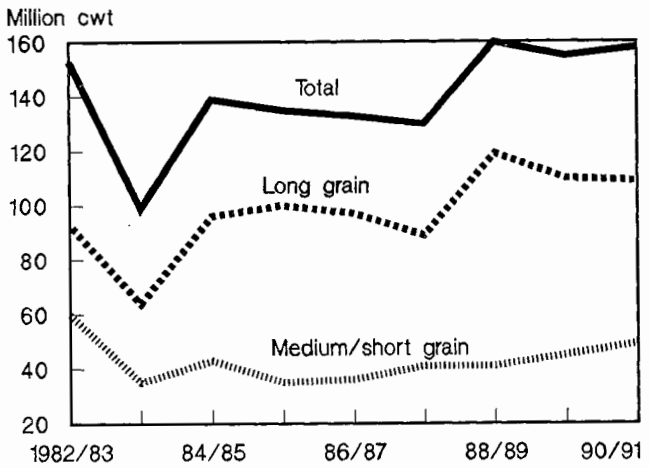


Figure 2
U.S. Rice Production



U.S. Exports Forecast Down in 1990/91

U.S. exports are forecast to fall 3.6 percent from 1989/90 to 74 million cwt as a result of reduced world trade and the Iraqi embargo. U.S. rice exporters are searching for find new markets in 1990/91 to replace the substantial loss incurred by the U.N. sponsored trade embargo against Iraq. Currently, increased P.L. 480 sales to the Ivory Coast are boosting exports to Africa. Brazil's recent purchase of 17,000 tons of U.S. rough rice could signal the beginning of large purchases by that country.

U.S. Government programs may be used more extensively in 1990/91. Iraq was a major destination for U.S. rice purchased through government programs in the past. However, other regions are likely to benefit from these programs. East-

New Farm Legislation

New farm legislation was recently approved by Congress that makes $11.9 billion in cuts in farm programs and major changes in farm, environmental, and consumer policy.

Key provisions for rice include the following:

- Target prices for 1991 through 1995 crops will be frozen at $10.71 per cwt,
- The price support level will be the same as current law,
- The maximum Acreage Reduction Program (ARP) will remain at 35 percent, and
- Target price deficiency payments will be available on underplanted acreage between 50 and 92 percent of the payment acres.

An important feature of the new bill is the *planting flexibility* component. A 15-percent planting flexibility program for wheat, feed grains, cotton, and rice producers will be established for the 1991 through 1995 crops. Under this program, farmers would not receive payments on 15 percent of their crop acreage base, but would be allowed to grow any crop except fruits and vegetables.

An additional 10-percent optional planting flexibility would be tied to program crop base. Producers may plant up to 10 percent of program crop base to other crops and receive base protection. Deficiency payments are not available on program crops planted on "flexed" acres. Loan eligibility is extended to program crops on flexed acres. Cross-compliance provisions are eliminated.

Base and yield provisions are as follows:

- Producers eligible to receive a deficiency payment for any program crop in any crop year can not use acreage, planted or considered planted with any program crop or oilseed, to increase crop acreage bases in subsequent years.
- Farm program payment yields will be frozen at the 1990 level. The Secretary shall allow producers to provide actual yield data to ASCS county committees.
- Rice base generally will equal the acreage planted and considered planted to rice in each of the three preceding years. Special base calculating rules apply to the 1991 and 1992 crops for producers who had not participated in production adjustment programs during the preceding two years.

Environmental and conservation issues include the following:

- *Wetlands Protection ("Swampbuster")*: Extends 1985 farm bill protections for 60 to 80 million acres of fragile wetlands. Also, for the first time, farmers may protect and restore their wetlands by enrolling them in a one million-acre reserve program and selling the federal government a conservation easement.
- *Clean Water:* Creates major new incentive program to help farmers prevent contamination of ground and surface water on 10 million acres of land. Also, for the first time, USDA must help farmers meet state and federal environmental standards.
- *Record keeping for Dangerous Pesticide Use*: In order to help monitor chemical use, farmers are required to keep records of hazardous pesticide use.

Note: Additional information is available from ASCS.

ern Europe, Africa, and Latin America are areas where U.S. exports are expected to increase. (See international section for further details)

U.S. Rice Use Projected To Exceed Production; Stocks To Remain Tight

Continued increases in domestic use of rice are expected to more than offset the forecast decline in U.S. exports. Consequently, total U.S. rice use is projected to increase by 3.6 million cwt (exactly matching the increase in output) to 162.8 million cwt. For the fifth straight year, U.S. production is expected to fall short of use. As a result, stocks will remain tight. An increase in imports will keep stocks from falling. For the third straight year, carryout stocks are expected to remain close to 26 million cwt and the stocks-to-use ratio at around 16 percent.

U.S. Prices Forecast Down in 1990/91

U.S. farm prices are a function of world prices and U.S. and world supply/demand conditions. Continued intense competition among traders is expected to keep world prices from rising in 1990/91, assuming no significant changes from current estimates of world supply/demand conditions. With the United States searching for new markets to make up for loss

of the Iraqi market, weaker world trade will likely hold down prospects for higher U.S. farm prices. Unforeseen circumstances, however, could immediately boost prices.

U.S. farm prices are currently forecast to range between $6.25 and $7.25 per cwt in 1990/91, compared with an estimated $7.30 in 1989/90 and $6.83 in 1988/89. Recently the nearby futures has shown an upturn reflecting the delayed harvest and tight supplies in the United States as well as purchases of U.S. rice by Brazil. Reports of lower test weights and milling rates for U.S. 1990 crop rice adds to the tightness of U.S. supplies and provides further support for U.S. prices.

Recap of 1989/90

Production Down; Milling Rate Up

U.S. rice production in 1989/90 slipped to 154.5 million cwt, down 3.4 percent from 1988/89. This decrease was attributed to an 8-percent drop in long grain production. Medium/short grain production rose 11 percent.

Lower long grain output resulted from reduced acreage. Long grain acreage declined 10 percent from 1988/89, while medium/short grain acreage rose 3 percent. About half the 1989/90 acreage decrease was due to increased participation in USDA's 50/92 program. Under this program, additional acreage removed from production nearly doubled from the prior year.

Overall yields reached a record 5,749 pounds in 1989/90. Long grain yields rose 2.3 percent from a year ago and medium/short grain yields rebounded 8 percent from the prior year's reduced level. Good weather and few disease problems helped yields improve in most rice-producing States. Excessive rainfall in Texas and Louisiana during the critical heading stage kept their yields down.

Although rough rice production was down 3.4 percent from 1988/89, milled production was down only 1.3 percent. The exceptionally high quality of the 1989/90 crop escalated the average milling rate to 73 percent compared with 71.5 percent in 1988/89 and 69.9 percent in 1987/88. With higher milling rates, less rough rice was needed to meet domestic and export needs.

Stocks Remained Tight; U.S. Farm Prices Held Firm Through March

For the fourth straight year, total use of rice outpaced production in the United States. As a result, stocks remained tight at 26.3 million cwt. Tight U.S. supplies kept American farm prices firm in 1989/90 even though world prices tumbled. World prices fell 40 percent in 1989/90 because of diminishing world trade and accumulating world rice supplies. Competition among rice trading countries, especially between Thailand and Vietnam, further pressured prices downward.

Because of tight U.S. supplies, U.S. farm prices remained above year earlier prices for most of the August-July marketing year. Monthly prices reached a peak in February 1990 of $7.52 per cwt and remained above year-ago prices through June. Between March and July U.S. prices fell 8 percent reflecting loss of the Iraqi market, weaker world trade, and sharply lower world prices.

International Rice Situation

World rice production is forecast to reach a record 345 million tons in 1990/91, slightly above 1989/90. Consumption is projected up 2 percent and world stocks are forecast to reach a record. Foreign production is projected up, reaching a record 340 million tons. Both consumption and stocks are forecast to rise.

Abundant Asian crops and the Iraq trade embargo have reduced trade prospects for calendar year (cy) 1990 and 1991. World trade in cy 1990 is forecast at 12.4 million tons, down 18 percent from cy 1989. Trade in cy 1991 is projected up 6 percent to 13.2 million tons. Export prices have declined from the first half of cy 1990 as exporters compete for the tighter world market.

Good Crops Cut Asia's Rice Imports

Total Asian imports in cy 1991 are projected to decline 3 percent from cy 1990 and 46 percent from cy 1989. Favorable monsoon rains have boosted prospects for Asia's 1990/91 rice crops. Both China and India, which together account for over half of world production, are expected to harvest record crops.

For China, 1990/91 marks the second consecutive year of record crops. Two years of exceptional weather and government policies that promoted grain production helped boost production. The government raised rice procurement prices, offered cash rather than IOUs in payment, and increased its investment in agriculture. China's 1990/91 production is forecast at 127 million tons, resulting from both area and yield increases.

Larger supplies and a change in policy which allows freer movement of rice within China has led to a sharp drop in imports from cy 1989. In cy 1989, China imported 1.4 million tons of rice. In cy 1990, China is forecast to return to its position as a net exporter, but not to the levels exported prior to 1987 when it exported close to 1 million tons annually. In fact, despite larger supplies, China is forecast to increase its imports in cy 1991. These imports are likely to be a result of an increase in smuggling from Vietnam and government-to-government trade agreements with Thailand and Burma to import small quantities of rice.

U.S. Rough Rice Exports

U.S. rough rice exports are typically a small proportion of U.S. rice exports, representing about 3 percent of annual U.S. rice exports. A few countries in the EC and Latin America have imported the bulk of U.S. rough rice exports over the past decade.

Some countries import rough rice even though it is more expensive to ship than milled rice and they must incur additional costs to mill rough rice once it arrives. In some countries, production shortfalls result in unused milling capacity. Importing rough rice, therefore, can support the domestic rice milling industry, rather than compete with it. Policies, such as those in the EC, can favor the importation of rough rice instead of milled rice. Finally, price spreads between U.S. rough and milled rice can influence importer decisions to import rough rather than milled rice.

EC rice millers import rough rice and re-export the milled product. It is profitable for millers because the EC reimburses the millers for import levies paid on rough rice, if it is milled and re-exported to non-EC countries (usually at a subsidized rate).

Latin American importers, including Brazil, Venezuela, Costa Rica, and Mexico, import rough rice only when domestic supplies fall short of consumption. Rough rice is imported to help meet domestic demand and to keep domestic mills operating. For example, Brazil licenses rice imports only in times of domestic shortage. Food imports are extremely unpopular with Brazil's farm sector, and foreign debt constraints have forced the Government to minimize imports of all types.

In the past, Brazil has attempted to minimize foreign exchange outlays by importing rough rice which is less costly than milled rice. The Government has also favored rough rice imports to reduce opposition from Brazilian rice millers. In 1986, Brazil's large imports of U.S. rough rice were used to meet growing demand at a time when production was not increasing as rapidly as consumption and Brazilian stocks were low. Large stocks and low prices in the United States tipped the scale in favor of Brazil's decision to purchase U.S. rough rice, in addition to milled rice.

The U.S. price spread between rough and milled rice may also influence the level of U.S. rough rice exports in a given year. There appears to be some correlation between rises in the spread between rough and milled rice and U.S. exports of rough rice. In some years, the price spread between U.S. rough rice and milled rice widened, likely contributing to the increase in U.S. rough rice exports in those years.

Table 1--U.S. Rough Rice Exports Versus Total Rice Exports

Calendar year	Rough rice exports	Total rice exports	Rough Total	Price spread 1/
	1,000 metric tons		Percent	$/ton
1978	129	2,264	5.7	182
1979	45	2,267	2.0	132
1980	22	2,976	.7	138
1981	132	3,008	4.4	248
1982	70	2,487	2.8	168
1983	64	2,331	2.7	188
1984	109	2,129	5.1	229
1985	51	1,902	2.7	205
1986	295	2,401	12.3	111
1987	47	2,444	1.9	118
1988	126	2,247	5.6	165
1989	99	2,973	3.3	123

1/ Total rice export unit value minus rough rice export unit value.

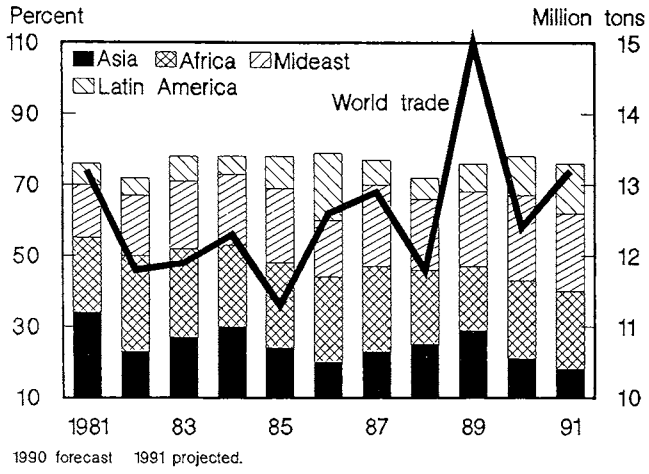
Table 2--U.S. Rough Rice Exports by Destination

Calendar year	Italy	Spain	Mexico	Costa Rica	Brazil	Venezuela	Jamaica	Other	Total
				Metric tons					
1978	126,912	---	24	16	---	---	39	2,543	129,534
1979	31,020	---	3	---	102	---	---	13,9741/	45,099
1980	20,098	---	5	---	16	---	6	2,088	22,213
1981	130,667	---	1,116	---	---	---	---	791	132,574
1982	62,758	3,334	33	---	---	---	---	3,923	70,048
1983	20,449	31,428	---	9,736	---	---	---	2,030	63,643
1984	70,981	21,774	---	---	---	---	---	16,0892/	108,844
1985	34,278	13,577	2	---	---	---	---	3,251	51,108
1986	---	9,325	---	---	208,428	---	---	5,315	295,068
1987	4,759	41,198	---	---	---	---	---	932	46,889
1988	13,154	62,697	223	---	---	38,000	10,321	1,365	125,760
1989	256	24,784	16,021	51,518	---	---	---	6,608	99,187

1/ Netherlands - 8,623 MT.
2/ Portugal - 14,690 MT.

Figure 3

Major Rice Importers' Percent of World Trade



1990 forecast 1991 projected.

India also is experiencing outstanding weather. Production is expected to exceed the year-earlier record. Relatively high farm prices, abundant and timely access to inputs, and favorable monsoon rains have led to three consecutive excellent crop years after a serious drought in 1987/88. This has allowed India to boost food grain stocks to comfortable levels after the sharp drawdown in 1987/88.

In cy 1988 and 1989, India imported 650,000 and 500,000 tons of rice, respectively. In cy 1990 and 1991, imports are projected to fall to 75,000 and 100,000 tons, respectively. In addition, India is forecast to double its exports from cy 1988 to a total of 400,000 tons of basmati and long grain white rice in cy 1990 and 1991.

Like India, Bangladesh has experienced another excellent growing season. Production is forecast at 17.5 million tons, only 3 percent below the 1989/90 record. A small reduction in area and yield account for the decline. Imports are expected to double to 200,000 tons, accounted for by an increase in smuggled rice from Burma.

The Philippines is likely to be Asia's largest importer in cy 1990, as adverse weather cut the size of the 1989/90 crop. However, crop prospects are much improved for 1990/91, although some damage was sustained during a recent typhoon. Imports are forecast to fall from 625,000 tons in cy 1990 to 250,000 in cy 1991.

In other Asian countries, Sri Lanka's 1990/91 production is projected to increase after two years of drought reduced crops. However, consumption growth is expected to lead to cy 1991 imports equal to cy 1990.

Indonesia's 1990/91 production is forecast only slightly below the 1989/90 record. As a result of a large crop and increased stocks, Indonesia is once again forecast to be a net exporter in cy 1991, with most of its exports flowing to the Philippines to pay back previous rice loans as in cy 1990.

Embargo Will Limit Rice Imports and Growth Prospects

Since Asian imports are projected to decline, exporters will be looking toward expansion prospects in other regions. However, the trade embargo on Iraq has limited growth prospects in the Middle East. Exporters are hoping that the recent pick-up in sales to Turkey, Jordan, Iran, and other Gulf States will offset some of the losses incurred by the embargo.

Iraq was the world's fourth largest importer in cy 1989, accounting for 4 percent of global imports. The country was the largest market for U.S. rice in cy 1989, taking about 13 percent of U.S. rice exports. Total Iraqi imports in cy 1991 are now forecast to be cut sharply by the trade embargo.

Iraq produces about a quarter of the rice it consumes and imports the rest. In recent years, its primary suppliers have been the United States and Thailand. Much of Iraq's rice imports from the United States have been bought on credit. Iraq exhausted its GSM-102 credit line for rice in May 1990, and USDA did not grant additional credits. During fiscal years 1987-90, Iraq used GSM-102 credits of approximately $618 million to buy 1.8 million tons of rice from the United States.

Iraq's 1990/91 rice production is forecast at 166,000 tons. If cy 1991 imports are limited to the 300,000 tons currently forecast by USDA and stocks are drawn down to the minimum, total consumption in 1990/91 will fall 3 percent. Per capita consumption will drop 6 percent to 31.6 kg. Consumption will drop by an additional 5.3 kg. per person for each additional 100,000 tons reduction in imports.

Latin American Imports To Increase

World trade in cy 1990 and cy 1991 is likely to be supported by large imports by Latin American countries, particularly Brazil, Peru, and Mexico. Brazilian farmers reduced area in 1989/90 due to lack of credit, low prices, and uncertain economic conditions. In addition, the crop in major producing areas suffered from adverse weather. While Brazil is holding over 3 million tons of stocks, much of it is low quality and distant from major markets. Meeting growing consumption needs will require relatively large imports.

Brazil has imported virtually all the rice available from Uruguay and Argentina for 1989/90. After a long delay, the Brazilian government issued import licenses in October for an undetermined amount of rice to be imported in cy 1990 and 1991. Sales registrations indicate that Brazil has purchased 17,000 tons of rough rice from the United States. Reports

indicate that Brazil also is negotiating with U.S. and Asian exporters for additional purchases of rough and milled rice. Brazil is forecast to import 350,000 tons in cy 1990 and 250,000 in cy 1991.

Peru's 1989/90 crop was severely affected by drought. At the same time, consumption has continued to expand. In cy 1990, imports are expected to total 350,000, more than double cy 1989, and are forecast to remain high in cy 1991. Mexico's 1988/89 and 1989/90 rice crops were also affected by drought. While forecast down 30 percent from cy 1989, imports are projected to reach 130,000 tons in cy 1990 and rise to 150,000 tons in cy 1991.

In other regions, only a small increase in African imports is projected for cy 1991. The EC's cy 1991 imports will nearly equal cy 1990.

Exporters Faced with Tighter Market

Major exporters are being hampered by strong Asian production, little market expansion, and stock accumulation prospects. Their exports will depend, in large part, on government policies adopted by Vietnam and Thailand. During the last two years, Vietnam has been aggressively marketing rice at low prices while Thailand has turned to supporting domestic farm prices and subsidizing exports. It is unclear whether these countries will continue these policies in cy 1991 or shift to new strategies.

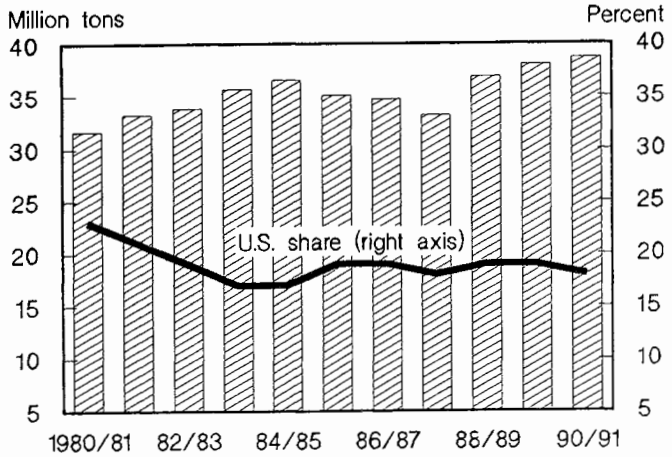
Thailand's 1990/91 crop is forecast down 4 percent due to drought in the northeastern part of the country and continued problems with brown planthoppers. However, Thailand's cy 1991 exports are not likely to be affected negatively by this small production decline because the Government holds abundant stocks.

In cy 1990, the Thai Government purchased 800,000 tons from the domestic market to shore up farm prices. The Government has been trying to unload the rice stocks onto the world market at subsidized prices, but was not initially successful due to competition from both Vietnam and Pakistan. A recent government-to-government sale of 200,000 tons of rice to the Soviet Union could help reduce government-held stocks.

Prospects for Thai exports have improved since August due to a slowdown in exports from Vietnam. Vietnam has been trying to overcome logistical problems to meet contractual obligations. As a result, Thai prices have begun to rise. However, the price acceleration is likely to be short-lived as prices are likely to drop again when the 1990/91 harvest of main season crops in both Vietnam and Thailand begins in late November.

Vietnam is forecast to produce 11.4 million tons in 1990/91, 3 percent below 1989/90. Reports indicate that reduced

Figure 4
Rice Production in Competitor Nations and U.S. Share of World Trade



Competitors include Thailand, Vietnam, Pakistan, Burma, and EC

availability of fertilizer is adversely affecting the crop. The Soviet Union has been Vietnam's primary supplier, providing fertilizer at subsidized rates. But this year, the Soviet Union has reduced fertilizer exports and there has been no indication of Vietnam buying fertilizer commercially from other sources.

Vietnam's export pace was rapid in the first half of cy 1990 but has slowed since July. Reports indicate that provincial traders are competing with the central government to procure and export rice. The competition has led to increased domestic prices in urban centers and shipping delays as exporters seek to procure supplies for shipment. For example, the Philippines had contracted with Vietnam for 600,000 tons of rice but the Government was not able to deliver the full amount in time.

Vietnam's reduced crop, continued logistical problems, and increased competition with other Asian exporters are expected to lead to a 15 percent reduction in Vietnam's cy 1991 exports. However, Vietnam still is expected to continue as the world's third largest exporter, exporting a forecast 1.7 million tons in cy 1991.

After several years of disappointing crops, Pakistan, like India, is projected to harvest a record crop in 1990/91. Cy 1991 exports are forecast at 1 million tons, 11 percent above cy 1990 and closer to Pakistan's export performance in the early 1980s.

In recent months, Pakistan has been lowering the price of both coarse and basmati rice exports to compete more effectively with Vietnam (low quality, coarse rice markets) and India (basmati markets). India has been undercutting Pakistan's basmati prices all year. In response, Pakistan has

been aggressively marketing basmati rice in the Middle East and has loosened its Government hold on rice exports. This has allowed the private sector to increase its exports of all varieties of rice.

However, this situation is not likely to continue. Pakistan has recently increased minimum export prices for basmati rice, making it more difficult for the private trade to participate in basmati sales.

Burma's export performance has been dismal in cy 1990. Even smuggling is down because of several consecutive years of large rice crops in Bangladesh. Burma's legal trade is handled by the Government which has been unable to procure adequate supplies from the market, despite two years of large crops. Nor has it been willing to lower export prices to compete with Pakistan and Vietnam for the low quality markets.

In 1990/91, Burma is forecast to produce 8.4 million tons, 4 percent above 1989/90. Exports in cy 1991 are projected to double to 400,000 tons. Increased supplies and larger exports to Malaysia and, possibly, South America are likely to help Burmese export prospects. Smuggling into Bangladesh is also expected to increase to a more "normal" level of 150,000 tons.

Australia's rice area in 1990/91 is forecast down 18 percent as a result of low prices and the loss of the Kuwaiti market. Although production is projected 18 percent below the record last year, exports are expected to equal cy 1990. Australia is aggressively marketing its rice crop to other Middle Eastern countries, including Turkey and Jordan, that prefer medium grain rice. However, stocks are forecast to decline.

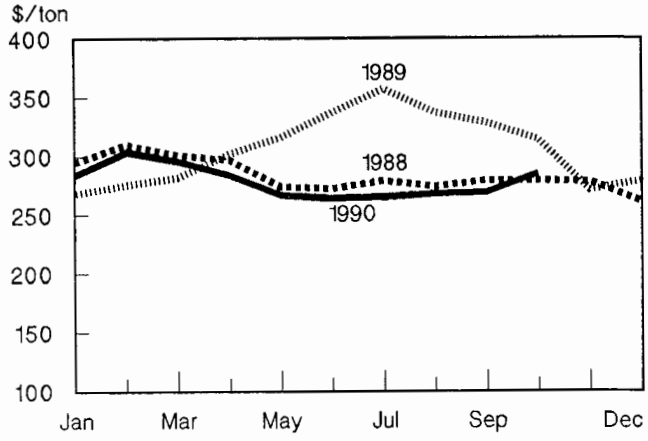
U.S. Exporters Challenged to Find New Markets

Smaller world trade in cy 1990 is limiting U.S. exports. U.S. exports in cy 1990 are forecast at 9 percent below cy 1989. In addition, relatively tight U.S. supplies have kept export prices high relative to the Asian exporters. Calendar 1991 U.S. exports are projected to match those of cy 1990. This assumes that U.S. exporters are able to find new and/or expanded markets to replace much of the exports that would have gone to Iraq.

U.S. prices have been falling, closing the price gap which has existed between Thai and U.S. high quality rice. However, Thailand's prices have been above those of other Asian exporters. For importers seeking the lowest price irrespective of quality, U.S. prices remain high relative to those offered by other Asian exporters.

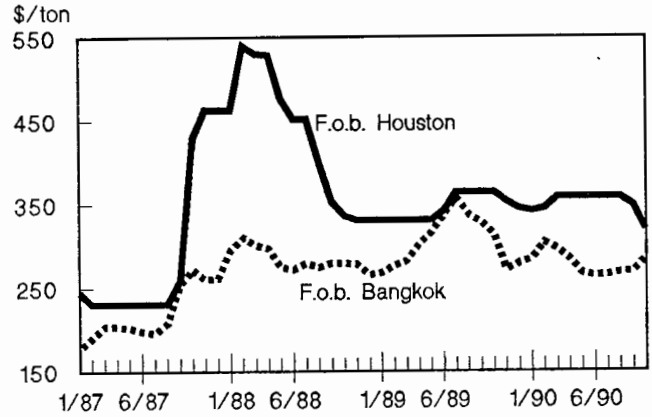
The cy 1991 export forecast also assumes that Latin American importers will turn to the United States for a large proportion of their import needs. Location, rapid delivery, and high quality give the United States an advantage over other

Figure 5
Rice Export Prices



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

Figure 6
U.S. and Thai Rice Export Prices



Thailand 100% B grade long grain rice nominal price quotes
US No. 2, 4% brokens, long grain rice price quotes

rice exporters. However, U.S. prices will have to be competitive to make U.S. rice attractive to Peru, which has severe foreign exchange constraints, Brazil, which is in the middle of serious economic adjustment, and Mexico.

U.S. government programs will play a more important role in rice exports than they have in the last two years. On September 14th, the United States targeted Eastern Europe (Hungary, Romania, Czechoslovakia, Yugoslavia, and Poland) for 100,000 tons of rice under the Export Enhancement Program (EEP).

Prior to October, the last EEP rice sale announced was to Turkey on December 12, 1988. Turkey and Jordan had been

targeted in 1985 and 1986, respectively, to assist U.S. exports to countries that had been buying subsidized rice from the EC. Recently, the EC has been subsidizing rice exports to Eastern Europe by providing restitutions of up to $420 per ton, well over 100 percent of the sale price.

The first EEP sale of 1,120 tons of rice to Eastern Europe took place on October 12th and carried a bonus of $48.06. Eastern Europe imports an annual average of 326,000 tons of rice (1985-89). Of that, the United States has sold an annual average of 5,900 tons. The EEP might allow the United States to expand its sales to the region.

In addition, an increase in P.L. 480 rice allocations will help support the U.S. rice market. P.L. 480 Title I/III FY 1991 initial allocations for rice were announced in October. The initial FY 1991 allocation for rice, set at 216,000 tons, is 31 per cent higher than the initial allocation for FY 1990. Several countries, such as the Philippines, Bangladesh, the Cote d'Ivoire, and Guinea, which were not allocated rice under P.L. 480 Title I/III in FY 1990, were included in the FY 1991 allocation. In addition, a recent 20,000 ton donation of rice to Jordan for refugee relief has helped U.S. exports.

The GSM program has been very important to U.S. rice exports (see special article). However, in past years, 85 percent of GSM credit for rice has gone to Iraq. It is not yet clear how much GSM credit guarantees for rice will be available in FY 1991, nor is it clear which countries will receive the guarantees. As of October 17, 1990, GSM allocations for rice in FY 1991 amounted to $35 million. Mexico, Hungary, and Morocco are the primary recipients. Further allocations are expected later in the year.

The Role Of Export Credit Programs For Rice

Ann Fleming

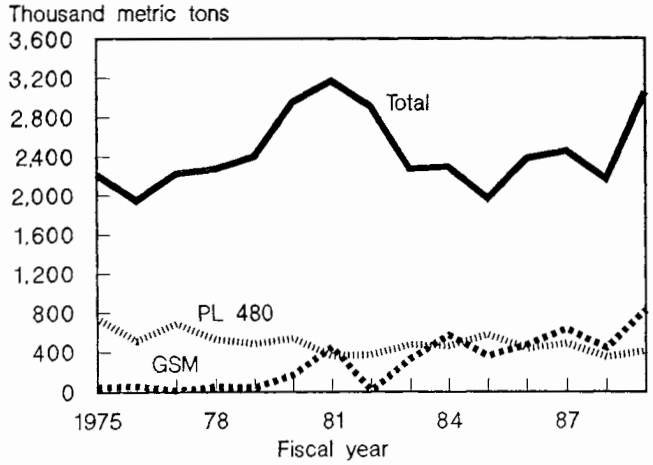
Abstract: Since fiscal 1985, more U.S. rice has been exported with assistance of the Commodity Credit Corporation's export credit guarantee programs than under other export programs. From fiscal 1985-1989, 2.7 million metric tons of rice, representing 23 percent of the total, was exported under the credit guarantee programs. During this period, Algeria, Iraq, and Mexico imported 100 percent of U.S. rice under these programs. The influence of export credit programs in increasing U.S. rice exports to participating countries is estimated statistically. Results indicate that U.S. rice exports to participating countries increased by 55 metric tons for every 100 metric tons exported under credit programs during the fiscal 1975-1989 period.

Keywords: Export Credit Programs, Commodity Credit Corporation, Export Credit Guarantees, Public Law 480, Rice Exports

The Commodity Credit Corporation's (CCC) export credit guarantee program became the leader among Government assisted export programs in fiscal 1985 — surpassing the Public Law 480 (PL 480) food aid programs which averaged around 451,000 metric tons of rice exported annually in the 1980's (fig. 1). This is particularly significant because, unlike PL 480, the credit programs are on a commercial (non-concessional) basis. From fiscal 1980 through 1989, 4.3 million metric tons of rice worth $1.5 billion were exported through CCC credit programs. While rice exports increased only slightly over this period, the proportion exported through CCC credit programs increased from 6 percent of total rice exports to 27 percent. In this article, export programs and their role in U.S. rice trade are discussed.

The Commodity Credit Corporation has offered seven export credit programs since 1956 designed to enhance export markets for U.S. commodities. Rice has been exported under five of these programs (table 1). Export credit programs have fallen into two main categories: direct export credits and export credit guarantees. Under the first, the CCC acts directly as the lender, offering credit for foreign purchases of U.S. commodities. Under export credit guarantees, the CCC guarantees payment on private loans made by U.S. financial institutions to foreign buyers.

Figure A-1
U.S. Rice Exports: Total and Under Export Programs



Export credit guarantee programs have been used extensively in the 1980's, representing USDA's largest commercial rice export tool. They accounted for 18 percent of U.S. rice exports over the fiscal 1981-1989 period and 27 percent in fiscal 1989 alone. Currently two credit guarantee programs are offered by the CCC, the Export Credit Guarantee Program (known as GSM-102) and the Intermediate Credit Guarantee Program (GSM-103). The GSM-102 program guarantees commercial credit of 6 months to 3 years in length. Since its initiation in 1981, over 3.8 million tons of rice have been exported under GSM-102 to 14 countries. Loan maturities have ranged from 12 to 36 months for rice purchases. The GSM-103 program differs from GSM-102 by offering credit guarantees for loans of over 3 and up to 10 years in length. Although GSM-103 was authorized by the 1985 Food Security Act, the first export of rice under the program, 38,000 tons, occurred in fiscal 1989. Loans under the GSM-103 program ranged from 4 to 7 years maturity for rice purchases.

Table A1--CCC export credit and credit guarantee programs

Program	Period	Loan Type	Maturity	Interest Rate
GSM-5	1956-80	direct government	6-36 months	commercial
GSM-101	1979-81	guaranteed private	6-36 months	commercial
GSM-102	1981-	guaranteed private	6-36 months	commercial
Blended Credit	1983-85	direct government & guaranteed private	6-36 months	GSM-5: no interest GSM-102: commercial
GSM-103	1986-	guaranteed private	3-10 years	commercial

Three earlier export credit programs were used less frequently. The original program (GSM-5) began in fiscal 1956 and offered direct CCC credit for sales of CCC-held commodity stocks and tobacco. Beginning in 1966, CCC began financing sales of commercially held commodities under the program. Exports of rice under the GSM-5 program were 281,000 tons from fiscal 1955 until sales under the program ceased in fiscal 1980. In fiscal 1983 through 1985 a program using GSM-5 credit blended with GSM-102 credit guarantees was used to export 171,000 tons of rice.

In 1979 the Non-Commercial Risk Assurance Program (GSM-101) was initiated to guarantee private loans covering non-commercial risks such as war, embargoes, or frozen foreign currency accounts. Such risks often precluded commercial loans for export sales. Rice exports under the GSM-101 program totaled 203,000 metric tons during the three years of operation.

How Credit Guarantee Programs Work

Limited foreign exchange is often a constraint to developing-country imports. The opportunity to purchase on credit is often an attractive, if not essential, option. The CCC credit guarantee programs often enable buyers to purchase under more liberal payment terms than they would otherwise be able to secure.

Beginning with the world debt crises of the late 1970's and early 1980's, many traditional importers of U.S. commodities not only found their financial condition tenuous, but also faced an increasingly conservative world banking community. Difficulty in securing loans was particularly acute for purchases of non-capital goods, such as agricultural commodities. The GSM-102 and -103 programs were designed to address such impediments to U.S. exports. Specifically, the stated mission[1] of the GSM-102 and -103 programs is to:

- increase or maintain U.S. exports to foreign markets where credit is prerequisite to purchase, and where private financial institutions would be unwilling to provide financing at acceptable rates; and

- permit countries, whose financial conditions have improved to the point where they no longer meet the PL 480 per capita GNP limitation, to now purchase on commercial terms.

GSM-102 and -103 are attempts to ease foreign exchange constraints and enhance U.S. export opportunities by encouraging private financial institutions to extend credit to foreign purchasers. The terms of the credit guarantees provide the incentive. Under the programs, the CCC guarantees up to 98 percent of the principal and a portion of the interest on credit extended for the f.o.b. value of designated commodities. Freight and insurance costs to some countries also can be covered. In fiscal 1989 Algeria and Iraq were eligible for freight coverage on rice purchases. By transferring the majority of nonpayment risk from lender to CCC, credit guarantees encourage financing that is offered for longer terms and lower interest rates than countries could otherwise secure.

Program authorization levels are established by Congress. Authorization levels provide limits on the amount of credit guarantees that can be issued, as well as establish program minimums. Since fiscal 1986, annual authorization levels have remained at a minimum $5 billion and $500 million for the GSM-102 and -103 programs, respectively.

CCC credit guarantee programs are operated through the General Sales Manager's (GSM) office in the USDA's Foreign Agricultural Service (FAS). With interagency approval, USDA allocates available coverage among countries and commodities according to market objectives and country needs. The composition of these allocations can be adjusted throughout the year as conditions warrant. When a sale is agreed upon by an exporter and importer, the exporter petitions FAS for coverage under the program, paying a nonrefundable guarantee fee[2]. Credit for the sale might be provided either by the exporter or a U.S. financial institution. If all program requirements are met, credit guarantee coverage begins at the time of export. The actual amount of guarantees allocated and approved for rice has fluctuated (table 2).

Importance of Export Credit Programs to Participating Markets

Allocations of export credit guarantees to a country does not ensure export sales. Since 1980, 24 markets received alloca-

Table A2--GSM-102 and -103 authorization levels and amounts allocated and approved for rice

Fiscal Year	Authorized Level	Rice --- Allocated	Rice --- Approved
	-- millions of dollars --		
1981	5,000	203	194
1982	5,000	111	5
1983	5,000	260	193
1984	5,000	225	218
1985	5,000	206	193
1986	5,500	156	93
1987	5,500	186	116
1988	5,500	316	290
1989	5,500	277	275
Total		1,940	1,577

[1]USDA, Foreign Agricultural Service (1984).

[2]The GSM-102 guarantee fee averages about one-third of one percent per annum on the outstanding coverage based on the shipment value.

Figure A-2

GSM Rice Exports and Largest Participating Country, by Fiscal Year

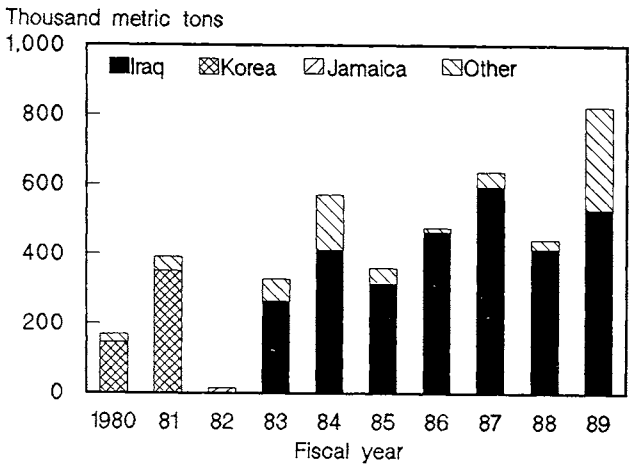


Table A3--Pooled model estimation results for U.S. rice exports to selected countries

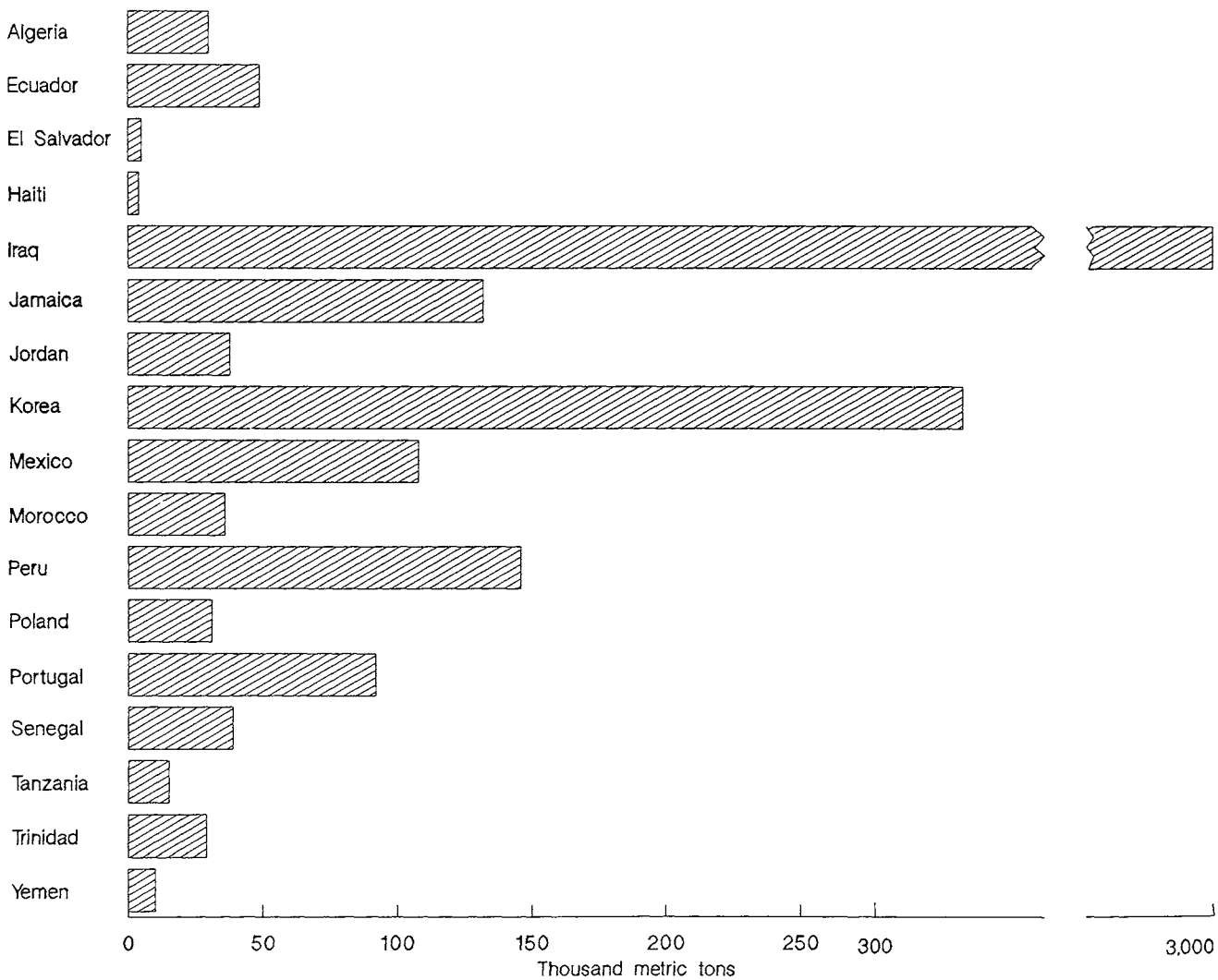
Variable		Estimated Coefficient	Standard Error 1/
PRIMARY VARIABLES:			
(GSM)	Credit exports	.5545	.0379
(PL480)	PL 480 exports	.6661	.0738
(M)	Country imports	.4452	.0231
(PDIF)	PU.S.-Pworld	-22.488	7.11
Constant term		-5105	2049
DUMMY VARIABLES:			
El Salvador		6977	2000
Haiti		17603	4525
Korea		46404	15878
Morocco		7915	2033
Peru		-15632	7570
Poland		-24571	3051
Senegal		-93000	16120
Tanzania		-13520	4569

SUMMARY STATISTICS: 2/
R2 = .912
Mean of Dependent Variable = 44103
F-statistic = 191
Total Observations = 255

1/ All estimates are significant at the 5 percent level or better.
2/ R2 statistic as calculated in Buse (1973).

Figure A-3

Rice Exports Under GSM Programs and Totals for Fiscal 1980-1990



tions for rice under at least one program but only 17 markets actually made purchases under the programs. Additionally, over the 1980-1989 period, rice exports under the programs were highly concentrated toward one country each year. The largest importing country purchased between 64 and 100 percent of total program rice exports (fig. 2). In contrast, averaging across all program commodities, the largest importing country purchased just 24 percent of the total over this period.

The total quantity of rice exported under all export credit programs from fiscal 1980-1989 ranged from 4,600 metric tons to Haiti to 3 million metric tons to Iraq (fig. 3). Iraq has consistently been the largest importer under the GSM-102 program since it first received credit guarantee allocations in fiscal 1983. Iraq alone represented 82 percent of all credit program rice exports during the fiscal 1983 to 1989 period. South Korea was the second largest importer under export credit programs through fiscal 1981, after which it ceased importing rice.

The share of rice exports under credit programs to total U.S. rice exports varies significantly across countries. From fiscal 1985-1989, for example, approximately 100 percent of U.S. rice exports to Algeria, Iraq, and Mexico were through export credit programs. Credit programs are clearly an important component of U.S. rice exports to these markets. Other countries, such as Haiti, Senegal, and Jamaica, imported less than 20 percent of U.S. rice under the programs.

Credit Program Role in U.S. Rice Exports

CCC credit programs are intended to enhance U.S. rice exports by targeting markets that require credit for purchases, perhaps no longer receive rice under PL 480, and/or where the U.S. has lost sales. Certainly for some markets imports under credit programs have represented a significant portion of their total U.S. rice imports, but what has been the role of these programs?

A statistical model was developed to analyze rice exports and attempt to separate out the effects of credit programs from other factors. The statistical relationships were estimated by a single equation pooled cross-sectional, time series, linear model of 17 countries over the 1975 through 1989 period[3]. Countries that imported U.S. rice under a credit program in at least one year during the sample period were included (fig. 3).

Total U.S. rice exports (X) were hypothesized to be a function of export credit and PL 480 program activity levels for rice, country specific rice import levels (M), and the difference between U.S. and a proxied world rice price (PDIF)[4]. Prices representative of the value to the importer of rice exported under either credit programs or PL 480 are not available. Hence, to capture the importance of export credit and PL 480 programs, reported program export quantities were used. Country import (M) levels implicitly represent growth in income, population, and per capita consumption as well as changes in supply factors. Import levels are based on the USDA database for calendar year imports, adjusted to a fiscal year basis. The PDIF variable represents the relative price competitiveness of U.S. rice against the alternative world supplier, Thailand, adjusted for exchange rate fluctuations. Although quality and service differences between U.S. and Thailand rice do exist and influence the relative level of prices, the influence of price competitiveness over time is captured by changes in PDIF. The basic model is as follows:

$$X_{jt} = fn(GSM_{jt}, PL480_{jt}, M_{jt}, PDIF_t, D_j)$$

where:
- X = Total U.S. rice exports to sample countries (metric tons)
- GSM = Rice exports under credit programs (metric tons)
- PL480 = Rice exports under the PL 480 program (metric tons)
- M = Estimated total imports of rice (metric tons)
- PDIF = Difference between exchange rate adjusted U.S. and world price(dollars/ metric ton)
- D = Country effect Dummy variable[5] (metric tons)

for:
- j = 1 to 17 sample countries
- t = 1 to 15 sample fiscal years

Model results should be interpreted only for the specific sample analyzed, and viewed as indicators of the magnitude and direction of influence for these variables. Summary statistics presented in table 3 indicate that the model accounted for 91 percent of the variability in U.S. rice exports to credit program countries over the sample period. All explanatory variables were significant at the 5 percent level. Estimated coefficients on the primary independent variables should be interpreted as the change in U.S. rice exports in metric tons given a one unit change in the independent variable, all else held constant. Coefficients on the dummy variables repre-

[3]Fiscal year data were used and corrected for heteroskedasticity and autocorrelation as described in Kmenta (1971, pp 509-512) since both cross-section and time series data were used.

[4]Thailand's 5 percent broken rice, f.o.b. Bangkok, price was used as a proxy of world price. Although Thai 100 percent B rice is closer in quality to U.S. rice, its price series only began in July 1984. U.S. price is represented by the reported f.o.b. Houston price. Monthly prices were aggregated to the fiscal year level.

[5]Individual country dummy variables were incorporated and tested for their significance. Eight of these variables were significant and included in the model to augment the regression's explanatory strength.

sent the adjustment in the constant term which is made for the countries represented in the model by a significant dummy variable.

Analysis of results shows that export credit programs did affect total U.S. rice exports to the countries in the sample. For example, an increase in credit exports of 100 tons led to an estimated increase in total rice exports of 55 tons, all other factors held constant. If additional credit program exports did not have a positive effect, the coefficient on the GSM variable would have been zero or negative.

Similar analysis can be made for the PL480 parameter estimate; increasing rice exports under PL 480 programs to the selected countries during the fiscal 1975-1989 period by 100 tons led to an additional 67 tons of total U.S. rice exports. The larger parameter estimate on the PL480 over GSM variable intuitively supports the difference in objectives of the two programs. PL 480 is largely targeted at countries that are less able to purchase rice commercially in the short-term, and involves concessional sales and grants. Export credit programs are not food aid; they target commercial markets.

The influence of rising importing country rice purchases (M) on U.S. exports to the sample countries was positive. An increase in country imports could be spurred by a number of factors including rising incomes, changing tastes and preferences for rice consumption, increasing stocks, and/or falling domestic supply. A 100-ton increase in rice imports by the sample countries was related to a 45-ton increase in U.S. exports to those countries over the sample period[6].

The role of export programs in mitigating the effect of relative price differences might be reflected in the PDIF coefficient. The model suggests that a one-dollar increase in the difference between the U.S. and proxied world price led to a small decrease in total rice exports over the model sample. Preference for U.S. rice and dependence on the terms of exports under CCC programs would lessen importing country sensitivity to small changes in the annual average difference between U.S. and world prices.

The annual model presented here is not intended for forecast purposes and cannot account for the short-run dynamics of U.S. rice trade or individual countries. It does, however, indicate the magnitude and direction of effects of export programs, country import levels, and price differences on U.S. rice exports to the countries analyzed.

[6]A logarithmic transformation was made and tested for the presence of a constant rate of change relationship between U.S. exports and country imports. No improvement was found in the test statistics.

Implications

Export credit programs have accounted for a significant amount of U.S. rice exports: 12 percent of total U.S. rice exports during fiscal 1975-1989 and 27 percent in fiscal 1989. Further analysis indicates that credit programs have increased total exports to recipient countries. For the seventeen GSM participating countries analyzed for the fiscal 1975-1989 period, U.S. rice exports increased by 55 tons for every 100 tons exported under credit programs. While pending 1990 farm bill legislation is not expected to affect the application of export credit programs to rice, events in Eastern Europe and the embargo on Iraq could. Of total U.S. rice exports from 1987 through 1989, 20 percent went to Iraq and 100 percent of that was exported under credit guarantee programs. Consequently, developing and expanding alternative markets will be important to the future role of these programs. Credit guarantees have created additional export sales in recent years, but without new markets that meet program criteria, PL 480 may again be the leading export program for rice.

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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	1986/87	1987/88	1988/89	1989/90	1990/91 3/ as of October 1990
Total rice:						
Area planted	Mil. acre	2.38	2.36	2.93	2.73	2.87
Area harvested	"	2.36	2.33	2.90	2.69	2.81
Yield	Pounds/acre	5,651	5,555	5,514	5,749	5,629
Beginning stocks 2/	Mil. cwt	77.30	51.40	31.40	26.70	26.30
Production	"	133.40	129.60	159.90	154.50	158.10
Imports	"	2.60	3.00	3.70	4.20	4.80
Total supply	"	213.30	184.00	195.00	185.40	189.10
Domestic & residual 4/	"	77.70	80.40	82.30	82.40	88.80
Exports	"	84.20	72.20	85.90	76.80	74.00
Total use	"	161.90	152.60	168.20	159.20	162.80
Ending stocks	"	51.40	31.40	26.70	26.30	26.30
CCC	"	8.70	0.00	0.00	0.00	0.00
Free	"	42.70	31.40	26.70	26.30	26.30
Average market price 5/	$/cwt	3.75	7.27	6.83	7.30	(6.25-7.25)
Long:						
Area harvested	Mil. acres	1.81	1.70	2.23	2.00	NA
Yield	Pounds/acre	5,358	5,241	5,345	5,469	NA
Beginning stocks	Mil. cwt	49.30	27.40	19.10	15.40	13.20
Production	"	96.80	89.00	119.40	109.50	108.80
Total supply 6/	"	148.60	119.40	142.00	129.10	126.80
Domestic & residual 4/	"	51.30	49.80	55.40	55.10	59.00
Exports	"	69.90	50.50	71.20	60.80	56.00
Total use	"	121.20	100.30	126.60	115.90	115.00
Ending stocks	"	27.40	19.10	15.40	13.20	11.80
Average market price 5/	$/cwt	3.82	7.77	6.96	NA	NA
Medium/short:						
Area harvested	Mil. acres	0.55	0.64	0.67	0.68	NA
Yield	Pounds/acre	6,603	6,395	6,077	6,571	NA
Beginning stocks	Mil. cwt	26.20	21.10	10.80	9.00	11.60
Production	"	36.60	40.60	40.50	44.90	49.20
Total supply 6/	"	62.90	61.70	51.40	54.00	61.00
Domestic & residual 4/	"	27.50	29.20	27.80	26.30	29.80
Exports	"	14.30	21.70	14.70	16.00	18.00
Total use	"	41.80	50.90	42.50	42.30	47.80
Ending stocks	"	21.10	10.80	9.00	11.60	13.20
Average market price 5/	$/cwt	3.55	6.36	6.47	NA	NA

Note: Totals may not add because of rounding.
1/ Marketing year beginning August 1. 2/ Includes the following quantities of broken kernel rice (type undetermined) not included in estimates of beginning stocks by type (in mil. cwt.): 1986/87, 1.8; 1987/88, 2.9; 1988/89, 1.5; 1989/90, 2.4; 1990/91, 2.4. 3/ Projected. 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, 1970/71-1990/91

Year beginning Aug. 1	Supply				Disappearance							Ending stocks--July 31--		
	Beginning stocks	Production	Imports	Total	Domestic use: Food	Seed	Brewers	Total	Exports	Residual	Total disappearance	CCC inventory	Free	Total
	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	9.5	9.1	18.6
1971/72	18.6	85.8	1.1	105.5	25.5	2.5	7.4	35.4	56.9	1.8	94.1	2.7	8.7	11.4
1972/73	11.4	85.4	0.6	97.4	25.1	3.0	7.7	35.8	54.0	2.5	92.3	0.1	5.0	5.1
1973/74	5.1	92.8	0.2	98.1	26.1	3.6	8.1	37.8	49.7	2.7	90.2	0.0	7.8	7.8
1974/75	7.8	112.4	0.1	120.3	28.6	4.0	8.4	41.0	69.5	2.7	113.2	0.0	7.1	7.1
1975/76	7.1	128.4	0.0	135.5	27.7	3.5	9.1	40.3	56.5	1.8	98.6	18.7	18.2	36.9
1976/77	36.9	115.6	0.1	152.6	29.2	3.2	10.3	42.7	65.6	3.8	112.1	18.6	21.9	40.5
1977/78	40.5	99.2	0.1	139.8	23.5	4.3	9.9	37.7	72.8	1.9	112.4	10.8	16.6	27.4
1978/79	27.4	133.2	0.1	160.7	33.7	4.3	11.2	49.2	75.7	4.2	129.1	8.3	23.2	31.6
1979/80	31.6	131.9	0.1	163.6	33.2	4.8	11.2	49.2	82.6	6.1	137.9	1.7	24.0	25.7
1980/81	25.7	146.2	0.2	172.1	38.4	5.1	11.0	54.5	91.4	9.7	155.6	0.0	16.5	16.5
1981/82	16.5	182.7	0.4	199.6	42.5	4.4	12.7	59.6	82.0	9.0	150.6	17.5	31.5	49.0
1982/83	49.0	153.6	0.7	203.3	37.3	3.2	13.5	54.0	68.9	8.9	131.8	22.3	49.2	71.5
1983/84	71.5	99.7	0.9	172.1	33.2	3.3	12.8	49.3	70.3	5.6	125.2	25.0	21.9	46.9
1984/85	46.9	138.8	1.6	187.3	35.8	2.8	13.9	52.5	62.1	8.0	122.6	44.3	20.4	64.7
1985/86	64.7	134.9	2.2	201.8	45.6	2.6	14.1	62.3	58.7	3.5	124.5	43.6	33.7	77.3
1986/87	77.3	133.4	2.6	213.3	53.1	2.6	15.0	70.7	84.2	7.0	161.9	8.7	42.7	51.4
1987/88	51.4	129.6	3.0	184.0	55.3	3.2	15.4	73.9	72.2	6.5	152.6	0.0	31.4	31.4
1988/89	31.4	159.9	3.7	195.0	57.7	3.0	15.6	76.3	85.9	6.0	168.2	0.0	26.7	26.7
1989/90 1/	26.7	154.5	4.2	185.4	60.7	3.2	15.5	79.4	76.8	3.0	159.2	0.0	26.3	26.3
1990/91 2/	26.3	158.1	4.8	189.1	65.0	3.2	15.6	83.8	74.0	5.0	162.8	0.0	26.3	26.3

1/ Estimated. 2/ Projected as of October 1990.

Appendix table 3--Long grain rough and milled rice (rough equivalent): Marketing year supply and disappearance, 1982/83-1990/91

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	142.0	55.4	71.2	126.6	15.4
1989/90 3/	15.4	109.5	129.1	55.1	60.8	115.9	13.2
1990/91 4/	13.2	108.8	126.8	59.0	56.0	115.0	11.8

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 1990.

Appendix table 4--Medium/short grain rough and milled rice (rough equivalent): Marketing year supply and disappearance, 1982/83-1990/91

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 3/	9.0	44.9	54.0	26.3	16.0	42.3	11.6
1990/91 4/	11.6	49.2	61.0	29.8	18.0	47.8	13.2

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 1990.

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	124,340	89,820	72.2	78,943	63.5
1980/81	141,192	103,037	72.3	89,602	63.5
1981/82	131,922	95,074	72.1	82,011	62.2
1982/83	118,726	84,517	71.0	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

1/ Includes brown rice.

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

Appendix table 6--Provisions under Food Security Act of 1985 and its modifications

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

NA = Not available.

Appendix table 7--Class loan rates and differentials, 1984-1990

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

NA = Not available.
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			Yield			Production		
	1988	1989	1990	1988	1989	1990	1988	1989	1990
	-----1,000 acres-----			------Pounds/acre------			--------1,000 cwt-------		
Long grain:									
Arkansas	1,075	1,030		5,340	5,580		57,447	57,458	
California	60	35		7,000	7,510		4,200	2,630	
Louisiana	388	295		4,520	4,450		17,538	13,128	
Mississippi	250	235		5,310	5,700		13,275	13,395	
Missouri	80	78		5,100	5,200		4,080	4,056	
Texas	380	330		6,010	5,720		22,824	18,874	
United States	2,233	2,003	NA	5,345	5,469	NA	119,364	109,541	108,840
Medium grain:									
Arkansas	134	109		5,400	5,800		7,236	6,322	
California	315	325		7,000	8,000		22,050	26,000	
Louisiana	147	190		4,450	4,400		6,542	8,360	
Mississippi	10	1/		5,050	1/		505	1/	
Missouri	2	1		5,100	5,200		102	52	
Texas	8	8		5,700	4,900		456	392	
United States	616	633	NA	5,989	6,497	NA	36,891	41,126	47,954
Short grain:									
Arkansas	1	1		5,200	6,000		52	60	
California	50	50		7,180	7,520		3,590	3,760	
United States	51	51	NA	7,141	7,490	NA	3,642	3,820	1,280
Total:									
Arkansas	1,210	1,140	1,200	5,350	5,600	5,350	64,735	63,840	64,200
California	425	410	385	7,020	7,900	7,700	29,840	32,390	29,645
Louisiana	535	485	565	4,500	4,430	4,800	24,080	21,488	27,120
Mississippi	260	235	235	5,300	5,700	5,600	13,780	13,395	13,160
Missouri	82	79	65	5,100	5,200	4,900	4,182	4,108	3,185
Texas	388	338	358	6,000	5,700	5,800	23,280	19,266	20,764
United States	2,900	2,687	2,808	5,514	5,749	5,629	159,897	154,487	158,074

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

Source: Crop Production 1989 Summary, October 1990 & January 1990, National Agricultural Statistics Service, USDA.

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

State	Area planted					1990/89
	1986	1987	1988	1989	1990	
	1,000 acres					Percent
Long grain:						
Arkansas	944	885	1,084	1,039	1,090	105
California	20	36	60	35	13	37
Louisiana	310	265	395	310	305	98
Mississippi	200	200	255	240	240	100
Missouri	66	64	81	80	74	93
Texas	282	264	382	332	352	106
United States	1,822	1,714	2,257	2,036	2,074	101.9
Medium grain:						
Arkansas	85	133	135	110	139	126
California	288	299	320	330	360	109
Louisiana	120	160	150	195	265	136
Mississippi	1/	1/	10	1/	1/	1/
Missouri	2	3	2	1	1	100
Texas	8	6	8	8	8	100
United States	503	601	625	644	773	120.0
Short grain:						
Arkansas	1	2	1	1	1	100
California	55	39	50	50	17	34
United States	56	41	51	51	18	35.3
Total:						
Arkansas	1,030	1,020	1,220	1,150	1,230	107
California	363	374	430	415	390	94
Louisiana	430	425	545	505	570	113
Mississippi	200	200	265	240	240	100
Missouri	68	67	83	81	75	93
Texas	290	270	390	340	360	106
United States	2,381	2,356	2,933	2,731	2,865	104.9

1/ No medium grain estimated.

Source: Acreage, June 1990, 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 warehouses (not attached to mills)	In ports or in transit	Total all positions	At mills and in attached warehouses	In warehouses (not attached to mills)	In ports or in transit	Total all positions
					1,000 cwt				
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
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
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 2/	599	5,370	13,133	51	19,153	3,650	548	998	5,196

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	8.28	7.32	7.27	4.14	5.20	4.72	4.70

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 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
					$/cwt					
Month:										
August	10.60	11.80	7.31	8.41	8.22	7.86	4.02	3.82	7.49	7.42
September	10.20	10.70	7.75	8.48	8.17	7.55	3.86	4.34	6.97	7.59
October	10.90	10.20	7.73	8.80	8.08	7.73	3.83	6.25	6.85	7.37
November	11.60	9.86	7.78	8.80	8.13	7.84	3.90	7.53	6.81	6.94
December	13.10	9.34	8.06	8.66	8.08	7.71	3.74	7.64	6.68	6.95
January	13.20	9.34	8.05	8.57	8.09	7.90	3.55	7.93	6.58	7.40
February	13.00	9.46	8.26	8.85	7.72	7.86	3.84	9.37	6.67	7.52
March	13.40	8.99	7.99	8.63	8.17	7.60	3.62	9.22	6.60	7.50
April	13.80	8.54	8.23	8.49	8.20	5.32	3.63	8.92	6.74	7.31
May	13.30	8.55	8.23	8.24	7.91	4.52	3.71	7.97	6.78	7.21
June	11.90	8.54	7.88	8.20	7.83	4.04	3.62	7.69	7.05	7.08
July	12.80	8.25	7.95	8.18	7.54	3.86	3.49	7.94	7.45	6.95
Season average price:										
12 months 1/	12.80	9.05	7.91	8.57	8.04	6.53	3.75	7.27	6.83	(6.25-7.25)
5 months 2/	11.30	10.40	7.69	8.63	8.14	7.73	3.87	5.71	6.84	7.24
State:										
Arkansas	12.30	9.37	8.61	9.18	8.51	6.70	3.68	7.60	6.90	NA
California	14.10	7.35	6.65	6.96	6.43	5.33	3.18	6.72	6.15	NA
Louisiana	12.00	9.36	8.05	8.90	8.20	7.24	4.03	7.65	6.90	NA
Mississippi	12.70	9.14	8.66	9.53	8.88	7.10	3.91	7.90	7.02	NA
Missouri	12.30	9.50	8.65	9.49	8.70	7.05	3.57	7.41	7.22	NA
Texas	12.80	10.40	8.94	9.97	8.90	7.38	4.22	8.07	7.24	NA
United States	12.80	9.05	7.91	8.57	8.04	6.53	3.75	7.27	6.83	(6.25-7.25)
Type:										
Long	12.50	9.70	8.56	9.36	8.66	6.75	3.82	7.77	6.96	NA
Medium	13.30	8.06	6.91	7.13	6.66	5.87	3.55	6.36	6.47	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											
						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											
						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	15.40	14.75											
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											
						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											
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											
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											

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	8.63
1990/91	7.75	7.50											
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	64.66
1990/91	72.25	52.40											
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	19.98
1990/91	28.75	19.00											

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	6.78
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											
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 1/	11.61											

1/ Preliminary.

Sources: Rice Market News, Agricultural Marketing Service, USDA.
Milling and Baking News.

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

Type	1986/87		1987/88		1988/89		1989/90		1990/91	
	$/metric ton									
100% 1st grade:	BOT 2/	NPQ 3/	BOT	NPQ	BOT	NPQ	BOT	NPQ	BOT 4/	NPQ
August	261	NA	270	NA	355	NA	504	NA	315	NA
September	256	NA	296	NA	355	NA	390	NA	313	NA
October	255	NA	319	NA	355	NA	374	NA		
November	253	NA	318	NA	355	NA	356	NA		
December	245	NA	312	NA	340	NA	355	NA		
January	249	NA	330	NA	335	NA	355	NA		
February	248	NA	355	NA	NQ	NA	355	NA		
March	255	NA	349	NA	324	NA	343	NA		
April	257	NA	349	NA	348	NA	341	NA		
May	258	NA	348	NA	357	NA	332	NA		
June	257	NA	351	NA	383	NA	318	NA		
July	258	NA	355	NA	410	NA	310	NA		
Average	254	NA	329	NA	356	NA	361	NA		
100% 2nd grade:										
August	228	191	238	208	315	274	373	337	285	268
September	221	179	263	255	315	279	360	328	283	269
October	220	180	287	272	315	279	344	314		
November	218	180	286	260	315	278	326	271		
December	210	172	279	261	300	265	325	279		
January	214	178	295	295	290	268	325	284		
February	213	191	320	310	285	276	325	307		
March	220	204	314	301	294	282	313	297		
April	227	204	314	297	318	302	311	284		
May	228	202	308	274	327	316	304	267		
June	227	198	311	272	353	337	288	264		
July	227	196	315	279	380	357	280	265		
Average	221	190	294	273	317	293	323	291		
5% brokens:										
August	214	185	222	204	305	269	363	332	274	NA
September	206	173	251	250	305	274	350	320	273	NA
October	205	175	277	267	305	273	334	304		
November	205	174	276	254	305	272	316	264		
December	195	167	269	256	290	260	315	272		
January	199	172	285	291	280	264	315	277		
February	198	186	310	305	275	269	315	300		
March	206	198	304	294	284	277	303	289		
April	212	199	304	288	308	298	301	276		
May	213	198	298	257	317	310	290	260		
June	212	193	301	266	343	331	278	NA		
July	212	191	305	273	370	351	270	NA		
Average	206	184	284	267	307	287	312	NA		

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 1990 is preliminary.

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

Type	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91 3/
				$/metric ton			
U.S. no. 2 milled, 4%, container, FAS:							
August	500	477	299	316	325	354	306
September	485	475	285	349	303	357	287
October	493	475	305	NQ	303	324	
November	496	475	303	415	310	314	
December	496	470	249	413	300	312	
January	496	454	224	442	292	338	
February	496	455	224	496	290	356	
March	496	455	224	493	290	348	
April	496	383	224	455	292	342	
May	496	325	240	420	317	338	
June	495	291	267	329	356	336	
July	490	286	277	355	368	333	
Average	495	418	260	408	312	338	
Thai SWR 100% Grade A, bulk 2/:							
August	382	265	303	300	380	448	401
September	360	264	297	312	380	433	395
October	350	283	292	349	378	407	
November	302	310	275	341	375	384	
December	294	290	260	338	375	376	
January	292	290	260	365	360	379	
February	290	270	262	395	360	395	
March	280	269	276	396	360	394	
April	274	258	282	383	365	371	
May	265	255	275	377	400	379	
June	265	280	273	366	412	396	
July	250	283	268	383	437	399	
Average	300	276	279	359	382	397	
Thai SWR 100% Grade B, bulk 2/:							
August	333	237	243	250	322	386	311
September	317	239	230	280	320	369	309
October	301	239	225	316	320	359	
November	272	260	219	303	320	331	
December	260	245	215	304	320	322	
January	258	240	218	328	315	328	
February	254	235	236	357	320	350	
March	255	234	244	359	325	343	
April	241	223	246	340	328	326	
May	244	222	241	340	360	309	
June	244	229	238	311	389	308	
July	228	230	235	324	402	307	
Average	267	236	232	318	337	336	

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 1990 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	125.3	2.12	265.6	180.8	8.2	179.8	17.3	9.6
1965/66	124.0	2.05	254.2	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	277.8	189.4	7.2	187.1	20.9	11.2
1968/69	128.7	2.23	287.0	195.6	7.5	191.8	24.8	12.9
1969/70	131.4	2.25	295.9	201.6	8.2	200.2	26.1	13.1
1970/71	132.6	2.36	313.4	213.6	8.6	211.0	28.8	13.6
1971/72	134.9	2.35	317.5	216.4	8.7	216.8	28.4	13.1
1972/73	132.7	2.31	307.2	209.6	8.4	214.6	23.4	10.9
1973/74	136.4	2.45	334.5	228.0	7.7	222.9	28.5	12.8
1974/75	137.9	2.41	332.0	226.3	7.3	226.7	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	238.1	37.8	15.9
1977/78	143.6	2.58	370.4	251.7	9.6	245.6	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	378.3	258.0	12.6	259.3	52.8	20.4
1980/81	144.2	2.76	398.7	271.0	13.1	275.8	48.0	17.4
1981/82	144.9	2.85	412.4	280.5	11.8	284.5	44.0	15.5
1982/83	140.4	2.99	420.4	286.3	11.9	286.4	43.8	15.3
1983/84	144.1	3.14	452.8	308.1	12.3	304.9	47.0	15.4
1984/85	144.2	3.25	468.3	318.9	11.3	310.4	55.6	17.9
1985/86	144.9	3.23	468.6	318.9	12.6	319.5	55.0	17.2
1986/87	145.2	3.23	468.5	318.7	12.9	322.8	50.9	15.8
1987/88	141.5	3.27	462.7	313.7	11.9	319.7	45.1	14.1
1988/89	145.5	3.35	487.7	330.2	15.1	328.1	47.1	14.3
1989/90 7/	146.5	3.44	504.5	340.8	12.4	334.1	53.0	15.8
1990/91 8/	145.9	3.50	511.0	345.0	13.2	340.6	55.8	16.3

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 1990.

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/						
	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91 as of October 1990
	Million metric tons						
Production:							
Bangladesh	21.9	22.6	23.1	23.1	23.3	27.0	26.3
Burma	14.3	11.5	11.8	11.4	12.5	13.5	14.0
China	178.3	168.6	172.2	173.9	169.1	180.1	182.0
India	87.5	95.7	90.6	85.3	106.0	105.0	109.5
Indonesia	38.1	39.0	39.0	41.5	42.3	44.8	44.3
Japan	14.8	14.6	14.6	13.3	12.4	12.9	12.9
South Korea	8.0	7.9	7.9	7.6	8.4	8.2	7.6
Pakistan	5.0	4.4	5.2	4.9	4.8	4.8	5.3
Thailand	19.9	20.3	18.9	18.0	21.1	20.8	20.0
Subtotal	387.8	384.6	383.3	379.0	399.9	417.1	421.9
Australia	0.9	0.7	0.6	0.8	0.8	0.9	0.7
Brazil	9.0	9.8	10.6	11.8	11.0	7.9	9.8
EC-12	1.9	2.0	1.9	1.9	2.0	2.0	2.2
All others	62.3	65.3	66.1	63.4	66.7	69.6	69.2
Total non-U.S.	461.9	462.4	462.5	456.9	480.4	497.5	503.8
United States	6.3	6.1	6.0	5.9	7.3	7.0	7.2
World total	468.2	468.6	468.5	462.7	487.7	504.5	511.0
Ending stocks 3/:							
Total foreign	53.5	52.4	49.2	44.1	46.2	52.1	55.0
United States	2.1	2.5	1.7	1.0	0.9	0.9	0.8
World total	55.5	54.9	50.9	45.1	47.1	53.0	55.8

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 1979 and early 1980 in the Northern Hemisphere and the crop harvested in early 1980 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	Calendar year 1986	1987	1988	1989	1990 1/	1991 2/ as of October 1990
	1,000 metric tons					
Exports:						
United States	2,401	2,444	2,247	2,973	2,400	2,400
Argentina	150	150	160	130	70	120
Australia	400	338	417	450	470	470
Burma	660	493	368	456	200	400
China	950	1,020	698	320	300	300
Taiwan	169	240	104	68	50	100
EC-12	1,136	981	920	963	974	991
Egypt	92	105	108	100	100	100
Guyana	38	69	56	26	30	30
India	200	350	200	400	400	400
Indonesia	220	100	0	104	50	0
North Korea	80	154	199	175	150	150
Nepal	0	0	0	0	0	0
Pakistan	1,146	1,226	950	779	850	1,000
Thailand	4,321	4,355	4,791	6,037	3,800	4,500
Uruguay	246	190	244	251	200	150
Vietnam	125	153	97	1,400	2,000	1,700
Other	271	560	371	419	403	355
World total	12,605	12,928	11,930	15,051	12,447	13,166
Imports:						
Bangladesh	90	746	187	400	100	200
Brazil	1,250	200	64	180	350	250
Canada	120	85	135	148	130	160
China	322	554	310	1,400	250	400
Cuba	200	150	200	200	200	200
Eastern Europe	321	356	322	299	310	350
EC-12	1,343	1,162	1,178	1,237	1,160	1,100
India	10	5	650	500	75	100
Indonesia	28	155	33	412	40	50
Iran	450	1,000	400	1,000	900	1,000
Iraq	500	524	603	542	450	300
Ivory Coast	361	445	212	305	290	280
South Korea	200	0	0	0	0	0
Kuwait	90	90	90	90	90	90
Madagascar	150	125	70	130	130	130
Malaysia	300	280	350	360	350	360
Mexico	5	0	0	189	130	150
Nigeria	320	400	240	130	150	200
Peru	186	211	17	162	350	250
Philippines	150	0	181	195	625	250
Saudi Arabia	500	500	431	525	525	530
Senegal	345	355	360	400	390	400
South Africa	190	268	237	280	300	300
Sri Lanka	220	102	180	292	200	200
Syria	130	120	120	140	140	140
U.A. Emirates	201	222	220	220	220	220
USSR	363	598	498	600	640	700
Vietnam	482	344	175	50	0	0
Other	3,510	3,423	3,586	3,715	3,598	3,725
Unaccounted 3/	268	508	881	950	354	1,131
World total	12,605	12,928	11,930	15,051	12,447	13,166

1/ Forecast. 2/ Projected. 3/ This represents exports not accounted for in reports from importing countries. Since 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	368	22	443	0	120	953	1,220	2,173	44
1989 4/	408	0	826	0	30	1,264	1,788	3,052	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/ Unofficial estimate compiled from press releases. 3/ Estimated. 4/ Preliminary.

Sources: Agricultural Stabilization and Conservation Service, and Foreign Agricultural Service, USDA. Table provided by Mark Smith, ERS-CED, 786-1822.

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

Rank	FY 1989 Country	FY 1989 % of total exports 1/	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	18.8	Iraq	21.4	Iraq	22.1	Iraq	22.2	Iraq	17.7
2	Saudi Arabia	8.7	Saudi Arabia	14.2	Saudi Arabia	13.1	Brazil	14.4	Saudi Arabia	16.5
3	Belgium-Luxembourg	5.1	Belgium-Luxembourg	6.3	Belgium-Luxembourg	6.0	Saudi Arabia	12.8	Belgium-Luxembourg	8.0
4	Turkey	4.4	Philippines	5.9	Haiti	4.7	Belgium-Luxembourg	6.2	Canada	6.4
5	Spain	4.3	Canada	5.3	Canada	4.4	Canada	4.9	Philippines	5.0
6	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	Canada	3.5	Haiti	3.3	Guinea	2.7	Republic of South Africa	2.8	Bangladesh	3.8
8	Switzerland	3.2	Switzerland	3.0	Netherlands	2.5	Switzerland	2.2	Switzerland	2.7
9	Haiti	3.1	Jamaica	2.9	Liberia	2.4	Jamaica	2.0	Liberia	2.7
10	Republic of South Africa	3.1	Bangladesh	2.7	Turkey	2.4	Dominican Republic	1.9	Jamaica	2.4
	Sub-total	58.1		69.3		63.7		72.5		69.7
				Million dollars						
Value of U.S. rice exports		955.00		734.00		551.00		648.00		677.00

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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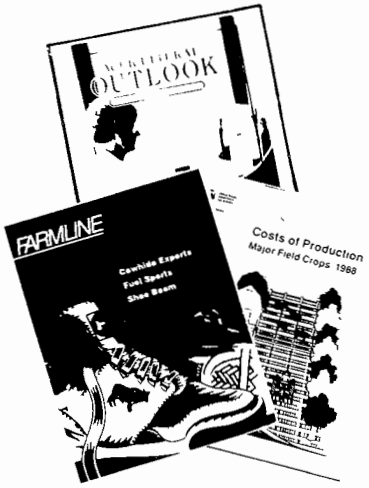

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