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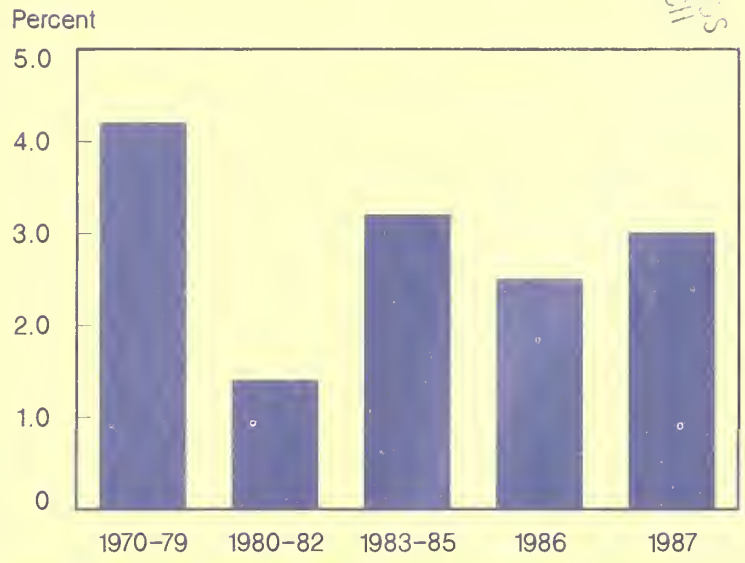
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World Agriculture

Situation and Outlook Report

World Economic Growth To Strengthen



Averages for 1970-79, 1980-82, 1983-85. 1986 estimated. 1987 projected.

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Note: Tons are metric, dollars are U.S., and rice is on a milled basis unless specified otherwise.

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SUMMARY

World economic growth in 1987 is expected to recover to 1985's 2.9 percent, after slowing to an estimated 2.5 for 1986. Lower oil prices and interest rates, and stronger Japanese and European currencies, will stimulate growth among the industrialized countries. This, in turn, will increase the demand for developing country exports. Rising prices for exports, plus the lower cost of imported oil and the opportunity to reschedule debt at reduced interest rates, will enhance developing-country growth into 1988.

The United States incurred its worst agricultural trade deficit with Mexico during fiscal 1986. Several factors contributed to lower Mexican import demand, including larger output of major crops and falling oil prices. At the same time, U.S. imports from Mexico were record high. U.S. agricultural exports to Japan fell to their lowest since 1979, reflecting lower export prices for grains and oilseeds, and reduced shipments of coarse grains and cotton.

Declining exports and record imports drove the fiscal 1986 U.S. agricultural trade balance down to \$5.4 billion, the lowest since 1972. In late fiscal 1986, lower prices for U.S.

rice, wheat, and cotton boosted export volumes of these commodities. In fiscal 1987, rising volume is expected to help offset lower prices.

Sorghum production has been increasing rapidly in the developing countries since the early 1970's, primarily from high yielding hybrid sorghums. Hybrids have been increasing yields in Asia and Latin America, but declining planted area in Asia has offset the yield effect on output.

Expanding hybrid area in Mexico and Argentina has boosted sorghum output in Latin America more than in any other region. Nevertheless, Mexico is one of the upper-middle-income countries responsible for shifting the developing world from being a net exporter of coarse grains to a net importer. Demand for feedstuffs in Mexico has outpaced expanding sorghum production.

World meat production is expected to reach 128 million tons in 1986, up about 1 percent from last year. Output will rise again in 1987, with foreign gains in poultry meat, pork, and beef.

WORLD ECONOMIC CONDITIONS

Global Assessment

Growth To Improve in 1987

World real GDP grew 2.9 percent in 1985, but is likely to fall to near 2.5 in 1986. Improvement to 2.9 in 1987 is expected with a steady but moderate expansion maintained into 1988.

Slower-than-expected economic activity in the first half of 1986 has led to downward revisions of many annual growth estimates for 1986. Much of this weak performance was due to commercial investment decisions that were postponed at the start of 1986, awaiting stabilization of oil price, interest rate, and U.S. dollar declines. These postponed investments are likely to be made toward the end of 1986, and normal business activity should continue into 1987 as markets stabilize.

Lower oil prices and interest rates, and stronger Japanese and European currencies, indicate room for improved growth among the industrial countries, and Europe in particular, during 1987. The recently released annual report by the European Community Commission projects real GDP growth near 2.8 percent next year, but the combination of factors may show this to be conservative with growth possibly reaching 3 percent or more.

Reduced cost of capital and imports indicates continued low inflation prospects of around 3 percent for Europe and Japan. However, European unemployment remains historically high, continuing to restrain incomes and consumption.

Along with other countries, Japan has benefited from the 50-percent drop in the dollar price of oil, and import costs have dropped because of the 40-percent appreciation of the yen over the dollar during the past year. However, the yen appreciation has also significantly slowed Japanese exports, dampening prospects for real GDP growth in Japanese fiscal 1986 (April-March) from 4 to 2.8 percent.

In an attempt to reach the 4-percent target, Japan introduced in September a supplementary budget worth over \$23 billion aimed at increasing domestic demand through

public works construction. Additional action designed to help shift the growth of the Japanese economy from export toward domestic demand came on October 31 with a reduction in the discount rate to 3 percent.

Of possibly greater impact could be revisions in the Japanese tax code in the coming fiscal year. Tax revisions would increase disposable income and thereby significantly raise domestic and import demand. Nonetheless, Japanese growth in 1987 is likely to reflect more of the export sluggishness, caused by the yen appreciation, and less of the upcoming domestic demand growth.

World Bank-IMF Meetings

At the fall annual meeting of the World Bank and IMF, finance ministers and central bank governors from the major industrial countries discussed the world's economic imbalances.

Ministers from the United States, United Kingdom, France, Germany, and Japan (G-5) focused on the U.S. desire for other members with large trade surpluses—especially Germany—to lower interest rates to stimulate demand, and boost imports to help reduce the U.S. trade deficit. Germany maintained that its current policies were already fully implemented toward this goal. The G-7 meeting (G-5 countries plus Canada and Italy) fulfilled the pledge made at the May Tokyo summit meeting of major industrial nations to review economic policies regularly to resolve any differences, aimed at improving world economic growth through better policy coordination.

Although neither meeting resulted in any direct action, the discussions concluded that further declines in the dollar, or yen appreciation, would do little to help correct the U.S. trade deficit.

Developing-Country Growth Mixed

Real GDP growth in developing countries as a group will increase moderately in 1987. Growth should expand further in 1988 as export markets pick up in the industrial countries, lower interest rates make debt reschedulings possible, and lower oil prices reduce import costs. However, although

regional differences will vary widely, the moderate income increases in industrial and developing countries will not absorb the abundant agricultural supplies on world markets. Low petroleum and commodity prices will prolong negative or minimal growth among Mideast and African countries heavily dependent upon exports.

Lower interest rates will allow many heavily indebted Latin American countries to begin or continue debt-rescheduling negotiations in 1987. Such action will likely produce moderate economic improvement for the region toward the end of 1987 and into 1988. Additional help for Latin America in 1987 will depend on improved export markets.

The Asian Pacific Rim countries will fare the best, showing steady increases of 4 to 5 percent in real GDP growth in 1986, 1987, and 1988.

New OPEC Uncertainties

World oil prices remain depressed, since OPEC oil ministers could not agree on member production quotas at their October meeting. Fresh uncertainty was added when longtime Saudi oil minister Zaki Yamani, a major architect of OPEC strategy, was replaced abruptly. How the new minister, Hisham Nazer, will pursue the Saudi Arabian Government's desire for higher oil prices remains a major unknown.

Dollar Exchange Rates

Foreign exchange markets have remained stable in recent months, with short-term interest rates for the dollar remaining just under 6 percent in the United States and abroad. Continuing low inflation has made nominal and real interest rate differentials slight. Japan and Germany continue to have the lowest interest rates. Japan reduced its discount rate to 3 percent on October 31 and Germany held at 3.5.

The U.S. discount rate remains at 5.5 percent, with a reduction to 5 in the near-term less likely as prospects improve for U.S. growth. The U.S. dollar, stable on a trade-weighted basis since spring 1986, recently gained slightly against the yen as Japanese investors anticipated reduction of the Japanese discount rate. U.S. and Japanese

Foreign currency units per U.S. dollar

Year	Mark	Yen	Pound	Guilder	Can\$
1980	1.818	226.4	.4299	1.987	1.169
1981	2.257	220.2	.4983	2.492	1.198
1982	2.427	248.8	.5722	2.669	1.233
1983	2.554	237.4	.6597	2.853	1.232
1984	2.847	237.6	.7517	3.209	1.295
1985	2.942	238.3	.7790	3.319	1.365
1986					
Jan.	2.437	199.8	.7014	2.746	1.407
Feb.	2.330	184.8	.6999	2.632	1.404
Mar.	2.276	178.6	.6809	2.565	1.400
Apr.	2.268	174.7	.6671	2.560	1.387
May	2.226	166.9	.6564	2.505	1.375
June	2.232	167.4	.6625	2.513	1.389
July	2.148	158.1	.6631	2.422	1.380
Aug.	2.060	154.1	.6726	2.324	1.388
Sept.	2.041	154.6	.6809	2.303	1.387
Oct.	2.005	156.4	.7006	2.265	1.388
Nov. 1/	2.032	162.8	.7021	2.295	1.386

1/ Preliminary.

Ministers have agreed that the exchange rate need not appreciate substantially more.

Stable interest rates, as well as oil price uncertainties which precipitated financial shifting from sterling into deutschemarks, have maintained the German mark at just above 2 per dollar. The French franc has also strengthened, to 6.7 francs per dollar, aided by an improving trade balance and decreasing French inflation.

Higher interest rates in Canada and Britain represent in large part their defense against falling world oil prices, which affect them as energy exporters. The Bank of England raised the base lending rate 1 percent in October to keep financial outflows from weakening the pound further from its \$1.43 October average. Resulting British short-term interest rates are near 11.4 percent, the highest among the industrial countries. Comparable Canadian interest rates are about 8.5 percent, maintaining the Canadian dollar steady around Can\$1.39 (\$0.72). [Ted Wilson (202) 786-1688]

Harvested Area

Foreign Cropland Probably Increased

Foreign areas of cereals and oilseeds harvested during 1986/87 are projected to be slightly larger (0.6 percent) than in 1985/86, with cereals accounting for 57 percent of the net increase of about 4.8 million hectares.

U.S. AGRICULTURAL TRADE

Essentially all of this increase took place in 44 major exporting and importing countries that account for some 80 percent of foreign grain area. (These major countries include major exporters or importers of cereals as designated by FAS, plus the larger exporters or importers of at least one major oilseed. Many smaller developing countries are not included among these 44 countries). Coincidentally, foreign oilseed producers (growers of soybeans, cotton, peanuts, sunflowerseed, flax, and rapeseed) are expected to increase their harvested areas 2 percent this year, continuing a long-term trend which has varied in amplitude but not in direction from year to year. This increase was quite widespread among both major exporting or importers countries and other foreign producers, although more pronounced among the major countries.

Revised estimates indicate that foreign cropland from which these crops were harvested actually declined slightly (0.7 percent) during 1984/85 and 1985/86. All these estimates of year-to-year variations are well within the cropland use pattern which has evolved since 1980.

Most of the net increase in output of cereals during the last 5 years was attributable to additional agricultural chemicals and genetic improvements of crop varieties rather than to more harvested area. On the other hand, foreign oilseed area has increased more than 8 percent since 1982. These aggregate assessments of trends in cropland area may hide some significant inter-country differences in trends, however.

Divergence of trends in cropland use and fertilizer consumption between different groups or classifications of foreign countries has become more apparent since 1982. Foreign countries that were major exporters and importers of cereals and oilseeds during 1984/85 and 1985/86, with the notable exceptions of Western Europe and Japan, increased their consumption of chemical fertilizers much faster than farmers in other foreign countries or in the United States. [Richard C. Taylor (202) 786-1705]

While export value suffered from lower prices and export volume for major commodities in fiscal 1986, rising volume in fiscal 1987 is expected to help offset lower prices. While U.S. agricultural imports hit a record for the third consecutive year in fiscal 1986, accelerating influences should weaken in fiscal 1987. As a result, the 1987 U.S. agricultural trade balance will not deteriorate the way it did in the previous 2 years.

U.S. agricultural trade finished 1986 in surplus for the twenty-seventh consecutive year. However, the surplus, \$5.4 billion, was more than 50 percent lower than a year earlier and the lowest since 1972. While imports were high, most of the balance's decline reflected eroding exports—for example, 1986 was the first year since 1972 that the USSR purchased less than 1 million tons of U.S. wheat, and U.S. grain export volume lagged behind that of its major competitors.

End of 1986 Indicates Trends in 1987

While weak overall, fiscal 1986 ended with 4 months of rising export volume, the first such increase in several years. In the latter part of 1986, lower prices demonstrated their ability to boost export volume. Rice, wheat, and cotton exports rose in the months

U.S. agricultural export values 1/

Commodity	1984	1985	1986	1987 F
Billion dollars				
Grains and feeds	17.4	13.3	9.5	8.2
Wheat and prod.	6.8	4.5	3.5	3.0
Rice	.9	.7	.6	.5
Feed grains and products	8.2	6.9	3.8	3.0
Oilseeds and prod.	8.8	6.2	6.3	6.0
Soybeans	5.7	3.9	4.2	4.0
Soybean cake and meal	1.2	.8	1.1	1.0
Soybean oil	.6	.6	.3	.2
Livestock prod.	3.5	3.3	3.5	3.7
Poultry prod.	.4	.4	.5	.5
Dairy prod.	.4	.4	.4	.4
Horticultural prod.	2.6	2.6	2.7	2.9
Cotton, incl. linters	2.4	1.9	.7	1.7
Tobacco	1.4	1.6	1.3	1.4
Other	1.1	1.5	1.4	1.2
Total	38.0	31.2	26.3	26.0

1/ Fiscal year. F = forecast.

following implementation of marketing loans or dramatically lower U.S. loan rates. During fiscal 1987, the largest U.S. agricultural export-- coarse grains-- is also expected to benefit from lower U.S. loan rates.

While it is uncertain exactly how 1987 export prices will stack up for the entire year, a good indicator in the past has been the average export price (Export Unit Value, or EUV) during the September preceding the start of the fiscal year. For corn, September's EUV was 23 percent lower than the corn EUV for all of fiscal 1986. Wheat's was 14 percent lower, and soybean's fell slightly as well. Stronger volume and weaker prices, as indicated by the EUV, will offset each other to some extent, in contrast with 1986, when both weakened.

The lower prices will allow the United States to capture an increased share of world agricultural exports for the first time since 1980. However, competition will remain keen as global export opportunities expand only slightly. The world's largest grain producer, China, will again be a net grain exporter for only the second year ever. A larger Soviet grain crop, combined with hard currency restraints, is likely to mean low Soviet imports. Finally, foreign soybean production will probably rebound, trimming trade prospects for what was the United States' best-performing farm product export in 1986. However, the United States will benefit from the Southern Hemisphere's shortage of old-crop supplies in early 1987.

U.S. Imports Could Slow

Record U.S. imports in 1986 stemmed almost entirely from higher coffee prices. Although coffee prices weakened towards the end of 1986, average import prices remained at least 30 percent above a year earlier. In 1987, the value of coffee imports will probably be driven down by lower prices, or by lower volume if continued high prices cut U.S. consumption, as during the late 1970's. Similarly, total U.S. consumption is not expected to grow as strongly in 1987, and the long-awaited impact of exchange rate adjustments will probably affect imports from European countries. [Stephen MacDonald (202) 786-1621]

U.S. agricultural import values 1/

Commodity	1984	1985	1986	1987 F
Billion dollars				
Competitive				
Dairy & poultry prod.	.9	.9	.9	.9
Meat & meat prod.	1.9	2.2	2.2	2.4
Other animal prod.	1.1	1.1	1.1	1.2
Fruits, nuts & vegetables	3.0	3.5	3.5	3.4
Oilseeds & prod.	.8	.8	.6	.6
Sugar & related prod.	1.5	1.3	1.0	1.0
Wines & malt beverages	1.5	1.6	1.8	1.6
Other	1.5	1.5	2.0	1.9
Noncompetitive				
Bananas & plantains	.7	.8	.7	.7
Coffee, green & processed	3.3	3.2	4.4	3.8
Cocoa beans & prod.	1.1	1.3	1.2	1.2
Rubber & allied gums	.9	.7	.6	.6
Other	.7	.8	.9	.7
Total	18.9	19.7	20.9	20.0

1/ Fiscal year. F = forecast.

WORLD COMMODITY DEVELOPMENTS

Grains

The 1986/87 world grain supply and demand situation is much the same as in recent years. Once again the world will produce more grain than it will consume, adding to already burgeoning grain stocks. Rice is the only exception--stocks are expected to drop somewhat despite a small increase in production. Largely because of lower prices, grain trade is forecast to show modest growth in 1986/87. However, competition for markets is keener than ever before. Many major exporters face serious oversupply problems, the Soviet Union's purchasing activity is down sharply, and several countries have larger availability of feed-quality wheat. While stocks will increase in several countries, most of the increase will occur in the United States.

Global Stocks Continue To Mount

The global grain supply in 1986/87 is forecast to reach 2 billion tons for the first time, an increase of more than 80 million over 1985/86 and 150 million above 1984/85. With forecast supply exceeding consumption of total grains by 2.4 percent, stocks are likely to grow an additional 50 million tons in 1986/87.

Wheat: World production, consumption, and net exports

Country	1984/85			1985/86			1986/87 P		
	Prod.	Cons.	N. exp.	Prod.	Cons.	N. exp.	Prod.	Cons.	N. exp.
Million metric tons									
Major exporters									
United States	70.6	31.4	37.9	66.0	28.4	24.7	56.5	30.7	27.8
Canada	21.2	5.2	19.4	24.3	5.7	16.9	31.3	5.6	18.0
Australia	18.7	3.0	15.8	16.1	3.0	16.0	16.0	3.0	14.5
EC-12	82.9	59.6	12.9	71.8	58.7	12.9	71.2	59.7	12.1
Argentina	13.2	4.6	8.0	8.5	4.4	6.1	9.6	4.5	4.6
Turkey	13.3	13.6	-5	12.7	13.8	-9	14.0	14.0	-1
Major importers									
USSR	68.6	91.2	-27.6	78.1	91.6	-15.2	81.0	94.0	-13.0
China	87.8	95.2	-7.4	85.8	92.4	-6.6	89.0	96.0	-7.0
Eastern Europe	42.1	40.0	+1.5	37.8	38.8	-9	39.8	40.0	-7
Other W. Europe	4.5	3.4	+8	4.1	3.5	+6	4.2	3.5	+6
Brazil	1.9	6.3	-5.4	4.3	6.8	-2.5	4.7	7.5	-3.0
Mexico	4.2	4.4	-5	4.4	4.7	-1	4.5	4.9	-2
Other Latin Am.	2.0	8.6	-6.8	2.3	8.6	-6.5	2.4	9.1	-6.7
Japan	.7	6.3	-5.3	.9	6.3	-5.2	.9	6.3	-5.3
India	45.5	43.1	0	44.2	43.9	+5	47.0	46.1	+4
South Korea	--	3.0	-3.1	--	3.1	-3.0	--	2.8	-2.7
Indonesia	0	1.5	-1.6	0	1.4	-1.4	0	1.6	-1.6
Other Asia	16.8	25.1	-7.8	17.4	24.6	-7.7	19.9	26.4	-6.9
Egypt	1.8	8.5	-6.6	1.9	8.5	-6.7	1.9	8.7	-7.0
Morocco	2.0	4.2	-2.5	2.1	4.3	-2.0	3.3	4.4	-1.5
Other N. Afr./ME	10.0	25.4	-15.0	13.2	26.1	-12.3	12.6	26.8	-14.3
Other Africa	3.2	8.5	-5.6	3.0	8.1	-4.4	3.3	8.5	-5.1
Residual	.3	.4	-6	.2	.1	-2.3	.5	.6	-2.9
World	511.3	492.5		499.1	486.8		513.6	504.7	

Trade on July-June years. -- = negligible. P = projected.

Rice: World production, consumption, and net exports

Country	1984/85			1985/86			1986/87 P		
	Prod.	Cons.	N. exp.	Prod.	Cons.	N. exp.	Prod.	Cons.	N. exp.
Million metric tons									
Major exporters									
United States	4.4	1.9	1.8	4.4	2.1	2.2	4.2	2.2	2.5
Thailand	13.1	8.8	4.0	13.0	9.0	4.4	12.7	8.8	4.0
Pakistan	3.3	2.4	1.0	2.9	2.0	1.1	3.2	2.1	.9
China	124.8	123.9	.9	117.9	117.2	.8	120.4	119.7	.8
India	58.6	57.0	.2	61.0	60.3	.2	60.0	60.8	.2
Burma	9.3	8.8	.5	9.3	8.7	.6	9.4	8.8	.6
Japan	10.8	10.2	--	10.6	10.0	--	10.3	9.9	--
Italy	.7	.3	.4	.8	.4	.4	.7	.3	.4
Australia	.6	.1	.4	.5	.1	.4	.5	.1	.3
Major importers									
Indonesia	25.9	25.2	+4	26.5	26.2	+3	26.5	26.5	--
South Korea	5.7	5.5	0	5.6	5.8	0	5.5	5.6	0
Bangladesh	14.6	14.9	-3	15.2	15.4	-2	15.5	15.6	-3
Vietnam	10.0	10.4	-4	9.8	10.2	-5	10.3	10.7	-4
Other Asia	17.2	18.7	-1.5	18.0	19.4	-1.1	17.9	19.2	-1.3
USSR	1.8	1.8	-1	1.7	1.7	-1	1.6	1.7	-1
Brazil	6.1	6.4	-4	6.8	7.3	-1.2	6.8	7.6	-5
Other Latin Am.	4.8	4.6	+2	4.9	4.8	-3	4.6	5.0	-2
Iran	.9	1.5	-6	.9	1.6	-7	.9	1.7	-7
Other N. Afr./ME	1.8	3.7	-1.8	1.8	3.7	-2.0	1.9	3.9	-1.9
Malagasy	1.4	1.5	-2	1.4	1.5	-2	1.4	1.6	-2
Nigeria	.9	1.5	-4	1.0	1.3	-1	1.0	1.1	-2
Other Africa	1.9	4.0	-2.0	2.1	4.1	-2.1	2.1	4.2	-2.2
Residual	.7	1.9	-2.1	.7	2.2	-1.9	.8	1.8	-1.7
World	319.3	315.0		316.8	315.0		318.2	318.9	

Trade on calendar years; P = projected.

As in past years, the United States will bear the brunt of the stock buildup. During 1986/87, U.S. grain inventories are forecast to grow 40 million tons, with all the increase in coarse grains. A 10-percent decline in U.S. production will be more than offset by large carryin stocks, modest trade increases, and stagnant consumption. The United States, by the end of the various crop years, will likely be holding more than 220 million tons of grain in inventory, almost 60 percent of the world total.

With foreign grain production gaining more than 2 percent, and the United States likely to gain a more-than-proportionate share of the world trade increase, many foreign exporters will face stock problems, although on a much smaller scale. Canadian wheat stocks may almost double, while coarse grain stocks rise around 25 percent. Large EC-12 inventories have been a problem for several years and while they are expected to decline in 1986/87, stocks will remain larger and result in pressure to export even though U.S. prices are lower and the U.S. dollar has increased. In Argentina, storage is limited, intensifying the need to export wheat, corn, and to a smaller extent, sorghum.

Wheat Output and Use To Rise Sharply

Foreign wheat production is expected to reach 457 million tons in 1986/87, an increase of 24 million over the previous year. About one-third of the increase is by major export competitors as Canada's 7-million-ton rise and a small gain in Argentina likely outweigh small reductions in the EC. The European Community's production of 71 million tons will be down about 11 million tons from the 1984/85 record.

Increased foreign production and low grain prices are both contributing to an expected 17-million-ton increase in wheat consumption for 1986/87. Another important factor is larger-than-anticipated supplies of feed-quality wheat in both Canada and Australia. As a result, global use of feed wheat is forecast to increase about 6 million tons.

World wheat trade in 1986/87 (excluding intra-EC trade) is forecast to improve about 2 million tons to reach 87 million. This growth

of less than 2 percent is small, given the sharply reduced wheat prices. Much of the explanation lies in the slow pace of Soviet purchases. The Soviet grain crop is expected to be the best since 1978/79, and 1986/87 wheat imports will be the smallest since 1979/80.

U.S. wheat export prospects, at 28 million tons, are mostly improved over 1985/86's 25 million. The U.S. wheat export record was set in 1981/82, when sales totaled more than 48 million tons. With Soviet wheat imports depressed, U.S. sales to that market are apt to remain small. Sales under the Export Enhancement Program have accounted for almost 15 percent of wheat sales to date and will continue to play a major role.

Global Coarse Grain Production Falls

Global coarse grain outturn for 1986/87 is forecast to fall about 17 million tons, due entirely to the estimated 24-million-ton (9 percent) drop in U.S. output.

Total foreign coarse grain production for 1986/87 is forecast to increase 6 million tons to 580 million. Production in the major foreign coarse grain exporting countries-- Argentina, Australia, Canada, South Africa, and Thailand-- is largely unchanged from last year. However, with relatively large beginning stocks and domestic use less than 60 percent of production, competitor exportable supplies remain abundant. Thai corn and Australian barley, each down about 1 million, are the only major decline in the group. Canadian barley production in 1986/87 is a record, and coarse grain outturn is up about 2 million tons. Total Canadian coarse grain outturn is forecast at 27 million tons.

Stocks Climb As Trade Fails To Rally

As production continues to mount, so do global inventories. In 1986/87, total coarse grain ending stocks are forecast to reach almost 223 million tons, a gain of about 44 million. Most of the increase will be in U.S. corn stocks, up 40 million tons. The remainder of the global stock increase is likely to be shared by several other nations, particularly Canada. EC-12 stocks are forecast to fall almost 2 million tons.

Coarse grains: World production, consumption, and net exports

Country	1984/85			1985/86 E			1986/87 P		
	Prod.	Cons.	N. exp.	Prod.	Cons.	N. exp.	Prod.	Cons.	N. exp.
Million metric tons									
Major exporters									
United States	237.7	163.8	54.7	274.4	169.9	35.4	250.8	169.2	39.8
Canada	22.0	18.6	2.8	25.0	18.9	5.5	27.0	19.5	6.2
Australia	8.6	2.9	6.4	7.8	2.6	5.1	7.1	3.1	3.8
Argentina	18.6	7.5	10.6	17.6	7.7	9.7	17.7	7.9	9.9
Thailand	4.7	1.3	3.4	5.5	1.3	4.0	4.5	1.4	3.2
South Africa	8.7	6.8	-4	8.8	7.4	1.4	9.9	7.4	1.8
Major importers									
USSR	90.5	113.8	-27.3	100.0	112.3	-13.0	100.0	111.0	-12.0
China	96.2	90.7	+5.6	82.3	76.1	+6.1	88.4	82.9	+5.3
Eastern Europe	72.8	72.7	-7	68.8	73.2	-3.5	71.0	70.9	-1.0
EC-12	89.6	85.7	-1.8	88.1	83.9	+2.9	80.7	81.9	+1.1
Other W. Europe	13.9	12.7	+6	13.1	12.3	+1.3	11.9	12.1	-2
Brazil	22.5	23.1	-4	20.7	23.3	-2.1	23.1	23.7	-2.0
Mexico	14.5	18.8	-4.2	14.7	18.3	-2.5	14.5	18.5	-4.3
Venezuela	1.1	2.6	-1.6	1.5	2.2	-7	1.9	2.4	-5
Other Latin Am.	8.6	10.3	-1.8	8.2	10.1	-1.8	8.5	10.7	-2.1
Japan	.4	21.3	-20.7	.4	21.4	-21.5	.4	22.7	-22.1
Taiwan	.3	4.3	-4.0	.3	4.4	-4.2	.3	4.7	-4.3
South Korea	.9	4.4	-3.4	.7	4.7	-4.0	.6	4.9	-4.3
Other Asia	47.3	50.4	-2.2	45.2	48.0	-1.8	47.2	49.3	-2.4
Egypt	4.4	7.0	-1.7	4.4	6.5	-1.9	4.7	6.6	-1.9
Iran	1.3	2.7	-1.3	1.3	2.8	-1.7	1.5	3.0	-1.5
Israel	.1	1.1	-1.0	--	1.1	-1.1	--	1.1	-1.1
Other N. Afr./ME	14.6	25.3	-10.8	20.1	29.8	-11.1	20.3	30.8	-11.9
Other Africa	33.6	34.3	-1.6	37.6	37.5	+5	37.6	38.5	-5
Residual	.6	.3	+8	1.0	.4	-1.0	.8	.6	+1.0
World	813.5	782.4		847.5	776.1		830.4	784.8	

Production on crop year basis, trade on October-September year. Includes corn, barley, sorghum, oats, millet, rye, and miscellaneous grains. E = estimated. P = projected. -- = negligible.

International commodity prices

Year	Wheat				Corn		Soybeans	Soyoil	Soymeal 44%	
	U.S. 1/	Arg. 2/	Can. 3/	Aust. 4/	U.S. 5/	Arg. 2/	U.S. 5/	U.S. 6/	U.S. 6/	Hamburg 7/
Dollars per metric ton										
1977	105	100	116	113	98	93	271	524	212	240
1978	131	126	134	119	105	102	259	565	189	226
1979	162	159	171	142	118	117	278	610	160	254
1980	176	203	192	175	129	159	272	522	217	271
1981	176	190	194	175	135	139	272	464	223	269
1982	161	166	165	160	110	109	233	404	197	233
1983	158	138	167	161	137	133	269	518	222	255
1984	153	135	166	153	138	132	271	678	184	210
1985	137	106	173	141	114	103	214	596	140	171
1986										
Jan.	133	108	189	140	108	100	210	447	168	197
Feb.	131	102	183	133	105	92	207	404	169	201
Mar.	136	97	189	139	101	87	208	384	180	210
Apr.	138	96	187	137	102	86	205	389	173	205
May	128	90	185	131	106	90	205	391	174	199
June	107	85	169	114	106	90	203	369	175	191
July	103	81	160	104	85	84	200	357	179	193
Aug.	104	80	137	104	74	82	198	312	182	200
Sept.	104	81	133	105	67	78	197	305	183	202
Oct.	105	80	130	108	67	70	188	322	168	197

1/ No. 2 hard winter, ordinary protein, f.o.b. Gulf ports. 2/ F.o.b. Buenos Aires. 3/ No. 1 western red spring, 13.5% protein, in store Thunder Bay. 4/ July-June crop year, standard white, f.o.b. selling price. 5/ U.S. No. 3 yellow, f.o.b. Gulf ports. 6/ Decatur. 7/ F.o.b. ex-mill.

World coarse grain trade (excluding intra-EC trade) in 1986/87 is projected at 85 million tons, only 1 million above last year. U.S. coarse grain sales for the year are now expected to reach about 40 million tons, an 11-percent gain from a year earlier but far from the record 71 million tons in 1979/80. Larger barley sales account for more than one third of the U.S. gain. Barley sales have been bolstered by EEP offers to Saudi Arabia, and are expected to reach 2.2 million tons, almost triple last year's.

A number of factors are limiting this year's world and U.S. coarse grain trade. Most notable are reduced Soviet purchases in the world corn, sorghum, and barley markets. This disinterest likely results from increased Soviet domestic crop prospects and hard currency difficulties caused by depressed energy prices. Aggressive selling by China and Australia has affected U.S. trade flows as well, as both have created new and expanding markets for coarse grain sales and sales of competing commodities. Each has increased sales to Korea and the Soviet Union, diminishing U.S. prospects. In addition, Argentina, whose ending stocks are traditionally very low, is actively expanding trade with Brazil and Japan. [*James Cole (202) 786-1691*]

Oilseeds

In 1986/87, the U.S. share of world oilseed output and exports is forecast to decline to 31 and 61 percent, respectively. Four years ago, the United States accounted for 38 percent of production and 75 of exports.

One major reason for the decline is expanded oilseed plantings by foreign producers, who are expected to harvest about 2.8 million more hectares of soybeans, peanuts, and rapeseed than in 1985/86. Although world oilseed prices have fallen since 1983, the drop has done little to discourage further foreign entry into traditional U.S. oilseed markets, particularly the world soybean market.

Foreign Planting Gains Exceed U.S. Cuts

Among the major oilseeds, 1986/87 soybean plantings outside the United States reflect the largest year-to-year change- up 1.3 million hectares. Argentina, Brazil, and

China, all net exporters, will account for more than 60 percent of this rise. All three are likely to displace U.S. soybean sales. Even Italy, traditionally a minor producer of soybeans and the EC's fifth largest importer of U.S. soybeans in 1985/86, has increased soybean area more than sixfold in the last 2 years. Production and crushing subsidies, coupled with a favorable support price compared with corn, are the main reasons behind Italian expansion. If this trend continues, Italy, which prior to 1983 had imported all its soybeans and meal, could satisfy about 70 percent of its soybean needs from domestic production by 1990.

In contrast to foreign oilseed expansion, U.S. producers planted 1.7 million fewer hectares in 1986/87. This marks the second consecutive drop in U.S. oilseed area and continues the downward trend that began in 1979/80 when area peaked at 36.8 million hectares. In 1986/87, U.S. area is forecast to fall to 29 million hectares, compared with foreign area of 108 million.

World oilseed output is projected to reach a record 198 million tons, primarily because of all-time high soybean, peanut, and rapeseed output. Increased South American and Chinese soybean production will more than offset the projected 2.4-million-ton U.S. reduction. Foreign peanut output will rise to more than 19 million tons, primarily because of a 13-percent increase in India. U.S. peanut output, however, will drop 17 percent to 1.6 million tons. Record rapeseed production is forecast because of higher output in China, Canada, India, and Eastern Europe. In contrast, world cottonseed and sunflowerseed production is expected to fall slightly to 28.1 and 19.1 million tons, respectively. More than one-half of the drop will come from the United States.

World Oilseed Exports To Rise

World oilseed exports are forecast to rise 5 percent to more than 35 million tons. The United States will continue to dominate world soybean trade, accounting for more than three-fourths of exports. Although U.S. soybean exports are projected to show a small increase in 1986/87, the U.S. share of world trade may slip 1-2 percent as South American competitors market their larger crops. Bad weather cut the 1985/86 Brazilian crop more

Soybeans and products: World production, consumption, and net exports

Country	1984/85			1985/86 E			1986/87 P		
	Prod.	Cons.	N. exp.	Prod.	Cons.	N. exp.	Prod.	Cons.	N. exp.
Million metric tons									
Soybeans									
Major exporters									
U.S.	50.64	28.03	16.28	57.11	28.66	20.14	54.68	29.39	20.68
Brazil	18.28	13.13	3.10	13.40	12.43	.85	16.50	12.80	1.65
Argentina	6.50	3.86	3.29	7.30	4.37	2.54	7.50	4.60	2.50
China	9.69	1.59	1.05	10.50	1.76	1.30	11.00	1.86	1.10
Major importers									
EC-12	.15	12.37	-12.84	.34	12.68	-12.78	.77	13.11	-12.83
Japan	.24	3.79	-4.61	.23	3.95	-4.75	.23	3.98	-4.85
Eastern Europe	.77	1.26	-.59	.53	1.31	-.85	.75	1.45	-.79
Mexico	.55	2.00	-1.43	.75	1.73	-1.00	.60	1.80	-1.20
Taiwan	.01	1.20	-1.47	.01	1.29	-1.57	.02	1.32	-1.56
USSR	.47	1.13	-.85	.46	2.24	-2.00	.50	2.28	-2.00
Residual	5.47	5.41	-1.93	5.67	5.92	-1.88	6.33	6.35	-2.70
World	92.77	73.77		96.30	76.34		98.88	78.94	
Soybean meal									
Major exporters									
U.S.	22.25	17.67	4.46	22.64	17.35	5.45	23.12	17.69	5.35
Brazil	10.17	1.99	8.44	9.66	2.42	7.38	9.89	2.60	7.50
Argentina	3.08	.27	2.88	3.49	.35	3.20	3.67	.35	3.30
Major importers									
EC-12	9.82	18.06	-8.28	10.13	18.04	-7.90	10.41	18.07	-7.63
Eastern Europe	1.02	4.57	-3.54	1.06	4.81	-3.80	1.16	5.00	-3.86
USSR	.86	1.41	-.55	1.75	2.35	-.60	1.78	2.38	-.60
Japan	2.92	3.12	-.09	3.05	3.18	-.22	3.07	3.29	-.13
Mexico	1.46	1.50	-.08	1.26	1.42	-.07	1.31	1.40	-.08
Residual	6.58	10.70	-3.24	7.19	11.45	-3.44	7.67	11.98	-3.85
World	58.16	59.29		60.23	61.37		62.08	62.76	
Soybean oil									
Major exporters									
U.S.	5.20	4.50	.75	5.27	4.57	.57	5.39	4.67	.54
Brazil	2.46	1.55	.82	2.35	1.87	.30	2.39	1.97	.45
Argentina	.64	.07	.50	.73	.11	.63	.76	.10	.66
EC-12	2.22	1.42	.78	2.27	1.43	.84	2.32	1.48	.87
Major importers									
India	.15	.57	-.40	.17	.49	-.22	.20	.50	-.30
Pakistan	0	.19	-.17	0	.22	-.28	0	.30	-.27
Eastern Europe	.19	.37	-.20	.21	.37	-.19	.23	.37	-.13
Iran	.02	.34	-.32	.02	.35	-.32	.02	.37	-.35
Morocco	0	.13	-.12	0	.13	-.13	0	.15	-.15
Residual	2.42	3.92	-1.64	2.69	3.86	-1.20	2.79	4.03	-1.34
World	13.30	13.06		13.71	13.40		14.10	13.94	

For soybeans, consumption refers to crush. Trade and consumption on marketing year except for Brazil and Argentina which are on an October-September year. E = estimated. P = projected.

than one-quarter, resulting in a two-thirds drop in exports. Brazilian output is expected to rebound sharply in 1986/87, while Argentine production continues its upward trend of recent years.

Weaker Dollar Promotes U.S. Exports

The projection of higher U.S. soybean exports, despite larger foreign supplies, is based upon two factors making U.S. soybeans more price attractive. Since February 1985, the dollar has fallen more than 30 percent against other major world currencies. Against the yen of Japan, the second largest importer of U.S. soybeans after the EC, the dollar has

depreciated 40 percent. Secondly, U.S. soybean export prices have declined since the soybean loan rate was lowered from \$5.02 a bushel to \$4.77 in September 1986.

In addition, stricter interpretations of soybean grading standards were introduced in September 1986. As a result, number one grade U.S. soybeans will contain less fatty acid, reducing processing costs and adding to the shelf life of soybean oil. Also in September, USDA announced an \$8.5-million targeted export promotion program for soybeans aimed at countering EC domestic oilseed production aids and subsidies.

U.S. Meal Exports To Drop

World meal demand is expected to expand faster than production in 1986/87. As a result, world meal stocks will fall to their lowest since 1982/83. Although soybean meal consumption will rise, most of the increase will come from domestically produced and imported soybeans. Thus, world soybean meal trade will remain flat, and increased South American availability will reduce the U.S. share 1 percent.

World demand for vegetable oils is expected to grow slightly more than supply, reducing 1986/87 ending stocks 3 percent. World vegetable oil trade will stay level, while palm oil and soybean oil will increase their share of trade. U.S. soybean oil sales are projected to decline 5 percent as major competitors (Brazil, Argentina) expand exports about 17 percent. [Tom Bickerton (202) 786-1691]

Meat

World meat production is expected to reach 128 million tons in 1986, with both U.S. and foreign output up about 1 percent. Next year's gain will occur entirely in the foreign sector, up about 2 percent, as U.S. production is forecast to decline.

U.S. Poultry Output and Exports Climbing

A major portion of the expected gain in world poultry meat production in 1986 and 1987 is in the United States, as foreign output is forecast to grow 3 and 3 to 4 percent,

respectively, compared to U.S. gains of 6 and 7 to 9.

Most of the growth in poultry meat production is by the major exporters, although additional production in Brazil and France will be consumed domestically. While output by the major importers also continues to gain, the pace is slower than during the past.

World poultry meat trade may rise only 1 to 2 percent during 1986 and 1987. Reduced oil prices and increased domestic production are weakening import demand in the Mideast. The U.S. share of total exports declined in the early 1980's as subsidized competition cut into Mideast markets, but is now rising because of increased demand from the Pacific Rim countries and shipments to Egypt under the Export Enhancement Program (EEP). Japan's poultry imports from the United States are expanding, due to the rapid and pronounced devaluation of the dollar against the yen, which has brought down the price of imported U.S. chicken and increased sales.

Foreign Pork Output Expands

Hog inventories have been rising in the EC, because of a favorable hog/feed price ratio. However, lower prices because of large meat supplies may dampen expansion, and hog numbers may peak next year. Feed problems continue to plague Eastern Europe and hog inventories are forecast to continue declining next year.

Foreign pork production is likely to increase 2 percent during 1986 and between 1 and 2 percent next year. China, with 35 percent, dominates foreign pork production, and its recent rapid expansion of output is forecast to moderate to about 3 percent a year in 1986 and 1987.

Pork output by the world's exporters will likely continue to gain next year. However, after increasing production nearly 5 percent this year, the United States' major suppliers may show a decline. On the other hand, major importers' production will likely fall in 1986, before showing a slight upturn next year.

U.S. Pork Exports Shrinking

Although world pork exports grew rapidly during the late 1970's, they have stagnated at

Country	Poultry production			
	1984	1985	1986 E	1987 P
Thousand metric tons				
United States	7,427	7,865	8,309	8,958
Canada	559	608	628	653
Mexico	646	627	608	637
Brazil	1,398	1,530	1,650	1,850
France	1,247	1,272	1,303	1,290
Total EC-12	5,219	5,312	5,417	5,450
Eastern Europe	1,928	1,943	1,978	2,038
USSR	2,686	2,700	2,750	2,800
Japan	1,309	1,395	1,399	1,424
Other	3,058	3,185	3,321	3,483
Total	24,230	25,165	26,060	27,293

E = estimated. P = projected.

Pork production

Country	1984	1985	1986 E	1987 P
Thousand metric tons				
United States	6,719	6,716	6,372	6,284
Canada	863	900	875	900
Mexico	942	865	922	936
Germany, Fed. Rep.	2,734	2,753	2,820	2,860
France	1,625	1,607	1,622	1,615
Netherlands	1,257	1,340	1,430	1,490
Total EC-12	11,100	11,187	11,495	11,551
Eastern Europe	6,473	6,546	6,676	6,681
USSR	5,927	5,900	5,850	5,850
China	14,447	16,495	17,000	17,600
Japan	1,424	1,531	1,500	1,560
Other	3,738	3,926	4,029	4,048
Total	51,633	54,066	54,719	55,410

E = estimated. P = projected.

about 1.7 million tons (excluding intra-EC trade) during recent years. China and Taiwan have become important exporters, reducing other suppliers' market share. U.S. pork exports have been declining and account for a very small portion of U.S. production--an average of 1 percent over the last 5 years. Higher U.S. prices relative to other exporters, and increased competition have discouraged U.S. exports.

Foreign Beef Output To Rise Next Year

World cattle inventories are likely to be down this year and next as the United States, the EC, and Argentina reduce herds. Drought in India lowered its cattle inventories in 1986. In contrast, Brazil's inventories are building, as producers continue to hold cattle from slaughter because of dissatisfaction with prices. However, the Brazilian Government has countered this move by confiscating herds. In New Zealand, a strike by meat processors in March delayed slaughter and raised midyear inventories.

Foreign beef and veal production is likely to decline 1 percent in 1986, before rising about 1 percent next year. The largest declines are in the major exporters. Argentina, Brazil, and the EC should all show declines, but Australia and New Zealand will continue to expand. Output by the major exporters next year is forecast to gain. The EC continues to reduce its dairy herd, and its beef production in 1987 may be comparable to this year.

Beef and veal production

Country	1984	1985	1986 E	1987 P
Thousand metric tons				
United States	10,928	10,996	11,172	10,420
Canada	997	1,035	1,020	985
Mexico	1,323	1,339	1,252	1,298
Argentina	2,558	2,740	2,700	2,650
Brazil	2,300	2,400	2,200	2,400
France	1,936	1,845	1,805	1,868
Germany, Fed. Rep.	1,614	1,576	1,625	1,630
Italy	1,182	1,205	1,206	1,190
Total EC-12	7,900	7,840	7,739	7,758
Eastern Europe	2,471	2,550	2,397	2,371
USSR	7,244	7,400	7,600	7,700
Australia	1,248	1,338	1,381	1,390
Other	4,899	5,228	5,274	5,334
Total	41,868	42,866	42,735	42,306

E = estimated. P = projected.

U.S. Beef Exports Larger

The United States has captured an increasing share of the world beef market during the eighties, mainly because of increased shipments to Japan. Larger U.S. beef exports are likely in 1986 because of meat exports mandated by the Food Security Act of 1985.

Brazil's beef exports probably will fall this year because of producer holdouts. To alleviate its meat shortage, Brazil is expected to import about 400,000 tons. The 200,000 tons coming from the EC should help reduce the EC's burdensome stocks, but EC export supplies remain ample. [Linda Bailey (202) 786-1691]

Cotton

Some relief in the world glut of cotton will occur in 1986/87 as production falls and consumption rises. World production is forecast to decline 9 percent to 72 million bales, the lowest since the 68-million-bale crop of 1983/84. Consumption will reach a fifth consecutive record, rising 3.3 percent to 77 million bales. Global stocks are expected to fall nearly 6 million bales from the 48 million recorded at the beginning of the season, but they will remain well above the pre-1984/85 level of 20 to 25 million bales. Exports are projected to expand 2.6 million bales, or 13 percent.

U.S. Output Adjusts Most

The United States will account for most of the world's adjustment to excess cotton supplies this season. As U.S. production falls sharply and consumption and exports rise, U.S. stocks are expected to drop 3.8 million bales and account for two-thirds of the world decline. U.S. exports, which are expected to be up 4.8 million bales because U.S. prices are again competitive, will more than absorb all the growth in world imports.

Foreign ending stocks will be nearly 5 percent below 1985/86, still a relatively small drop considering the size of surplus stocks. Although foreign consumption will grow a healthy 3 percent, exports are projected to drop 2.2 million bales and production will fall only 3.3 million, 0.3 million less than the U.S. production decline. The market share of most foreign exporters will shrink as the U.S. share rises from 10 to 29 percent.

U.S. production and exports have changed markedly this year, largely because of the strong U.S. policy response to last year's drop in cotton exports and market share and runup in stocks. The U.S. acreage reduction program led to a 10-percent drop in cotton plantings for 1986/87, but foreign producers reduced area only 2 percent. In addition, for the

second consecutive year, China decreased area planted and accounted for two-thirds of the foreign drop. Poor weather also cut U.S. yields, while foreign yields dropped only slightly from last year.

Low Prices Boost Use

Cotton prices in northern Europe fell from about 70 cents per pound during the 1984/85 season to a record low of 36 cents at the beginning of 1986/87. Low cotton prices contributed to the 7-percent gain in consumption registered in 1985/86 and to further gains expected this year. Lower prices of cotton relative to polyester also contributed to increased consumption. During the last two seasons, polyester prices also fell but stabilized well above cotton prices. Polyester prices at mills are now about 65 cents per pound in the United States, compared with around 50 cents for cotton. Rising consumer preference for cotton is also a factor.

Increased cotton consumption is particularly apparent in countries that supply the U.S. textile market, such as Taiwan, South Korea, and Hong Kong. Cotton use by these three major consumers rose 13, 4, and 19 percent, respectively, in 1985/86, and is expected to show similar gains in 1986/87.

Cotton: World production, consumption, and net exports

Country	1984/85			1985/86			1986/87 P		
	Prod.	Cons.	N. exp.	Prod.	Cons.	N. exp.	Prod.	Cons.	N. exp.
Million 480-lb. bales									
Major exporters									
United States	13.0	5.5	6.2	13.4	6.4	1.9	9.9	7.0	6.7
USSR	11.9	9.5	2.1	12.1	9.7	2.4	11.5	9.8	1.8
Pakistan	4.6	2.3	1.2	5.7	2.3	3.1	5.5	2.5	2.7
Egypt	1.8	1.5	.4	2.0	1.6	.5	2.0	1.6	.4
Turkey	2.7	1.9	.7	2.4	2.1	.3	2.1	2.1	.1
Central America	.8	.2	.5	.6	.2	.4	.4	.2	.1
Sudan	.9	.1	.6	.7	.1	.7	.7	.1	.7
Brazil	4.4	2.7	.3	3.8	3.1	.1	3.4	3.3	.1
Mexico	1.2	.6	.6	1.0	.7	.4	.8	.7	.1
India	7.9	7.1	.1	8.4	7.2	.3	7.8	7.4	.6
China	28.7	15.5	1.1	19.0	17.5	2.7	18.4	17.5	2.7
Major importers									
Western Europe	.9	5.9	-4.9	1.1	5.9	-4.8	1.0	6.2	-5.2
Japan	0	3.2	-3.1	0	3.1	-3.1	0	3.1	-3.1
Eastern Europe	.1	3.7	-3.7	.1	3.9	-3.9	.1	4.1	-4.1
South Korea	--	1.6	-1.6	--	1.7	-1.7	--	1.8	-1.8
Taiwan	0	1.2	-1.3	0	1.4	-1.5	0	1.6	-1.6
Hong Kong	0	.7	-.9	0	.8	-1.1	0	.9	-1.2
Residual	9.2	6.6	+1.7	8.6	6.9	+3.3	8.5	7.2	+1.0
World	88.1	69.8		78.9	74.6		72.1	77.1	

Year beginning August 1; consumption is mill use. -- = negligible. P = projected.

Growth in consumption among smaller but more rapidly growing cotton consumers has been even faster, particularly this summer when prices were at their lowest. [Carolyn L. Whitton (202) 786-1691]

Cocoa and Chocolate

Cocoa Supplies Continue Abundant

Cocoa bean production for 1986/87 (October/September) is forecast at 1.97 million tons, only marginally higher than the previous year's crop.

The world cocoa grind is forecast at 1.85 million tons in calendar 1987, up 2.2 percent from 1986, consistent with abundant cocoa supplies and relatively low cocoa bean prices. Despite the anticipated faster rate of expansion of grind, relative to production, consumption is still expected to be below production and therefore 1986/87 cocoa stocks may increase around 104,000 tons from 1985/86 (allowing for a 1-percent loss of weight in production). If realized, this will be the third consecutive increase following stock drawdowns in 1982/83 and 1983/84.

The United States imported over 164,000 tons of cocoa beans during January-September 1986, a 26-percent drop from 1985. However, imports of sweetened and unsweetened chocolate, and unsweetened cocoa increased. Combined U.S. imports of cocoa and chocolate for the first three quarters of 1986 were down from the same period in 1985. This suggests some stock drawdown and sluggish U.S. demand for cocoa and chocolate products, despite relatively low prices.

Prices Likely To Remain Below \$1 a Pound

New York cocoa bean prices (average of daily closing prices of the nearest 3 active future trading months on the New York market) averaged nearly 99 cents a pound in calendar 1985, down from \$1.06 in 1984. Prices averaged 90 cents a pound for the first 10 months of 1986, and seem likely to average close to that for the year.

New ICCA Negotiated

A new International Cocoa Agreement (ICCA) was negotiated in July 1986 to replace the 1980 agreement, which expired September

30, 1986. The agreement will be effective for 3 years and may be extended up to another 3 years. Membership consisting of 80 percent of world exporters and 65 percent of importers is needed for the new ICCA to enter into force.

The new pact includes the Cote d'Ivoire, the world's largest producer; however, the United States, the largest importer, chose not to belong. The agreement includes: management of a 250,000-ton buffer stock; prices based on SDR's (Special Drawing Rights); and a price of approximately 85 cents to \$1.21 a pound. The buffer stock manager will attempt to keep cocoa bean prices within the designated range by purchases to or releases from the buffer stock and through a supplementary withholding scheme. [Frederick Gray (202) 786-1769]

REGIONAL DEVELOPMENTS

Western Hemisphere

U.S. Crop Production Declines

At the end of the 1986 harvest, total U.S. crop production appeared to be down about 7 percent from last year. High participation rates in commodity programs reduced area for major crops, but yields were excellent for some items, especially corn, soybeans, and rice. Production of feed grains, food grains, and oilseeds could fall almost 10 percent, with even larger declines for cotton and tobacco.

However, smaller crops will not raise market prices because of lower loan rates and large carryin stocks. Stocks for many crops will remain sizable during 1986/87, despite increased use. Low prices will increase domestic wheat use and exports, and stocks will decline slightly but continue large. Domestic feed grain use is not expected to change in 1986/87, reflecting the smallest cattle and hog inventories in over a decade. However, broiler and turkey production is likely to expand. The major changes in stocks will occur in cotton and rice, where lower production and increased domestic use and exports will lead to significant stock declines in 1986/87.

The move toward less production will continue, as evidenced by the recent

announcement of a voluntary paid land diversion program for 1987 feed grains, in addition to the regular 20-percent acreage reduction program announced in September. Farmers participating must divert 15 percent of their feed grain acreage base to conserving uses. The program appears attractive because diversion payments for corn are \$2.00 per bushel, compared with the \$1.82 loan rate. Most feed grain farmers will leave 35 percent of their acreage idle.

U.S. Farm Income Stable

Net cash income (gross cash income minus cash expenses) for 1986 will hold close to last year's record, but net farm income (total gross income including changes in inventory values minus total expenses) will decline. Cash receipts will decline as lower crop returns are only partially offset by increased livestock receipts. However, lower petroleum prices, interest payments, and feed costs reduced production expenses, and larger direct government payments provided relief to some financially-pressed farmers. Both reduced production expenses and high direct government payments are expected to continue in 1987.

Although higher hog and broiler prices raised retail meat prices, the gain in all food prices for 1986 may be about 3 percent, slightly above the increase expected for the Consumer Price Index.

Canadian Crops Record

Canada has harvested record wheat, barley, and rapeseed crops as a result of record area for wheat and excellent growing conditions. In addition, durum production was almost double last year's drought-reduced crop. However, like last year, a rainy fall delayed the harvest and resulted in crop quality below the 10-year average. The sheer size of the harvest means more high-quality, high-protein wheat for export, but Canada will again be burdened with lots of feed wheat.

Higher production of major grains and oilseeds will translate into increased exports, but gains will be limited by sluggish world demand and fierce price competition. The grain handlers' strike at Thunder Bay, Ontario during September came at a critical time and further limited Canadian grain exports.

Canadian Wheat Board 1986/87 initial prices provide a minimum below which average export prices will not fall, unless the Board and the Government make an explicit policy decision to subsidize sales--that is, sell grain below the initial price and have the Government make up the difference.

Canadian Farm Income To Improve Slightly

Net realized farm income (gross income minus total costs) is expected to improve slightly in 1986. The Canadian situation is similar to that in the United States--lower crop receipts, higher livestock receipts, and falling production expenses.

Poor 1985 crops, low commodity prices, and increased imports are contributing to a smaller agricultural trade surplus in 1986. In addition, food prices have been running 5 percent above last year, compared to 1985's rise of only 3.7 percent, primarily because of higher meat prices.

U.S. Agricultural Exports Down

The value of U.S. agricultural exports to the Western Hemisphere dropped sharply in fiscal 1986 because of several factors: (1) low commodity prices; (2) a delay in importers' orders in expectation of even lower prices; (3) sluggish economic growth in Latin America due partly to oil price declines and continuing debt problems; and (4) larger harvests in Latin America that reduced the immediate need for imports.

U.S. agricultural exports to the Western Hemisphere 1/

Country	1984	1985	1986	1987 F
Million dollars				
Mexico	1,967	1,566	1,115	1,400
Caribbean islands	827	771	752	750
Central America	396	358	334	350
Andean countries	1,600	1,277	904	950
Brazil	437	557	444	500
Other 2/	52	38	50	50
Canada	1,936	1,727	1,466	1,500
Total	7,215	6,294	5,066	5,500

F = forecast. 1/ Fiscal year. 2/ Guyana, Suriname, Fr. Guiana, Argentina, Paraguay, and Uruguay.

Source: U.S. Bureau of the Census and ERS estimates.

Sales to Mexico were down 29 percent, reflecting lower exports of coarse grains and oilseeds. Exports to Venezuela fell more than 30 percent as coarse grain sales declined. Sales to Brazil declined 20 percent as wheat purchases from the United States dropped 2.4 million tons. Sales to all other countries in the region were off another \$100 million, but exports to the Caribbean and Central America did not fall as sharply, because drought conditions during 1985 and early 1986 increased import needs enough to offset major commodity price declines. Exports to Canada fell to their lowest in a decade as shipments declined for almost all major commodities--animal products, grains, fruits, vegetables, and cotton.

The outlook for fiscal 1987 is for some increase in U.S. exports to the region. U.S. exports of coarse grains and oilseeds to Mexico are forecast to increase because higher economic growth is expected to stimulate demand and stocks are very low. Increased U.S. wheat shipments to Brazil are forecast because of more competitive prices, and beef exports will also increase as a result of sales under the Dairy Termination Program.

Exports to Canada are forecast to expand nearly 10 percent, led by fruits and vegetables because of reduced Canadian production and a ban on South African imports. A provisional countervailing duty on corn of \$1.05 per bushel, announced by Canada on November 7, will likely lower U.S. corn exports but not have a significant impact on total U.S. agricultural exports to Canada, because corn exports are small and declining.

U.S.-Mexican Farm Trade Reverses

The United States incurred its worst agricultural trade deficit with Mexico during fiscal 1986. U.S. agricultural exports fell over \$400 million to \$1.1 billion. At the same time, the United States imported a record \$2 billion from Mexico because of sharp increases in the prices of coffee and tomatoes, and significant volume increases for live cattle, orange juice, and coffee.

Several factors contributed to lower Mexican import demand. Larger production of major crops increased domestic supplies. Falling oil prices hurt economic growth and

exacerbated the debt situation. Poor economic performance has dampened domestic demand for some commodities and forced the country to limit imports.

The GSM-102 export credit guarantee program may have prevented further deterioration in U.S. agricultural sales to Mexico. The United States allocated Mexico credits of \$900 million for fiscal 1986, up from \$700 million last year. The GSM-102 program provided for the bulk of Mexican imports of major food categories during the year.

Drought Hits Central America

A prolonged drought has affected the Pacific coastline of Central America. The rainy season that usually starts in May or June did not begin until late August. The effects on agriculture were felt everywhere, but southern Honduras and northern Nicaragua were especially hard hit.

Losses in Honduras' basic grains harvest have been officially estimated at \$4 million. In early August, the Government shipped \$400,000 worth of grains to meet the affected population's immediate needs, and has committed itself to further emergency shipments. Relief agencies have reported that up to 300,000 people are threatened with famine. In El Salvador, the Government estimated that almost one-fifth of the corn harvest has been lost. In Nicaragua, field losses reduced the corn, beans, rice, and sorghum harvests.

In response to the drought, Central American governments have decided to invest nearly \$5 million in a program to expand irrigation and drainage. Some 400,000 hectares in Central America are irrigated, only a tenth of the cropland and 15 percent of the potential irrigated land. The largest percentage, 37 percent of the total, is in Guatemala, and the smallest (7 percent) is in El Salvador, even though 85 percent of El Salvador's land is cultivated.

If this program is successful in expanding irrigation, it could increase agricultural exports from the region. The most highly irrigated crops are sugar cane (26 percent), pastures (15 percent), and rice (10 percent). About 77 percent of the irrigated land is in the hands of private farmers, mainly sugar and

rice planters and stock breeders. Almost three-quarters of the region's exports are agricultural, and five products--coffee, sugar, bananas, cotton, and beef--account for 62 percent of the total. [*Western Hemisphere Branch* (202) 786-1663]

Western Europe

Dollar Decline Pressures EC Budget

European Community (EC) budget pressures and consequent adjustments will be the notable events in Western European agriculture in 1986/87. Beef and dairy programs are the most likely to change. Changes in grain and oilseed policies, in which the United States has more interest, are less likely in 1986/87, even though their program costs will also increase substantially.

The decline of the dollar has seriously increased EC budgetary problems. EC Council President Delors recently announced that the EC will be 3 billion European Currency Units (ECU) in deficit for calendar 1987, an extraordinary forecast before the year has even begun for a budget that totals 24 billion ECU (1ECU = \$0.90).

The lower dollar reduces the price of U.S. commodities in terms of European currencies, thereby requiring increased EC budget outlays on the differences between import levies and export subsidies, which bridge the gap between lower world prices and higher EC prices. For example, maximum wheat subsidies have risen from 36 ECU per ton in August 1985 to 132 in October 1986. The costs of deficiency payments for commodities, such as soybeans, for which producers receive the difference between market prices and a "target" price, have also risen.

Nonetheless, EC budget difficulties are not likely to precipitate a radical modification of the Common Agricultural Policy (CAP) favorable to the United States. Export subsidies and variable import levies, to which the United States objects, will probably continue because farm incomes, which declined steeply in 1985, still lag nonfarm incomes by a considerable margin. Furthermore, a German parliamentary election is at hand.

Among the likely EC adjustments to budget pressures are a reduction in EC milk delivery quotas in 1987 beyond those already planned and a reduction in effective support of internal beef prices. However, the reduction in beef support may not be possible within the next round of EC price setting in the spring of 1987. The dairy and beef sectors provide the greatest prospect for budget saving; these sectors comprised 45 percent of EC price support appropriations in 1985. Furthermore, there is little prospect of selling current surpluses on world markets. Grains, with which the United States is most concerned, comprised only 12 percent of support appropriations in 1985 and can be sold on world markets, albeit at very low prices. (Recent EC sales to the Soviet Union were reported at only \$60 per ton.)

EC Surpluses Limit U.S. Grain Exports

Lower U.S. grain prices will not affect EC imports because variable levies will maintain high prices to EC users. Imports from the United States will be reduced in fiscal 1987 and domestic use of grain will be maintained, despite declines in EC production of both wheat and coarse grains due to drought. Although EC wheat production is down 1 percent and coarse grain 8.5, domestic use is forecast up 1.7 percent for wheat and down just 2.3 for coarse grains.

The EC Commission has helped maintain domestic use by encouraging on-farm feeding of grain--particularly wheat--through temporary halts in intervention buying, more stringent grain quality standards, and a new co-responsibility levy (production tax) which does not apply to on-farm use. With production down and domestic use encouraged, ending stocks of both wheat and coarse grains will drop--3.4 percent for wheat and 14.7 for coarse grains--but still remain large.

The value of U.S. exports of grains and feeds to the EC-12 is forecast to decline in 1986/87 from the \$1.5 billion exported in 1985/86. Volume declines are forecast in all major categories. These forecasts continue recent trends. U.S. grains and feed exports to Europe have been falling steadily as Europe has become more self-sufficient. While remaining the second largest U.S. export in value, grains to Europe have shrunk steadily

from \$3.6 billion in 1981/82 to a forecast of less than half that for 1986/87.

Soybean Export Value To Slip

The total value of soybean and soybean product exports to the EC-12 is expected to decrease slightly in 1986/87, although volume of soybeans is forecast up. Several offsetting factors have formed the outlook for soybeans and products: a trend towards larger EC oilseed production, large world supplies and low prices for soybeans, and current low meal prices relative to grains. The low prices encourage EC imports of soybeans and products because they are not supported by variable levies, as grains are.

Nearly stable U.S. exports of soybeans to the EC reflect anticipations that low prices will stem a downward trend in EC purchases, a trend which has accompanied increased domestic production of oilseeds. Total imports of soybeans have dropped from 16 million tons in 1981/82 to 12.9 in 1985/86 and will drop again in 1986/87. U.S. exports of soybeans were 8.9 million tons in 1985/86 and will be close to that this year. But value will drop because of lower prices.

U.S. Policy Boosts Cotton and Tobacco

U.S. cotton exports to the EC-12 could double in volume from fiscal 1986, the poorest year for EC purchases of U.S. cotton in the 1980's. Passage of the Food Security Act of 1985 has allowed U.S. upland cotton to be sold at competitive prices, driving the world cotton price in August 1986 to a recent low of 37.17 cents a pound ("A" index). Since August, however, prices have been higher and exports lower than initially expected. Nonetheless, U.S. exports to the EC are still forecast up substantially.

A volume increase of over 10 percent is forecast for U.S. sales of tobacco to Western Europe, with the major gains expected in Switzerland and the Netherlands, where the U.S. market share could rise significantly. The likely positive sales effect of a weakened dollar should be augmented by the lower U.S. tobacco auction prices, which have resulted from a legislated 17-percent reduction in the tobacco support price. Also, this year's tobacco program features a sell-off of stabilization stocks from earlier crops at

catalogue-value prices, and the quality is superior to many kinds of competing tobaccos. Purchasers in high-income Western European countries, especially those with low stocks, are likely to buy the competitively priced, high-quality tobacco. [*Western Europe Situation and Outlook Section and Gene Hasha (202) 786-1716*]

USSR

With the grain harvest exceeding earlier expectations, Soviet agricultural production for 1986 is expected to be higher than last year's. Near record nongrain feed and livestock are prime contributors to the rosy forecast. Slight increases in potato, vegetable, and fruit output support the upturn. However, sugarbeets, cotton, cottonseed, and sunflowerseed probably did not fare as well as last year.

Damage from dry weather during the summer set back grain production only slightly, and continued dry weather in the fall allowed timely harvesting. Reports in the Soviet press indicate good yields with an increase in the production of grain and high quality wheat procurements (*Izvestia*, 22 and 23 October, 1986). Grading standards for wheat were lowered for this year's crop, so the quality may be less impressive than Soviet statements indicate. Nevertheless, the overall grain crop is expected to exceed last year's.

The success story is continued in the livestock sector, where Gorbachev's program to improve efficiency seems to be paying off. Meat, milk, and egg production are expected to reach records because of increased output per head. Inventories of cattle and hogs in the socialized sector are at an alltime high. Although poultry inventories are roughly unchanged from last year's, poultry meat production is up more than 10 percent.

Grain Production Data Published

In keeping with Gorbachev's policy encouraging more openness, the Soviets published annual grain production data which had been withheld for the past 5 years. The newly revealed figures include USSR grain production, yield and procurements by grain type, and grain procurement by republic for 1981-85. The data confirm USDA estimates

Soviet grain production

Year	Wheat	Coarse grain	Total grain
Million metric tons			
Average			
1961-65	64.2	57.2	130.3
1966-70	90.2	67.7	167.6
1971-75	88.9	82.3	181.6
1976-80	99.7	94.9	205.0
1981-85	77.9	90.7	180.3
1981	81.1	69.4	158.2
1982	84.3	91.8	186.8
1983	77.5	101.9	192.2
1984	68.6	90.5	172.6
1985	78.1	100.0	191.7

Source: Narodnoye Khozyaistvo SSSR v 1985.

that had put Soviet grain production for that 5-year period close to the 1971-75 level. Rather than increasing towards the planned target of 238-243 million tons, grain output fell 12 percent from the previous 5-year average.

The relatively good grain harvest dampens the prospects for Soviet grain imports during the 1986/87 marketing year. Forecasts show Soviet wheat and coarse grain imports in the 1986/87 marketing year at their lowest since 1978/79. Other factors affecting Soviet grain purchases are better quality domestic wheat, and a good forage harvest, and the drop in hard currency earnings.

In September, the Foreign Trade Ministry announced plans for a major restructuring of Soviet trade methods, giving more autonomy in trade to 20 ministries and 70 state enterprises. The trade reorganization will have little effect on agricultural trade, however, since trade of all raw materials remains under the jurisdiction of the Foreign Trade Ministry.

U.S. wheat exporters suffered as the Soviets ignored lower U.S. prices offered in August under the Export Enhancement Program. For the second time, the USSR failed to fulfill the Long Term Grain Agreement requirements for wheat purchases of at least 4 million tons, falling short by over 3.8 million tons. According to estimates, Canada, Australia, and the EC increased their shares of Soviet wheat imports during October/September 1985/86, while Argentina and U.S. shares fell about 15 percentage

points. Prospects for renewed Soviet interest in U.S. wheat remain dismal, with no Soviet purchases since November 1985. [Carolyn E. Duff (202) 786-1710]

Eastern Europe

Crop production turned in another good year; grain output was the second best ever and oilseed production was also up. Livestock continued to lag, however, with meat and milk output unchanged and egg production up only slightly. Poland had an excellent year--grain and rapeseed production reached records, but a drought devastated Hungarian agriculture.

Large debt repayment obligations continue to restrict the region's imports. Grain imports will be lower in 1986/87, and Hungary, Eastern Europe's largest agricultural exporter, should see a decline in its farm trade surplus because of the drought. The Soviet Union has stepped up its imports of agricultural goods from the region following West European restrictions on food imports from Eastern Europe because of the Chernobyl nuclear accident.

Crop Output Up, Livestock Lags

Grain production in Eastern Europe, minus Albania, is estimated at 111.2 million tons, the second largest crop ever and 4 percent above 1985's outturn. Production was higher in every country except Czechoslovakia and Hungary. Poland had a record crop, making 1986 the sixth straight year of above-average grain production.

Nongrain feed harvests were also good, except in Hungary, and supplies for the 1986/87 winter will be improved over 1985/86. Harvested grain quality is excellent. Dry weather during the harvest offset the region's chronic lack of drying facilities and, in the southern countries, allowed a higher-than-usual percentage of second-crop corn to mature. Rapeseed harvests in Poland and the GDR were records, contributing greatly to a 9-percent rise in oilseed (rapeseed, sunflowerseed, and soybean) production. Poland will again export rapeseed, but the small world market will limit sales.

The livestock sector continues to hold back agriculture, however. Meat output this year will be unchanged at just over 12 million

tons, and milk output is forecast to fall 2 percent to 44.5 million tons. The December 31 livestock census is expected to show no significant increase in numbers. Romania's livestock situation remains the most desperate in the region because of poor feed quality and supplies, and excessive exports.

Debt and Good Crops Depress Imports

Eastern Europe's debt crisis will again overshadow trade developments in 1987. Poland and Romania suffer most from foreign debt. These two countries have had to reschedule into the 1990's debt payments falling due this year and next, debts that were already rescheduled in the past.

Total grain imports in 1986/87 are forecast at 8 million tons, compared with 9.3 million in 1985/86. Imports of soybeans are forecast at 790,000 tons, well below the 850,000 of 1985/86, but soybean meal imports should be unchanged at 3.8 to 3.9 million tons.

The redirection of the region's livestock exports away from the West and toward the Soviet Union will continue in 1987. Restrictions on meat imports from Eastern Europe imposed by the EC and other countries following the Chernobyl accident cut off an important hard-currency market. Hungarian and Polish officials have announced that the Soviet Union will step up purchases of meat in response to the lost Western markets, and may well extend similar treatment to other East European meat exporters.

U.S. Farm Exports To Rise Slightly

Debt, insufficient exports, and good 1986 crop production will hold U.S. farm exports to Eastern Europe to only minor improvement at least in 1987. Also, the United States continues to face pressure from competitors. Argentina, for example, will supply Hungary 400,000 tons of soybean meal pellets annually from 1986 to 1990. This reportedly represents 40 percent of Hungarian meal needs. Hungary also has a 1986-90 trade agreement with China providing guaranteed imports of Chinese soybeans, soybean meal, and cotton.

Crop Prospects Good for 1987

Prospects for 1986 fall-sown crops are good. Recent rains in the southern countries

improved a very dry situation and allowed tilling and sowing to proceed. Dry conditions will hinder fall sowing and germination only in Czechoslovakia and Hungary. Livestock production will muddle through in 1987. Poor feed supplies in Czechoslovakia and Hungary will be offset in the other countries, but low profitability, low feed quality, and slack export demand will hold off economic recovery until 1988. [Robert Cummings (202) 786-1710]

Australia

Australian farm income will likely drop by one-tenth in 1986/87, the third straight year of decline. While prices received by farmers have risen about 15 percent since 1980, prices paid have jumped over 50 percent. The sharp decline in the value of the Australian dollar during 1985 and in the first half of 1986 helped support agricultural product prices, but it also raised farmers' costs. The Australian dollar is likely to remain low through 1986/87.

The 1986/87 Preliminary Guaranteed Minimum Price for Australian Standard White (ASW) wheat is \$A130.62 (US\$85), down from \$A149.87 (US\$102) last year. The Government of Australia will probably have to make substantial payouts for the 1986/87 crop, for the first time since 1972/73, to support the guaranteed price. Nevertheless, net returns to farmers will fall a fifth.

Prices of coarse grains, cotton, and oilseeds, which are not supported by government guarantees, are declining sharply. Sugar prices are expected to recover somewhat because of reduced Cuban production. Cattle prices are following U.S. prices upward. Strong wool prices relative to sheepmeat prices will encourage expansion of merino herds. The new dairy marketing arrangements are being phased in slowly, allowing milk returns to rise slightly this year.

Grain Area, Production Slip

Low prices and poor early-season weather reduced winter coarse grain area 15 percent. Production may decline 18 percent. Wheat area fell only 3 percent, and the crop may be near last year's 16 million tons. Spring (September and October) rains significantly improved yield prospects in all states except Queensland.

Reduced plantings of winter crops provide more area for summer crops. However, soil moisture and irrigation water supplies are low in parts of the major growing region of northern New South Wales- Queensland. Plantings will depend on weather developments and relative prices.

Meat Exports Larger

Largely because dry summer and fall weather forced animals to slaughter, Australian beef and veal exports were up 13 percent in volume in the first 9 months of 1986. Shipments rose to all major markets, with those to the United States up 12 percent. The pace of exports has slowed in the last 2 months.

Mutton exports jumped 53 percent, mainly because of larger sales to Iran and Japan. Lamb exports rose 31 percent because of larger sales to the Middle East and the United States. [*Sally B. Byrne (202) 786- 1611*]

Japan

U.S. Farm Exports Decline

U.S. agricultural exports to Japan in fiscal 1986 fell to \$5.1 billion, 9 percent below the previous year and the lowest since 1979. Lower U.S. export prices for grains and oilseeds and reduced shipments of coarse grains and cotton were primarily responsible.

U.S. sales of coarse grains declined 15 percent to 11.6 million tons, the lowest since 1979. Competition from Chinese corn, Argentine sorghum, and South African corn caused the U.S. share of Japanese coarse grain imports to decline from 69 percent in fiscal 1985 to 57 last year. U.S. cotton shipments fell almost 50 percent from fiscal 1985, hurt by high U.S. prices and competition from China, Pakistan, Australia, and other suppliers. Soybean exports were up 4 percent to 4.2 million tons, helped by reduced Brazilian supplies.

In contrast to steady or declining exports of many bulk commodities, U.S. exports of high-value and processed products to Japan made impressive gains in fiscal 1986, helped by the weaker dollar. The value of U.S. exports of animals and animal products rose 23 percent. Beef and veal exports surged 22

percent to 100,000 tons, almost triple the 6,900-ton increase called for in the 1984 U.S.-Japan understanding. Pork sales were up 50 percent from fiscal 1985's low level to 12,000 tons. U.S. poultry meat exports jumped 41 percent to a record 69,000 tons. In addition, U.S. exports of citrus fruit, primarily grapefruit, and frozen vegetables were also strong.

U.S. farm sales to Japan in fiscal 1987 are expected to increase slightly. Volume gains for coarse grains and cotton are expected as U.S. prices become more competitive as a result of new U.S. farm legislation. A recovery in sales is already evident: U.S. cotton exports in August and September were the highest in 16 months, and September corn shipments (934,000 tons) were the largest in 6 months.

Japan's Farm Output Declines

The value of Japan's agricultural output is expected to show a slight decline in 1986 because of lower crop production. Although wheat output is forecast at 876,000 tons, the largest harvest in 18 years, the rice crop (the most important crop in Japan) is estimated to be down marginally from last year. Livestock output is expected to remain about the same in 1986, after almost continuous expansion over the past decade.

U.S. Rejects Rice Complaint

On October 23, the United States rejected a petition (under Section 301 of the 1974 Trade Act) submitted by the American Rice Millers Association in September against Japan's restrictions on rice imports. According to the petition, U.S. rice exports would expand and world rice prices would rise significantly if Japan dismantled its restrictive rice policy.

In rejecting the petition, the United States will urge Japan to discuss its rice policy in the new round of multilateral trade negotiations. If Japan does not respond, the United States plans to reexamine the issue in mid-1987. [*Lois A. Caplan (202) 786- 1611*]

Middle-Income East Asia (South Korea, Taiwan, Hong Kong)

U.S. farm exports to the region decreased 11 percent in fiscal 1986 to \$2.78 billion because of lower prices and reduced exports of cotton and coarse grain. Prices for most bulk commodities are expected to remain low in fiscal 1987, and should stimulate significant increases in U.S. exports. The total value of farm exports to the region is expected to increase about 10 percent.

U.S. Cotton Exports To Increase Sharply

U.S. cotton exports to the region decreased 68 percent in fiscal 1986 to 130,000 tons because of high prices. Since August, when U.S. cotton prices became more aligned with competitors' prices under provisions of the 1985 Food Security Act, sales have picked up quickly. U.S. cotton exports to the region are expected to increase sharply in fiscal 1987.

Coarse Grain Exports Expected To Rise

U.S. coarse grain exports to the region decreased 16 percent to 4.24 million tons in fiscal 1986, because of stepped-up competition from Thai corn and Canadian and Australian feed wheat to South Korea, and South African corn, New Zealand barley, and Thai sorghum to Taiwan. U.S. coarse grain exports to the region are expected to improve somewhat in fiscal 1987 because of more competitive U.S. prices, reduced supplies of Thai corn, and larger livestock inventories.

Crop Production Down

Two typhoons in September caused some crop damage, and production in 1986 is estimated to decline 1 percent for South Korea and 8 for Taiwan. Production of rice, the most important crop in the region, is forecast to decline 5 percent from 1985's 5.6 million tons in South Korea, and from 1.97 to 1.92 million in Taiwan. Despite reduced rice production, South Korea, which was a rice-deficit country throughout the 1970's, is not expected to import rice. Taiwan still has surplus rice stocks.

Livestock Numbers Remain High

Livestock production remains steady in the region. Taiwan's hog industry is expanding

because of high prices, low feed costs, and strong export demand. According to a July survey, hog numbers had increased 6 percent since March.

In South Korea, hog producers are benefiting from the highest prices since 1982 and low feed costs. Hog inventories are expected to expand during the remainder of 1986. Pork is South Korea's principal animal protein source, accounting for three-quarters of the country's red meat consumption. The Government protects this industry through a ban on imports, administered since 1980.
[Sophia Wu Huang (202) 786-1611]

China

1986 Grain Situation Improved

Output of wheat, rice, and coarse grain is forecast to be around 297 million tons, 11 million over 1985/86 but 12 million under the 1984/85 record. Area increased 1 percent over last year while yields advanced 2 percent. A record summer grain harvest, along with good growing conditions for spring wheat, should result in a record wheat crop of 89 million tons.

Early rice output rose over 3.5 million tons compared with last year, but the 35-million-ton crop is only average compared with those of the last 5 years. Dry weather constrained yield increases for intermediate and late rice crops, and total output will be around 120 million tons, almost a 2-percent increase over 1985 but still below the 124.8 million of 1984.

The same dry weather retarded coarse grain yield growth in south China, in the Northwest region, and in the North China Plains. Moreover, heavy rains in the Northeast region reduced coarse grain yields there. Coarse grain area is estimated to have expanded about 750,000 hectares but the effect of dry and wet weather limited output to 88 million tons, only 6 million tons over 1985 and 8 million below the 1984 record.

China Continues To Export

In marketing year 1986/87, China continues to aggressively market grain, cotton, and oilseeds. Scarce foreign exchange

has driven business firms to export agricultural commodities and restrain imports. China's imports of wheat are forecast to be 7 million tons, about the same as last year. The sum of corn and barley imports will again be about 700,000 tons. Rice exports of around 1 million tons are anticipated. In spite of reduced coarse grain production in 1985 and an average crop in 1986, corn and sorghum exports are forecast to continue at around 6 million tons. Cotton exports are forecast to hold steady at 600,000 tons. Soybean and soybean meal exports should drop a little from last year.

U.S. agricultural exports to China in fiscal 1985/86 declined 63 percent from 1984/85 to only \$88 million. Major commodities exported in 1985/86 were cattle hides, \$17 million; wheat, \$19 million; and soybeans \$38 million.

Outlook for 1987 Crops

Area sown to grain crops likely will expand in 1987. However, dry fall weather in major winter-wheat-growing regions may have limited sown area and increased the likelihood of poor stands. State procurement officers are now authorized to advance 20 percent of cash payments to farmers who contract to sell their grain to the State. In addition, these households will be allowed to purchase 60 kilos of chemical fertilizer and 30 kilos of diesel fuel for every ton of grain sold to the state. Both of these inputs were in short supply in 1986. [Frederick W. Crook (202) 786-1616]

South Asia

Food Grain Import Demand Likely To Fall

Record or near-record harvests of wheat and rice are estimated in Bangladesh, India, and Pakistan in 1986/87 following generally favorable monsoon rains, but adverse weather has sharply reduced rice production in Nepal and Sri Lanka. South Asian wheat imports are forecast to decline 15 percent to about 2.9 million tons in 1986/87 (July/June), with a large drop in Pakistan's needs more than offsetting larger imports by Bangladesh, Nepal, and Sri Lanka.

Reduced sales to Pakistan are expected to lower U.S. wheat exports to the region 35

percent to 1.2 million tons. India and Pakistan will have substantial wheat surpluses, and their combined exports are forecast at 800,000 tons. Regional rice imports are forecast to rise 40 percent to more than 600,000 tons in 1987 because of larger requirements in Bangladesh, Nepal, and Sri Lanka. Rice exports by Pakistan and India are expected to drop 15 percent to 1.1 million tons in 1987, but Indian sales could expand because of a growing rice surplus.

Edible Oil Imports May Rise

South Asian edible oil imports are forecast to rise 1 percent to 2.3 million tons in 1986/87 (October/September). Reduced stocks and a second consecutive poor peanut crop are expected to boost India's imports from 1.15 million tons in 1985/86 to 1.25 million in 1986/87. Pakistan's imports are forecast at 850,000 tons, near last year's record, as large stocks offset growth in domestic demand and lower production of cottonseed oil. Lower-priced palm oil is forecast to maintain a dominant share of the region's oil market in 1986/87. However, soybean oil's share is likely to rise from the 10-year-low reached in 1985/86 because of reduced stocks in India and continued concessional credit sales to Pakistan. South Asian soybean oil imports are forecast to rise about 12 percent to 615,000 tons in 1986/87, while palm oil imports are forecast to remain near 1.5 million tons.

Cotton Output May Decline

Cotton production is expected to decline from 1985/86 records in both India and Pakistan in 1986/87, because of weakening prices and poor weather in some cotton-producing areas of India. India's 1986/87 crop is estimated at 7.8 million bales, down 7 percent, and Pakistan's crop is estimated at 5.3 million bales, down 3 percent. Pakistan's exports are expected to drop from a world-high 3.1 million bales in 1985/86 (August/July) to about 2.7 million in 1986/87, primarily because of increased competition from U.S. cotton, while Indian exports are projected to rise 80 percent to about 600,000 bales. However, because of burdensome stocks, both India and Pakistan may opt for export pricing adjustments and more aggressive marketing to boost exports. [Maurice R. Landes (202) 786-1614]

Southeast Asia

Production of Cereal Crops Stable or Lower in Indonesia and Thailand

Indonesia's 1986 milled rice production is expected to only match 1985 output of 26.5 million tons, following a decade of annual increases. For the first time since the early 1970's, the producer rice support price was not increased, although fertilizer subsidies were continued. The Government plans to phase out the fertilizer subsidy eventually. The burdensome level of government rice stocks may decline to 2.5 million tons by year's end, aided by calendar 1986 exports of about 300,000 tons. Overall per capita consumption of grain will continue to increase, based on greater intake of domestic corn and imported wheat. Current government policy seeks to boost domestic output and use of secondary food crops such as corn and soybeans, and to keep rice production gains consistent with population growth.

Poor weather and low commodity prices have kept Thailand's 1986 corn and rice production down. Rice output is estimated to be down 300,000 tons from 1985 to 12.7 million. Rice exports may drop 9 percent to 4 million tons in 1987 due to the increased competition for shrinking export markets. Corn production is estimated at 4.2 million tons, 18 percent below the 1985 record. This may result in 2.9 million tons exported in 1986/87, nearly 1 million less than in 1985/86.

Vegetable Oil Production Up

Malaysia's 1985/86 (October-September) crude palm oil output reached an estimated 4.77 million tons, 25 percent higher than in 1984/85. Despite higher export volume in 1985/86, the extended slump in palm oil prices is having a severe impact on the Malaysian economy. Although palm oil processing margins are poor, the brunt of the financial loss falls on oil palm plantations and the Government, which assesses duties on exports of palm oil and palm oil products that have been declining in calendar 1986. Crude palm oil production in 1986/87 will rise to an estimated 5 million tons, reflecting higher average yields and expanding mature crop area. Despite recent market recovery which boosted domestic palm oil prices to 1986 highs, the medium term outlook for relatively

low vegetable oil prices may cause the Government to review its ambitious palm oil expansion plans.

Recovery of Philippine coconut production and lower coconut oil prices have led to a surge in Philippine coconut oil exports during 1986. Compared with January-August 1985, exports have more than doubled to 803,000 tons; however, earnings have increased only 8 percent. Coconut oil exports in 1986 are forecast to reach a record 1.2 million tons, with the United States accounting for nearly half of total shipments. [J. Albert Evans (202) 786-1614]

Sub-Saharan Africa

Coarse Grains Surplus Causes Problems

Following another year of favorable weather, many Sub-Saharan African countries produced a second consecutive bumper grain crop in 1986. In many cases, this led to excessive stocks of corn and sorghum, severely taxing countries' storage capacity and finances. This represents a dramatic turnaround from the widespread food emergency of 1984 and early 1985, with drought-induced shortages in much of the continent. Nevertheless, some localized food deficits persist, reflecting warfare, poor logistics, and foreign exchange shortages that inhibit better distribution. Furthermore, exports outside the region are constrained by the current world glut of grains and African countries' lack of competitiveness.

The development of large surpluses is partly related to the previous drought crisis and special efforts to aid recovery, combined with the unusual occurrence of 2 years of good weather. There were many special efforts to increase seed and input distribution in affected countries, often with the help of donors, and to provide incentives in the form of higher producer prices or guaranteed purchases by government marketing agencies.

Where there were no government-supported prices, market prices generally rose to reflect serious shortfalls. In addition, large imports of grains, including food aid, often exceeded needs or arrived late, and led to large carryovers into 1986. Thus, there have not always been space or funds available to handle incoming harvests. Some

countries are responding by making adjustments in pricing and marketing policies, and some are exporting, although frequently at a loss.

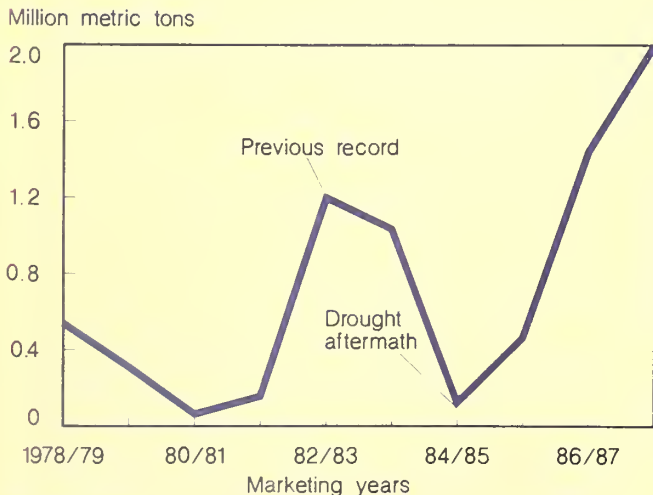
The largest surpluses are in Zimbabwe, Kenya, and Sudan. The first two are exporting significant amounts of corn, while Sudan is not exporting any sorghum because of a government ban. Although Malawi's production of corn was down slightly in 1986, it had sufficient carryover stocks to still be able to export this year. There are also smaller surpluses in West Africa, Benin, Cote d'Ivoire, and Togo, and in some Sahelian countries, including Burkina, Mali, and Niger.

Zimbabwe Discourages Production

Zimbabwe opened its 1986/87 marketing year with corn stocks of more than 1.4 million tons, a result of a record 1985 harvest, low domestic demand, and disappointing export sales. Smaller stocks of sorghum and millet are also proportionately large, stretching resources. The 1986 corn harvest was also good, and stocks could increase to over 2 million tons by the end of the marketing year in March, depending on exports.

Domestic sales by the Grain Marketing Board are currently about 700,000 tons per year, down nearly 50 percent from the peak in the drought year of 1983, while this year's intake should reach 1.7 million tons. Rural demand is down significantly, as farmers have increased their retentions.

Zimbabwe's Corn Stocks Soar



1987/88 forecast

With storage charges estimated at over \$40 per ton, including \$25 just for interest, and a high budget deficit, the Government is trying to discourage plantings for the upcoming crop. Producers selling more than 20 tons will only receive the Government-guaranteed price of \$108 per ton for up to 50 percent of their 1986/87 deliveries, and \$60 per ton for the balance.

Zimbabwe's landlocked position and high transport costs constrain exports to its immediate neighbors. In 1985/86, corn exports were under 300,000 tons, despite an exportable surplus of at least 1 million. Nearly all the exports went to other African countries, and some of these sales were financed by outside donors because of customers' lack of foreign exchange.

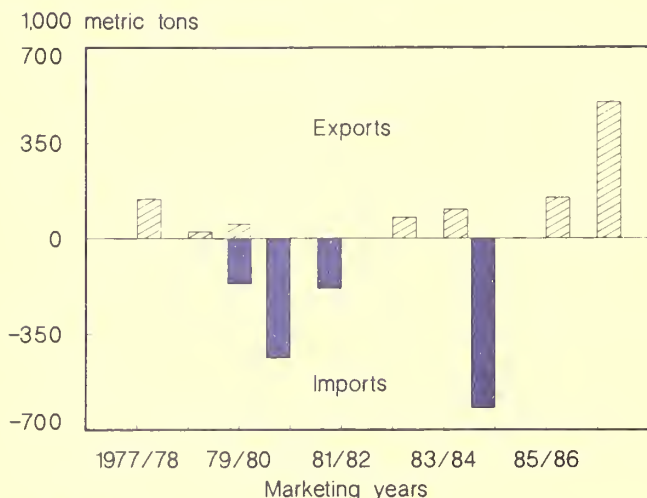
During 1986, South Africa purchased 200,000 tons of white corn, even though it has been exporting yellow corn, and there were reports of sales of 100,000 tons to Iran. There is potential for further sales to South Africa, but these may not materialize because of strained relations. Zimbabwe's corn exports during 1986/87 are unlikely to exceed 500,000 tons.

Kenya Exports Corn

Faced with a second consecutive record corn harvest and inadequate storage capacity, Kenya began exporting corn during 1986. However, much of this was yellow corn imported from Thailand during the 1984 drought. For the 1985/86 marketing year which ended in June, Kenya exported 150,000 tons, mainly to Korea, Malaysia, Singapore, and Jordan. The National Cereals and Produce Board (NCPB) is also selling old stocks of U.S. yellow corn, imported under the Whitten program during the drought crisis of 1984. However, this is being sold domestically for feed.

The large intake of corn has created problems for the NCPB. There were some instances of late payments to farmers for the 1985 crop, and more difficulties are expected for this year's crop, as the producer price was raised 8 percent. Kenya plans to expand storage, but this will not help current crops. The problem of production fluctuations is quite pronounced in Kenya, so that in recent

Kenya's Corn Trade Fluctuates



1986/87 forecast

years it has entered grain markets both to buy and sell. For 1986/87, Kenya may export up to 500,000 tons of corn, some of which will be swapped for wheat.

Scope Limited for Other Exporters

The administrative burden and high costs of maintaining above-normal stocks will remain a problem in Sub-Saharan Africa through 1986/87. Only two other countries in the region have been significant coarse grain exporters in the past. Sudan frequently exported sorghum up to the devastating drought of 1984, while Malawi has regularly exported small amounts of corn over the last 4 years.

This year, Malawi has about 100,000 tons available, similar to last year, but its practical outlets are restricted to neighboring countries. Not only are import needs low this year--except for Mozambique, which depends on donor assistance--but there is also stiff competition from Zimbabwe. Malawi has not raised the producer price for the last 2 years in an effort to increase production of other crops.

Sudan made a striking recovery from drought in 1985 with a record-breaking sorghum harvest. However, with serious local shortfalls in parts of the country, the Government banned exports. While prices have fallen dramatically in much of the country, shortages persist in urban areas in the south, where warfare restricts movement of

food. For 1986, another good crop is being harvested, and this could double the 500,000 tons carried in from last year. Most of the stocks are privately held. Growing numbers of refugees in the capital--as a result of the war in the south--are increasing food needs, but donor assistance will be required to feed them because of Sudan's severe financial limitations. The resumption of exports to Saudi Arabia, of about 100,000 tons, is possible.

The lack of markets is also a constraint on potential exports from West Africa. In 1984 and early 1985, small surpluses in coastal West African countries could be used in the Sahel to the north where crops were reduced by drought. For example, Ghana exported small amounts of corn to Burkina and Mali (in exchange for U.S. P.L. 480 rice) in both years. Currently, the Sahelian countries have little or no need for coarse grain imports.

In both Mali and Niger, where government marketing boards normally handle relatively small quantities of grain, good harvests and unprecedented stocks in 1985 and 1986 have strained limited resources. Farmers increased sales in both countries because government prices were higher than those on the free market. Neither board can easily dispose of its large supplies, as market prices remain low.

Virtually all the African countries with surpluses have expressed interest in trilateral transactions to supply neighboring countries. Donors either purchase coarse grains or exchange wheat or rice for shipment to a third country. Many donors, including Australia, the EC, the United States, and the World Food Program, did this in 1985/86. With the exception of a few countries, however, coarse grain needs are limited, and these transactions are not likely to significantly reduce surplus stocks in the region. *[Peter A. Riley (202) 786-1680]*

COUNTRY BRIEFS

Kenya Coffee Output Recovers; Foreign Exchange Earnings Rise

With improved rainfall, Kenya's coffee yields were up 25 percent in 1986 and output rose to 118,000 tons. When the International Coffee Organization's (ICO) export quotas were lifted in February, Kenya took advantage

of this marketing opportunity and exported a record 121,000 tons of Arabica coffee during the 1985/86 marketing year. The move occurred at a propitious moment, as coffee export prices were 30-60 percent above 1985 because of the 50-percent drop in Brazil's output.

Kenya's coffee export price reached \$2.60 a pound early in 1986, and earnings from exports are estimated slightly above \$500 million, the record set during the 1977 coffee boom. As a result, total agricultural exports in 1986 could exceed the previous high of \$841 million in 1977.

Despite previous record exports of 102,000 tons in 1981/82, Kenya's coffee output has been expanding faster than exports, which resulted in stocks of 75,000 tons in 1983/84 valued at \$147 million that had to be financed by the Coffee Board.

Kenya has expanded its coffee industry since 1977, when 84,000 hectares were harvested. For 1987, the U.S. Agricultural Attache, Nairobi, reports that area will be 138,000 hectares. Kenya conducts its own research on coffee, and this year a new disease-resistant variety, Ruiru II, was made available to farmers. Export and other taxes have recently been increased, however, and farmers complain of higher production costs which reduce net returns, even with higher world prices.

Kenya has done better in cash/export crop production than in food crops. Its index of cash/export crop production was 131 in 1985 (1976-78 = 100), one of the highest in Sub-Saharan Africa. For food crops, however, Kenya's index of production was only 114 in 1985, slightly below the average of 119 for all of Sub-Saharan Africa. [Larry Witucki (202) 786-1680]

Barley Sales Enhance U.S. Exports to Saudi Arabia

U.S. agricultural exports to Saudi Arabia have been enhanced by the Export Enhancement Program (EEP) for barley. In fiscal 1987, a rebound in the value of U.S. agricultural exports to over \$350 million is forecast. Initial estimates forecast lower total 1986 exports, but barley shipments commenced during the summer following

purchase of the 750,000 tons provided under the EEP. The price averaged \$64 per ton.

By September, actual shipments lagged behind purchases, and barley exports in fiscal 1986 totaled 486,598 tons for \$36.2 million, up \$32.4 million over 1985. This gain partially offset declining sales of some other commodities, leaving the loss for 1986 at 12 percent, only half the loss reported through June, prior to the upsurge in barley shipments. The value of \$335 million was a third below the 1981 peak, but Saudi Arabia ranked 17th among foreign markets.

The decline in U.S. sales of wheat and flour-related to Saudi self-sufficiency--occurred before 1985, so most of the 1986 decline came in other items. Rice sales declined 13 percent to 188,000 tons, and lower prices--a result of intense Thai competition--showed a 26-percent decline to \$82.6 million. Exports of beef and poultry were down a third to \$10.3 million because of lower EC prices. Shipments of apples were only a third of fiscal 1985's \$17 million, as Chile and the EC took a much greater share of the market.

Greater Saudi purchases of Malaysian palm oil, and lower prices, trimmed the value of U.S. corn oil shipments 14 percent. Rising Saudi imports of pistachios and almonds from Iran contributed to a 42-percent U.S. decline in almond sales to \$3.2 million. Gains in U.S. soybean meal exports were slowed by increased competition from the EC and Asian suppliers, and a shift to the EC and local suppliers trimmed U.S. seed sales 50 percent. [John B. Parker (202) 786-1680]

Nigeria's Foreign Exchange Auction

Nigeria took an important step toward economic reform in September when the country's first foreign-exchange auction led to an effective 66-percent devaluation of the naira against the dollar. The naira fell from about N1 = \$1 to N4.6 = \$1, but has since stabilized at about N4 = \$1.

The official rate will continue to apply to imports for which confirmed letters of credit existed prior to September 23. There will be no extension for these documents, most of which expire on December 31, 1986. This auction means that anyone who can purchase

foreign exchange will be able to import, albeit at much higher prices.

In order to control imports, the Government issued a revised list of banned imports. Agricultural commodities included were wheat and products, rice and products, corn and products, vegetable oil, live poultry, vegetables, fruit, and eggs. This action confirmed the wheat import ban, which had been discussed for several months. Wheat imports will continue until existing letters of credit are used. [Margaret Missiaen (202) 786-1680]

U.S. Wheat Shipments to Jordan Rise

U.S. wheat shipments to Jordan rose to 359,374 tons in fiscal 1986 from 84,347 tons last year. Sales of wheat flour increased from 248 to 3,897 tons. Total U.S. agricultural exports to Jordan were \$72 million, up sharply from last year's \$41 million.

For the 1986 crop, Jordan's cumulative rainfall was below average, resulting in a disastrous wheat harvest. At the same time, wheat consumption approached 500,000 tons. As a result, wheat import requirements for fiscal 1986 exceeded 450,000 tons.

In the first half of the 1980's, Jordan's combined field-crop output--including wheat, barley, and corn--averaged 99,000 tons and covered only 12 percent of the country's consumption needs. During that period, wheat output averaged 61,000 tons, a self-sufficiency ratio of 12 percent.

In April 1986, the United States announced a \$90-million CCC program for the purchase of wheat, rice, feed grains, oilcake, and meal. This program, along with the EEP, boosted U.S. farm exports to Jordan and increased the U.S. share of Jordan's wheat market to 81 percent. Australia's share decreased to an estimated 15 percent, and that of the EC to 4 percent. [Fawzi A. Taha (202) 786-1680]

U.S. and EC Compete for Egyptian Market

Competition between the EC and the United States for Egypt's food imports has been intense during the last 6 years. The EC pulled into the lead with sales of \$981 million in 1984, compared with \$909 million for the United States. The United States was again ahead in 1985, despite a 2-percent decline to \$891 million, as EC sales declined 15 percent to \$840 million.

The EC is expected to win the 1986 race with the added help of Spain, and because appreciation of European currencies will boost their dollar value to an estimated \$1 billion. A modest rebound for U.S. sales is expected with greater exports of wheat, flour, and frozen poultry through the EEP. When the final 1986 tally is in, the United States may be only about 5 percent behind the EC.

Competition has been most intense for wheat, flour, and livestock products. Egypt's wheat and flour imports averaged 7 million tons, wheat equivalent, in 1984-86. The U.S. share is estimated at 40 percent in 1986, up from 34 in 1985. The EC's share is 20 percent. In livestock products, the EC is far ahead of the United States. The EC provided about 75 percent of Egypt's dairy imports during 1980-86. While gaining over 90 percent of the Egyptian market for imported beef in 1985 and 1986, EC sales of frozen poultry declined because of competition from Brazil and the United States.

In 1987, EC sales to Egypt are estimated at \$1.1 billion, with more concessional financing and stronger ties due to aid programs. Gains are expected, especially in high value items like dairy products, beef, and margarine. U.S. exports may rise slightly, with further gains for bulk items, including wheat, flour, corn, and soybean meal. [John B. Parker (202) 786-1680]

HYBRIDS INCREASE SORGHUM PRODUCTION IN DEVELOPING COUNTRIES

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Abstract: Since the early 1970's, sorghum production has been increasing rapidly in the developing countries, accounting for one-fourth of the total increase of coarse grain there. The increased sorghum output is primarily due to the rapidly expanding area planted to high-yielding, hybrid varieties in Latin America. Hybrids are also increasing yields in Asia, but production has been static because area is declining. The use of hybrids in Africa is negligible, and average yields have been trending down for 25 years.

Keywords: Sorghum, hybrid sorghum, green revolution, developing countries, coarse grains.

Sorghum represents only 4 percent of the world grain production of some 1.7 billion tons (1982-84), and an even smaller share of the grain trade. Yet it is of crucial importance in many parts of the world. It is the most important food grain in the Sahel and other arid and semi-arid areas of Africa, where living standards depend to a large extent on sorghum production. It is mostly a food grain in India, and a principal feed grain in Central and South America.

Sorghum in the Developing Countries

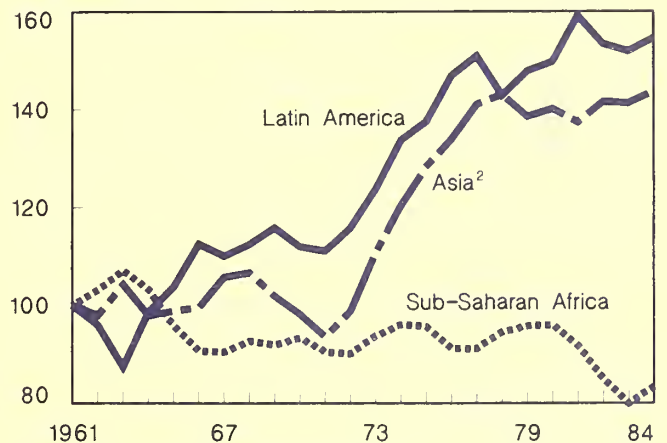
The developing countries produce about half of the world's sorghum, most of which is consumed in the country in which it is grown. Only two developing countries, Argentina and Mexico, consistently trade large volumes of sorghum. In 1983-85, Argentina had 86 percent of all developing-country exports of grain sorghum and was the principal U.S. competitor. Mexico had 43 percent of the developing countries' grain sorghum imports, and is a key U.S. market.

Sorghum Production Widespread

Grain sorghum production in the developing countries is almost equally divided among three regions: Asia, Sub-Saharan Africa, and Latin America. (The People's Republic of China is not included in this discussion.) Most of Asia's production is in India, the world's second largest sorghum producer after the United States. Argentina

Hybrids Raise Yields in Latin America and Asia¹

% of 1960-62



^{1/} Three-year averages centering on dates shown.
^{2/} Does not include PRC.

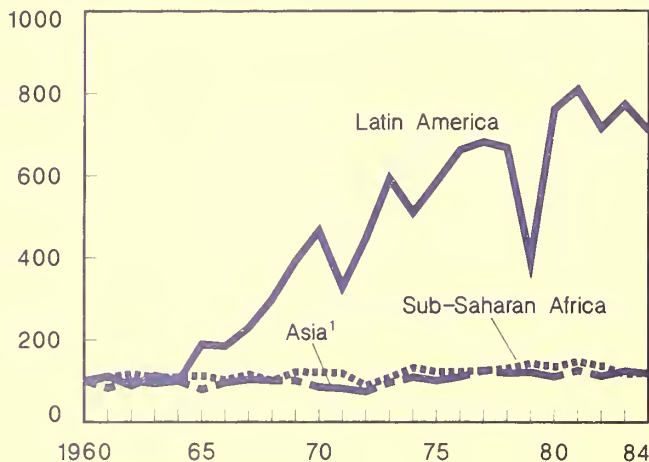
and Mexico produce most of the Latin American sorghum. Sorghum is widely grown in the semi-arid areas of Sub-Saharan Africa. Nigeria is the major producer, followed by Sudan and Ethiopia. Little sorghum is grown in North Africa and the Middle East.

Latin American yields are high, and along with area, are increasing. Yields in India are rising because of hybrids, but area is declining. In Sub-Saharan Africa, expanding area is offset by declining yields. See Roth and Abbott (9)* for country-level production and trade data for the world.

* Numbers in parentheses refer to literature cited at the end of this article.

Sorghum Production Increases Rapidly in Latin America

% of 1960



¹ Does not include PRC.

Sorghum Used as Food

Most of the sorghum grown in the LDC's of Africa and Asia is consumed as food by low income, rural people. The stalks, which may reach 15 feet, and leaves of the traditional varieties are used for feed, construction material, and fuel. In Asia, about 85 percent of the sorghum is used as food as is 95 percent in Africa. In contrast, almost 95 percent of the sorghum use in Latin America is as feed.

Sorghum is used for many types of food in Asia, Africa, and Latin America (8). For example: Indian roti is an unleavened bread. In Central America, the tortilla is an unleavened bread usually prepared from corn; however, in some countries such as Honduras and Guatemala, sorghum or blends of sorghum and corn are used. In Sudan, kiswa is a leavened bread made from sorghum. Ogi in Nigeria is a porridge made by soaking sorghum grain in water at room temperature for 2 to 4 days to soften the kernels and to ferment. The fermented sorghum is milled with large quantities of water and then filtered through a sieve. The filtrate is allowed to settle. The sediment is ogi. Sorghum is also widely used to make beer.

Unlike the other major cereals, underneath the hull of most traditional sorghums is a layer called testa that contains high levels of tannin. Tannins are distasteful to weaver birds, the most destructive sorghum pest in Africa. Large colonies of these birds

can quickly devastate a maturing crop. If there are alternative foods available, usually grass seeds, the birds will not bother sorghum with tannins. If these sorghums are prepared for consumption without first removing the testa layer, the tannin will combine with the proteins in mature grain, making it nutritionally unavailable to humans and monogastric livestock, such as poultry and swine. The tannins also reduce the incidence of molds if mature grain is not harvested immediately. Traditionally, hulls have been removed by hand pounding, taking up to 1 hour to process 2 kilograms of grain.

Analysis of income and consumption data in the developing countries suggests that the use of sorghum as food declines as income increases. However, because rising incomes generally stimulate a higher demand for livestock products, researchers find a positive relationship between income and the use of sorghum as a feedstuff (9).

Sorghum Suited for Semi-Arid Climates

Sorghum is suited for semi-arid climates because it is more tolerant of hot, dry weather than corn and has higher yields than millet, a crop even more tolerant of dry weather. Sorghum is best suited for the heavier soils of the semi-arid tropics. Millets are better suited for the light sandy soils. There will always be extensive areas of the rain-fed tropics where sorghum and millet will be the main cereal crops because they will give more consistent yields under semi-arid conditions.

Hybrid Adoption Slow in India

In a joint project of the Indian Agricultural Research Institute and the Rockefeller Foundation in the 1960's, semi-dwarf sorghum hybrids with yields 60 percent higher than traditional varieties were made using U.S. male sterile lines. When growing these hybrids, farmers typically shift from intercropping with traditional varieties to sole cropping and more intensive management, including fertilization, to realize the higher yield potential. Because of the increased risk when using additional inputs, the use of hybrids has been limited to the sorghum growing areas with more dependable rainfall or that can be irrigated. These hybrids now occupy one-third of total sorghum area, raising average yields in the country.

Sorghum hybrids and traditional varieties are readily differentiated in the market and are priced accordingly. The grain from hybrids is priced lower than traditional sorghums because of its poorer quality for roti making. And, unlike the traditional varieties, the stalk of semi-dwarf hybrid varieties is considered to lose its feed value after drying; only negligible quantities can be sold in the local markets.

Important factors underlying the decline in sorghum area in India include a consumer preference for wheat and rice, little demand for sorghum grain for feed, and a lack of government promotion through price supports, extension, etc. Sorghum area also declined due to the green revolution for wheat. When farmers in the dryland areas invest in irrigation facilities, they often switch to the more profitable high-yielding, semi-dwarf wheat (7).

Research Growing in Africa

The American and Indian hybrids cannot be grown in Africa because they are not resistant to local diseases and pests. The American hybrids were developed for livestock feed, not human tastes. Improved varieties developed in Africa have not replaced traditional varieties because of difficulties with germination and seedling establishment, grain quality, and not fitting the intercropping practices of subsistence farmers. In addition, the new, high-yielding hybrid sorghums are semi-dwarf (up to 6 feet in height) and thus, the stems and leaves are not nearly as useful for feed and building material as traditional varieties (1).

The French began research in West Africa in 1931 to develop suitable high-yielding sorghums, but the failure to achieve any noticeable improvement in yields in over 40 years partially explains why Sahelian countries asked the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) to set up a sorghum and millet research program in the Sahel in the mid-1970's (2). The U.S. Agency for International Development's (USAID) Collaborative Research Support Program on Sorghum and Pearl Millet (INTSORMIL) is also contributing to the effort. Researchers are now making progress. Recently, for example, a promising new hybrid sorghum was released in Sudan

after a 12-year research program in which 5,000 varieties were tested. This new hybrid, Hageen Dura-1, has produced average yields 52 percent higher than local varieties over four crop seasons at an experiment station (3). In Africa, as in India, the hybridization of sorghum has been carried out using male sterile lines from the United States.

Development of high-yielding hybrids, however, will not entirely solve the problem of how to intensify sorghum production in Africa. Yields of many varieties are presently below their potential because of various pests and diseases. For example, sorghum yields can be reduced as much as 80 percent by the parasitic witchweed, which becomes a severe pest if sorghum is grown without rotation. Extensive areas in Africa have been rendered unfit for sorghum cultivation, with the buildup of witchweed under continuous sorghum cultivation (10). The parasite's seeds remain viable in the soil for more than 10 years. It is almost impossible to control mechanically and few sorghum varieties have resistance.

Even in those areas where sorghum is better suited, corn may still be grown because it is a preferred food and because it is better protected against grain-eating birds. Corn is also more convenient and easier than sorghum to prepare for consumption. Thus, a cash market developed during colonial times for corn while sorghum remained in the informal, subsistence economy.

To move sorghum out of this subsistence economy several things are needed, including improved processing. Before grinding into flour, the sorghum is hulled manually, using a pounder and a little water to make it easier to remove the seed coat. Even though the flour is left to dry after grinding, it will still contain 30 percent water. Because flour prepared in this way turns rancid very quickly, it must be used within 2 days. Researchers are developing mechanical dry dehullers. The flour made after dry hulling can be stored for months.

These developments could make sorghum flour a more marketable product in the rapidly growing urban areas which have become dependent on imported wheat and rice. Dry mills, designed specifically for dehulling and milling sorghum, can decrease the tedious hand processing time, the flour moisture

content, and the amount of hull in sorghum flour—all essential for development of the cash markets that can provide the incentives for farmers to intensify rain-fed sorghum production.

Feed Sorghum Expanding In Latin America

Following the development in the United States of high-yielding hybrid feed sorghums that could be machine harvested, strong interest developed in Latin America. Starting in the 1960's, U.S. seed firms began marketing hybrid seed in Latin America, where it grew very well, and area expanded very rapidly.

U.S. Research Beneficial

Sorghum has greatly changed since it was introduced in the United States in the 1850's. The tall, late-maturing daylength-sensitive varieties from Africa were transformed into semi-dwarf, early-maturing varieties that are not sensitive to daylength. Many of these varieties produce grain with no tannin, and are referred to as yellow sorghums. The U.S. sorghums with tannin are called brown sorghums. The U.S. grain sorghums are no longer dual purpose plants supplying both grain and forage, as in Africa. (The United States has also developed specialized forage varieties.) Shortening the plants permitted mechanized harvesting. The daylength insensitivity increased the crop's adaptability.

Because the feed value of yellow sorghums is almost equal to corn, they receive a higher price than the brown sorghums. Brown sorghum grain causes a 10- to 30-percent reduction in feed efficiency, compared with yellow sorghum (5). There is a dock of about \$1 per hundredweight for brown sorghums, so there is very little grown in the United States. The brown sorghums that are grown are not mixed with the yellow sorghums that the United States exports. Other exporting countries including Argentina and Sudan, however, do not keep their sorghums separated, which causes potential U.S. customers to think that all sorghums are nutritionally inferior.

In the 1950's, commercial high-yielding hybrid sorghums were developed by publicly supported breeding programs. Because sorghum is a self-pollinating crop, producing

hybrid sorghum on a commercial scale was not possible until the discovery of cytoplasmic male sterility (CMS) in the early 1950's. Self-pollination can be prevented by CMS, a factor inherited through the cytoplasm that prevents viable pollen from being produced.

U.S. Firms Market Hybrids

Yield trials, largely encouraged or conducted by U.S. companies, in Mexico, Argentina, Australia, and South Africa showed that U.S.-bred feed sorghum hybrids performed well, while in contrast, U.S. hybrid corn was not so directly transferable. The U.S. seed companies quickly established themselves in Argentina and Mexico, countries with large, semi-arid areas.

In Mexico, sorghum was introduced in the irrigated cotton areas of the Northwest. The Mexican farmers were soon obtaining yields equal to or higher than in the United States and production increased rapidly. Sorghum was a more efficient user of irrigation water than cotton or rice. Because sorghum uses the same planting and harvesting machinery as wheat, a wheat-sorghum rotation was established (6). Sorghums supply Mexico's rapidly growing poultry and swine production.

Mexico's sorghum imports have become the largest in the developing world even though production has increased rapidly. Had it not been for the development of sorghum production, either massive feed grain imports would have been necessary, or the poultry business could not have grown so fast.

In Argentina, sorghum varieties suitable for combine harvesting were already being planted in some of the drier areas. With the introduction of hybrids (mostly produced by local licensees of U.S. seed companies) production expanded as both planted area and yields increased (6). In Argentina, sorghum is primarily grown for export. Importantly, most of the Argentine sorghum has tannins, making it less competitive in international markets with corn and with the yellow sorghums exported from the United States. Recently, sorghum area has declined because of competition from sunflowers, which give a higher income (4).

Food Use Small in Latin America

In recent years, there has been increased interest in growing sorghums suitable for direct human consumption. In areas with considerable risk of drought, an early-maturing corn crop is intercropped with a traditional, long-season sorghum (12). In good years, corn is used for the family and sorghum for poultry and livestock, but in dry years, when the corn crop fails, sorghum is used in the tortillas. The area in traditional sorghums is small compared to feed sorghums. However, because sorghum is better suited than corn to some of the drier areas in Latin America, plant breeders are now breeding higher-yielding food sorghum varieties. These provide new possibilities for supplementing cereal production for human consumption in areas where corn yields are poor due to uncertain rainfall.

Limited Impact on U.S. Exports

U.S. research has meant a green revolution for sorghum yields in parts of the developing world. This is most evident in Latin America, where U.S.-developed hybrids were used directly, and in India, where high-yielding hybrid varieties were developed from U.S. CMS lines. Although a sorghum green revolution has not occurred in Africa, development of suitable hybrids is gaining momentum and research on mechanized milling is progressing. The impact of hybrid varieties on sorghum production in the developing world has been much less than the green revolution for wheat.

Except for Argentina, which will continue to be a low-cost sorghum exporter, this green revolution has not adversely affected the U.S. export market. Sorghum in Africa and Asia is mostly consumed as food by low-income, rural people. U.S. feed sorghums are not suitable for their needs. Production has increased in Mexico, but not nearly as rapidly as the feed requirements for the livestock sector. Mexico is already a key market for U.S. sorghums with further developments from the private sector. Presently, however, economic stagnation and massive debts limit Mexico's imports.

Mexico is one of the upper-middle income countries, which has been the driving force in shifting the developing world from net exporters of coarse grains to net importers (13).

Consumers in these upper-middle income countries are including more meat and poultry products in their diet. This demand, arising from higher incomes, is increasing the requirements for feedstuffs much faster than domestic production. Shortfalls deriving from this imbalance are creating strong, growing markets for coarse grains such as sorghum.

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