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## Commodity Profile: Rice

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### **Overview**

Rice cultivation originated in China over 4,000 years ago and remains an important agricultural commodity in many Asian diets. In addition, its low cost and the high caloric value make rice a staple commodity for many poor and developing countries. Production occurs in over 50 countries throughout the world, although Asian countries produce well over two-thirds of the world crop of 430 million tons. U.S. production accounts for less than 2 percent of the world total, however, the United States is an important exporter due to the relatively small percentage of rice traded globally. In recent years, over 45 percent of U.S. production has been exported.

### **Industry Characteristics and Production**

In the United States, rice production is predominant in three areas of the country—the Mississippi Delta region, the Gulf Coast, and the Sacramento Valley region of California. Of these regions, the Mississippi Delta is the largest in terms of total acreage, however the Sacramento Valley historically has produced the highest yields. Agronomic practices between regions vary based on climate and technological efficiency.

Multiple varieties of rice exist including short-grain, medium-grain and long-grain varieties. The majority of U.S. production (nearly 70 %) is long-grain. Medium-grain varieties account for the remaining percentage of U.S. production while short-grain varieties, on average, account for less than 1 percent of U.S. total production. Over 90 percent of California rice production is medium-grain which accounts for roughly two-thirds of the U.S. medium-grain supply and California growers are responsible for almost the entire supply of U.S. short-grain rice varieties. The other distinction is between japonica rices and indica rices. Japonica rices are typically medium or short grain glutinous rice in which the kernels stick together. About 80 percent of US rice and more than 90% of world rice supply is indica varieties. Japonica varieties are those typically consumed in Japan, Korea and Northern China. In the United States California is the sole producer of japonica rice.

In the United States, long-grain rice accounts for the bulk of U.S. consumption. Long-grain varieties are predominantly used in processed foods such as packaged mixes and as a side or main dish. Medium-grain varieties have found an outlet in breakfast

cereals and other processed foods and are also used for desserts, casseroles, and stir-fry recipes, while short-grain rice is ideal for pudding and other desserts. Short and medium grain japonica rice is used for Japanese and Korea foods, including sushi. Rice used for manufacturing beer is not limited to one set of varieties (Economic Research Service (ERS 2002) and Riceland). In addition, rice is often processed into products including rice flour and vegetable oil and many rice products are branded.

The largest rice miller and marketer in the United States is Riceland Foods, Inc, which is headquartered in Stuttgart, Arkansas. According to Riceland Inc., 25 percent of the U.S. crop is marketed through Riceland mills.

### **U.S. Rice Policy and Government Programs**

The Farm Security and Rural Investment Act of 2002 provides rice producers access to federal government programs designed to increase producer revenue beyond that from market sales. The three major programs providing payments to rice farmers are direct payments, counter-cyclical payments, and marketing loan payments. Direct payments are paid to producers based on historical production and are linked to current prices or output only indirectly. Counter-cyclical payments use a basis of previous production dependant upon national prices and marketing loan benefits rely on federal compensation in response to low market prices. Marketing loan benefits are available when the price of rice in specified international markets is below the legislated U.S. loan rates. In years where rice prices are low, counter cyclical payments and marketing loan payments can be substantial (Economic Research Service (ERS) 2005). Eligibility for both the direct payments and the counter-cyclical payments restrict crops eligible for rice base acres and the 2002 Act allowed farmers to update the base to reflect more recent planting and yields.

In addition, U.S. rice producers are able to take advantage of government revenue insurance, trade assistance, and conservation programs. Because rice land provides a wetland-friendly habitat for wildlife, several conservation programs have been made available to producers in order to enhance, protect and preserve the habitat they utilize. Some of these programs include the Conservation Security Program, Conservation Planning Assistance Pilot Program, U.S. Fish and Wildlife Service Conservation Easement Program, Wetland Reserve Program, Conservation Reserve Enhancement Program, Partners for Fish and Wildlife Program, and the Wildlife Habitat Incentive Program (California Rice Commission). These programs typically offer monetary compensation for restoration projects by producers or compensation for land retirement.

### **Demand**

Nearly 460 million tons of rice are consumed globally each year. In less developed countries, increasing per capita income typically results in decreased per capita rice consumption. This is because increased income leads to diversification in diet and an ability to buy more expensive foods. China and India far outpace consumption patterns compared to any other country. In 2004, Chinese consumption totaled 135 million metric tons while India consumed 84 million metric tons. Together, these two countries accounted for just over 52 percent of total world consumption in 2004 (Foreign

Agricultural Service (FAS)). In comparison, 3.6 million metric tons of rice were consumed in the United States during the same year. As shown in Figure 1, rice consumption in the United States has continued to increase due to an increase in Asian and Hispanic populations, growth in overall national population, the introduction of new rice-based food products and industry advertising efforts (ERS 2005). Direct food use accounted for 65 percent of total U.S. domestic use in 2003, while processed foods accounted for 18 percent, and rice used in beer production accounted for 17 percent (ERS 2005).

## **Exports**

ERS statistics indicate only 6 to 7 percent of total world rice production is traded internationally each year, 75 percent of which is long-grain rice. Although China and India dominate world rice production, they do not dominate the world export market. In 2004, Thailand was responsible for 38 percent of total world exports while the United States ranked fourth with 11 percent of total tonnage behind Vietnam and India (Figure 2). U.S. exports in 2004 were valued at almost \$1.2 billion dollars. Although the traded share of rice has increased due to increased market access over the last 15 years, a number of countries, especially in Northeast Asia, have also implemented policies which have restricted imports (ERS 2005). As a result of trade barriers and production subsidies, rice prices are lower than they would otherwise be.

According to FAS statistics, in 2004 the top destinations for U.S. rice exports in terms of value were Mexico and Japan, which each received exports worth approximately \$182 (Figure 3). Though much smaller in terms of value, Canada received just below \$100 million worth of U.S. rice exports in 2004 and Haiti received nearly \$80 billion worth. Historically Canada and Haiti have alternated between the third and fourth largest U.S. export destinations. World wide, the three largest importers are Indonesia, Bangladesh and Sub-Saharan Africa. Rising populations and limited room for expanded rice production, coupled with increased competition for alternative crops are factors that have led to expanded export markets in these and other regions (ERS 2005).

Exports of rice have accounted for at least 45 percent of total U.S. production in recent years. U.S. exports of milled rice have declined due to lost market share to Africa and the Middle East. However, the U.S. industry has capitalized on the rough rice (i.e. unmilled paddy rice) export market relinquished by top Asian exporters, offsetting losses in milled rice exports (ERS 2005). High quality, supplier reliability, year round delivery, versatility of products including rough or unmilled rice and WTO imposed policy in the Northeast Asian markets have helped the U.S. remain competitive in export markets (ERS 2005). U.S. rice, mainly from California, accounts for nearly 50 percent of Japan's WTO commitment to import 8 percent of annual consumption of rice, and also regularly supplies South Korea and Taiwan as well.

## **Supply**

According to FAS 2004 statistics the world's largest consumers of rice are also the world's largest producers. China's production totaled 112.5 million metric tons in 2004 followed by India's 87 million metric tons. Combined they account for 50 percent of

world rice production. Comparatively, in 2004, U.S. rice production was 6.4 million metric tons, or 1.6 percent of total world production.

U.S. rice production acreage has remained relatively stable, averaging 3.3 million acres since 1997, with 2004 estimated acreage at 3.4 million (Figure 4). Prior to 1996, acreage was often restricted by supply control measures subsequently eliminated under the 1996 Farm Act. While acreage has changed minimally, average U.S. yields have increase by 931 pounds per acre since 1997, with an average yield in 2004 of 6,828 pounds/acre as shown in Figure 5. Notably, the increase in precision leveling and the introduction of new, semi-dwarf varieties has greatly contributed to increased yields (ERS 2005).

Real prices for rice (in 2000-dollars) have continued to fall since 1980, as noted in Figure 6. Prices fell most dramatically in 1986 (to \$5.34/cwt), 2001 (to \$4.15/cwt) and 2002 (\$4.31/cwt). By 2004, prices rebounded slightly to \$6.69/cwt.

Typically, U.S. rice producers do not respond as expected to market forces or changes in prices. This is best illustrated by the increased plantings in 1997 despite falling prices. Several factors contribute to producer responses. First, in years when world prices are low, U.S. marketing loan benefits and counter-cyclical payments compensate farmers for lower prices, so anticipated losses from a decrease in world prices are minimized. Second, the large capital investments, high operating costs of rice production, and specialized machinery specific to rice production make exit or decreased production costly for many producers. Third, because much of the acreage dedicated to rice production in the U.S. is unsuitable for other viable planting options, it is less common that rice cropland is converted to alternative crops. Lastly, increased yields lead to increased production, regardless of market prices (ERS 2005).

### **Imports**

Although the United States remains a net exporter by nearly one billion dollars, according to (FAS) statistics, U.S. imports from Thailand in 2004 were worth nearly \$160 million and Indian imports worth \$37 million (Figure 7). Milled long-grain rice, primarily jasmine, accounted for most of these imports. Thailand has accounted for 60-70 percent of total U.S. imports of rice, primarily because of the inability of U.S. producers to successfully grow specific Asian aromatic varieties. The United States also imports mainly medium-grain rice from Australia and China, almost all of which is destined for Puerto Rico.

### **Related Issues**

As the United States continues to use its market power in terms of price support to rice producers and as the price difference between global and U.S. prices widens, U.S. competitiveness in world markets is expected to decrease. U.S. competitiveness in the global market will continue to be an issue of importance to producers. In addition, in the summer of 2004, the EU altered its rice policy and essentially cut its domestic support price by 50 percent and moved to fixed import levies. Long-run effects from these changes are not yet known.

Recently the popularity of organic rice has increased in many regions around the world. The organic rice market remains relatively immature, though decreased cost of production per acre (but not per unit of production) and environmentally-friendly production methods have become appealing to some producers. Organic price premiums are not well established. Decreased yields compared to conventional production also partially offset, or more than offset potential premiums for most producers.

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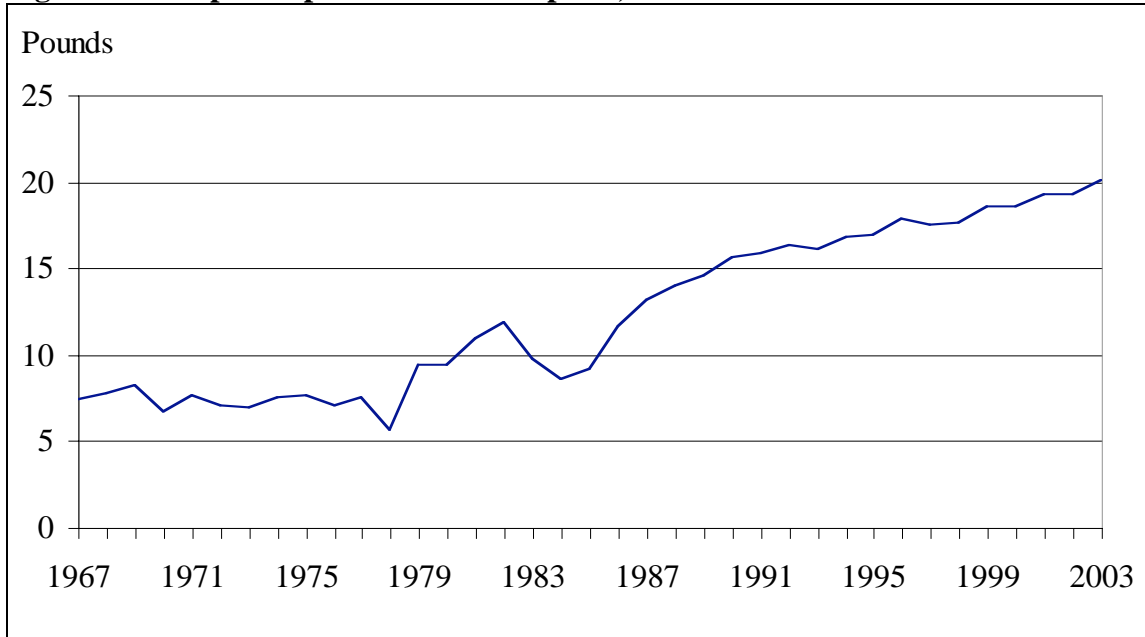
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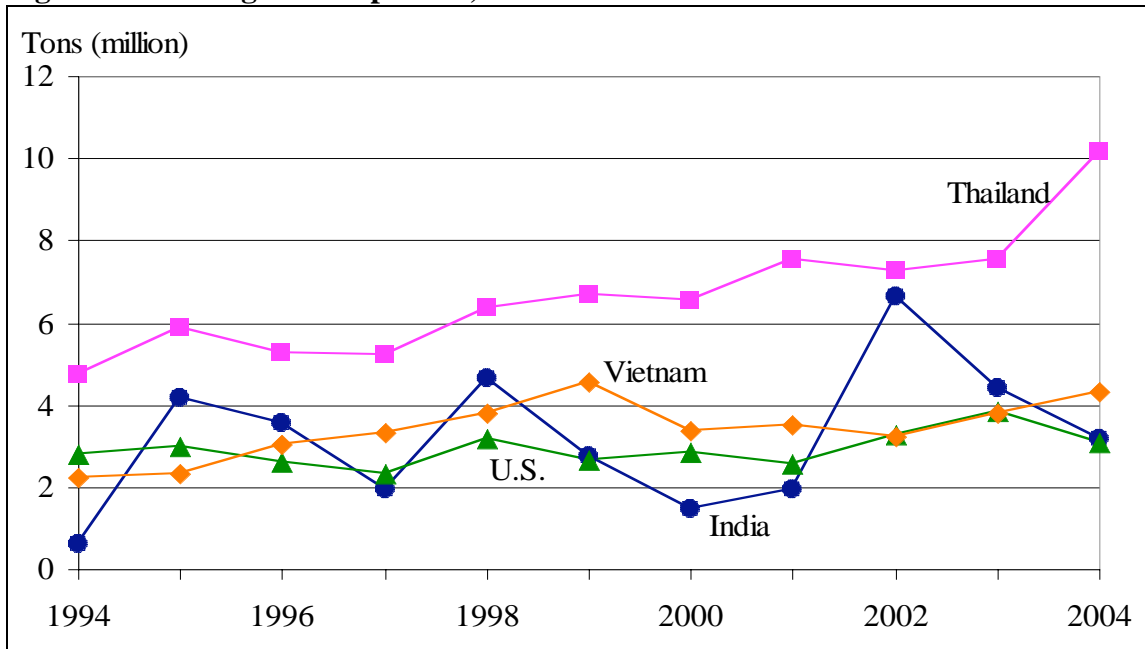
## FIGURES

**Figure 1. U.S. per Capita Rice Consumption, 1967-2003**



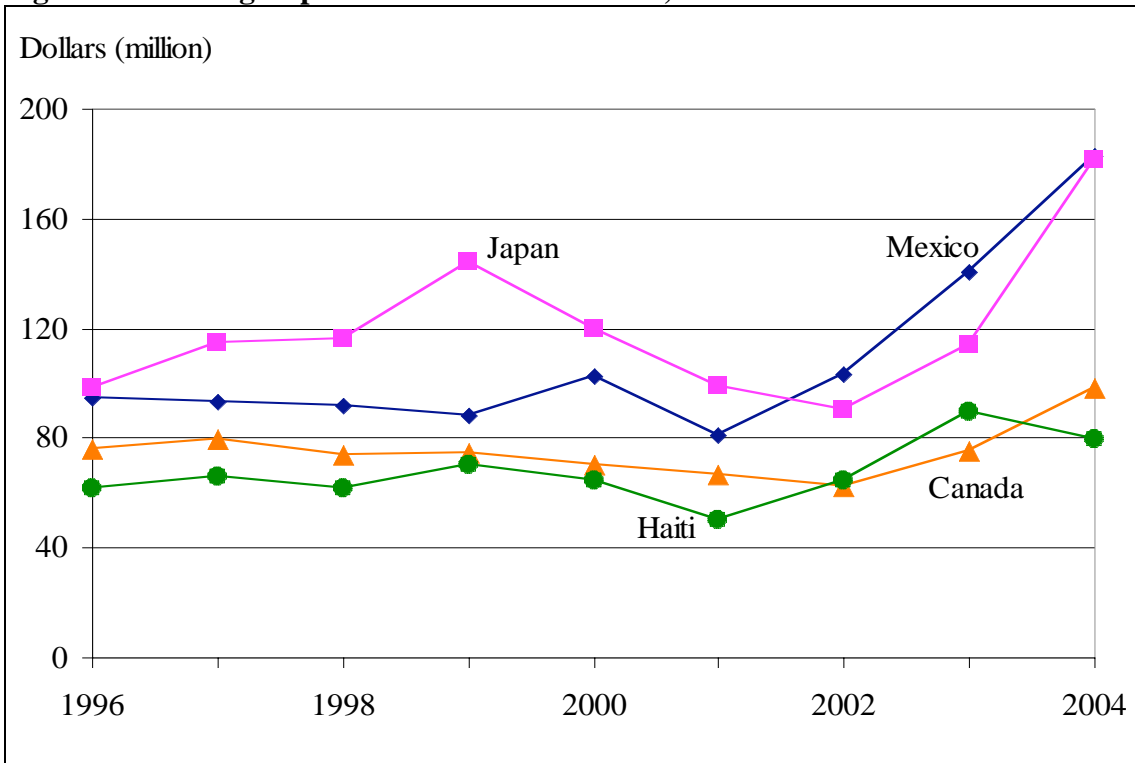
Source: USDA Economic Research Service, Food Consumption Data System

**Figure 2. Leading Rice Exporters, 1994-2004**



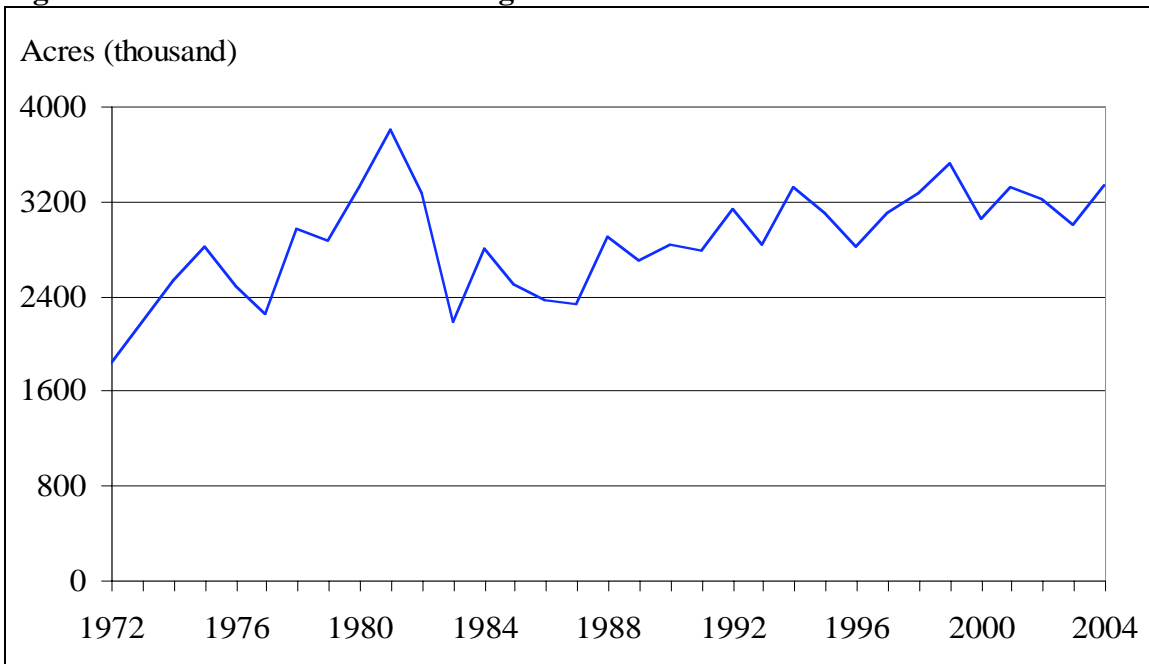
Source: USDA Foreign Agricultural Service

**Figure 3. Leading Export Markets for U.S. Rice, 1996-2004**



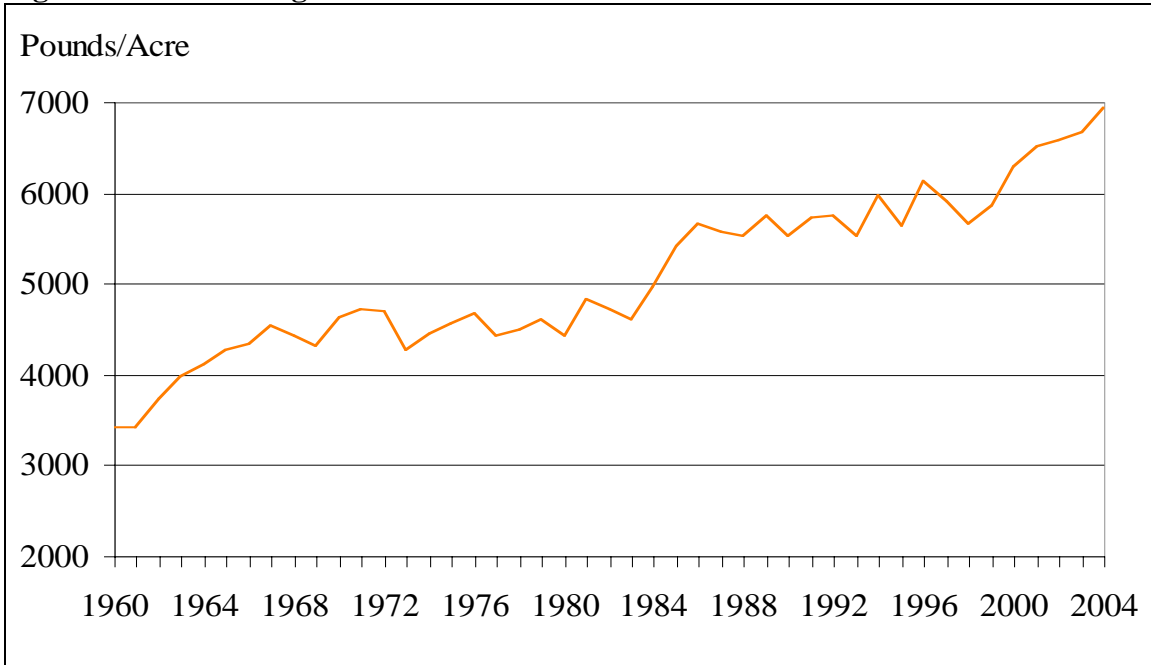
Source: U.S. International Trade Commission Data

**Figure 4. U.S. Rice Harvested Acreage 1972-2004**



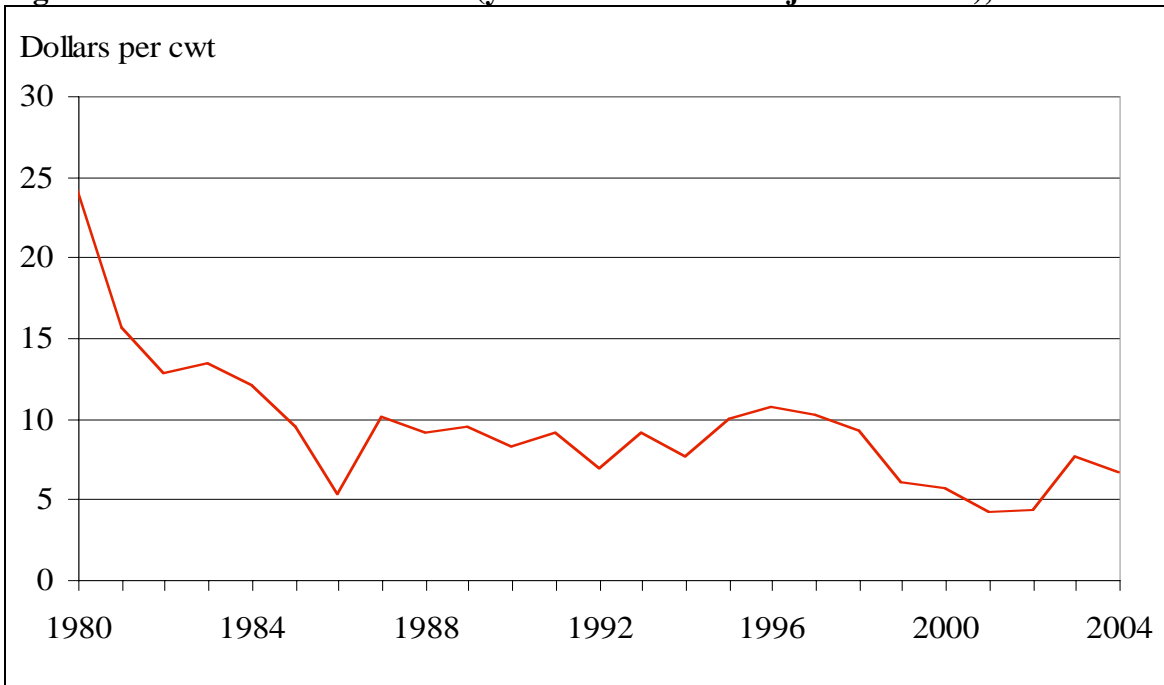
Source: USDA Economic Research Service, Rice Yearbook

**Figure 5. U.S. Average Yield Per Acre 1960-2004**



Source: USDA Economic Research Service, Rice Yearbook

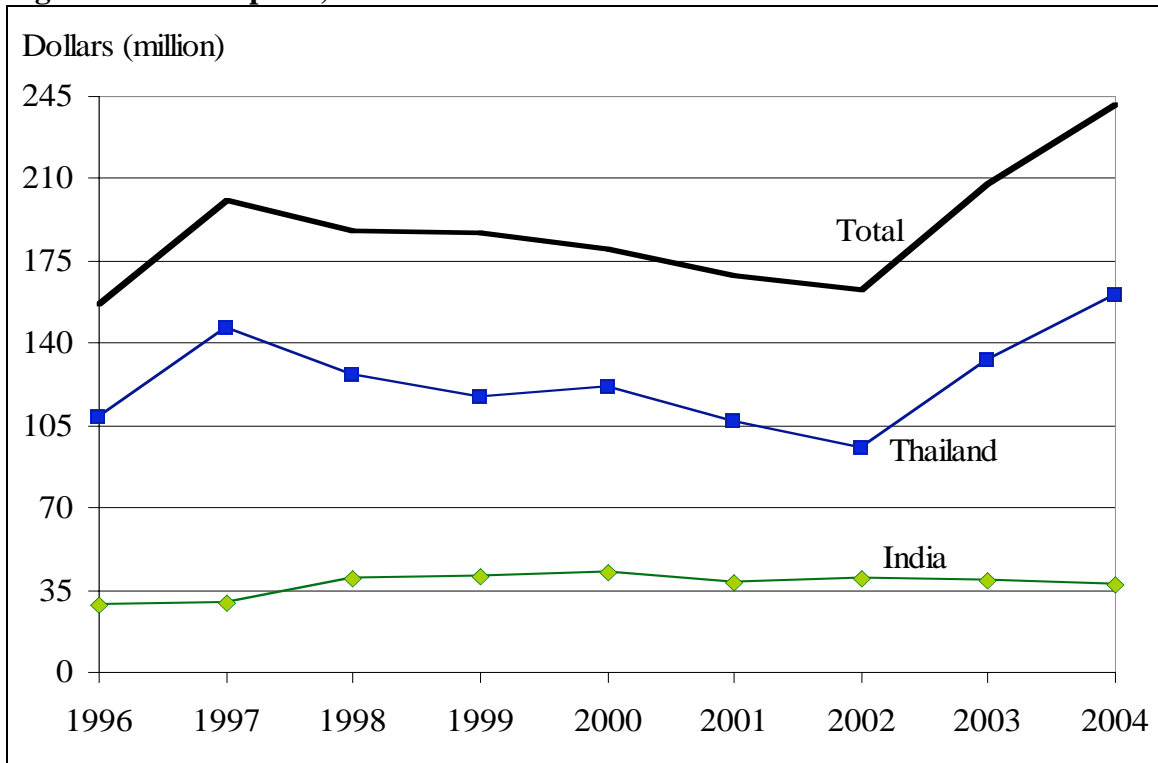
**Figure 6. U.S. Farm Price of Rice (year-2000 inflation-adjusted dollars), 1980-2004**



Source: USDA Economic Research Service, Rice Yearbook



**Figure 7. U.S. Imports, 1996-2004**



Source: U.S. International Trade Commission Data