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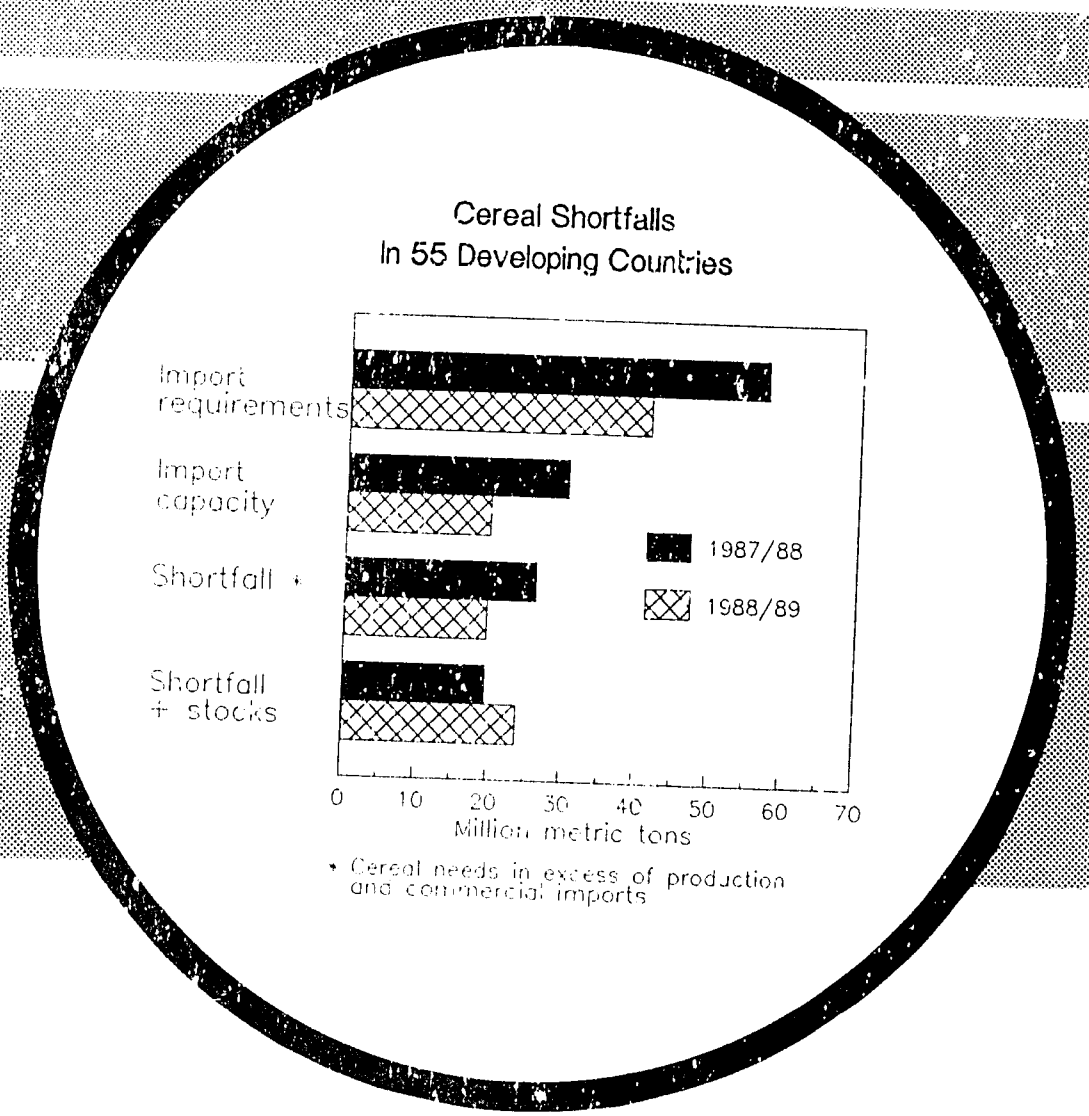

PREFACE

The food need levels reported are for the marketing years 1988/89 and 1989/90. As with any projection, assumptions must be made about future events. The assessment of food needs is based heavily upon projections of food crop production and financial ability to commercially import food. Food production is subject to the vagaries of weather and commercial import capacity is influenced by various international commodity and financial market conditions. Since neither weather nor international markets can be predicted with certainty, the food needs contained in this report are subject to change.

To reflect current crop conditions and import capacity, each country is reviewed quarterly and an updated food needs calculated for those countries judged to be facing conditions significantly different from those at the last assessment. For this reason, readers are encouraged to acquire current reports to keep abreast of changing food needs. Readers are further advised that both the methodology and the data used in the calculations are continually being refined by the Interagency Food Aid Analysis Working Group (IFAAWG). This effort reflects the continuing commitment of the U.S. Government to respond more rapidly and adequately to the needs of those countries where food commodity assistance can be used for humanitarian purposes and in the mutual interests of the recipient country and the U.S. Government.

As a result of a Presidential Initiative in the summer of 1984, an Interagency Food Aid Analysis Working Group was established to provide the U.S. Government with the best possible food needs assessment for countries in the developing world. This report is prepared under the aegis of the Interagency Working Group.

As assessment of world food needs has serious implications for both donor and recipient countries, and it has the potential to influence the expenditure of many millions of dollars and affect the lives of many millions of people. It is, therefore, very important that readers clearly understand the issues that the Food Needs and Availabilities report addresses, and those it does not. This report is not an allocation or programming document, but an objective analytical assessment of food needs. Allocation and programming decisions are made in other forums and consider factors in addition to the food needs assessed in this report.

The assessment of food needs presented herein refers to the *amount of food needed* to cover the difference between a country's domestic food production plus its commercial import capacity, and either of the following two alternative measures of food need.

The *status quo* need is based on a country's recently achieved levels of food consumption, while the *nutrition-based* need is based on FAO's published information on minimum recommended dietary intake for each country. In addition, an estimate is made of the maximum absorbable imports if the highest historical levels of per capita total food use and carryover stocks were to be maintained. This assumes the food delivery systems in most food-aid-recipient countries have been "at capacity" at the highest historical level. None of these measures, taken individually, adequately reflect the range of objectives embodied within P.L. 480 legislation, nor does any one measure capture all factors considered in allocation and programming decisions.

WORLD FOOD NEEDS AND AVAILABILITIES, 1988/89

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ABSTRACT

Cereal needs for 1988/89 to meet consumption requirements *in 55 developing countries* are estimated at 19.5 million tons, 6.5 million below 1987/88. However, inclusion of stock adjustments puts additional cereal needs for 1988/89 over 1987/88 by 4.3 million tons. Nutrition-based needs are 37.5 million tons, down 2.7 million from 1987/88, but up 9.5 million with stock adjustments. These needs are in excess of domestic production and commercial import capacity. Import requirements are down, but the cost of commercial cereal imports is up sharply. Commercial import capacity in the 55 countries is 6.5 million tons as compared to 11.7 million in 1987/88. Asian cereal production is forecast at 237 million tons, up from 217 million in 1987/88, reducing food needs. Needs in North Africa are sharply up, from 2.6 million in 1987/88 to 5.3 million in 1988/89 due to drought in Tunisia and a combination of crop and financial shortfalls in Egypt.

FOREWORD

This is the initial report in the *World Food Needs and Availabilities* series for 1988/89. Food needs assessments for 1988/89 update those published in the May 1988 report.

The country coverage of the *World Food Needs and Availabilities* report has been reduced from 69 to 55. The 14 countries excluded contributed 6.5 percent of 1987/88 status quo import requirements, and less than 5 percent of assessed status quo and 2.9 percent of nutrition-based additional food needs to meet consumption requirements. Excluded countries contributed less than 1 percent of 1987/88 cereal needs in Sub-Saharan Africa. For detailed analysis of the reduced country coverage, see Appendix A.

Additional food needs are no longer analyzed for all countries in the initial issue of *World Food Needs and Availabilities*. Each quarterly report analyzes only those countries for which current crop information is available: 15 countries in the initial (Summer), 17 in the fall and 23 in the winter. The spring issue will present final adjustments as needed.

Complete updates have been done on the 15 countries covered by this report. Partial updates have been done for the 40 countries not written up to provide a basis for estimation of 1988/89 regional and global food needs. The partial update is done through use of agricultural supply and utilization data and financial data on file as of May, 1988. Agricultural imports and exports in 1987/88 are assumed to be equivalent to the base period average. Ending stocks for 1987/88 are updated from ERS sources. These data are employed in the FNA country models to generate regional estimates of additional food needs.

Estimates of global food needs for 1989/90 are deferred until February 1989, at which time full analysis will have been completed on the 55 countries. The "Appraisal of Additional Food Needs" will also be included in the February issue.

Countries are grouped in regions as follows:

North Africa	Egypt Morocco Tunisia
West Africa	Benin Burkina Cape Verde Chad Gambia Ghana Guinea Guinea-Bissau Liberia Mali Mauritania Niger Senegal Sierra Leone Togo
East Africa	Burundi Central African Republic Ethiopia Kenya Rwanda Somalia Sudan Tanzania Uganda Zaire
Southern Africa	Angola Lesotho Madagascar Malawi Mozambique Swaziland Zambia Zimbabwe
South Asia	Afghanistan Bangladesh India Nepal Pakistan Sri Lanka
East Asia	Indonesia Philippines Vietnam
Caribbean	Dominican Republic Haiti Jamaica
Central America	Costa Rica El Salvador Guatemala Honduras Nicaragua
South America	Bolivia Peru

World Food Needs and Availabilities serves both the requirement of P.L. 480, as amended, that "global assessments of food production and needs" be submitted to the Congress, and the food needs analysis function of the Inter-agency Food Aid Analysis Working Group. Information provided through these reports to the Executive Branch and the Congress is employed along with other information in considering fiscal 1989 and 1990 food aid budget allocations. The reports are also intended to provide detailed updates on food supplies and additional food needs both country-by-country and in aggregate. This information is also useful to program and policy officials within donor governments and food-aid-recipient countries, analysts in international organizations and universities, and private agencies involved in food aid distribution.

This report presents two alternative measures of the overall food import requirements and the additional food needs of each country for 1988/89. The analysis for 1989/90 is also presented for the 15 currently subject to the full FNA analysis. The *status quo* and *nutrition-based* assessments are based on two different sets of normative judgments and assumptions regarding the role of additional food and the considerations that might govern its use. The basic assumption underlying the *status quo* assessment is that additional food would be needed to prevent food supplies, and hence consumption, from falling below recent levels. Meeting status quo food needs would in principle stabilize per capita use by compensating for shortfalls in domestic production and import capacity. The *nutrition-based* assessment addresses the continuing problem of undernutrition in many of the developing countries. The assumption is that additional food would be needed to close the gap between food availabilities and an internationally accepted minimum nutritional standard. The nutrition-based estimates thus provide an aggregate measure of the nutritional gap, net of recipient countries' capacity to import food commercially. Calculation of zero nutrition-based food needs does not mean all citizens have a nutritionally adequate diet. In developing countries, poor nutrition is frequently the consequence of poor income distribution.

Status quo food needs assessments are stabilized by the method of estimating annual base period per capita food use. Base period food use is calculated as the mean of the most recent 4 years within one standard deviation from the mean of the most recent 8 years. The method is explained in Appendix C, Methodological Notes.

The most current weather, crop production, and financial data were employed in making 1988/89 assessments for the 15 current countries. The 1989/90 assessments for these countries are based on projected agricultural production, trade and general economic trends.

Estimates of commercial food import capacity are based on historical and projected foreign exchange availability, with the assumption of the continuance of recent debt payment. The share of this exchange allocated to imports is determined by the average value of commercial food imports in the past three years. Significant changes in debt payment performance would alter food import capacity and additional food needs.

Neither the status quo nor the nutrition-based food needs measures deals specifically with the ability of a country's infrastructure to absorb food aid without overloading port and transportation capacity, and storage and distribution systems. The maximum absorbable food imports assessment frequently limits the quantity of nutrition-based needs that can physically be provided. The "gap" between maximum absorbable and nutrition-based food needs is one measure of the seriousness of a country's food problem. In a very real sense, the magnitude of the task of achieving the financial and physical capacity to import food, or increasing domestic food production consistent with national food demand, is captured by this measure.

The import requirements and additional food need estimates in *World Food Needs and Availabilities* reports are based on national agricultural and economic data. These estimates assist financial and logistics planning by both donor and food aid recipient countries. It should be apparent, however, that additional food need levels are only a part of the calculus, and that delivering imported food to communities that are deprived by national food production shortfalls or civil disturbances is a major undertaking. Factors bearing on success include local transportation and communications infrastructure, the financial status of both local and national public service agencies, and the availability of international financial support. The supplementary assessments of additional food needs issued through the year are intended to add to the information available so that food and complementary financial and technical assistance can be made available in a timely fashion.

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Food Needs Analysis Coordinator

ACKNOWLEDGMENTS

Ray Nightingale directed the overall planning and preparation of the report. Pat Scheid updated software to set the food needs assessment model for 1988/89-1989/90 projections; assisted by Lydia Kasparian. Margaret Missiaen prepared supporting data bases for agricultural trade, concessional trade and population; assisted by Stacy Jones.

In designing and implementing revisions in analysis necessitated by changes in FNA country coverage and work scheduling, the Coordinator benefitted from the counsel of T. Kelley White, Gene Mathia, Rip Landes, Mike Kurtzig, Frederic Surls, Margaret Missiaen, Pat Scheid, and Suzanne Marks.

The Economic Research Service economists providing analysis for the report included: Tom Bickerton, Richard Brown, Robert Cummings, Rip Landes, Suzanne Marks, John Parker, Peter Riley, Stacey Rosen, Leslie Ross, Pat Scheid, Sara Schwartz, Bethuel Setai, Mark Smith, and Frederic Surls.

Interagency Food Aid Analysis Working Group (IFAAWG) members contributed in food needs assessment workshops. The Agency for International Development (AID) cleared the report. Tom Ross of AID and Bruce Cogill, Jeffery Marzilli, and Michele McNabb from the AID/Food Needs Assessment Project assisted in the review. Dee Linse participated in working sessions and reviewed the report for the Foreign Agricultural Service, USDA.

Reviewed and approved by the World Agricultural Outlook Board.

SUMMARY

The detailed country tables and narratives in this report include information on the quantities and dollar values of assessed additional food needs, including the need for cereals, pulses, vegetable oils, and milk. This summary covers only additional need for cereal, the principal commodity in international food aid. Food needs assessments for 1988/89 are based on information available in July 1988

The country coverage of this report is more limited than that of recent issues of *World Food Needs and Availabilities*. The number of countries being reported on and included in regional and global summaries is reduced from 69 to 55. Additional changes in the analysis are discussed in the Foreward, and in Appendix A.

The decline in world food supplies will continue in 1988/89. With global cereal consumption exceeding production, world cereal stocks at the end of 1988/89 are expected to fall 37 percent below the record of 2 years earlier. The drop in production and stocks is concentrated in North America, where drought is sharply reducing 1988/89 output in the United States and Canada. However, winter wheat, the cereal most used in U.S. food assistance programs, was little affected.

Aside from North America, world cereal production is larger than in 1987, and stocks are dropping only modestly. Supplies of food grains on world markets are tight, but should be adequate to meet 1988/89 requirements. World market prices of wheat and coarse grains are sharply higher. Higher international grain prices have reduced the capacity of all countries to import food commercially.[1]

A number of factors contribute to sustained high levels of assessed 1988/89 food needs *in 55 developing countries*. Drought induced production shortfalls are again dominant in some regions. Food stocks were drawn down sharply in 1987/88 and the stocks adjustment provides for rebuilding. Higher international grain prices have reduced the capacity of developing countries to import food commercially. Improvements in the statistical coverage of concessional food imports in food aid recipient ccuntries has reduced foreign exchange allocation to food imports in some countries. The year 1987 has been moved into the financial data base employed in the analysis. With large annual changes in total foreign exchange available, or commercial imports, estimated commercial import capacity has changed greatly for some countries.

Status quo additional cereal needs for 1988/89 consumption requirements *in 55 developing countries* are estimated at 19.5 million tons, 6.5 million below 1987/88. However, inclusion of stock adjustments puts additional cereal needs for 1988/89 over 1987/88 by 4.3 million tons. Nutrition-based needs are 37.5 million tons, down 2.7 million from 1987/88, but up 9.5 million with stock adjustments. Considering historical consumption levels and stocks, 40 million tons is the maximum that could be absorbed in meeting status quo or nutrition-based additional cereal needs.

Status quo additional cereal needs in Sub-Saharan Africa are placed at 4.5 million tons, down 2.13 million from 1987/88, but up 400,000 with stock adjustments. Needs in North Africa are sharply up, from 2.6 million in 1987/88 to 5.3 million in 1988/89 due to drought in Tunisia and a combination of crop and financial shortfalls in Egypt.

The principal factor causing large Asian food needs assessments in 1987/88 was the drought in India. Indian agricultural production is expected to recover in 1988/89. Asian cereal production is forecast at 237 million tons, up from 217 million in 1987/88. In Asia, status quo food needs are sharply down, from 16.8 million tons in 1987/88 to 8.2 million. However, stock adjusted needs are down by only 600,000 tons. Negative stock adjustments in 1987/88 are reversed in 1988/89. The cost of commercial cereal imports is up sharply. Commercial import capacity is 6.5 million tons as compared to 11.7 million in 1987/88. This is the combined consequence of higher commodity prices, reduced foreign exchange availability and the inclusion in the base period of years of very low commercial imports.

Latin American cereal needs are 2.3 million in 1988/89, up nearly 2 million. The increase is a consequence of higher prices for commercial agricultural imports and inclusion of more complete information on historical concessional food imports. The consequence is higher current import costs and lower historical expenditures on imports, resulting

1 The food needs consequences of rising international commodity prices is discussed in the world food situation and outlook and food aid availabilities sections and also in individual country reports.

in both a lower share of foreign exchange allocated to cereal imports and reduced tonnage for that expenditure.

The 55 countries are estimated to be short 37.5 million tons of cereals to meet minimum nutritional standards in 1988/89, 2.7 million under 1987/88 needs. Nutrition-based needs follow the same pattern as status quo because of the dominance of commodity price increases, but they are greatly amplified by the 17 million ton greater cereal use associated with attainment of minimum caloric requirements. The stocks adjusted nutrition-based needs are 42 million tons, 10 million tons over 1987/88, but the maximum absorbable capacity is 40 million.

Without stock adjustments, assessed status and nutrition-based cereal needs are lower in 1988/89 in relation to cereals production and use for consumption, but higher when stock adjustments are considered.

Regional cereal situation and assessed additional cereal needs (thousand tons cereal equivalent) [1]

Region	Maximum [2]	Status quo			
		Import Requirements	Total use	Consumption	Consumption + stocks
1987/88 [3]					
Total	28279	57301	346254	26065	19514
Percent of production				9.0	6.8
Percent of total use				7.5	5.6
1988/89					
Africa	16299	19710	90068	5158	10873
North Africa *[4]	5289	13002	28245	4631	5289
Sub-Saharan Africa	11010	6708	61823	4527	5584
Southern Africa *	2724	1651	11355	1310	1760
Other Sub-Saharan	8286	5057	50468	3217	3824
Asia	21059	17545	254483	8210	10595
Indonesia *	1239	2110	39019	733	1239
Pakistan *	717	1565	18515	605	1103
Sri Lanka *	293	838	2723	288	293
Vietnam *	992	1500	12075	992	992
Other Asia	17818	11532	182151	5592	6968
Latin America	3072	3926	11145	2118	2328
Total	40430	41181	355696	19486	23796
Percent of production				6.2	7.6
Percent of total use				5.5	6.7

	Cereal Equivalent Production	Commercial Import Capacity	Nutrition-based		
			Total use	Consumption	Consumption + stocks
1987/88					
Total	288957	30187	358351	40246	32942
Percent of production				13.9	11.4
Percent of total use				11.2	9.2
1988/89					
Africa	70358	11385	95097	14545	16400
North Africa *	15243	8506	25637	2032	2682
Sub-Saharan Africa	55115	2879	69460	12513	13718
Southern Africa *	9704	749	13401	2947	3553
Other Sub-Saharan	45411	2130	56059	9566	10165
Asia	236938	6542	266015	19973	22819
Indonesia *	105[illegible]	1247	37187	0	0
Pakistan *	16956	544	19383	790	1287
Sri Lanka *	1885	491	2663	227	233
Vietnam *	10575	598	11703	620	620
Other Asia	196953	3752	195079	18336	20679
Latin America	7218	1723	12029	2999	3208
Total	314514	19650	373141	37517	42427
Percent of production				11.9	13.5
Percent of total use				10.1	11.4

1 Major cereals, and the cereal equivalent of shortfalls in roots and tubers.

2 Imports consistent with maximum recent levels of consumption and food stocks.

3 1987/88 assessment, May, 1988 World Food Needs and Availabilities report.

4 Regions and countries marked with (*) are done employing the full FNA analysis. All other regions are done employing the reduced analysis discussed in the forward to the report.

WORLD FOOD SITUATION AND OUTLOOK

World food production dropped in 1987/88 from the 1986/87 all-time peak. Decreased production of cereals overshadowed increased oilseed output. Another decline in total cereal production will take place in 1988/89, the second year in a row that world consumption will exceed production.[1] Severe drought in North America has reduced output and stocks considerably. In spite of larger foreign production and only moderate declines in foreign stocks, falling global stocks have prompted dramatic increases in world prices. A return to normal weather in 1989/90, along with increased incentives to plant due to higher prices and lower requirements for acreage reduction in the United States, will generate greater world harvests and downward pressure on prices.

Food Output Down in 1987/88

A delayed monsoon in South and Southeast Asia supplied inadequate rainfall to the region and contributed to the substantial decline in world cereal production from 1986/87 to 1987/88. In the United States, acreage reduction programs continued to reduce crop area. Low world market prices discouraged cereal planting in countries such as Australia and Canada, resulting in smaller harvests. Production also decreased in Eastern Europe, Sub-Saharan Africa, and the Middle East, primarily because of unfavorable weather.

Per capita food production in 1987/88 showed the sharpest decline in southern Asia. Drought in India reduced food output per person to its lowest level since 1980/81. However, reliance on ample stocks and imports minimized the impact on consumption. Throughout much of southern Asia, per capita output and food supplies fell. Per capita food production in Africa also dropped by 6 percent.

While world cereal production fell considerably in 1987/88, global supplies declined only 2.5 percent from the 1986/87 high because of record carryin stocks of grain. These large supplies, together with intense competition among exporting countries, elicited continued low prices on world markets for wheat and coarse grains during early months of the year. However, as consumption surpassed production, falling stocks triggered modest increases in wheat and coarse grain prices late in the year. On the other hand, rice prices rose sharply early in 1987/88 since poor weather diminished rice harvests in Asia and the United States. Rice prices moderated late in the year when Thailand's harvest proved to be better than originally expected. A record 1987/88 oilseed crop, together with recovery of palm oil production, created large vegetable oil supplies and, for much of the year, low vegetable oil prices on world markets. But toward the end of 1987/88, strong demand contributed to rising oil prices.

U.S. Drought Cuts World 1988/89 Supply

As 1988/89 begins, world market conditions have changed dramatically from a year ago. Unlike last year, supplies on the world market have tightened and prices of many commodities have risen. Severe drought in the United States has considerably reduced grain and oilseed output, causing low stocks to plummet. Drought also cut prospective cereal production in Canada and Argentina. These developments have reduced global grain supplies, driving wheat and coarse grain prices up.

While total exporter output has declined, cereal production elsewhere in the world will increase in 1988/89. Production is returning to normal in the areas of Asia hit by drought last year. In much of Africa, crops will improve.

World oilseed output will remain large in 1988/89, despite the United States shortfall. Soybean production will drop from last year's record, but harvests of other oilseed crops will expand. World total vegetable oil production is forecast at 53 million tons. The decline in soybean supplies and the continuing increase in demand for all vegetable oils may push prices up slightly in 1988/89.

Cereal Situation and Outlook

The world produced 1,601 million tons of cereals in 1987/88, a 5 percent decrease from the record output of the previous year. Total area harvested fell to its lowest level since 1972/73. Consumption exceeded production for the first time in 4 years, prompting a 12 percent decline in world ending stocks. Nonetheless, total world supplies exceeded consumption by the third highest amount because of record 458 million ton beginning stocks.

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1 / References to 1988/89 are USDA forecasts as of August, 1988.

In 1988/89, the world cereal production estimate fell to 1,545 million tons. Because grain consumption will reach an unprecedented 1,656 million tons, ending stocks will be drawn down to their lowest level since 1980/81. The recent rise in cereal prices reflects tightening supplies. Current estimates for 1988/89 show the lowest ratio of world cereal stocks to use since 1974/75. A significant decline in the stock to use ratio occurs in the United States, where ending stocks will drop more than 60 percent from record stock levels two years earlier. However, foreign stocks will decrease less than 20 percent during the same period. The 212 million tons of foreign stocks expected at the end of 1988/89 will fall only 8 percent below the previous 10-year average.

The tighter world supplies of wheat and coarse grains in 1988/89 are likely to prove temporary. In 1989/90, the U.S. wheat program will require participants to idle only 10 percent of their wheat base, compared with 27.5 percent in 1988/89. Corn set-aside requirements will also be lowered. The high prices of 1988/89 will prompt increases in foreign acreage as well. If weather returns to normal in 1989/90, production will gain substantially, stocks will recover somewhat, and prices will moderate. For example, world grain production rose 160 million tons in 1984/85, the year after the last major nationwide U.S. drought.

Wheat

Global wheat production in 1987/88 fell 5 percent to 505 million tons from the previous year's level of 530 million. Cool, wet weather decreased wheat harvests by 9 million tons in the USSR. Canada and Australia harvested smaller quantities, mostly because low wheat prices encouraged farmers to shift to higher valued crops and livestock. World wheat consumption climbed 2 percent, showing major increases in India and China. China's increase in consumption was fueled by stock drawdowns and by substantial increases in imports, 6.5 million tons over 1986/87. China imported 4 million tons of wheat from the U.S. under the Export Enhancement Program. The other 2.5 million tons of imports came primarily from Canada. The USSR also benefited from U.S. EEP sales to bolster reductions in domestic supplies and quality due to poor weather and large dockage and waste. Soviet imports increased 5.5 million tons over the 1986/87 level to 21 million tons.

In 1988/89, wheat export supplies will fall almost 35 million tons from the previous year's level. The drought will likely reduce wheat production almost 8 million tons in both the United States and Canada. As a result, U.S. ending stocks will be drawn down to 16 million tons, their lowest level since 1974/75. The shortfall will come in spring and durum wheat varieties. Tighter global wheat supplies, demonstrated by the lowest stock-to-use ratio since 1972/73, have pushed wheat prices higher.

Tighter supplies and higher prices will contribute to lower world wheat trade in 1988/89. World trade will decline to 96 million tons from 104 million tons in 1987/88. The centrally planned countries, especially the USSR, will show the greatest decreases in imports. A larger Soviet crop will mean less need for imports of quality wheat than the prior year. Developing countries may increase their wheat imports by 1.3 million tons. In an attempt to recover from last year's drought, India will likely import 2 to 3 million tons of wheat in 1988/89, contrasted with previous years' nominal exports.

Rice

Drought in South and Southeast Asia greatly affected the global rice market in 1987/88. The poor monsoon cut production by 12 million tons in the region and reduced global output to 307.5 million tons (milled basis), its lowest level since 1982/83. Although the world consumed over 4 million tons less rice, ending stocks also fell to absorb part of the production cut. The Indian crop alone declined 12 percent. With Thailand's harvest cut by over 15 percent and the U.S. crop of long grain rice also down, rice supplies on world markets tightened to their lowest level since 1983/84. World prices, as measured by the Thai price, rose 45 percent from 1986/87 to 1987/88. With higher prices rationing demand, world trade in calendar 1988 may drop 15 percent to 11 million tons, the lowest level of the past decade.

A normal monsoon in Asia in 1988/89 will boost world rice production 5 percent to a record 322 million tons. USDA estimates a record crop in Thailand and larger crops in all of the major exporters, resulting in substantially lower world market prices and larger trade. World rice trade in calendar 1989 will likely rise to over 12 million tons. However,

ending stocks will drop slightly, and the ratio of world stocks to use will remain well below the average during the last 10 years.

Coarse Grains

Global production of coarse grains fell 46 million tons to 788 million tons in 1987/88. World consumption exceeded production for the first time in 4 years. In the United States, the acreage reduction and conservation reserve programs helped to decrease output by 37 million tons to 216 million. Despite the decline in output, U.S. exports climbed by 6 million tons through drawdowns in stocks. Poor weather reduced harvests by 14 percent in India and by 13 percent in Sub-Saharan Africa. As the second and third major coarse grain producers after the United States, the USSR produced 7.8 and China produced 7.4 million tons more than the previous year to fuel increases in utilization. World trade in 1987/88 fell slightly to 83 million tons and remained well below the 1980/81 record of 108 million tons.

Drought in the United States, along with acreage reductions, will cut global coarse grain availabilities sharply in 1988/89. U.S. production will plunge 36 percent to only 138 million tons. Consumption in the U.S. will fall 10 million tons and exports will likely decrease 4 million tons. Moreover, ending stocks will slip to 60 million tons, their lowest level in 5 years. Although drought will decrease coarse grain production by 6 million tons in Canada, another major export supplier, projected exports will fall only 280 thousand tons. The USSR output estimate will decline 9 million tons from 1987/88's good harvest to a level near those of prior years. Production in China will slip by 4 million tons because of decreased plantings and unfavorable weather. With normal weather, expected harvest increases in the developing countries, especially Thailand, India, and Sub-Saharan Africa, will partially offset world production decreases. Foreign coarse grain production will rise to its second highest level ever. However, world consumption will once again exceed production. With supplies expected to remain tight in 1988/89, prices will likely rise to levels near those of 1983/84.

Vegetable Oil Situation and Outlook

The world produced a record amount of total oils in 1987/88, 52 million tons, up 4 percent from the previous year.[1]/ The quantity of total oils consumed rose more than 3 percent. Drought damage to crops in southern Asia led to larger imports, which contributed to a record 17.6 million tons of oils traded globally. World market prices rose sharply during 1987/88, particularly in the later months. Prices may show a modest gain in 1988/89, despite a likely increase in world production of vegetable oils.

Production of most oils in 1987/88 climbed, with rapeseed oil showing the largest rise. World rapeseed oil production has been increasing steadily, with particularly large gains in recent years taking place in the European Community. Production in the Community surged by 25 percent in 1987/88. Canadian and Chinese production also rose by large margins. Rising supplies of rapeseed oil, now ranking third in world production, have made it one of the cheapest vegetable oils traded on world markets.

Output of palm oil in 1987/88 gained nearly 7 percent and resumed its upward trend, after prior year reductions due to poor weather in Malaysia. Although soybean oil production did not increase from the previous year, output remained large in 1987/88. Stock build-ups absorbed part of the production gains in Brazil and Argentina.

Larger imports of vegetable oils by India, Pakistan, and Algeria in 1987/88 contributed greatly to the 4-percent gain in world vegetable oil trade. Edible oil production in India was cut more than 10 percent by the poor 1987 monsoon.

Use of the U.S. Export Enhancement Program (EEP) also contributed to the growth of world trade, as well as to the large expansion of U.S. exports of soybean oil in 1987/88. EEP bonuses for soybean oil during the first 9 months of the 1987/88 U.S. marketing year averaged over $156 per ton. These bonuses kept U.S. oil competitive with other suppliers, particularly the EC. Bonuses for soybean oil helped boost the United States share of the world market from 14 percent to nearly one-fourth. Bonuses also aided U.S. sales of cottonseed and sunflowerseed oil.

Despite the drought's impact on U.S. production, world oilseed supplies in 1988/89 will decline only 3 percent below the 1987/88 record. The U.S. crop will fall 20 percent, largely because of 23-percent lower soybean production. Lower production and carryin stocks will mean a 21 percent drop in total U.S. oilseed supplies. Oilseed output in the

2 / Total oils include soybean, palm, palm kernel, sunflowerseed, rapeseed, cottonseed, peanut, coconut, olive, fish, and linseed oils.

European Community will also decline somewhat since policies in the EC will reduce incentives to produce. However, very large gains in Southern Hemisphere acreage and production, particularly of soybeans, will sharply boost output there. Substantial foreign carryin stocks will also increase foreign supplies of oilseeds.

Early projections for 1988/89 indicate that a 2-percent rise in world production of major vegetable oils and a slight fall in world trade will occur. Output of soybean oil will probably decline slightly, and rapeseed oil production may dip for the first time since 1983/84 because of smaller EC and Canadian crops. But record palm oil production is likely, and output of most other oils will also rise.

Foreign consumption will continue to grow, but foreign demend for edible oil on world markets will probably drop in 1988/89 because of smaller imports by Pakistan and India. However, China may increase its imports considerably, since production will decline slightly while domestic demand continues its very rapid expansion.

With lower demand on world markets and higher world production, vegetable oil prices in 1988/89 will show only modest gains following increases in 1987/88. Prices should weaken next spring when crushing of the large Southern Hemisphere crop begins. Price differentials may move against soybean oil.

Since the 1988/89 year has not yet begun, much uncertainty remains about the year's forecasts. Among the most important factors affecting world markets are: the final size of the U.S. crop, the use of the EEP and other export subsidy programs, and production in the Southern Hemisphere.

Total cereals: World production, consumption, net imports, and ending stocks [1]

Region/country[2]	Production	Consumption	Net imports[3]	Ending stocks	Production	Consumption	Net imports[3]	Ending stocks
	1985/86				1986/87			
	Million tons							
Developed countries	618.7	436.8	(96.1)	245.0	587.1	448.7	(115.3)	268.1
United States	345.2	200.9	(61.9)	181.2	314.0	216.5	(74.9)	203.8
Canada	48.2	24.1	(21.7)	13.5	56.9	25.3	(27.1)	18.9
EC-12	161.2	143.2	(13.6)	31.6	154.5	138.4	(18.4)	29.3
Other Western Europe	17.1	16.0	(1.7)	4.3	16.6	15.8	(1.0)	4.2
South Africa	19.5	8.9	(2.6)	1.7	10.2	9.1	(1.7)	1.2
Japan	11.9	37.8	26.8	5.0	11.8	37.5	26.9	6.2
Australia	24.6	5.8	(21.4)	6.7	23.1	6.2	(19.1)	4.5
Centrally planned countries	586.9	644.2	34.6	117.3	630.9	668.1	36.6	116.7
Eastern Europe	102.8	108.2	4.7	6.3	113.2	113.0	2.9	9.4
USSR	179.8	206.7	29.0	28.4	199.9	219.5	26.6	35.4
China	286.1	309.6	(0.5)	82.6	299.0	315.6	5.9	71.9
Developing countries	456.0	512.8	61.4	67.8	464.1	530.2	78.7	73.7
Mexico	19.6	23.4	2.5	1.3	19.7	24.4	4.7	1.3
Central America	4.6	8.9	4.2	0.8	4.4	9.2	4.8	0.7
Brazil	33.0	37.6	5.7	3.5	40.0	42.4	3.4	4.5
Argentina	26.1	12.6	(13.9)	1.0	22.2	12.8	(9.4)	0.9
Paraguay	0.6	0.6	0.1	0.0	0.8	0.9	0.1	0.1
Other South America	11.2	15.8	4.5	2.0	11.5	16.7	5.2	2.1
North Africa	17.9	33.9	16.2	1.7	18.4	34.9	17.2	2.4
Middle East	38.6	61.6	22.3	10.7	42.0	63.6	25.3	14.4
Sub-Saharan Africa	46.9	51.7	7.7	6.2	46.6	53.6	6.9	6.2
India	133.7	132.4	(0.6)	24.6	134.0	132.4	(0.8)	25.5
Other Asia	140.5	152.9	13.9	15.7	142.0	158.2	16.0	15.5
World total	1,661.6	1,593.8	--	430.1	1,682.1	1,647.1	--	458.5
	1987/88[4]				1988/89[4]			
	Million tons							
Developed countries	540.4	446.9	(129.1)	232.5	452.6	436.6	(120.1)	128.3
United States	277.0	210.8	(96.4)	173.5	192.1	202.2	(86.6)	76.8
Canada	52.3	26.4	(28.3)	16.6	38.0	24.1	(20.2)	10.2
EC-12	154.9	139.1	(17.9)	27.2	162.0	138.7	(24.9)	25.7
Other Western Europe	14.6	15.5	0.3	3.6	16.0	15.4	(0.1)	4.0
South Africa	10.9	9.7	(0.7)	1.6	11.8	10.1	(1.7)	1.6
Japan	10.9	39.0	27.8	5.9	10.8	39.1	28.3	6.0
Australia	19.8	6.3	(14.0)	4.0	21.9	7.0	(14.9)	3.9
Centrally planned countries	626.9	678.2	49.3	114.6	627.5	671.9	36.4	106.7
Eastern Europe	104.7	111.5	5.2	7.7	110.5	113.1	1.7	6.8
USSR	198.7	223.9	51.1	41.3	197.8	219.9	23.1	42.3
China	305.2	323.4	11.9	65.6	300.9	319.3	10.3	57.6
Developing countries	433.7	527.9	79.8	55.8	464.9	547.6	83.7	53.5
Mexico	18.6	23.2	4.3	1.0	18.3	24.1	5.8	1.0
Central America	4.5	9.6	5.0	0.7	4.8	9.7	5.0	0.8
Brazil	38.3	39.4	2.2	5.6	35.2	39.0	2.9	4.7
Argentina	23.3	12.2	(11.4)	0.6	23.4	12.5	(10.8)	0.6
Paraguay	0.9	0.9	0.1	0.1	0.9	1.0	0.1	0.1
Other South America	11.7	18.0	6.4	2.1	12.2	18.5	6.5	2.3
North Africa	17.4	35.9	18.6	2.5	17.7	36.6	18.6	2.2
Middle East	39.4	65.0	22.0	10.8	43.4	65.6	21.6	10.3
Sub-Saharan Africa	41.2	51.1	7.2	3.5	45.1	53.3	7.4	2.7
India	121.6	131.1	0.2	16.1	137.8	141.2	3.4	16.1
Other Asia	134.1	159.8	22.8	12.5	143.5	164.6	21.2	12.6
World total	1,600.9	1,653.0	--	402.9	1,545.0	1,656.1	--	288.4

Source: USDA/ERS, as of August 1988.

[1] Regional totals include some high-income developing countries not treated in this report. [2] Region and world totals may not add due to rounding. [3] A negative figure indicates net exports. [4] Forecast.

Wheat: World production, consumption, net imports, and ending stocks [1]

Region/country[2]	Production	Consumption	Net imports[3]	Ending stocks	Production	Consumption	Net imports[3]	Ending stocks
	1985/86				1986/87			
	Million tons							
Developed countries	184.7	107.9	(65.7)	86.8	183.9	111.0	(73.2)	86.6
United States	66.0	28.5	(24.5)	51.8	56.9	32.5	(26.8)	49.6
Canada	24.3	5.6	(17.7)	8.6	31.4	6.2	(20.8)	13.0
EC-12	71.6	59.3	(12.4)	16.3	71.9	57.6	(14.6)	16.0
Other Western Europe	4.1	3.5	(0.6)	2.1	4.3	3.6	(0.8)	2.0
South Africa	1.7	2.2	0.2	0.4	2.3	2.3	(0.0)	0.5
Japan	0.9	6.2	5.3	1.6	0.9	6.1	5.4	1.8
Australia	16.2	2.7	(16.0)	6.0	16.2	2.7	(15.7)	3.9
Centrally planned countries	202.3	232.6	23.8	50.8	222.7	246.2	27.2	54.5
Eastern Europe	37.1	38.2	0.8	0.9	39.1	39.4	2.0	2.6
USSR	78.1	91.6	15.2	19.2	92.3	102.8	15.5	24.2
China	85.8	100.4	6.6	30.7	90.0	101.5	8.5	27.7
Developing countries	112.8	153.9	41.9	30.6	123.0	161.6	46.0	34.8
Mexico	4.4	4.6	0.1	0.4	4.5	5.0	0.5	0.4
Central America	0.1	2.8	2.8	0.2	0.0	2.9	2.9	0.3
Brazil	4.3	6.8	2.2	0.4	5.6	8.0	2.8	0.8
Argentina	8.5	4.4	(4.3)	0.3	8.9	4.4	(4.4)	0.3
Paraguay	0.2	0.2	0.1	0.0	0.2	0.3	0.1	0.1
Other South America	2.1	5.4	3.4	0.7	2.4	5.9	3.7	1.0
North Africa	7.1	19.2	12.1	0.9	7.1	20.1	13.0	0.9
Middle East	23.9	32.8	8.2	7.7	26.6	33.7	8.2	8.7
Sub-Saharan Africa	1.5	6.6	5.2	0.5	1.5	6.4	5.0	0.6
India	44.1	43.7	(0.4)	15.0	47.1	45.6	(0.5)	16.0
Other Asia	17.7	29.3	12.3	4.4	20.0	31.4	12.7	5.7
World total	499.8	494.4	--	168.2	529.7	518.8	--	175.9
	1987/88[4]				1988/89[4]			
	Million tons							
Developed countries	175.6	109.8	(87.7)	64.8	163.6	109.5	(77.3)	41.6
United States	57.3	29.3	(43.1)	34.5	49.6	30.1	(37.7)	16.3
Canada	26.3	6.6	(23.5)	9.2	18.0	5.1	(16.0)	6.1
EC-12	71.6	58.7	(14.7)	14.2	74.8	59.3	(17.3)	12.4
Other Western Europe	4.0	3.8	(0.6)	1.6	3.8	3.5	(0.3)	1.5
South Africa	3.1	2.6	(0.3)	0.7	3.0	2.6	(0.4)	0.6
Japan	0.9	6.1	5.0	1.5	1.0	6.0	5.1	1.6
Australia	12.4	2.7	(10.5)	3.1	13.5	2.8	(10.7)	3.1
Centrally planned countries	212.0	249.8	38.8	55.5	222.8	252.3	27.1	53.1
Eastern Europe	39.8	41.3	1.7	2.8	42.6	42.5	(0.5)	2.4
USSR	83.3	100.5	21.0	28.0	91.0	103.0	13.0	29.0
China	87.7	105.7	15.0	24.7	88.0	104.5	13.5	21.7
Developing countries	117.8	168.6	48.9	27.7	118.8	169.2	50.2	25.0
Mexico	3.7	4.4	0.6	0.3	3.2	4.4	1.2	0.3
Central America	0.0	3.0	3.0	0.3	0.0	3.0	3.0	0.3
Brazil	6.2	7.1	1.7	1.5	5.7	7.0	1.3	1.5
Argentina	10.0	4.5	(5.6)	0.2	8.5	4.5	(4.0)	0.2
Paraguay	0.3	0.3	0.1	0.1	0.3	0.3	0.1	0.1
Other South America	2.2	6.0	3.7	0.9	2.1	6.1	4.0	0.9
North Africa	7.4	20.9	14.4	1.9	7.0	21.0	13.6	1.6
Middle East	23.9	34.3	8.8	7.2	27.7	34.9	7.1	7.0
Sub-Saharan Africa	1.4	6.2	4.7	0.5	1.5	6.1	4.6	0.5
India	45.6	51.1	(9.5)	10.0	45.0	50.5	3.0	7.5
Other Asia	18.0	32.6	13.6	4.7	18.7	33.2	14.7	4.9
World total	505.5	528.2	--	148.0	505.1	531.0	--	119.7

Source: USDA/ERS, as of August 1988.

1/ Regional totals include some high-income developing countries not treated in this report. 2/ Region and world totals may not add due to rounding. 3/ A negative figure indicates net exports. 4/ Forecast.

Rice: World production, consumption, net imports, and ending stocks [1]

Region/country[2]	Production	Consumption	Net imports[3]	Ending stocks	Production	Consumption	Net imports[3]	Ending stocks
	1985/86				1986/87			
	Million tons							
Developed countries	16.8	14.2	(1.5)	4.4	16.5	14.3	(2.2)	4.5
United States	4.3	2.1	(1.8)	2.5	4.2	2.5	(2.6)	1.6
Canada	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.0
EC-12	1.3	1.5	0.2	0.3	1.3	1.5	0.2	0.1
Other Western Europe	0.0	0.1	0.1	0.0	0.0	0.2	0.2	0.0
South Africa	0.0	0.2	0.2	0.0	0.0	0.2	0.2	0.0
Japan	10.6	10.2	0.0	1.1	10.6	9.7	0.0	2.0
Australia	0.5	0.1	(0.4)	0.5	0.4	0.1	(0.4)	0.4
Centrally planned countries	133.7	138.8	0.0	27.5	136.8	139.7	(0.1)	24.6
Eastern Europe	0.2	0.5	0.3	0.0	0.2	0.5	0.3	0.1
USSR	1.7	1.7	0.1	0.0	1.7	1.8	0.1	0.0
China	118.0	122.3	(0.7)	27.5	120.6	123.0	(0.6)	24.5
Developing countries	169.5	167.0	1.5	22.2	165.1	166.5	2.3	20.9
Mexico	0.5	0.4	0.0	0.2	0.4	0.4	0.0	0.1
Central America	1.2	1.6	0.4	0.2	1.1	1.6	0.5	0.2
Brazil	7.0	7.6	1.3	2.0	7.1	7.2	0.1	1.9
Argentina	0.3	0.1	(0.2)	0.0	0.2	0.1	(0.1)	0.0
Paraguay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other South America	3.0	2.7	(0.4)	0.7	2.9	2.9	(0.2)	0.5
North Africa	1.6	1.6	0.1	0.0	1.8	1.9	0.0	0.0
Middle East	1.2	3.5	2.2	0.2	1.2	3.6	2.8	0.5
Sub-Saharan Africa	4.3	6.8	2.5	0.4	4.4	6.8	2.5	0.5
India	63.8	62.1	(0.2)	9.0	60.4	60.1	(0.3)	9.0
Other Asia	100.5	95.3	(4.5)	9.6	99.8	96.2	(4.9)	8.2
World total	320.0	320.0	--	54.1	318.3	320.4	--	49.9
	1987/88[4]				1988/89[4]			
	Million tons							
Developed countries	15.6	14.2	(2.0)	3.8	16.2	14.2	(2.1)	3.8
United States	4.1	2.6	(2.1)	1.0	4.8	2.7	(2.3)	0.9
Canada	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.0
EC-12	1.3	1.5	0.1	0.3	1.3	1.5	0.2	0.2
Other Western Europe	0.0	0.2	0.2	0.0	0.0	0.2	0.2	0.0
South Africa	0.0	0.2	0.2	0.0	0.0	0.2	0.2	0.0
Japan	9.7	9.6	0.0	2.1	9.5	9.4	0.0	2.2
Australia	0.6	0.1	(0.4)	0.5	0.6	0.1	(0.5)	0.4
Centrally planned countries	137.5	139.6	(0.1)	22.4	136.9	139.4	0.0	19.9
Eastern Europe	0.2	0.5	0.3	0.0	0.2	0.5	0.3	0.1
USSR	1.7	1.8	0.1	0.0	1.8	1.9	0.1	0.0
China	121.8	123.4	(0.5)	22.4	121.1	123.0	(0.6)	19.9
Developing countries	154.4	162.4	2.0	15.5	168.9	169.2	2.1	17.2
Mexico	0.4	0.4	0.0	0.0	0.3	0.4	0.2	0.0
Central America	1.1	1.7	0.5	0.1	1.2	1.7	0.6	0.2
Brazil	7.5	7.3	(0.2)	1.9	6.9	7.5	(0.1)	1.2
Argentina	0.2	0.1	(0.1)	0.0	0.3	0.1	(0.2)	0.0
Paraguay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other South America	3.2	3.1	(0.2)	0.5	3.2	3.0	(0.1)	0.6
North Africa	1.6	1.6	0.0	0.0	1.4	1.5	0.1	0.0
Middle East	1.2	3.6	2.3	0.3	1.3	3.7	2.5	0.4
Sub-Saharan Africa	4.4	6.7	2.4	0.6	4.5	6.9	2.3	0.6
India	53.0	56.7	0.4	5.8	63.0	60.8	0.2	8.3
Other Asia	95.5	95.0	(2.6)	6.1	100.7	97.6	(3.4)	5.9
World total	307.5	316.2	-	41.7	322.0	322.8	--	40.9

Source: USDA/ERS, as of August 1988.

1/ Regional totals include some high income developing countries not treated in this report. 2/ Region and world totals may not add due to rounding. 3/ A negative figure indicates net exports. 4/ Forecast.

Coarse Grain: World production, consumption, net imports, and ending stocks [1]

Region/country[2]	Production	Consumption	Net imports[3]	Ending stocks	Production	Consumption	Net imports[3]	Ending stocks
	1985/86				1986/87			
	Million tons							
Developed countries	417.3	314.7	(28.9)	153.8	386.7	323.5	(40.0)	177.0
United States	274.9	170.3	(35.6)	126.9	252.8	181.6	(45.5)	152.6
Canada	23.9	18.4	(4.1)	5.9	25.5	19.0	(6.5)	5.9
EC-12	88.3	82.5	(1.4)	14.9	81.3	79.2	(4.1)	12.9
Other Western Europe	13.0	12.4	(1.3)	2.3	12.3	11.9	(0.4)	2.2
South Africa	8.9	6.5	(3.0)	1.3	7.9	6.7	(1.8)	0.7
Japan	0.4	21.5	21.5	2.3	0.4	21.7	21.5	2.4
Australia	7.9	3.0	(5.0)	0.2	6.6	3.4	(3.1)	0.2
Centrally planned countries	250.8	272.8	10.9	39.0	271.4	282.3	9.5	37.7
Eastern Europe	65.5	69.6	3.6	5.4	73.9	73.0	0.6	6.8
USSR	100.0	113.4	13.7	9.2	105.9	114.9	11.0	11.2
China	82.3	86.9	(6.4)	24.4	88.4	91.1	(2.0)	19.7
Developing countries	173.7	192.0	18.0	15.0	176.0	202.1	30.4	18.0
Mexico	14.7	18.3	2.4	0.7	14.9	19.0	4.2	0.8
Central America	3.4	4.5	1.1	0.4	3.2	4.7	1.4	0.2
Brazil	21.7	23.8	2.2	1.2	27.3	27.2	0.6	1.9
Argentina	17.4	8.1	(9.4)	0.7	13.0	8.3	(4.9)	0.6
Paraguay	0.4	0.4	0.0	0.0	0.5	0.5	0.0	0.0
Other South America	6.1	7.7	1.5	0.6	6.2	7.9	1.6	0.6
North Africa	9.3	13.1	4.0	0.7	9.4	12.9	4.2	1.5
Middle East	13.6	25.3	12.0	2.9	14.2	26.2	14.3	5.2
Sub-Saharan Africa	41.1	38.3	0.0	5.4	40.7	40.4	(0.5)	5.1
India	25.8	26.6	(0.0)	0.6	26.6	26.7	(0.0)	0.5
Other Asia	22.3	28.2	6.1	1.7	22.2	30.7	8.3	1.6
World total	841.8	779.5	--	207.8	834.1	807.8	--	232.6
	1987/88[4]				1988/89[4]			
	Million tons							
Developed countries	349.2	322.9	(39.5)	163.9	272.8	313.0	(40.7)	82.9
United States	215.7	179.0	(51.2)	138.1	137.7	169.5	(46.7)	59.6
Canada	26.0	19.6	(4.9)	7.4	20.0	18.9	(4.3)	4.1
EC-12	82.0	79.0	(3.2)	12.8	85.9	77.8	(7.8)	13.1
Other Western Europe	10.6	11.5	0.7	2.0	12.2	11.8	0.0	2.4
South Africa	7.8	7.0	(0.6)	0.9	8.9	7.3	(1.5)	1.0
Japan	0.4	23.3	22.8	2.3	0.4	23.6	23.2	2.2
Australia	6.8	3.5	(3.1)	0.4	7.8	4.1	(3.7)	0.4
Centrally planned countries	277.3	288.8	10.6	36.7	267.8	280.2	9.3	33.7
Eastern Europe	64.6	69.8	3.2	4.9	67.8	70.1	1.9	4.4
USSR	113.7	121.6	10.0	13.3	105.0	115.0	10.0	13.3
China	95.8	94.2	(2.6)	18.6	91.8	91.8	(2.6)	16.0
Developing countries	161.5	196.9	28.9	12.6	177.3	209.2	31.4	11.3
Mexico	14.5	18.4	3.7	0.6	14.9	19.3	4.4	0.6
Central America	3.4	4.9	1.6	0.2	3.6	5.0	1.5	0.3
Brazil	24.7	25.0	0.6	2.2	22.6	24.5	1.7	2.0
Argentina	13.0	7.5	(5.7)	0.4	14.6	7.9	(6.7)	0.4
Paraguay	0.6	0.6	0.0	0.0	0.6	0.6	0.0	0.0
Other South America	6.3	8.9	2.8	0.7	6.9	9.4	2.6	0.8
North Africa	8.4	13.4	4.1	0.6	9.3	14.2	4.9	0.6
Middle East	14.3	27.1	10.9	3.3	14.5	27.0	12.0	2.8
Sub-Saharan Africa	35.3	38.2	0.1	2.4	39.0	40.3	0.5	1.6
India	23.0	23.4	0.3	0.4	29.8	29.9	0.1	0.4
Other Asia	20.5	32.2	11.8	1.7	24.1	33.8	9.9	1.8
World total	788.0	808.6	--	213.2	717.8	802.4	--	127.9

Source: USDA/ERS, as of August 1988.

[1] Regional totals include some high-income developing countries not treated in this report. [2] Region and world totals may not add due to rounding. [3] A negative figure indicates net exports. [4] Forecast.

Total Vegetable and Marine Oils: World production, consumption, net imports, and ending stocks [1]

Region/country[2]	Production	Consumption	Net imports[3]	Ending stocks	Production	Consumption	Net imports[3]	Ending stocks
	1985/86				1986/87			
	Thousand tons							
Developed countries	16,429	17,336	1,463	2,662	17,282	18,030	918	2,832
United States	6,383	6,098	(5)	809	6,718	6,478	120	1,169
Canada	691	573	(95)	51	823	583	(237)	54
EC-12	6,804	7,551	997	1,609	6,973	7,718	541	1,405
Other Western Europe	463	660	204	119	482	695	196	102
South Africa	153	348	169	0	287	350	63	0
Japan	1,750	1,776	48	74	1,849	1,940	119	102
Australia	185	310	125	0	150	245	95	0
Centrally planned countries	8,571	9,408	904	168	8,778	10,124	1,407	229
Eastern Europe	1,721	1,799	145	168	1,980	1,829	(90)	229
USSR	2,946	3,469	523	0	2,913	3,714	801	0
China	3,904	4,140	236	0	3,885	4,581	696	0
Developing countries	24,293	21,076	(2,584)	3,139	24,217	21,421	(3,097)	2,838
Mexico	667	862	220	94	716	860	91	41
Central America	213	439	252	42	225	492	256	31
Brazil	2,599	2,248	(368)	334	2,794	1,959	(1,031)	138
Argentina	2,331	452	(1,854)	165	2,058	486	(1,642)	95
Paraguay	54	30	(24)	0	61	35	(26)	0
Other South America	1,045	1,267	267	278	856	1,293	373	214
North Africa	328	1,359	1,031	106	357	1,362	1,015	116
Middle East	716	2,055	1,302	86	919	2,232	1,341	114
Subsaharan Africa	2,339	2,686	350	7	2,536	2,634	99	8
India	3,023	4,286	1,213	300	3,058	4,474	1,526	410
Other Asia	10,785	5,379	(4,802)	1,727	10,421	5,563	(4,914)	1,671
World total	49,293	47,820	---	5,969	50,277	49,575	---	5,899
	1987/88[4]				1988/89[4]			
	Thousand tons							
Developed countries	18,318	18,329	(36)	2,785	17,239	18,682	1,190	2,532
United States	7,011	6,597	(481)	1,102	6,507	6,711	78	976
Canada	847	645	(207)	49	868	661	(217)	39
EC-12	7,683	7,796	136	1,428	7,040	7,967	810	1,311
Other Western Europe	488	689	222	123	522	702	187	130
South Africa	331	355	24	0	336	361	25	0
Japan	1,818	1,970	133	83	1,818	1,990	165	76
Australia	140	252	112	0	148	265	117	0
Centrally planned countries	9,303	10,499	1,174	207	9,391	10,839	1,429	188
Eastern Europe	1,847	1,779	(90)	207	1,931	1,800	(150)	188
USSR	3,195	3,743	548	0	3,284	3,912	628	0
China	4,261	4,977	716	0	4,176	5,127	951	0
Developing countries	24,770	22,325	(2,249)	3,034	26,507	23,107	(3,344)	3,090
Mexico	652	837	195	51	665	850	170	36
Central America	236	486	247	28	249	500	251	28
Brazil	2,833	1,941	(730)	300	3,009	2,067	(950)	292
Argentina	2,544	504	(1,976)	159	2,787	526	(2,202)	218
Paraguay	82	39	(43)	0	93	42	(51)	0
Other South America	1,012	1,369	339	196	1,067	1,454	372	181
North Africa	314	1,543	1,191	78	344	1,574	1,216	64
Middle East	840	2,284	1,423	93	994	2,360	1,391	118
Subsaharan Africa	2,612	2,729	117	8	2,601	2,753	159	15
India	2,745	4,645	1,880	390	3,233	4,873	1,600	350
Other Asia	10,685	5,916	(4,705)	1,731	11,232	6,073	(5,102)	1,788
World total	52,391	51,153	---	6,026	53,137	52,628	--	5,810

Source: USDA/ERS, as of July 1988. There was insufficient information by the report release date to allow us to update this table.

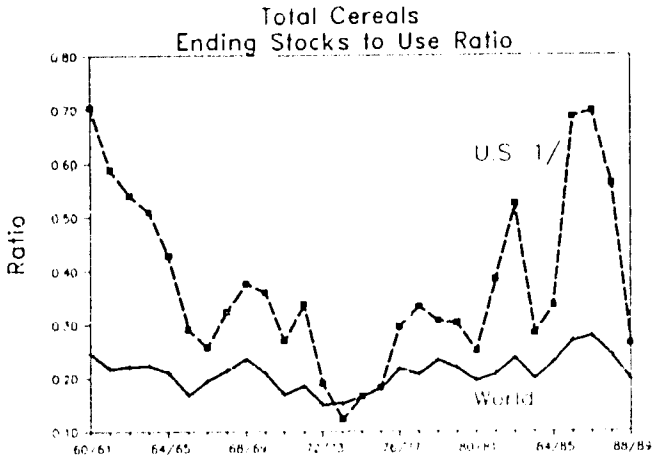
[1] Regional totals include some high-income developing countries not treated in this report. [2] Region and world totals may not add due to rounding. [3] A negative figure indicates net exports. [4] Forecast.

Soybean Oil: World production, consumption, net imports, and ending stocks [1]

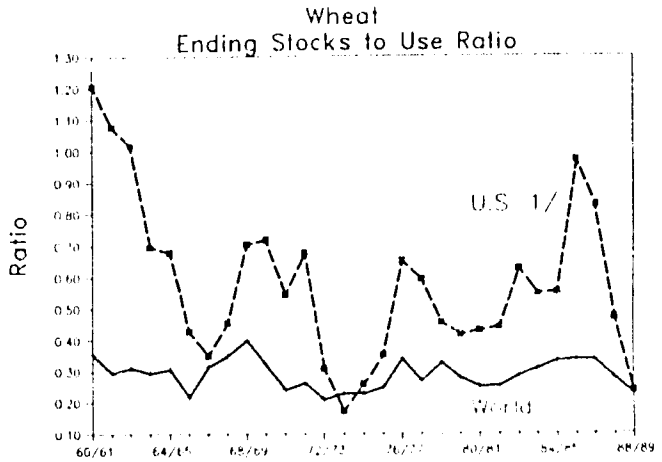
Region/country[2]	Production	Consumption	Net imports[3]	Ending stocks	Production	Consumption	Net imports[3]	Ending stocks
	1985/86				1986/87			
	Thousand tons							
Developed countries	8,497	7,052	(1,304)	678	9,146	7,482	(1,320)	1,022
United States	5,269	4,560	(566)	430	5,798	4,915	(531)	782
Canada	156	160	3	8	158	172	9	3
EC-12	2,251	1,376	(880)	214	2,362	1,448	(915)	213
Other Western Europe	90	171	78	14	91	167	77	15
South Africa	4	37	33	0	3	15	12	0
Japan	710	701	(2)	12	709	710	(2)	9
Australia	17	37	20	0	25	45	20	0
Centrally planned countries	971	1,331	374	44	1,058	1,824	785	63
Eastern Europe	205	330	139	44	243	359	135	63
USSR	419	529	110	0	330	533	203	0
China	347	472	125	0	485	932	447	0
Developing countries	4,319	5,144	895	834	4,839	5,293	284	664
Mexico	310	375	50	24	305	335	25	19
Central America	25	142	138	26	34	167	123	16
Brazil	2,319	2,074	(255)	260	2,600	1,814	(921)	125
Argentina	729	61	(650)	58	852	92	(800)	18
Paraguay	13	13	0	0	29	19	(10)	0
Other South America	89	358	256	55	131	396	248	38
North Africa	38	156	120	20	49	249	195	15
Middle East	115	592	474	13	119	715	597	14
Subsaharan Africa	24	150	126	0	23	128	106	1
India	160	416	256	160	132	435	363	220
Other Asia	497	756	381	218	565	944	359	198
World total	13,787	13,527	-	1,556	15,043	14,599	-	1,749
	1987/88[4]				1988/89[4]			
	Thousand tons							
Developed countries	9,063	7,541	(1,547)	997	8,300	7,459	(950)	888
United States	5,819	4,944	(884)	773	5,364	4,944	(535)	658
Canada	170	175	5	3	175	180	5	3
EC-12	2,229	1,465	(790)	187	1,917	1,374	(540)	190
Other Western Europe	102	169	80	28	95	172	81	32
South Africa	4	14	10	0	4	14	10	0
Japan	725	725	(3)	6	730	730	(1)	5
Australia	14	34	20	0	15	35	20	0
Centrally planned countries	1,116	1,581	444	42	1,110	1,599	480	33
Eastern Europe	234	349	94	42	248	362	105	33
USSR	387	487	100	0	347	472	125	0
China	495	745	250	0	515	765	250	0
Developing countries	5,275	5,620	605	924	5,616	5,830	200	910
Mexico	310	320	10	19	302	337	30	14
Central America	35	159	124	16	38	165	127	16
Brazil	2,600	1,800	(630)	295	2,765	1,920	(850)	290
Argentina	1,200	85	(1,080)	53	1,290	85	(1,150)	108
Paraguay	24	18	(6)	0	32	20	(12)	0
Other South America	154	409	253	36	159	421	261	35
North Africa	50	265	220	20	56	288	222	10
Middle East	120	695	576	15	128	717	590	16
Subsaharan Africa	27	124	97	1	30	138	108	1
India	127	557	400	190	153	523	350	170
Other Asia	628	1,189	642	279	663	1,217	525	250
World total	15,454	14,742	-	1,963	15,026	14,888	-	1,831

Source: USDA/ERS, as of July 1988. There was insufficient information by the report release date to allow us to update this table.

1/ Regional totals include some high income developing countries not treated in this report. 2/ Region and world totals may not add due to rounding. 3/ A negative figure indicates net exports. 4/ Forecast.



1/ U.S. ratio of stocks to domestic use plus exports.



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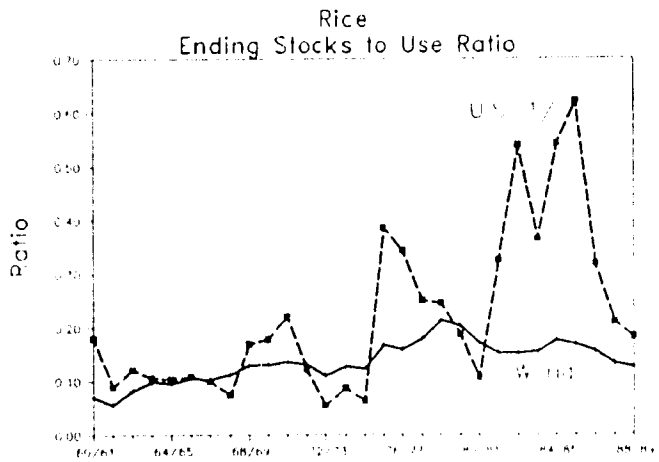

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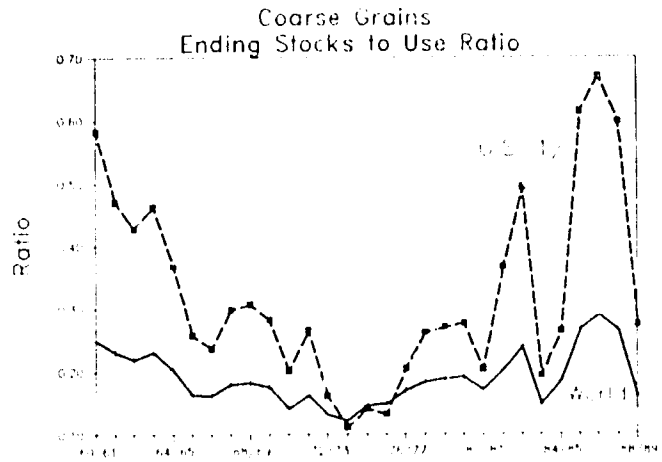
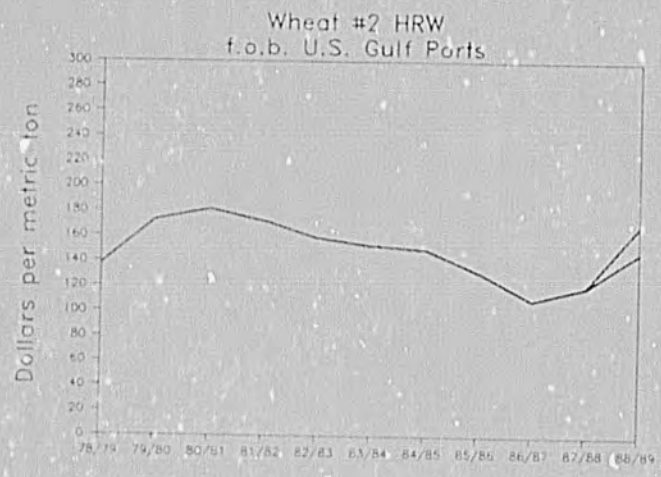
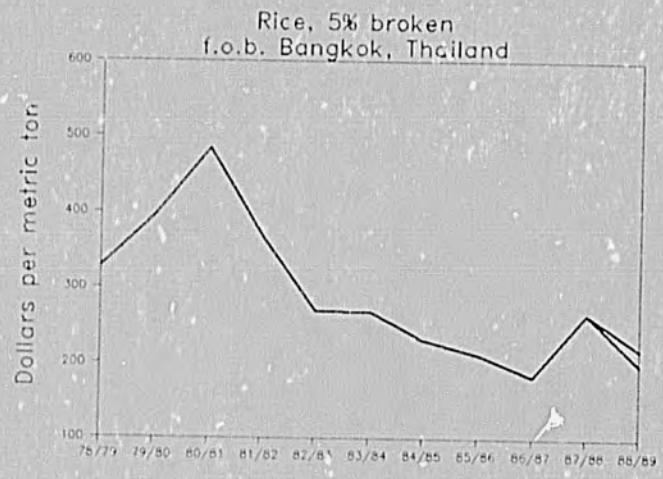


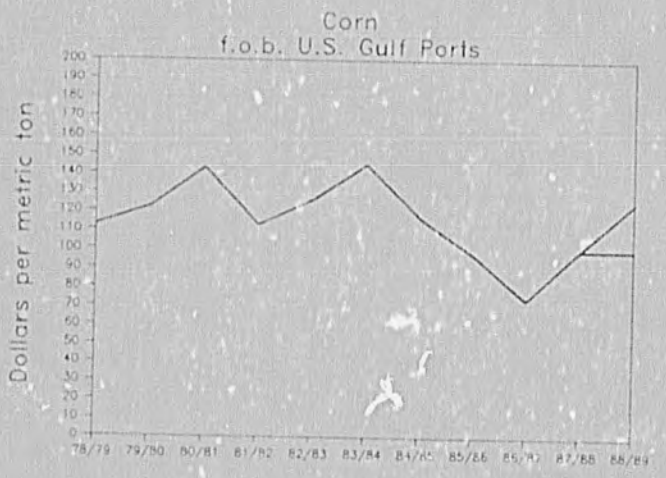
1/ U.S. ratio of stocks to domestic use plus exports.

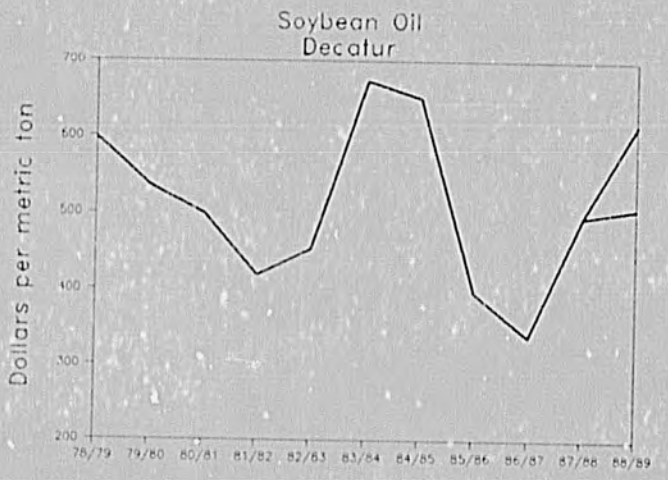
Selected world cereal and oilseed prices

Product	Marketing year	1983/84	1984/85	1985/86	1986/87	1987/88 Forecast	1988/89 Forecast
	Dollars per ton						
Wheat, #2, HRW, f.o.b. U.S. Gulf ports	June/May	153	150	132	110	120	148-170
Rice, 5% broken, f.o.b. Bangkok Thailand	Aug/July	269	232	213	184	267	200-220
Corn, f.o.b. U.S. Gulf ports	September/August	145	117	98	74	100	100-125
Soybean oil, Decatur	October/September	674	651	397	339	496	507-617









Indices of world and regional food production

Region/country	Total food production						
	1981	1982	1983	1984	1985	1986	1987
	(1979-81 = 100)						
Developed market economies	103	104	97	106	108	106	104
United States	105	105	88	102	108	102	98
Canada	108	117	109	110	114	125	120
Western Europe	100	105	103	110	107	109	108
South Africa	109	96	80	89	95	97	99
Japan	99	102	101	107	108	109	110
Australia	100	89	111	105	103	105	104
Centrally planned economies	100	107	113	118	119	128	128
USSR	96	105	110	109	111	120	118
China	102	111	118	127	129	137	141
Developing market economies	104	106	109	111	116	118	116
Mexico	106	104	110	110	110	113	114
Brazil	104	112	110	114	124	116	128
Argentina	103	105	100	107	106	109	104
Latin America	104	107	106	109	113	112	116
Africa	102	105	103	104	115	121	117
Near East	104	109	107	106	114	118	117
India	106	104	119	120	124	124	113
Far East	105	105	114	117	120	122	115
World	102	106	106	111	114	116	115

Region/country	Per capita food production						
	1981	1982	1983	1984	1985	1986	1987
	(1979-81 = 100)						
Developed market economies	102	103	95	103	104	102	100
United States	104	103	85	98	103	96	92
Canada	107	114	105	105	108	118	112
Western Europe	99	104	102	108	106	107	106
South Africa	107	91	74	80	84	83	83
Japan	98	100	99	104	104	105	105
Australia	98	87	107	100	96	97	95
Centrally planned economies	99	105	109	112	113	119	118
USSR	95	103	107	106	106	114	111
China	101	108	114	120	121	128	129
Developing market economies	102	101	102	101	104	103	99
Mexico	103	98	102	99	97	97	96
Brazil	102	107	103	105	111	102	110
Argentina	102	102	96	100	98	99	94
Latin America	102	102	99	100	101	98	99
Africa	99	99	94	92	99	101	95
Near East	102	103	99	96	100	101	97
India	104	100	112	111	112	111	99
Far East	103	101	107	107	108	108	100
World	101	102	100	104	105	105	102

Note: Production reported on a calendar year basis by the Food and Agricultural Organization of the United Nations.

FOOD AID AVAILABILITIES AND OUTLOOK

The Food and Agriculture Organization (FAO) estimates that food aid in the form of cereal shipments for the July 1987-June 1988 trade year were about 10.5 million tons, down from the 1986/87 levels of about 12.2 million tons. Of the 1987/88 total, the United States is estimated to have provided 65 percent, followed distantly by the European Community (EC) with 15 percent, Canada with 10 percent, and Japan and Australia, with about 3 percent each.

Should this estimate be true, 1987/88 will be the fourth consecutive year in which the 1974 World Food Conference goal of 10-million tons of food aid was exceeded. However, given no significant increases in the major donors' 1988/89 food aid budgets and sharply higher commodity prices, the volume of food aid will fall, and achievement of the 10-million-ton goal is doubtful in 1988/89.

Cereal aid shipments are comprised mostly of wheat and flour. In 1986/87, these commodities comprised about 80 percent of the volume of cereal shipments. Egypt, Bangladesh, and Sudan, the principal recipients of world wheat and flour aid, together received more than 40 percent of the total. Rice accounted for a little less than 10 percent of total cereal aid. The top destinations, Bangladesh, Guinea, and the Dominican Republic, together received nearly 30 percent of world rice aid. Coarse grains and other products comprised the remainder of world cereal aid. India, Tunisia, and Ethiopia were chief recipients, accounting for slightly more than 35 percent of such aid shipments.

As of June 1988, pledges of cereal aid to Sub-Saharan Africa for 1987/88 or 1988 amounted to nearly 4.7 million tons. Local purchases in the recipient countries and triangular transactions (in which a donor obtains food aid commodities for the recipient from a third country) comprised 10 percent of the total.

Total food aid from all OECD countries fell slightly less than 5 percent to $2.9 billion in 1986, the last year for which data are available. The grant element of that aid rose from a little more than 70 percent in 1985 to slightly more than 75 percent in 1986. About 30 percent of the aid was distributed multilaterally, chiefly through the World Food Program (WFP).

Contributions to the International Emergency Food Reserve, administered by the WFP, exceeded the 500,000-ton goal in 1987. However, cereal pledges as of May of almost 215,000 tons are about 100,000 tons below the level a year ago.

United States

The P.L. 480 program of fiscal 1988 (October 1987-September 1988) reflects an increase of close to 5 percent from fiscal 1987 levels to nearly $1.5 billion. Of this, about $810 million is provided through the Title I/III program, and about $670 million through Title II donations. As of May, about two-thirds of the volume was programmed as wheat and wheat products, while about 5 percent each was programmed as feed grains and vegetable oils. Rice, dairy products, pulses, and other products comprised the remainder. Africa accounted for nearly half of the regional allocations, while Asia accounted for about one-third; about one-fifth were to Latin America.

A significant proportion of U.S. food aid is comprised of donations from surplus Commodity Credit Corporation stocks under authority of Section 416(b) of the Agricultural Act of 1949, as amended. As of July 1988, Section 416 transactions involved more than 660,000 tons of wheat, 560,000 tons of corn, and nearly 190,000 tons of sorghum for a total of about 1.4 million tons.

The United States has consistently exceeded its pledge to the Food Aid Convention (FAC) whose members, in aggregate, pledge to provide a minimum of about 7.5 million tons of cereal aid annually. In trade year 1987/88, the United States is again expected to have exceeded its 4.47 million-ton pledge.

The fiscal 1989 P.L. 480 program has yet to be decided. The Administration has requested a program level of about $1.4 billion ($812 million under Title I/III agreements and $595 million under Title II). If approved by Congress, this would amount to a decrease in value of 5 percent. However, since the volume of commodities provided depends both on budget appropriations and commodity prices, the fall in volume may be greater. The Food Security Act of 1985 set a minimum volume level of 1.9 million tons under Title II, but no minimum volume levels are set for Title I/III. The volume of commodities provided under Section 416 will depend on the size of CCC inventories and approved program requests.

Australia

The FAO estimates that Australian cereal aid shipments in 1986/87 were almost 370,000 tons, exceeding its FAC pledge of 300,000 tons. Nearly 80 percent of the shipments were wheat or flour, with about 45 percent going to Bangladesh alone, followed by Egypt and Ethiopia. Rice, the second largest commodity, was shipped mostly to a variety of African countries. African countries, chiefly Mozambique, received all of the corn shipments. Close to 40 percent of the commodity tonnage was channelled through the WFP.

The June 1987-July 1988 food aid program of A$88 million (about $62 million) was more than 10 percent above the 1986-87 level of A$82.8 million (about $55 million) when compared in terms of U.S. dollars. Donations through the WFP, through which about half of the aid was to be distributed, showed a significant increase from the 1986-87 level.

As of June 1988, Australia pledged to provide slightly more than 90,000 tons of cereals to Sub-Saharan countries in 1987/88 or 1988. Mozambique and Ethiopia account for the bulk of this pledge.

Canada

The FAO estimates that Canadian cereal aid shipments amounted to about 1.2 million tons in 1986/87. Wheat and flour accounted for essentially all the 1986/87 shipments; less than 1 percent were corn. Asian countries received more than three-quarters of the aid shipments; Africa received about 20 percent and Latin American countries the remainder. China and Bangladesh each received about one-third of all aid shipments. Close to half was distributed through multilateral channels.

As of June, Canada pledged more than 235,000 tons of cereals to Sub-Saharan countries in 1987/88 or 1988. Ethiopia, Mozambique, Zambia, and Sudan are chief recipients.

Canada consistently exceeds its FAC pledge of 600,000 tons.

European Community

The EC shipped an estimated 1.8 million tons of cereal aid in 1986/87, of which wheat and flour comprised about 80 percent. Egypt, Bangladesh, and Ethiopia accounted for 45 percent of total EC wheat and flour shipments. Somalia and Mozambique were top coarse grain recipients, and a relatively large number of small recipients received rice. Thirty percent of the total volume of cereal shipments were through multilateral channels

The EC, excluding member contributions may be the only major donor whose aid shipments do not sustain a large drop in 1988/89. Commodity allocations for 1988 are mostly unchanged from 1987 levels. Cereal availabilities are 1.16 million tons, and milk powder's maximum availability is 94,100 tons, both unchanged from 1987. Butteroil availabilities (25,000 tons) sustained a slight decrease, while sugar (11,000 tons) and vegetable oils (34,000 tons) remain at their high 1987 levels. Other products amount to about 290,000 tons (in cereal equivalent terms).

As of June, the EC pledged more than 1.3 million tons of cereals to Sub-Saharan countries for the 1987/88 or 1988 years. Ethiopia and Mozambique together account for nearly 60 percent of the total. The EC's minimum pledge under the FAC is 1.67 million tons of cereals measured in terms of wheat equivalent. This minimum has been exceeded since 1983/84.

Japan

Japan provided an estimated 434,000 tons of cereals in 1986/87, well in excess of its FAC pledge of 300,000 tons. Rice accounted for more than half of the actual tonnage of shipments, while wheat and flour comprised about 40 percent. A small amount of corn was also purchased in Zimbabwe for distribution in Zambia.

Japan is unique among major donors in that all commodities provided as food aid are purchased in other countries, and all of it is distributed bilaterally. All the wheat and flour (valued at more than $18 million) was purchased in the United States, while rice (valued at more than $40 million) was purchased from Burma, Pakistan, and Thailand. Sudan and Bangladesh together accounted for about two-thirds of wheat and flour shipments. Bangladesh and Mozambique, the top rice destinations, accounted for more than 30 percent of Japanese rice donations.

Volume of food aid contributions, principal commodities

Commodity/country[2]	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	Estimated shipments 1/ 1987/88	Estimated shipments 1/ 1988/89
	1,000 metric tons (grain equivalent 3/)								
Grains 4/	8,942	9,140	9,238	9,849	12,494	10,805	12,249	10,495	8,730
Argentina	67	20	33	30	51	44	24	35	35
Australia	370	485	349	460	466	345	368	300	300
Canada	600	600	843	817	543	1,216	1,240	1,000	800
European Community 5/	1,291	1,602	1,596	1,917	2,504	1,562	1,764	1,600	1,600
Finland	29	9	28	40	20	5	41	20	25
Japan	914	507	517	445	280	374	434	350	350
Norway	10	36	36	17	45	16	46	30	30
Sweden	94	119	87	83	88	69	74	70	40
Switzerland	16	22	29	30	39	22	53	30	27
United States	5,212	5,341	5,375	5,655	7,536	6,675	7,861	6,800	5,300
Others	309	399	345	355	522	477	344	260	223
Other commodities 6/	**1981**	**1982**	**1983**	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**
Vegetable oils	309	346	342	345	384	513	564	NA	NA
United States	275	300	290	271	310	418	501	NA	NA
Other	34	46	52	74	74	95	63	NA	NA
Dairy products	428	334	320	463	432	436	357	NA	NA
United States	122	129	168	196	273	293	226	NA	NA
Other	306	205	152	267	159	143	131	NA	NA

NA = Not available.

Sources: Food and Agricultural Organization, U.S. Department of Agriculture, and U.S. Agency for International Development.

1 / Estimates based on minimum contributions under the 1986 Food Aid Convention, budgetary allocations, historical patterns, current food aid policies, and other sources.

2 / July-June trade years.

3 / To express cereal food aid in grain equivalent, wheat, rice and coarse grains are counted on a one-to-one basis; for grain products, appropriate conversion factors are used to determine the grain equivalent.

4 / In addition, unofficial reports indicate that the USSR provided several Asian countries with 200,000 tons each in 1979/80, as emergency aid.

5 / Aid from individual members as well as Community action. Ten member countries, prior to accession of Portugal and Spain.

6 / Calendar years. 1987 data are preliminary.

Measures of Additional Food Needs--Conceptual Framework

Financial indicators and food and agriculture data are used to generate two alternative measures of food needs in addition to estimated commercial import capacity. These measures reflect the choice countries must make between making extraordinary commercial purchases and seeking food aid to fill this gap. Large commercial imports, particularly in successive years, would be at the cost of other imports, including those of development goods. In addition, a measure is computed of the maximum quantities of commodities that countries could feasibly import. Each measure highlights a different aspect of the food problem in low-income countries and a different notion of the role food assistance might play in easing the problem. For a more detailed discussion, see the section entitled "Methodological Notes."

The first measure, termed "status quo," estimates the additional food needed to maintain per capita use of food staples at levels reported in recent years. Per capita food use is calculated as the mean of the most recent 4 years that do not deviate more than one standard deviation from the mean of the most recent 8 years. This per capita food use is called base-use in the following descriptions of tables and elsewhere in this report. The data years employed in calculations for this report are 1980/81 through 1987/88. No provision is made for improving substandard diets, for reducing allocations to countries where diets are relatively good, or for correcting problems related to the uneven distribution of food across or within countries. Because status quo estimates support a level of per capita availability that has been achieved in the past, in most cases they can be considered to be consistent with the ability of countries to absorb food imports.

The second measure, termed "nutrition-based," estimates the additional food required to raise per capita caloric intake to the levels associated with FAO's recommended minimum diet. This measure is based on the notion that food aid might be utilized in a way consistent with nutritional need rather than to maintain a recent, possibly substandard, status quo. In this sense, the nutrition-based measure might be viewed as a maximum level of additional food need, but not necessarily consistent with a country's ability to absorb food imports.

The measure of food import feasibility called "maximum absorbable imports" provides one basis for assessing what maximum quantity of additional food might be imported toward meeting large nutrition-based food needs, or possibly for building stocks in a period of ample world food supplies. The implicit assumption is that the food delivery systems of many of the countries involved have been fully "loaded" by past high levels of consumption. In addition, the highest level of stocks maintained over the previous 8 years is assumed, in the absence of better information, to be the largest level that can currently be maintained. The estimate is intended to provide a crude measure of the amount of food that can be physically absorbed. This level may then be used to scale back nutrition-based additional food need estimates that may be beyond the physical limits of a country's transportation, distribution, and storage capabilities.

While the status quo and nutrition-based methods differ in the estimation of requirements, they have a common structure. In each, an estimate of every country's domestic supplies of food staples is subtracted from an estimate of staple food requirements to arrive at a quantity estimate of import requirements. These are then totaled for food groups, based on assumptions regarding their substitutability. An estimate of a country's capacity to commercially import food in each category is then subtracted from the import requirement to arrive at an estimate of additional food needs. Estimated import unit values for each food group are used to generate import requirements, and additional food needs estimates in both quantity and value terms.

Several factors affecting additional food needs are not addressed in these estimates. First, food distribution problems--both geographical and across income or population groups--are overlooked by national level food availability and country average food requirement measures. These can mask acute shortages in specific places within a country as well as uneven distribution of food across population groups. However, measuring the unevenness of food distribution is extremely difficult, because data are not available. Acute problems of this nature are treated qualitatively in the country narratives.

Second, additional food needs are estimated without reference to a country's food and agriculture policies and current performance. Although these issues figure importantly in a country's choice between exceptional commercial food purchases and concessional food imports, a comprehensive consideration of them is beyond the scope of this report.

Introduction to Country Tables

The following section reports on the food and financial situation and outlook for 55 countries in Africa, Asia, and Latin America. The materials summarize events during the 1987/88 local marketing year (generally July-June), and project food and financial conditions for 1988/89 and 1989/90.

Data shown in the tables must be interpreted with caution. Forecasts of food production, population, and financial conditions for 1988/89 and 1989/90 represent ERS's forecasts of what is likely to happen during those years. But, 1988/89 and 1989/90 estimates of all other items--stocks, use, import requirements, and additional needs--are not forecasts of what is likely to happen; they are estimates derived using the status quo and nutrition assumptions summarized in the previous section, and explained in detail in the "Methodological Notes" section of this report. Additional food needs calculations are also subject to a number of adjustments detailed in the Methodology section.

In each of the country tables, any quantity less than 500 tons and any value less than $500,000 is shown as zero.

Tables Entitled "[Country] basic food data"

These tables provide food staple supply and utilization data for 1980/81-1987/88 and for forecast years (1988/89 and 1989/90). An explanation of each column heading follows:

1. Actual or forecast production--actual production for the individual staples for 1980/81-1987/88 and forecast production for 1988/89 and 1989/90.

2. Net imports--actual net imports during 1980/81-1987/88. Net import figures for forecast years are not supplied. Instead, estimated import requirements based on status quo and nutrition-based approaches are provided in the next set of tables.

3. Nonfeed use, 1980/81-1987/88.

4. Feed use--actual feed use, 1980/81-1987/88, and targeted feed use for 1988/89 and 1989/90. Targeted feed use is calculated to maintain per capita feed use at base-use levels. The same base-use level of feed use is employed in the status quo and nutrition-based estimates of aid needs.

5. Beginning stocks--actual stocks for 1980/81-1987/88, where reliable stocks data are available. Initial calculations of status quo and nutrition-based import and aid needs are done by maintaining the ending stocks for 1987/88 (beginning stocks 1988/89) constant throughout the forecasting period. Import requirements for building food security stocks are calculated subsequently for the countries for which stock data are available.

6. Per capita total use--actual per capita human consumption and livestock feed use for 1980/81-1987/88.

7. Commodity coverage--the food staples included for each country.

8. Share of diet--each staple's share of total daily caloric intake, and the share of total daily caloric intake covered by the food staples analyzed. Data are drawn from the 1979-81 FAO Food Balance Sheets with adjustments made in some cases for differences in FAO or ERS estimates of feed use or more recent significant changes in a staple's share of the diet.

Tables Entitled "Import requirements for [Country]"

These tables deal only with 1988/89 and 1989/90 estimates. An explanation of each column heading follows:

1. Forecast domestic production--data are drawn from the "basic food data" tables.

2. Total use, status quo--total amount of a staple needed to maintain per capita human consumption at the base-use level and feed use at the targeted level.

3. Total use, nutrition-based--the amount of a staple needed to support FAO recommended minimum daily per capita caloric intake levels and targeted feed use.

4. Import requirements, quantity, status quo--the imports of a staple required to maintain per capita consumption, and also to achieve the targeted levels of feed use with no change in stocks, as shown in the basic food data table. These estimates are calculated for each staple by subtracting forecast domestic production from status quo-based total use.

Subtotals for each commodity group are calculated by summing the import requirements for individual commodities. Calculated surpluses (negative import requirements) for individual commodities within groups are subtracted from deficits in other commodities because foods are assumed to be substitutable within groups. Noncereals such as roots and tubers are converted to caloric wheat equivalents before being

summed. Negative subtotals are shown as zeros because these calculated surpluses are assumed not to be substitutable elsewhere in the diet.

5. Import requirements, quantity, nutrition-based--the imports of a staple required to support recommended minimum per capita caloric intake, and targeted feed use, as no change in stocks is shown in the basic food data tables. These estimates are calculated by subtracting forecast domestic production from nutrition-based total use. Totals for each commodity group by year are computed as described in (4) above.

6. Import requirements, maximum--the largest quantity that could be managed if countries wished to take the greatest advantage of low grain prices to improve stocks or to improve on the nutritional status of the population.

Tables Entitled "Financial indicators for [Country], actual and projected"

These tables give historical data and forecasts for four key financial indicators: year-end international reserves, merchandise exports, merchandise imports, and debt-service obligations. All data are on a calendar year basis and are compiled from a variety of sources, including the World Bank, the International Monetary Fund, Chase Econometrics, country sources, and ERS estimates.

Tables Entitled "Additional food needs for [Country], with stock adjustment and as constrained by maximum absorbable imports"

These tables provide calculations of cereal import requirements and food needs in excess of normal commercial imports resulting from consumption requirements and from estimates of cereal stock adjustments required for food security. The estimated stock increment (quantity and value) is added to import requirements and additional food needs to support consumption to arrive at total import requirements and additional food needs. The stock increment is shown only when it results in altered total additional food needs (i.e. when not offset by negative additional food needs for consumption). For a discussion of how stock increment estimates are calculated, see "Methodological Notes."

1. Commercial import capacity--an estimate of the amount of food within each group that a country can afford to import commercially without reducing below historical levels the share of its available foreign exchange used for nonfood imports. Countries are assumed in forecast years to spend the same proportion of available foreign exchange on commercial food imports as in the base period. The measure is sensitive to historical and projected levels of foreign exchange holdings, total merchandise imports and exports, and debt service. The measure is provided in both quantity and value, using the same country-specific estimates of unit import costs as in the import requirements estimate.

2. Additional food needs, quantity--the estimated quantity of additional food needed in each commodity group to support either the status quo or nutrition-based use level and targeted stock and feed use levels. Negative needs are shown as zero.

3. Additional food needs, value--the estimated value of the additional food needed in each commodity group to maintain either status quo consumption or nutrition-based consumption and targeted stock and feed use levels.

North Africa

Egypt

Egypt's status quo grain import requirements in 1988/89 are expected to rise slightly to 9.75 million tons. Status quo addition cereal needs of 3.3 million tons reflect greater cost of commercial food imports, and reduced grain production because of reduced availability of irrigation water from the Nile River. While cereal commercial import capacity increased from $1.04 billion in 1987/88 to $1.34 billion in 1988/89, that purchases 6.46 million tons, only 250,000 tons more than in 1987/88. Foreign exchange is still in short supply and not expected to ease until petroleum export value rebounds. Egypt's balance of payments worsened in 1988 as income from petroleum exports, remittances, and cotton exports declined. New borrowing enabled the import of essential commodities and prevented a dip in the standard of living.

Egypt's foreign debt remained at about $47 billion in 1988. Lower petroleum prices and smaller cotton supplies for export may cause total exports to decline to about $3 billion in 1988. Egypt's inflation rate rose to 22 percent in 1987 because of the declining purchasing power of Egypt's pound, and shortages of imported goods other than wheat. Actual debt service payments are estimated at about $2 billion, instead of the $5 billion which would have been required without rescheduling.

The striking 27 percent gains in wheat production to 2.44 million tons in 1987 occurred because of increased area planted in recently developed desert areas, good yields from improved varieties, and greater fertilizer use. Production increased to 2.52 million tons in 1988, as the area planted rose and high yields were maintained. Total grain output peaked at 9 million tons in 1987 and is likely to decline about 9 percent in 1988 because of smaller rice and corn harvests, related to the shortage of irrigation water from the Nile.

The rice area was reduced 18 percent for 1988, because this crop accounts for a seventh of Egypt's use of Nile water. A slight rebound for cotton production from the 351,000 tons of 1987 is expected in 1988, although the 25-percent hike in producer prices was not considered adequate to generate the expected increase in area planted. Egypt's overall agricultural output increased 3.9 percent in 1987 compared with 4.4 percent in 1986, but a decline of possibly 2 percent is likely in 1988.

Higher world prices may cause the value for Egypt's agricultural imports to rise slightly to about $4 billion in 1988, after registering slight declines in the two previous years. Lower world commodity prices reduced Egypt's expenditures for imports of wheat, flour, corn, beef, frozen poultry, and some other items in 1986 and 1987. Lower prices caused the value of wheat and flour imports to decline to less than $1 billion.

Grain imports reached 9.4 million tons in 1987, as wheat and flour combined remained at 7.1 million tons, and feed grain imports rose to 2.3 million tons. A sharp decline for corn imports is underway for 1988, while wheat and flour imports remain steady.

Egypt has purchased approximately 1 million tons of wheat and wheat flour from the United States under Title I, P.L. 480 in fiscal 1988, and about 3,000 tons of wheat and flour have been donated under Title II. A combination of GSM 102 financing and EEP related price reductions for about 2 million tons of wheat, and much of the May 18, 1988, announcement for 1 million tons has already been purchased. The 600,000 tons of wheat flour available through the EEP has not yet been fully used, with 225,000 tons outstanding. Plans to use the programs available should push total U.S. exports of wheat and flour above 3 million tons (wheat equivalent) in fiscal 1988.

Commodity Import Program grants from USAID for corn so far in fiscal 1988 have been far below previous years when the financing provided funds for purchases of about 500,000 tons annually.

Australian deliveries of wheat to Egypt are expected to decline to 1.5 million tons in 1988 from 2.2 million tons in 1987. Canadian wheat deliveries may decline to 100,000 tons from 616,000 tons in 1985. EC wheat flour deliveries in 1987 were only half the 1.2 million tons shipped in 1985, but French wheat shipments rose to 408,000 tons, up from 51,000 tons in 1986. Total cereals use is expected to rise to 18.3 million tons in 1988/89, with slight declines in per capita use and with imports accounting for slightly over half the supply.

Egypt's financial outlook is clouded by depressed petroleum prices. However, rising revenues from Suez Canal tolls, greater exports of manufactured items, and a rebound in remittances are bright spots. Remittances passing through the Egyptian banking system had fallen in 1987, despite some relaxation of regulations. The "free market exchange" system now provides exchange for about $3 billion of imports, compared with $10 billion moving through the Central Bank of Egypt.

Egypt basic food data

Commodity/year	Actual or forecast production	Beginning stocks	Net imports	Nonfeed use	Feed use	Per capita total use	1979-81 Commodity coverage	1979-81 Share of diet
	1,000 tons					Kilos		Percent
Major cereals								
1980/81	7,373	2,545	6,267	11,408	2,357	326	Wheat	36.9
1981/82	7,424	2,420	7,294	12,072	2,964	344	Rice	10.0
1982/83	7,714	2,102	7,017	11,857	3,419	339	Corn	16.0
1983/84	7,883	1,557	8,242	11,907	3,984	342	Sorghum	1.1
1984/85	7,788	1,791	9,018	12,484	4,592	358	Barley	0.2
1985/86	7,818	1,521	8,768	12,182	5,065	351	Total	64.2
1986/87	8,408	860	9,077	12,046	5,307	343		
1987/88	8,935	992	8,702	12,124	5,363	337		
1988/89	8,567	1,142						
1989/90	8,860	1,142						

Import requirements for Egypt

Commodity/year	Production	Total use: Status quo	Total use: Nutrition-based	Import requirements: Status quo	Import requirements: Nutrition-based	Import requirements: Maximum absorbable
	1,000 tons					
Major cereals						
1988/89	8,567	18,318	16,336	9,751	7,769	11,783
1989/90	8,860	18,809	16,780	9,949	7,920	12,001

Financial indicators for Egypt, actual and projected

Year	Exports and other credits	Imports and other debits	Debt service	International reserves	Foreign exchange available: Total	Foreign exchange available: Share to major food imports
	Million dollars					Percent
1980	9,307	9,745	1,411	1,046	7,896	14
1981	10,449	12,054	1,911	716	8,538	20
1982	10,091	12,385	1,905	698	8,187	18
1983	11,250	13,610	1,999	771	9,251	16
1984	12,237	14,451	2,352	736	9,885	18
1985	11,157	13,913	2,556	792	8,601	21
1986	10,000	13,850	2,400	829	7,600	16
1987	10,900	14,700	2,300	1,378	8,600	
1988	11,300	15,500	1,950	1,378	9,711	19
1989	11,550	15,900	2,250	1,378	9,635	19

Additional food needs to support consumption for Egypt, with stock adjustment and as constrained by maximum absorbable imports

Commodity/year	Commercial import capacity		Status quo		Nutrition-based	
	Quantity	Value	Quantity	Value	Quantity	Value
	1,000 tons	Million $	1,000 tons	Million $	1,000 tons	Million $
Cereal equivalent						
Consumption						
1988/89	6,460	1,341	5,292	684	1,309	272
1989/90	7,395	1,331	2,554	460	525	94
Stock adjustment						
1988/89			729	151	729	151
1989/90			50	9	50	9
Total						
1988/89			4,021	835	2,039	423
1989/90			2,605	469	575	103
Maximum absorbable						
Cereal equivalent						
1988/89			4,021	835	2,039	423
1989/90			2,605	469	575	103

Morocco

Rainfall during the winter was ample for wheat and barley, and the situation remained favorable for yields in the spring. The locusts arrived too late to cause much damage, except for some areas of southern Morocco. Estimates for the 1988 wheat crop of 3.25 million tons indicate a strong rebound from the drought-damaged 1987 harvest of 2.4 million tons. Barley production rebounded even more dramatically, reaching 2.87 million tons, or double the 1987 quantity. Other cereals account for less than 4 percent of Morocco's total 1988 grain output, estimated at 6.4 million tons, up 52 percent over 1987.

Morocco's debt service payments rose to $1.9 billion in 1987, double the 1985 level. A slight increase to about $2 billion is expected for 1988, even with some rescheduling of payments on the foreign debt, which has risen to about $17 billion. Exports of phosphates and citrus fruit are expected to rise slightly in value in 1988. Pressure on international reserves will be less, partly because of a decline in food imports.

Net grain imports are expected to decline nearly 400,000 tons in 1988/89. Wheat imports are expected to drop from 2.3 million tons in 1987/88 to 1.5 million tons in 1988/89, while barley exports rise from token levels to over 500,000 tons. Both status quo and nutrition-based cereal needs to meet consumption requirements are projected to decline to zero, but stock adjusted additional needs are 239,000 and 229,000 tons, respectively.

Morocco basic food data

Commodity/year	Actual or forecast production	Beginning stocks	Net imports	Nonfeed use	Feed use	Per capita total use	1979-81 Commodity coverage	1979-81 Share of diet
	1,000 tons					Kilos		Percent
Major cereals								
1980/81	4,354	580	2,220	5,740	778	317	Wheat	42.8
1981/82	2,021	636	2,655	4,122	559	222	Corn	3.5
1982/83	4,764	631	1,470	5,519	898	298	Barley	15.9
1983/84	3,457	448	2,296	4,868	1,075	269	Total	62.2
1984/85	3,658	256	2,652	5,044	1,088	271		
1985/86	4,904	456	2,190	5,590	1,315	298		
1986/87	6,596	625	1,885	5,677	1,645	308		
1987/88	4,210	1,784	2,280	5,911	1,704	313		
1988/89	6,410	659						
1989/90	5,800	659						

Import requirements for Morocco

Commodity/year	Production	Total use: Status quo	Total use: Nutrition-based	Import requirements: Status quo	Import requirements: Nutrition-based	Import requirements: Maximum absorbable
	1,000 tons					
Major cereals						
1988/89	6,410	7,429	7,419	1,019	1,009	2,639
1989/90	5,800	7,617	7,482	1,817	1,682	3,449

Financial indicators for Morocco, actual and projected

Year	Exports and other credits	Imports and other debits	Debt service	International reserves	Foreign exchange available: Total	Foreign exchange available: Share to major food imports
	Million dollars					Percent
1980	3,270	3,770	1,175	399	2,095	20
1981	3,084	3,840	1,274	230	1,810	27
1982	2,945	3,815	1,350	218	1,595	25
1983	2,879	3,301	1,186	107	1,691	18
1984	3,026	3,500	722	19	2,304	19
1985	3,180	3,510	967	115	2,213	17
1986	3,619	3,480	1,342	211	2,177	8
1987	3,620	3,760	1,900	411	1,720	
1988	3,760	3,920	2,000	150	1,695	15
1989	4,000	3,900	2,000	250	2,036	15

Additional food needs to support consumption for Morocco, with stock adjustment and as constrained by maximum absorbable imports

Commodity/year	Commercial import capacity		Status quo		Nutrition-based	
	Quantity	Value	Quantity	Value	Quantity	Value
	1,000 tons	Million $	1,000 tons	Million $	1,000 tons	Million $
Cereal equivalent						
Consumption						
1988/89	1,153	188	0	0	0	0
1989/90	1,598	225	218	31	84	12
Stock adjustment						
1988/89			373	61	373	61
1989/90			26	4	26	4
Total						
1988/89			239	39	229	37
1989/90			244	34	110	15
Maximum absorbable						
Cereal equivalent						
1988/89			239	39	229	37
1989/90			244	34	110	15

Tunisia

After a strong rebound to a near-record 1.9 million tons in 1987/88, food and feed grain production plunged 86 percent to under 270,000 tons in 1988/89. The worst drought in decades decimated much of Tunisia's winter crops of wheat and barley even before the locust problem appeared this spring. The autumn and winter were very dry, and modest rainfall in March was too little, too late. Wheat production is estimated to have declined by more than 1 million tons, from 1.36 million tons in 1987 to 211,000 tons in 1988. The barley crop for 1988 is estimated at 54,000 tons, only a tenth of the 1987 level. Over 80 percent of the corn and most of the barley are being used as animal feed. About 100,000 tons of barley is being used for human food, and 1988 use will remain similar to the 1983-87 average. Greater barley imports will allow an increase in feed for animals, despite the drought.

Status quo cereal import requirements, which fell sharply in 1987/88 because of good harvests, are projected to quadruple to 2.2 million tons in 1988/89. Meeting these requirements will require over 1.4 million tons of wheat and about 500,000 tons of barley and 200,000 tons of corn. Nutrition-based cereal imports increase from only 207,000 to 1.6 million in 1988/89. The drought has also created unusually high import need for some other commodities, including dry beans and peas.

Lower world petroleum prices further strained Tunisia's foreign exchange situation, already aggravated by the drought. Tunisia's economy was showing good signs of progress in 1987, with a recovery in the value of petroleum exports and greater foreign exchange earnings from exports of industrial products. Efforts to curb imports in accordance with advice from international lenders were successful, and foreign exchange reserves increased despite substantially higher debt service payments. Total foreign debt reached $7.3 billion in 1987, double the 1980 level. Debt service payments increased sharply from $793 million in 1986 to $930 million in 1987. Some rearrangements will slow the rise in debt payments for 1988, when obligations are estimated at $850 million. Much of the borrowing in the 1980's was to maintain high food consumption levels through greater imports, and to expand industrial capacity. Diversification of the economy, with less than a fourth of the GNP now coming from agriculture, will limit the overall damage to national income because of the drought and locusts. However, slowed export growth and larger imports, mainly to meet shortfalls stemming from the drought, are likely to lead to some deterioration of the balance of payments in 1988.

Because of the major crop failure, a greater share of foreign exchange was allocated to cereal imports in 1988/89. But $152 million

($4million over 1987/88) bought 277,000 tons less grain. Drought-reduced harvests and constrained commercial import capacity are expected to boost status quo cereal needs to 1.3 million tons and nutrition-based cereal needs in 1988/89 to 723,000 tons. Stock adjustments reduce these needs to 1 million and 430,000 tons, respectively.

Tunisia basic food data

Commodity/year	Actual or forecast production	Beginning stocks	Net imports	Nonfeed use	Feed use	Per capita total use	1979-81 Commodity coverage	1979-81 Share of diet
	1,000 tons					Kilos		Percent
Major cereals								
1980/81	1,166	211	816	1,590	402	308	Wheat	52.9
1981/82	1,234	201	1,142	1,730	627	356	Barley	1.9
1982/83	1,256	220	864	1,741	469	327	Corn	0.0
1983/84	922	130	1,283	1,699	526	323	Total	54.9
1984/85	1,024	110	1,100	1,707	502	314		
1985/86	2,067	25	852	1,791	873	369		
1986/87	607	280	1,542	1,859	460	314		
1987/88	1,858	110	1,198	1,999	579	341		
1988/89	266	628						
1989/90	1,651	628						

Import requirements for Tunisia

Commodity/year	Production	Total use: Status quo	Total use: Nutrition-based	Import requirements: Status quo	Import requirements: Nutrition-based	Import requirements: Maximum absorbable
	1,000 tons					
Major cereals						
1988/89	266	2,498	1,882	2,232	1,616	2,591
1989/90	1,651	2,555	2,126	904	475	1,272

Financial indicators for Tunisia, actual and projected

Year	Exports and other credits	Imports and other debits	Debt service	International reserves	Foreign exchange available: Total	Foreign exchange available: Share to major food imports
	Million dollars					Percent
1980	3,296	3,823	427	590	2,869	8
1981	3,616	4,117	520	536	3,096	7
1982	3,467	4,169	485	607	2,982	6
1983	3,292	3,906	569	567	2,723	8
1984	3,101	3,913	650	406	2,451	9
1985	2,970	3,606	676	233	2,294	7
1986	3,101	3,765	793	305	2,308	6
1987	3,150	3,760	950	525	2,220	
1988	3,300	4,090	850	450	2,501	9
1989	3,485	4,300	900	450	2,615	7

Additional food needs to support consumption for Tunisia, with stock adjustment and as constrained by maximum absorbable imports

Commodity/year	Commercial import capacity		Status quo		Nutrition-based	
	Quantity	Value	Quantity	Value	Quantity	Value
	1,000 tons	Million $	1,000 tons	Million $	1,000 tons	Million $
Cereal equivalent						
Consumption						
1988/89	893	152	1,339	229	723	123
1989/90	876	130	28	4	0	0
Stock adjustment						
1988/89			(310)	(53)	(310)	(53)
1989/90			7	1	0	0
Total						
1988/89			1,029	176	414	71
1989/90			36	5	0	0
Maximum absorbable						
Cereal equivalent						
1988/89			1,029	176	414	71
1989/90			36	5	0	0

Angola

Angola's total cereals production for 1988/89 is estimated at 365,000 tons, consisting of 300,000 tons of coarse grains (mainly corn), 2,000 tons of rice, and 3,000 tons of wheat. Cassava, which accounts for 28 percent of the Angolan diet, has an estimated production of 2 million tons for 1988/89. Although weather conditions have been poor in some areas this year, the continued civil unrest has done the greatest damage to crop production and distribution.

In southern Angola, rainfall was below normal, and drought affected crops in Huila, a major corn producing province. Average corn yields are lower than the previous season throughout the country, a result of dry weather in some areas and lack of available farm inputs, such as fertilizers, plant protection agents, and farm machinery. In the northern and central provinces rainfall was generally favorable.

Since oil is a major export, commercial import capacity is largely affected by world oil price changes, as well as debt service obligations. Although financial data are largely unavailable, it is estimated that Angola's commercial import capacity for cereals is 210,000 tons. According to FAO analysts, the Government of Angola has programmed commercial cereal imports of 205,000 tons. If actual commercial cereal imports approach the programmed amount, which historically they have, they will return to levels reported in the period before the oil price collapse.

Cereal equivalent status quo import requirements in 1988/89 are 401,000 tons. With a commercial import capacity of 210,000 tons, there remain additional food needs of 191,000 tons to support status quo consumption levels. Since nutrition-based total import requirements are below the status quo level at 391,000 tons, it can be assumed that if Angola approaches this level of imports the general population will be able to maintain minimum nutritional levels. However, the marketing system must be operational, allowing access to food, and the citizenry must have the money to buy food commercially in the markets.

Angola basic food data

Commodity/year	Actual or forecast production	Beginning stocks	Net imports	Nonfeed use	Feed use	Per capita total use	1979-81 Commodity coverage	1979-81 Share of diet
	1,000 tons					Kilos		Percent
Major cereals								
1980/81	371	0	302	673	0	99	Wheat	7.7
1981/82	260	0	276	536	0	77	Rice	2.8
1982/83	259	0	332	591	0	83	Corn	20.0
1983/84	284	0	322	606	0	82	Cassava	28.2
1984/85	268	0	446	714	0	96	Total	58.7
1985/86	258	0	330	588	0	78		
1986/87	286	0	415	701	0	91		
1987/88	306	0	436	742	0	93		
1988/89	365	0						
1989/90	365	0						
Roots								
1980/81	1,800	0	0	1,800	0	265		
1981/82	1,850	0	0	1,850	0	266		
1982/83	1,900	0	0	1,900	0	267		
1983/84	1,925	0	0	1,925	0	265		
1984/85	1,900	0	0	1,900	0	256		
1985/86	1,925	0	0	1,925	0	254		
1986/87	1,950	0	0	1,950	0	252		
1987/88	1,950	0	0	1,950		232		
1988/89	1,950	0						
1989/90	1,975	0						

Import requirements for Angola

Commodity/year	Production	Total use		Import requirements		
		Status quo	Nutrition based	Status quo	Nutrition-based	Maximum absorbable
	1,000 tons					
Major cereals						
1988/89	365	722	704	357	339	451
1989/90	365	748	728	383	363	480
Roots						
1988/89	1,950	2,066	2,086	116	136	249
1989/90	1,975	2,141	2,157	166	182	304
Cereal equivalent						
1988/89	1,110	1,511	1,500	401	391	539
1989/90	1,119	1,566	1,552	446	432	589

Financial indicators for Angola, actual and projected

Year	Exports and other credits	Imports and other debits	Debt service	International reserves	Foreign exchange available	
					Total	Share to major food imports
	Million dollars					Percent
1980	1,682	1,353	0	308	1,682	7
1981	1,662	1,584	0	122	1,662	6
1982	1,558	1,000	361	105	1,197	7
1983	1,771	767	335	111	1,436	7
1984	2,055	1,034	421	150	1,634	8
1985	2,211	1,346	437	200	1,774	8
1986	1,787	1,080	411	150	1,376	6
1987	1,800	1,100	378	200	1,422	
1988	1,850	1,100	380	200	1,501	7
1989	1,850	1,100	380	200	1,501	7

Additional food needs to support consumption for Angola, with stock adjustment and as constrained by maximum absorbable imports

Commodity/year	Commercial import capacity		Status quo		Nutrition-based	
	Quantity	Value	Quantity	Value	Quantity	Value
	1,000 tons	Million $	1,000 tons	Million $	1,000 tons	Million $
Cereal equivalent Consumption						
1988/89	210	46	191	42	180	40
1989/90	243	46	204	39	190	36
Stock adjustment						
1988/89			0	0	0	0
1989/90			0	0	0	0
Total						
1988/89			191	42	180	40
1989/90			204	39	190	36
Maximum absorbable						
Cereal equivalent						
1988/89			191	42	180	40
1989/90			204	39	190	36

Lesotho

Cereal production has not kept pace with growing use in Lesotho, despite the wide use of hybrid corn seed, fertilizer and growing employment of tractor power. Yields have not increased and cropping intensity remains the same. Labor released from agriculture has been employed in South Africa. Cereal production is estimated to be 163,000 tons in 1988/89, down from 202,000 tons in 1987/88. The fall reflects in part an obstacle to agricultural lending, resulting from the destruction by fire of the Lesotho Agricultural Bank. Total use, at 337,000 tons, is well in excess of production, leaving status quo import requirements at 174,000 tons. Nutrition-based import requirements are 233,000 tons.

Rural food consumption is adversely affected by farm market conditions. Producer prices for sugar, pinto beans, and brown haricot beans have recently been increased substantially. But Government policies to increase production of these crops have not been coordinated with distribution policies. There are no storage facilities for these crops and as a result they discolor and bring low prices. In addition, the fixed producer prices deviate from import and export parities, and producers have been unable to dispose of their crops in competition with South Africa. Currently, there are no efforts being made to remedy this situation.

Lesotho continues to depend on remittances of miners working in South Africa. Additional foreign exchange earnings from the migrant labor system and other sources increased total foreign exchange allocated to major food imports by $6 million over 1987/88. But higher international commodity prices reduce the estimated volume of commercial cereal imports to 96,000 tons. Status quo additional foods needs are 78,000 tons and nutrition-based needs 137,000 tons in 1988/89.

Lesotho basic food data

Commodity/year	Actual or forecast production	Beginning stocks	Net imports	Nonfeed use	Feed use	Per capita total use	1979-81 Commodity coverage	1979-81 Share of diet
	1,000 tons					Kilos		Percent
Major cereals								
1980/81	193	0	105	274	24	221	Wheat	23.1
1981/82	171	0	137	269	19	223	Corn	41.3
1982/83	123	0	118	222	19	170	Sorghum	11.4
1983/84	122	0	120	223	19	166	Total	75.9
1984/85	118	0	150	249	19	179		
1985/86	167	0	140	293	14	200		
1986/87	134	0	200	313	21	212		
1987/88	202	0	153	335	20	219		
1988/89	163	0						
1989/90	163	0						

Import requirements for Lesotho

Commodity/year	Production	Total use: Status quo	Total use: Nutrition-based	Import requirements: Status quo	Import requirements: Nutrition-based	Import requirements: Maximum absorbable
	1,000 tons					
Major cereals						
1988/89	163	337	396	174	233	208
1989/90	163	346	406	183	243	218

Financial indicators for Lesotho, actual and projected

Year	Exports and other credits	Imports and other debits	Debt service	International reserves	Foreign exchange available: Total	Foreign exchange available: Share to major food imports
	Million dollars					Percent
1980	360	532	5	50	355	5
1981	382	513	4	43	378	5
1982	425	509	9	48	416	5
1983	454	546	21	67	433	8
1984	396	489	21	49	375	5
1985	282	358	18	44	264	8
1986	314	399	14	60	300	8
1987	387	500	18	68	369	
1988	410	514	21	65	389	7
1989	412	514	22	65	391	7

Additional food needs to support consumption for Lesotho, with stock adjustment and as constrained by maximum absorbable imports

Commodity/year	Commercial import capacity: Quantity	Commercial import capacity: Value	Status quo: Quantity	Status quo: Value	Nutrition based: Quantity	Nutrition based: Value
	1,000 tons	Million $	1,000 tons	Million $	1,000 tons	Million $
Cereal equivalent						
Consumption						
1988/89	96	19	78	15	137	27
1989/90	111	19	72	12	132	22
Stock adjustment						
1988/89			0	0	0	0
1989/90			0	0	0	0
Total						
1988/89			78	15	137	27
1989/90			72	12	132	22
Maximum absorbable						
Cereal equivalent						
1988/89			78	15	112	22
1989/90			72	12	107	18

Madagascar

Due to a dry spell early in the season, the 1988/89 rice crop will not match last year's record harvest. However, this year's output should equal the normal level of 1.4 million tons (milled) as good rainfall in the latter part of the season offset the earlier dry periods.

Status quo import requirements are 298,000 tons. With a commercial import capacity of more than 100,000 tons and a small stock adjustment, the additional food needs are 191,000 tons. Most of the 45,000 tons of rice stocks resulting from last year's bumper crop are expected to be drawn down, thus resulting in additional food needs closer to 150,000 tons.

The rice policy reforms which were first implemented in 1983, have not yet proven to be very successful. Despite elimination of state marketing monopolies, increases in producer prices, and the removal of restrictions on movement of rice between regions, production response has been negligible. Production did increase (albeit marginally) during the 3-year period, 1984/85 to 1986/87, but the question must be posed as to whether this was in response to the new policy measures or favorable weather conditions. The next few years will provide a longer time frame in which to study the production response to these reforms, which are among the most extensive in Africa.

Madagascar basic food data

Commodity/year	Actual or forecast production	Beginning stocks	Net imports	Nonfeed use	Feed use	Per capita total use	1979-81 Commodity coverage	1979-81 Share of diet
	1,000 tons					Kilos		Percent
Major cereals								
1980/81	1,477	0	261	1,738	0	200	Wheat	1.9
1981/82	1,408	0	413	1,771	0	198	Rice	54.4
1982/83	1,460	50	231	1,701	0	185	Corn	3.9
1983/84	1,506	40	142	1,668	0	176	Total	60.3
1984/85	1,505	20	159	1,674	0	171		
1985/86	1,534	10	150	1,684	0	167		
1986/87	1,580	10	208	1,738	0	167		
1987/88	1,619	60	146	1,780	0	166		
1988/89	1,560	45						
1989/90	1,610	45						

Import requirements for Madagascar

Commodity/year	Production	Total use: Status quo	Total use: Nutrition-based	Import requirements: Status quo	Import requirements: Nutrition-based	Import requirements: Maximum absorbable
	1,000 tons					
Major cereals						
1988/89	1,560	1,858	1,898	298	338	667
1989/90	1,610	1,917	1,959	307	349	689

Financial indicators for Madagascar, actual and projected

Year	Exports and other credits	Imports and other debits	Debt service	International reserves	Foreign exchange available: Total	Foreign exchange available: Share to major food imports
	Million dollars					Percent
1980	436	704	58	9	379	12
1981	332	511	62	27	270	27
1982	333	450	69	20	264	30
1983	307	390	46	29	261	21
1984	330	355	44	59	286	7
1985	280	336	106	48	174	18
1986	330	331	113	115	217	12
1987	310	315	105	155	205	
1988	335	355	84	165	316	12
1989	360	370	90	175	340	12

Additional food needs to support consumption for Madagascar, with stock adjustment and as constrained by maximum absorbable imports

Commodity/year	Commercial import capacity		Status quo		Nutrition-based	
	Quantity	Value	Quantity	Value	Quantity	Value
	1,000 tons	Million $	1,000 tons	Million $	1,000 tons	Million $
Cereal equivalent						
Consumption						
1988/89	109	30	189	52	229	63
1989/90	135	32	172	41	214	51
Stock adjustment						
1988/89			2	1	2	1
1989/90			2	0	2	0
Total						
1988/89			191	52	231	63
1989/90			174	41	216	51
Maximum absorbable						
Cereal equivalent						
1988/89			191	52	231	63
1989/90			174	41	216	51

Malawi

Malawi's recent corn harvest was slightly better than the drought-reduced 1987/88 crop. Grain production, however, remains substantially below current use, making imports mandatory. Easing of the drought during the early months of 1988 boosted yields somewhat, but mealy bug infestations continue to reduce yields in primary cassava producing areas. Even with normal rainfall patterns, some experts estimate it may take 2 to 3 years to reduce mealy bug populations to tolerable levels in primary corn and cassava growing areas.

The balance of payments position is currently better than anticipated 6 months ago. Merchandise exports were stronger than expected in 1987/88 and import costs have been lower, particularly in recent months. Foreign aid and refugee programs appear to have eased the Government's financial burden considerably through the first 6 months of 1988, but a severe food shortage could develop as early as November or December 1988 unless current relief efforts are increased.

Six months ago, the World Health Organizations estimated refugee food needs for the year on the assumption that an average of 20,000 refugees per month would enter the country during 1988. But continuing civil strife in Mozambique has already doubled or tripled the monthly flow, with few if any signs of abatement in the next few months.

Some unofficial estimates now suggest the refugee population will exceed a 1 million people by January 1, 1989, and account for more than 10 percent of the food needs of the country before then.

Current calculations of status quo import needs, just to feed the indigenous population of Malawi for the 1988/89 crop year, have also doubled during the past 6 months. Rising food costs in world markets are primarily responsible. Higher grain costs resulting from shorter supplies in world markets have reduced Malawi's commercial import capacity by roughly 10,000 tons of cereal equivalent.

Production and financial changes have increased 1988/89 additional food needs estimates from 135,000 to 308,000 tons of cereal equivalent, including stock adjustments, since February 1988. Similarly, nutrition-based needs have increased from 270,000 to 421,000 tons for the 1988/89 year with no allowances for the refugees. If allowances for refugees are included, both of these estimates should be increased by at least 100,000 tons of cereal equivalent in the current year and the next (1989/90). A refugee population of 1 million people will require an additional 200,000 tons of grain equivalent per year, even if they consume grain at the same rate as Malawians. The refugee problem has also put a severe strain on existing grain storage, transportation and distribution facilities.

Malawi basic food data

Commodity/year	Actual or forecast production	Beginning stocks	Net imports	Nonfeed use	Feed use	Per capita total use	1979-81 Commodity coverage	1979-81 Share of diet
	1,000 tons					Kilos		Percent
Major cereals								
1980/81	1,165	100	86	1,211	40	208	Wheat	0.9
1981/82	1,245	100	50	1,195	50	201	Corn	64.4
1982/83	1,415	150	(5)	1,237	60	203	Total	65.3
1983/84	1,370	263	(76)	1,221	30	190		
1984/85	1,401	306	(99)	1,241	30	188		
1985/86	1,356	337	(30)	1,404	35	206		
1986/87	1,295	224	45	1,373	35	195		
1987/88	1,226	156	130	1,382	30	190		
1988/89	1,271	100						
1989/90	1,301	100						

Import requirements for Malawi

Commodity/year	Production	Total use: Status quo	Total use: Nutrition-based	Import requirements: Status quo	Import requirements: Nutrition-based	Import requirements: Maximum absorbable
	1,000 tons					
Major cereals						
1988/89	1,271	1,488	1,601	217	330	565
1989/90	1,301	1,537	1,653	236	352	588

Financial indicators for Malawi, actual and projected

Year	Exports and other credits	Imports and other debits	Debt service	International reserves	Foreign exchange available: Total	Foreign exchange available: Share to major food imports
	Million dollars					Percent
1980	284	318	68	68	217	7
1981	273	300	89	49	185	12
1982	240	272	63	23	177	7
1983	246	242	59	15	187	6
1984	312	221	73	57	239	5
1985	250	198	83	45	168	7
1986	248	154	108	25	140	1
1987	290	182	90	24	200	
1988	300	210	93	26	191	4
1989	320	240	99	25	198	4

Additional food needs to support consumption for Malawi, with stock adjustment and as constrained by maximum absorbable imports

Commodity/year	Commercial import capacity		Status quo		Nutrition-based	
	Quantity	Value	Quantity	Value	Quantity	Value
	1,000 tons	Million $	1,000 tons	Million $	1,000 tons	Million $
Cereal equivalent						
Consumption						
1988/89	11	3	206	49	319	76
1989/90	13	3	223	46	339	70
Stock adjustment						
1988/89			102	24	102	24
1989/90			73	15	73	15
Total						
1988/89			308	73	421	100
1989/90			296	61	412	85
Maximum absorbable						
Cereal equivalent						
1988/89			308	73	421	100
1989/90			296	61	412	85

Mozambique

Mozambique continues to have high additional food needs as agricultural production and marketing are affected both by persistent dry weather and ongoing civil unrest. Large segments of the rural population, often whole villages, have been displaced due to rebel activity, leaving farms idle. Nearly 1 million people have fled to Malawi. Rebel attacks often destroy transport systems, disrupting normal marketing mechanisms and leaving some areas inaccessible. In every Province, agriculture has been affected by insurgency, and drought in early 1988 has affected much of the upper coastal area, including Cabo Delgado, Nampula, Zambezia, and Sofala provinces, as well as large areas of Gaza, Inhambane, and Maputo Provinces.

Planting of cereal crops in the northeastern Provinces, in particular of sorghum, which is approximately 40 percent of the harvest in that region, was delayed by late rains. Corn, which accounts for 50 percent of the cereal harvest in the Northeast, was planted at the same time as sorghum, rather than staggered, increasing the risks of total crop failure and shortening the growing season for both crops. When rains did reach the Northeastern provinces, they came in the form of Tropical Cyclone Doaza, bringing extremely heavy rains to the coastal areas of Sofala, Zambezia, and Cabo Delgado, and increasing the risks of crop flooding in these recently planted areas. Zambezia Province was particularly hard hit by a second disaster, Tropical Cyclone Filao, causing loss of life and homes.

In southern Mozambique below normal crop yields are expected in Maputo, Gaza, and Inhambane Provinces, as abnormally dry conditions and above normal temperatures reduced soil moisture available to planted crops in the critical reproductive-to-filling stage of development.

In other Provinces in Northwestern and Central Mozambique rains have been moderate to heavy since January 1988. Conditions appear to be good for a normal crop in Niassa, Manica, Sofala, and Tete Provinces, although tropical storms along coastal Sofala may have caused flooding, and there remain unconfirmed reports of crop failure and repeated plantings in Tete Province, due to sporadic rains and high temperatures.

Mozambique's additional food needs for 1988/89 are estimated at 637,000 tons to maintain status quo consumption levels. However, nutrition-based needs are estimated at 1.7 million tons. This difference of over 1 million tons, as well as reports from Mozambique, indicate that the general nutritional status of the population is deteriorating and well below minimum requirements. These additional food needs are estimated by looking at available supply, including production and import capacity, and calculating the food deficit based on population and consumption. Since historical stock data are unavailable, and 1988/89 beginning stocks minus delayed 1987/88 food pledges are minimal, stocks are assumed to be zero in this analysis. Estimated total maximum absorbable imports are 996,000 tons for 1988/89. Mozambique's commercial import capacity is estimated at only 46,000

tons in 1988/89, and is not expected to increase considerably in the near future. After debt relief, actual debt service payments in 1988 are placed at 58 percent of earnings. The debt service ratio is likely to rise even with continued debt relief, as the amount of debt that may be rescheduled declines and interest on the amounts already rescheduled grows. Although real GDP is estimated to have risen 3 to 4 percent in 1987, mostly due to activity in light industry, other sectors of the economy are declining. Service earnings are projected to decline in 1988 because fewer Mozambicans are working in South African mines. The shipping industry, notably at Beira corridor, continues to lose activity due to rebel sabotage. The current account deficit is expected to rise by about $130 million in 1988.

Because increasing numbers of the population are displaced, more people will be dependent on the commercial market for their food supplies. Recently, the Government increased prices of basic food items, which will cause some financial difficulties for low-income people who depend on the commercial markets for their food supply. On April 1, 1988, some "official" food prices rose as much as 400 percent over March 1988 prices. Significant price increases were seen for rice at 577 percent, sugar at 428 percent, and maize flour at 282 percent. The Economic Recovery Program (ERP) is designed to reduce Government outlays for agricultural subsidies, which are estimated at $148.5 million annually. The ERP is expected to provide producers with new incentives to increase production by raising prices. In the long term consumer prices are expected to drop as the domestic food supply increases. Meanwhile, the Government has announced that it will increase wages and may lower taxes to ease the effects of these price changes. Currently, real incomes of the urban population are declining.

Given ideal conditions, economic recovery would not be expected to take place for several years. Given the continued crippling of the economy due to rebel insurrection, and the effects of long-term drought, it is expected that Mozambique will continue to suffer from food shortages in the near future.

Mozambique basic food data

Commodity/year	Actual or forecast production	Beginning stocks	Net imports	Nonfeed use	Feed use	Per capita total use	1979-81 Commodity coverage	1979-81 Share of diet
	1,000 tons					Kilos		Percent
Major cereals								
1980/81	538	0	409	947	0	78	Wheat	6.3
1981/82	605	0	365	970	0	78	Rice	6.0
1982/83	570	0	383	953	0	75	Corn	15.8
1983/84	372	0	463	835	0	64	Sorghum	5.7
1984/85	429	0	527	956	0	71	Millet	0.2
1985/86	513	0	560	1,073	0	78	Cassava	38.4
1986/87	486	0	405	891	0	63	Total	72.4
1987/88	388	0	567	955	0	66		
1988/89	397	0						
1989/90	432	0						
Roots								
1980/81	2,800	0	0	2,800	0	231		
1981/82	2,850	0	0	2,850	0	229		
1982/83	2,900	0	0	2,900	0	227		
1983/84	2,300	0	0	2,300	0	176		
1984/85	2,600	0	0	2,600	0	194		
1985/86	2,800	0	0	2,800	0	203		
1986/87	2,900	0	0	2,900	0	205		
1987/88	2,900	0	0	2,900		201		
1988/89	2,900	0						
1989/90	3,000	0						

Import requirements for Mozambique

Commodity/year	Production	Total use		Import requirements		
		Status quo	Nutrition based	Status quo	Nutrition-based	Maximum absorbable
	1,000 tons					
Major cereals						
1988/89	397	1,037	1,416	640	1,019	773
1989/90	432	1,067	1,459	635	1,027	771
Roots						
1986/87	2,900	3,005	4,756	105	1,856	558
1987/88	3,000	3,091	4,893	91	1,893	557
Cereal equivalent						
1986/87	1,560	2,242	3,324	683	1,764	996
1987/88	1,635	2,307	3,422	672	1,787	995

Financial indicators for Mozambique, actual and projected

Year	Exports and other credits	Imports and other debits	Debt service	International reserves	Foreign exchange available	
					Total	Share to major food imports
	Million dollars					Percent
1980	448	870	91	268	357	17
1981	452	918	214	206	238	21
1982	394	971	226	71	168	19
1983	292	797	174	60	118	27
1984	214	690	94	69	120	29
1985	184	624	50	49	134	29
1986	198	820	8	72	190	17
1987	208	975	94	107	114	
1988	218	1,113	125	107	94	25
1989	249	1,253	152	132	110	25

Additional food needs to support consumption for Mozambique, with stock adjustment and as constrained by maximum absorbable imports

Commodity/year	Commercial import capacity		Status quo		Nutrition-based	
	Quantity	Value	Quantity	Value	Quantity	Value
	1,000 tons	Million $	1,000 tons	Million $	1,000 tons	Million $
Cereal equivalent Consumption						
1988/89	46	9	637	126	1,718	349
1989/90	61	11	610	105	1,725	296
Stock adjustment						
1988/89			0	0	0	0
1989/90			0	0	0	0
Total						
1988/89			637	126	1,718	340
1989/90			610	105	1,725	296
Maximum absorbable						
Cereal equivalent						
1988/89			637	126	951	188
1989/90			610	105	933	160

Swaziland

The outlook for agriculture is rather mixed. The above average rainfall in 1987/88 season is expected to benefit some crops but not others. It is feared that some crops may be affected by low temperatures and frequently overcast skies. A dry spell during the most critical growth stage (December-January) has reduced corn crop expectations. Soil acidity problems are also foreseen as the high rains washed out nutrients. Cereal production is expected to drop from 88,000 tons in 1987/88 to 82,000 tons in 1988/89. Cereal use to maintain status quo consumption is 146,000 in 1988/89, increasing to 150,000 in 1989/90. Nutrition-based cereal use requirements are slightly lower, indicating that recent per capita consumption has in the aggregate covered minimum caloric needs.

The balance of payments improved significantly in 1986 as export revenue increased by 57 percent while imports grew by 12 percent. This healthy trend was reversed in 1987 when some economic realities hit home. Since 1985, the Swazi currency, Lilangeni, has lost over 40 percent of its value against all major currencies and, while this trend has had a positive effect on exports, it has been more than offset by an increase in import costs. Sugar exports fell by 25 percent due to recent disruptions on the Mozambique railways as well as competition with South Africa in the EC markets and the 30 percent reduction in the U.S. sugar import quota. Debt service is estimated to be down slightly in 1988. While the financial situation has deteriorated significantly, foreign exchange is adequate to cover higher cost food imports, and status quo additional food needs are minimal.

Swaziland basic food data

Commodity/year	Actual or forecast production	Beginning stocks	Net imports	Nonfeed use	Feed use	Per capita total use	1979-81 Commodity coverage	1979-81 Share of diet
	1,000 tons					Kilos		Percent
Major cereals								
1980/81	99	0	53	105	47	260	Corn	50.1
1981/82	95	0	59	104	50	256	Sorghum	0.7
1982/83	53	0	69	87	35	198	Milk	4.5
1983/84	52	0	67	84	35	187	Total	55.3
1984/85	112	0	27	109	30	212		
1985/86	86	0	41	97	30	188		
1986/87	96	0	45	107	34	203		
1987/88	88	0	49	100	37	192		
1988/89	82	0						
1989/90	87	0						
Milk (whole)								
1980/81	37	0	6	43	0	74		
1981/82	37	0	7	44	0	73		
1982/83	37	0	4	41	0	66		
1983/84	38	0	5	43	0	68		
1984/85	38	0	5	43	0	66		
1985/86	38	0	5	43	0	64		
1986/87	39	0	5	44	0	63		
1987/88	39	0	5	44	0	62		
1988/89	39	0						
1989/90	40	0						

Import requirements for Swaziland

Commodity/year	Production	Total use		Import requirements		
		Status quo	Nutrition-based	Status quo	Nutrition-based	Maximum absorbable
	1,000 tons					
Major cereals						
1988/89	82	146	138	64	56	109
1989/90	87	150	143	63	56	110
Milk (whole)						
1988/89	39	48	52	9	13	15
1989/90	40	49	54	9	14	16

Financial indicators for Swaziland, actual and projected

Year	Exports and other credits	Imports and other debits	Debt service	International reserves	Foreign exchange available	
					Total	Share to major food imports
	Million dollars					Percent
1980	368	517	12	159	356	2
1981	388	562	16	96	372	3
1982	324	438	18	76	306	3
1983	304	404	18	93	286	2
1984	231	371	17	80	214	7
1985	173	277	23	83	150	5
1986	266	302	25	96	241	3
1987	270	310	25	127	245	
1988	270	310	24	115	265	5
1989	270	310	24	115	265	5

Additional food needs to support consumption for Swaziland, with stock adjustment and as constrained by maximum absorbable imports

Commodity/year	Commercial import capacity		Status quo		Nutrition-based	
	Quantity	Value	Quantity	Value	Quantity	Value
	1,000 tons	Million $	1,000 tons	Million $	1,000 tons	Million $
Cereal equivalent						
Consumption						
1988/89	55	10	9	2	0	0
1989/90	63	10	0	0	0	0
Stock adjustment						
1988/89			0	0	0	0
1989/90			0	0	0	0
Total						
1988/89			9	2	0	0
1989/90			0	0	0	0
Milk						
1988/89	2	3	6	9	0	0
1989/90	3	3	6	8	0	0
Total						
1988/89		13		11		0
1989/90		13		8		0
Maximum absorbable						
Cereal equivalent						
1988/89			9	2	0	0
1989/90			0	0	0	0
Milk						
1988/89			6	9	0	0
1989/90			6	8	0	0
Total						
1988/89				11		0
1989/90				8		0

Zambia

Status quo additional food needs for 1988/89 are zero. Zambia is harvesting a bumper corn crop this year, with initial estimates of production at 1.35 million tons, a 42-percent increase over last year's drought corn crop of 950,000 tons. Corn, in the milled forms of breakfast meal and mealie meal, comprises 57 percent of the Zambian diet. Wheat production for 1988/89 is estimated at 35,000 tons. Increasing wheat demand is largely met by imports. In 1987/88, Zambia imported nearly 100,000 tons of wheat, and imports for 1988/89 are projected at 55,000 tons, but will likely exceed that number. In late 1988 wheat shortages were rampant, with many bakeries closing or operating below capacity. Wheat area is expanding, as several irrigated wheat/cotton farms are underway, but Zambia will continue to be an importer.

Since the termination of its IMF agreement in May 1987, Zambia has been pursuing several new agricultural policies. Since market year 1986/87, producer prices for most agricultural commodities have been decontrolled. A system of official "ceiling prices" has been replaced by "floor prices," with the government marketing board (NAMBOARD) and the Provincial Cooperative Unions (PCUs) being the buyers and sellers of last resort. Agricultural commodities, with the exceptions of corn and wheat, are marketed privately. To encourage farmers to make early deliveries of the 1988/89 bumper corn crop in order to prevent supply shortages, pressures on low stocks, and overloading of the transport sector, the Government announced in April that a kwacha 25.00 per 90 kilogram bag bonus would be paid for deliveries to district warehouses or millers through May 31, 1988. June 1 thru July 31 a bonus of kwacha 12.50 per bag would be paid for like deliveries. To date there has not been much information as to the effectiveness of this bonus system.

Despite record production, shortages of mealie meal, breakfast meal, and wheat flour may continue to be a problem. Since the nationalization of the National Milling Corporation (NMC) in 1986, processing of both corn and wheat has been below capacity, and consumers have had difficulty buying the staple mealie meal due to shortages in shops.

Zambia's status quo import requirements for major cereals for 1988/89 are negative, due to high corn production. An 86,000-ton import requirement for wheat is offset by a 91,000-ton corn surplus. This year's record corn production will allow Zambia to replenish stocks and possibly export to neighboring countries. Significant amounts of corn are smuggled to Zaire where prices are higher. Commercial import capacity for 1988/89 is 78,000 tons for cereals, which will probably be used largely to import wheat.

Zambia basic food data

Commodity/year	Actual or forecast production	Beginning stocks	Net imports	Nonfeed use	Feed use	Per capita total use	1979-81 Commodity coverage	1979-81 Share of diet
	1,000 tons					Kilos		Percent
Major cereals								
1980/81	711	56	381	1,096	30	200	Wheat	9.3
1981/82	1,023	22	220	1,199	30	211	Rice	0.5
1982/83	752	36	248	969	40	167	Corn	57.1
1983/84	962	27	205	1,135	35	186	Total	67.0
1984/85	888	24	154	1,007	39	160		
1985/86	1,149	20	152	1,172	39	179		
1986/87	1,302	110	179	1,295	39	190		
1986/87	1,002	257	195	1,316	34	185		
1988/89	1,403	104						
1989/90	1,410	104						

Import requirements for Zambia

Commodity/year	Production	Total use: Status quo	Total use: Nutrition-based	Import requirements: Status quo	Import requirements: Nutrition-based	Import requirements: Maximum absorbable
	1,000 tons					
Major cereals						
1988/89	1,403	1,397	1,805	(6)	402	344
1989/90	1,410	1,449	1,861	39	451	396

Financial indicators for Zambia, actual and projected

Year	Exports and other credits	Imports and other debits	Debt service	International reserves	Foreign exchange available: Total	Foreign exchange available: Share to major food imports
	Million dollars					Percent
1980	1,457	1,114	289	78	1,168	8
1981	996	1,065	294	56	702	5
1982	942	1,004	176	58	766	4
1983	923	711	125	55	798	3
1984	893	612	116	54	777	3
1985	797	571	94	200	703	4
1986	689	517	124	70	565	1
1987	848	753	125	109	723	
1988	800	700	113	100	664	3
1989	825	750	116	100	676	3

Additional food needs to support consumption for Zambia, with stock adjustment and as constrained by maximum absorbable imports

Commodity/year	Commercial import capacity		Status quo		Nutrition-based	
	Quantity	Value	Quantity	Value	Quantity	Value
	1,000 tons	Million $	1,000 tons	Million $	1,000 tons	Million $
Cereal equivalent						
Consumption						
1988/89	78	14	0	0	324	59
1989/90	92	15	0	0	359	57
Stock adjustment						
1988/89			0	0	12	2
1989/90			0	0	10	2
Total						
1988/89			0	0	336	61
1989/90			0	0	369	58
Maximum absorbable						
Cereal equivalent						
1988/89			0	0	279	51
1989/90			0	0	314	50

Zimbabwe

Cereal production is expected to reach 2.6 million tons during the 1988/89 harvest, up from 1.6 million the previous year. The forecast for 1989/90 is 2.7 million tons. The increase in cereal output is due to a forecast doubling of corn production from 1987/88, despite Government policies to discourage production by maintaining low producer prices. Per capita cereal total use has recovered from the 1986/87 level of 211 to 286 kilograms.

The balance of payments continues to be a major concern. Gains in the balance of trade are being offset by increases in debt service, remittances on company profits and rising dividend payments. The Government is concerned by the increasing debt service ratio but feels that the economy can survive the current debt crisis. Foreign exchange availability is expected to be adequate to cover relatively small amounts of food imports.

Status quo additional food needs are zero, and nutrition-based needs are only 40,000 tons in 1988/89. However, the country has additional need for stock adjustments to recover to recent stock levels. Commercial cereal import capacity is 144,000 tons, down from 332,000 in 1987/88. This is the consequence of both a reduced share of foreign exchange allocated to major food import and higher commodity prices.

Zimbabwe basic food data

Commodity/year	Actual or forecast production	Beginning stocks	Net imports	Nonfeed use	Feed use	Per capita total use	1979-81 Commodity coverage	1979-81 Share of diet
	1,000 tons					Kilos		Percent
Major cereals								
1980/81	2,046	246	7	1,704	300	275	Wheat	8.8
1981/82	3,253	295	(288)	1,577	350	254	Corn	45.4
1982/83	2,196	1,333	(464)	1,521	350	240	Sorghum	2.6
1983/84	1,160	1,194	(171)	1,640	300	240	Millet	6.3
1984/85	1,695	243	379	1,468	310	212	Total	63.2
1985/86	3,460	539	(210)	1,791	325	243		
1986/87	3,001	1,673	(600)	1,607	300	211		
1987/88	1,600	2,167	(86)	2,279	400	286		
1988/89	2,555	1,002						
1989/90	2,720	1,002						

Import requirements for Zimbabwe

Commodity/year	Production	Total use: Status quo	Total use: Nutrition-based	Import requirements: Status quo	Import requirements: Nutrition-based	Import requirements: Maximum absorbable
	1,000 tons					
Major cereals						
1988/89	2,555	2,375	2,739	(180)	184	1,391
1989/90	2,720	2,466	2,842	(254)	122	1,332

Financial indicators for Zimbabwe, actual and projected

Year	Exports and other credits	Imports and other debits	Debt service	International reserves	Foreign exchange available: Total	Foreign exchange available: Share to major food imports
	Million dollars					Percent
1980	1,446	1,339	44	214	1,401	3
1981	1,451	1,534	70	170	1,381	1
1982	1,312	1,472	140	140	1,173	1
1983	1,154	1,070	441	75	713	2
1984	1,174	989	272	45	902	5
1985	1,120	919	307	93	812	4
1986	1,326	1,011	339	106	987	0
1987	1,350	1,100	340	166	1,010	
1988	1,350	1,100	386	166	1,018	3
1989	1,375	1,150	393	170	1,034	3

Additional food needs to support consumption for Zimbabwe, with stock adjustment and as constrained by maximum absorbable imports

Commodity/year	Commercial import capacity		Status quo		Nutrition-based	
	Quantity	Value	Quantity	Value	Quantity	Value
	1,000 tons	Million $	1,000 tons	Million $	1,000 tons	Million $
Cereal equivalent						
Consumption						
1988/89	144	24	0	0	40	7
1989/90	169	25	0	0	0	0
Stock adjustment						
1988/89			490	83	490	83
1989/90			0	0	57	8
Total						
1988/89			346	59	530	90
1989/90			0	0	10	2
Maximum absorbable						
Cereal equivalent						
1988/89			346	59	530	90
1989/90			0	0	10	2

Pakistan

Food grain production is forecast to rise more than 4 percent to nearly 17 million tons in 1988/89, only a marginal recovery from the poor 1987/88 harvest. A stronger recovery in 1988/89 food grain production is unlikely because dry weather led to another poor wheat crop of only about 12.3 million tons in 1988. With normal rainfall so far during the 1988 monsoon, and assuming normal rainfall through September, 1988/89 harvests of rice and corn are likely to stage a strong recovery. Both rice and corn plantings should rise in response to higher support and open market prices. The 1988/89 pulse crop is also expected to be up sharply following drought damage in 1987/88, also aided by higher prices and increased plantings. Cottonseed oil continues to account for most domestic edible oil production, and cotton output is currently forecast to show little change in 1988/89. However, favorable weather could result in another strong gain in cotton production.

Status quo cereal import requirements for 1988/89 are estimated at nearly 1.6 million tons and nutrition-based import needs at 2.4 million tons. Maximum absorbable cereal imports are estimated at about 1.9 million tons. Status quo per capita consumption meets roughly 91 percent of recommended caloric intake. Public and private stocks of food grains, primarily wheat, were drawn down by about 1 million tons to an estimated 2.9 million tons during 1987/88 to compensate for the drop in 1987 wheat output. Even at 2.9 million tons, stocks remain relatively high by historical standards. Using the standard calculation procedure, stocks are rebuilt by nearly 500,000 tons in 1988/89, boosting import needs to meet both consumption and stock building to 2.1 million tons using the status quo method and 2.9 million using the nutrition-based approach. However, because stocks remain relatively high, the Government may choose not to rebuild stocks in 1988/89, or even to reduce them further, without threatening food security.

The status quo import requirement for oils is estimated at 690,000 tons in 1988/89, and probably better accounts for the increasing role of oils in the diet than the lower nutrition-based estimate. Pulse import requirements are forecast to be negligible in 1988/89, according to both methods.

Pakistan's export performance and prospects for 1988 and 1989 continue to improve, with higher rice and raw cotton prices and strong gains in yarn and textile volumes boosting export earnings. These export gains are expected to compensate for continued sluggishness in worker remittances, a major source of foreign exchange, because of slowed economic expansion in the Middle East. Improved export performance is projected to offset rising imports and lead to little or no growth in the current account deficit in 1988 or 1989. However, debt service payments, including repayment of IMF obligations, are likely to rise in 1988 and lead to a further decline in foreign reserves. Completion of IMF repayments should reduce debt service in 1989, leading to a recovery in foreign reserves. However, the balance of payments position will remain fragile, in part because weak domestic savings performance continues to require increased foreign borrowing that could jeopardize future import capacity unless strong export growth is sustained.

Pakistan's 1988/89 status quo additional food needs to support consumption are estimated at 605,000 tons of cereals, rising to 1.1 million tons if stock rebuilding is taken into account. Nutrition-based additional cereal needs are estimated at 219,000 tons to support consumption and 717,000 tons to support consumption and stock building. Maximum absorbable nutrition-based additional needs are smaller than status quo needs because smaller nutrition-based import needs for edible oils and pulses leave more commercial import capacity available for cereals. Using the larger status quo import requirements for edible oils and pulses, maximum absorbable nutrition-based cereal needs would be about 900,000 tons to support consumption and 1.4 million tons for both consumption and stock building.

Assuming normal weather and a recovery in wheat production, cereal import needs are projected to drop sharply in 1989/90. Commercial import capacity is likely to be sufficient to cover all cereal import needs according to both the status quo and nutrition-based methods. Edible oil and pulse import needs are also projected to remain within the range of commercial import capacity.

Pakistan basic food data

Commodity/year	Actual or forecast production	Beginning stocks	Net imports	Nonfeed use	Feed use	Per capita total use	1979-81 Commodity coverage	1979-81 Share of diet
	1,000 tons					Kilos		Percent
Major cereals								
1980/81	14,920	1,248	(843)	13,997	130	166	Wheat	47.2
1981/82	15,833	1,204	(494)	14,394	130	164	Rice	10.5
1982/83	15,754	2,019	(654)	14,636	140	162	Corn	3.3
1983/84	16,766	2,343	(984)	15,183	150	164	Vegetable oils	7.7
1984/85	15,225	2,792	157	15,580	160	164	Pulses	2.2
1985/86	15,631	2,434	535	15,368	252	158	Total	70.9
1986/87	18,519	2,980	(926)	16,191	270	162		
1987/88	16,228	4,112	(450)	16,501	275	160		
1988/89	16,950	3,114						
1989/90	18,700	3,114						
Vegetable oils								
1980/81	225	75	455	693	0	8		
1981/82	240	62	573	808	0	9		
1982/83	256	67	663	917	0	10		
1983/84	190	69	630	812	0	9		
1984/85	289	77	659	950	0	10		
1985/86	344	75	984	1,083	0	11		
1986/87	350	320	617	1,137	0	11		
1987/88	379	150	875	1,189	0	11		
1988/89	389	215						
1989/90	410	215						
Pulses								
1980/81	526	0	0	496	30	6		
1981/82	488	0	40	478	50	6		
1982/83	694	0	50	692	52	8		
1983/84	710	0	65	725	50	8		
1984/85	726	0	42	718	50	8		
1985/86	732	0	61	743	50	8		
1986/87	790	0	40	780	50	8		
1987/88	672	0	80	702	50	7		
1988/89	822	0						
1989/90	840	0						

Import requirements for Pakistan

Commodity/year	Production	Total use: Status quo	Total use: Nutrition-based	Import requirements: Status quo	Import requirements: Nutrition-based	Import requirements: Maximum absorbable
	1,000 tons					
Major cereals						
1988/89	16,950	18,515	19,383	1,565	2,433	1,863
1989/90	18,700	19,026	20,011	326	1,311	600
Vegetable oils						
1988/89	389	1,075	836	686	447	938
1989/90	410	1,104	860	694	450	950
Pulses						
1988/89	822	842	796	20	(26)	67
1989/90	840	865	817	25	(23)	73

Financial indicators for Pakistan, actual and projected

Year	Exports and other credits	Imports and other debits	Debt service	International reserves	Foreign exchange available: Total	Foreign exchange available: Share to major food imports
	Million dollars					Percent
1980	5,799	6,824	1,225	1,058	4,574	6
1981	5,595	7,130	1,524	809	4,071	7
1982	6,618	7,130	1,573	1,911	5,045	7
1983	6,681	7,681	1,499	1,731	5,182	7
1984	6,107	7,792	1,518	668	4,589	12
1985	6,753	7,987	1,733	930	5,020	11
1986	6,600	7,700	2,187	900	4,413	13
1987	7,200	8,530	2,043	710	5,157	
1988	8,100	9,400	2,300	500	5,358	12
1989	8,800	10,400	2,150	810	6,418	12

Additional food needs to support consumption for Pakistan, with stock adjustment and as constrained by maximum absorbable imports

Commodity/year	Commercial import capacity: Quantity	Commercial import capacity: Value	Status quo: Quantity	Status quo: Value	Nutrition-based: Quantity	Nutrition-based: Value
	1,000 tons	Million $	1,000 tons	Million $	1,000 tons	Million $
Cereal equivalent Consumption						
1988/89	544	119	605	132	790	172
1989/90	751	142	0	0	0	0
Stock adjustment						
1988/89			497	109	497	109
1989/90			0	0	0	0
Total						
1988/89			1,103	241	1,287	281
1989/90			0	0	0	0
Vegetable oils						
1988/89	822	479	0	0	0	0
1989/90	1,083	574	0	0	0	0
Pulses						
1988/89	42	22	0	0	0	0
1989/90	52	26	0	0	0	0
Total						
1988/89		619		241		281
1989/90		742		0		0
Maximum absorbable						
Cereal equivalent						
1988/89			1,103	241	717	157
1989/90			0	0	0	0

Sri Lanka

Sri Lanka's rice production during 1988 is forecast to increase to 1.6 million tons or nearly 13 percent above last year's reduced crop, which was the lowest since 1980. Despite an improved (February/March harvested) maha crop, which accounts for about 60 percent of total production, soil moisture stress and low water levels in the country's major reservoirs may inhibit a full rebound in the largely irrigated (August/September harvested) yala crop. Wheat is not grown in Sri Lanka, but accounts for more than one-quarter of domestic cereal supplies. Coconut oil output in 1988/89 is estimated at

75,000 tons, 36 percent above 1987/88, but well below the 150,000-ton record set in 1985/86. Steadily increasing domestic demand for fresh coconuts combined with unattractive incentives for coconut producers is reducing coconut oil production. Cassava output is estimated to keep pace with population growth and reach about 650,000 tons in 1988/89.

To maintain status quo consumption, 1988/89 cereal import requirements are estimated at 837,000 tons. To meet the FAO-recommended minimum, cereal imports of 778,000 tons are suggested by the nutrition-based method.

The economy continues to be constrained by several factors, including an unsustainable fiscal deficit, a weak export base, rising debt service obligations, and an unstable political and investment climate. Despite the Peace Accord signed in July 1987, continuing internal conflicts have slowed implementation of the aid-financed Reconstruction Program. The chronic trade deficit is projected to narrow slightly, as defense-related imports decline and non-traditional export items, such as textiles and gems, rise. Since civil unrest began in 1983, the balance of payments deficit has been financed by concessional loans from abroad and a steady drawdown in foreign reserves. These factors, combined with significantly higher world cereal prices, are likely to hamper the country's ability to finance imports commercially.

Additional needs during 1988/89 are currently estimated at 288,000 tons to maintain status quo consumption and 227,000 to meet the FAO-recommended minimum. Because rice stocks were lowered sharply to offset the production shortfall and curb price rises, an additional 6,000 tons are suggested for rebuilding security stocks. With average weather and sustained export growth, no additional needs are indicated for Sri Lanka in 1989/90.

Sri Lanka basic food data

Commodity/year	Actual or forecast production	Beginning stocks	Net imports	Nonfeed use	Feed use	Per capita total use	1979-81 Commodity coverage	1979-81 Share of diet
	1,000 tons					Kilos		Percent
Major cereals								
1980/81	1,450	254	692	2,198	0	148	Wheat	13.8
1981/82	1,469	198	663	2,142	0	141	Rice	42.0
1982/83	1,466	188	789	2,226	0	145	Cassava	3.0
1983/84	1,688	217	728	2,317	0	148	Vegetable oils	3.5
1984/85	1,640	316	705	2,458	0	156	Total	62.3
1985/86	1,809	203	876	2,553	0	160		
1986/87	1,765	335	895	2,460	0	152		
1987/88	1,445	535	780	2,430	0	148		
1988/89	1,630	330						
1989/90	1,785	330						
Roots								
1980/81	500	0	0	500	0	34		
1981/82	526	0	0	526	0	35		
1982/83	573	0	0	573	0	37		
1983/84	722	0	0	722	0	46		
1984/85	683	0	0	683	0	43		
1985/86	598	0	0	598	0	37		
1986/87	615	0	0	615	0	38		
1987/88	630	0	0	630	0	37		
1988/89	650	0						
1989/90	665	0						
Vegetable oils								
1980/81	78	0	(5)	73	0	5		
1981/82	103	0	(35)	68	0	4		
1982/83	87	0	(26)	61	0	4		
1983/84	37	0	1	38	0	2		
1984/85	130	0	(63)	67	0	4		
1985/86	150	0	(68)	82	0	5		
1986/87	72	0	12	84	0	5		
1987/88	55	0	5	60	0	4		
1988/89	75	0						
1989/90	90	0						

Import requirements for Sri Lanka

Commodity/year	Production	Total use		Import requirements		
		Status quo	Nutrition-based	Status quo	Nutrition-based	Maximum absorbable
	1,000 tons					
Major cereals						
1988/89	1,630	2,467	2,428	837	798	1,232
1989/90	1,785	2,501	2,473	716	688	1,114
Roots						
1988/89	650	653	599	3	(51)	120
1989/90	665	662	609	(3)	(56)	115
Cereal equivalent						
1988/89	1,885	2,723	2,663	838	778	1,221
1989/90	2,046	2,761	2,711	715	666	1,101
Vegetable oils						
1988/89	75	68	75	(7)	(0)	11
1989/90	90	69	80	(21)	(10)	(2)

Financial indicators for Sri Lanka, actual and projected

Year	Exports and other credits	Imports and other debits	Debt service	International reserves	Foreign exchange available	
					Total	Share to major food imports
	Million dollars					Percent
1980	1,294	2,205	229	246	1,065	17
1981	1,343	2,055	260	327	1,077	12
1982	1,305	2,205	300	351	1,005	7
1983	1,359	2,138	341	297	1,018	11
1984	1,742	2,121	317	511	1,425	8
1985	1,555	2,296	368	451	1,187	13
1986	1,518	2,263	423	353	1,095	12
1987	1,711	2,437	536	279	1,175	
1988	1,925	2,645	550	250	1,163	11
1989	2,195	2,865	530	300	1,464	11

Additional food needs to support consumption for Sri Lanka, with stock adjustment and as constrained by maximum absorbable imports

Commodity/year	Commercial import capacity		Status quo		Nutrition-based	
	Quantity	Value	Quantity	Value	Quantity	Value
	1,000 tons	Million $	1,000 tons	Million $	1,000 tons	Million $
Cereal equivalent						
Consumption						
1988/89	491	80	288	47	227	37
1989/90	713	101	0	0	0	0
Stock adjustment						
1988/89			6	1	6	1
1989/90			0	0	0	0
Total						
1988/89			293	48	233	38
1989/90			0	0	0	0
Vegetable oils						
1988/89	16	10	0	0	0	0
1989/90	22	12	0	0	0	0
Total						
1988/89		90		48		38
1989/90		113		0		0
Maximum absorbable						
Cereal equivalent						
1988/89			293	48	233	38
1989/90			0	0	0	0
Vegetable oils						
1988/89			0	0	0	0
1989/90			0	0	0	0

Indonesia

During 1988/89, cereal production is estimated to increase marginally to 31.3 million tons because of a rebound in corn output to 5 million tons. Rice production, however, is estimated to stagnate at 26.3 million tons and fall short of domestic consumption for the second year. A late monsoon delayed planting by 1-2 months leading many farmers to switch to faster maturing but lower yielding rice varieties during the main growing season. The new rice intensification program is not expected to significantly augment rice output, because it is estimated to cover only 4 percent of total rice area. In addition, attractive corn and soybean prices are causing farmers to plant these crops instead of a second rice crop. Wheat is not produced in Indonesia but is an important cereal supplement, particularly in urban areas. Strong growth in cassava production is estimated to continue because of increasing use of improved varieties. Vegetable oil production is expected to increase 2 percent to 2.3 million tons, as recent plantings on palm plantations reach maturity.

To maintain status quo consumption levels in 1988/89, cereal import requirements are estimated at 2.1 million tons. Recent consumption levels apparently exceed the FAO-recommended minimum, resulting in a much lower nutrition-based estimate of 278,000 tons.

The balance of payments situation in Indonesia remains tight but manageable, as Government austerity and reform measures have led to increased investment, improved export competitiveness, and reduced dependence on the petroleum sector. The current account surplus is projected to widen through 1989, allowing international reserves to be maintained at record or near-record levels. However, the appreciation of the Japanese yen has caused a surge in the foreign debt burden, with debt service obligations estimated to account for a cumbersome 30 percent of export earnings during 1988. Indonesia's 1988/89 commercial import capacity is now estimated at $286 million, down 20 percent from earlier projections. This is mainly explained by the surge in world cereal prices and, to a lesser extent, by the inclusion in the new base period (1984-86) of years during which Indonesia enjoyed greater self-sufficiency and, therefore, lower imports of food grains (see Forward).

As a result, status quo additional needs in 1988/89 are calculated to have risen dramatically to 1.2 million tons. This estimate includes 505,000 tons for building public stocks, which fell to extremely low levels as the Government increased food grain distribution to moderate inflation. Although the financial situation is tight, Indonesia appears capable of allocating a larger share of its available foreign exchange to food grain imports and financing more of its import requirement. Additional needs using the nutrition-based method continue to be estimated at zero. Assuming modest gains in domestic grain and root production in 1989/90, estimated status quo additional needs will drop slightly and nutrition-based additional needs are unchanged at zero.

Indonesia basic food data

Commodity/year	Actual or forecast production	Beginning stocks	Net imports	Nonfeed use	Feed use	Per capita total use	1979-81 Commodity coverage	1979-81 Share of diet
	1,000 tons					Kilos		Percent
Major cereals								
1980/81	24,154	1,012	3,519	25,607	1,045	172	Wheat	2.5
1981/82	26,795	2,033	1,867	26,988	1,121	177	Rice	57.9
1982/83	26,072	2,586	2,010	27,355	1,208	176	Corn	7.9
1983/84	29,093	2,105	2,921	30,407	1,439	192	Cassava	6.5
1984/85	31,221	2,273	1,722	30,320	1,559	188	Vegetable	
1985/86	30,872	3,337	1,004	30,342	1,776	186	oils	5.0
1986/87	31,500	3,095	1,465	31,123	2,085	188	Total	79.8
1987/88	31,100	2,852	1,805	31,370	2,280	187		
1988/89	31,300	2,107						
1989/90	31,500	2,107						
Roots								
1980/81	13,726	0	(986)	12,440	300	82		
1981/82	13,301	0	(685)	12,356	260	80		
1982/83	12,988	0	(490)	12,298	200	77		
1983/84	12,103	0	(256)	11,607	240	71		
1984/85	14,205	0	(1,050)	12,875	280	78		
1985/86	13,762	0	(1,630)	11,842	290	70		
1986/87	13,312	0	(1,185)	11,891	236	69		
1987/88	14,335	0	(2,332)	11,738	238	69		
1988/89	14,800	0						
1989/90	15,125	0						
Vegetable oils								
1980/81	1,552	40	(180)	1,357	0	9		
1981/82	1,618	55	(303)	1,304	0	8		
1982/83	1,703	66	(414)	1,331	0	8		
1983/84	1,942	24	(229)	1,577	0	10		
1984/85	2,040	160	(904)	1,259	0	7		
1985/86	2,156	37	(722)	1,449	0	8		
1986/87	2,204	22	(683)	1,481	0	8		
1987/88	2,247	62	(770)	1,512	0	8		
1988/89	2,326	27						
1989/90	2,350	27						

Import requirements for Indonesia

Commodity/year	Production	Total use: Status quo	Total use: Nutrition based	Import requirements: Status quo	Import requirements: Nutrition based	Import requirements: Maximum absorbable
	1,000 tons					
Major cereals						
1988/89	31,300	33,923	31,796	2,623	496	5,282
1989/90	31,500	34,593	32,398	3,093	898	5,780
Roots						
1988/89	14,800	13,448	14,224	(1,352)	(576)	331
1989/90	15,125	13,714	14,515	(1,411)	(610)	305
Cereal equivalent						
1988/89	36,909	39,019	37,187	2,110	278	4,657
1989/90	37,232	39,790	37,899	2,558	667	5,131
Vegetable oils						
1988/89	2,326	1,534	1,522	(792)	(804)	(442)
1989/90	2,350	1,564	1,546	(786)	(804)	(432)

Financial indicators for Indonesia, actual and projected

Year	Exports and other credits	Imports and other debits	Debt service	International reserves	Foreign exchange available	
					Total	Share to major food imports
	Million dollars					Percent
1980	21,795	12,624	1,758	5,392	20,037	4
1981	23,348	16,542	2,047	5,014	21,301	2
1982	19,747	17,854	2,249	3,144	17,498	2
1983	18,689	17,726	2,542	3,718	16,137	4
1984	20,754	15,047	3,257	4,773	17,497	3
1985	18,527	12,705	4,018	4,974	14,509	2
1986	14,396	11,938	4,432	4,051	9,964	3
1987	16,981	12,013	5,156	5,592	11,825	
1988	18,800	13,000	5,746	5,600	13,779	3
1989	21,200	14,300	6,089	5,600	15,348	3

Additional food needs to support consumption for Indonesia with stock adjustment and as constrained by maximum absorbable imports

Commodity, year	Commercial import capacity		Status quo		Nutrition-based	
	Quantity	Value	Quantity	Value	Quantity	Value
	1,000 tons	Million $	1,000 tons	Million $	1,000 tons	Million $
Cereal equivalent						
Consumption						
1988/89	1,247	286	733	168	0	0
1989/90	1,602	318	788	157	0	0
Stock adjustment						
1988/89			505	116	0	0
1989/90			364	72	0	0
Total						
1988/89			1,239	284	0	0
1989/90			1,153	229	0	0
Vegetable oils						
1988/89	94	30	0	0	0	0
1989/90	115	33	0	0	0	0
Total						
1988/89		316		284		0
1989/90		352		229		0
Maximum absorbable						
Cereal equivalent						
1988/89			1,239	284	0	0
1989/90			1,153	229	0	0
Vegetable oils						
1988/89			0	0	0	0
1989/90			0	0	0	0

Vietnam

Vietnam's rice production during 1988/89 is projected to increase to 10 million tons, slightly above last year's reduced crop. The recently harvested spring crop was better than previously expected and has eased, at least temporarily, reported shortages in the northern provinces. However, even with an average fall harvest, which usually accounts for about half of total production, rice demand from Vietnam's rapidly growing population will exceed domestic supply. After peaking in 1984/85, per capita rice production has declined steadily, because of inadequate supply and high prices for fertilizer and other inputs, low procurement prices, and poor weather. Corn output is estimated at 575,000 tons, bringing Vietnam's total cereal production in 1988/89 to 10.6 million tons, about 1 percent above 1987/88.

To maintain status quo consumption during 1988/89, cereal import requirements are estimated at 1.5 million tons. Recent consumption levels apparently exceed the FAO recommended minimum, resulting in a lower nutrition-based import requirement estimate of 1.1 million tons.

Despite recent policy reforms the economy continues to deteriorate. Spiraling inflation of more than 400 percent has eroded public confidence and the Government's ability to procure rice from farmers for the ration system and distribution to rice deficit areas. The trade deficit narrowed in 1987, yet export earnings continue to account for less than half of import payments. Vietnam remains dependent on a very limited agricultural and light industrial export base, although significant quantities of petroleum were exported for the first time. The balance of payments deficit has been financed largely by aid from the COMECON countries and by the accumulation of arrears on foreign debt obligations. No new loans or debt relief have been extended since 1985. Because of revisions in the base period used to calculate the commercial import capacity and higher commodity prices, Vietnam's ability to import food commercially in 1988/89 has dropped in volume to 508,000 tons (from 699,000 tons), but risen in value to $134 million (from $98 million).

As a result of these changes, estimated additional cereal needs for 1988/89 have risen to 992,000 tons using the status quo method and 620,000 tons using the nutrition-based method. In response to Vietnam's worldwide appeal for 120,000 tons of food in May 1988, the United Nations has committed $9.1 million (30,000 tons of cereals and 720 tons of vegetable oil). Preliminary projections for 1989/90 suggest average growth in food grain production, which results in slightly lower import requirements. Still, additional needs are projected to show only a marginal decline as the fragile balance of payments situation remains a major constraint to Vietnam's ability to import food commercially.

Vietnam basic food data

Commodity/year	Actual or forecast production	Beginning stocks	Net imports	Nonfeed use	Feed use	Per capita total use	1979-81 Commodity coverage	1979-81 Share of diet
	1,000 tons					Kilos		Percent
Major cereals								
1980/81	8,009	0	753	8,762	0	163	Wheat	8.4
1981/82	8,575	0	811	9,386	0	171	Rice	58.7
1982/83	9,647	0	595	10,242	0	182	Corn	3.0
1983/84	10,050	0	700	10,750	0	187	Total	70.1
1984/85	10,604	0	925	11,529	0	195		
1985/86	10,842	0	1,005	11,847	0	196		
1986/87	10,952	0	980	11,932	0	192		
1987/88	10,511	0	925	11,436	0	180		
1988/89	10,575	0						
1989/90	10,800	0						

Import requirements for Vietnam

Commodity/year	Production	Total use		Import requirements		
		Status quo	Nutrition based	Status quo	Nutrition based	Maximum absorbable
	1,000 tons					
Major cereals						
1988/89	10,575	12,075	11,703	1,500	1,128	2,188
1989/90	10,800	12,378	11,992	1,578	1,192	2,283

Financial indicators for Vietnam, actual and projected

Year	Exports and other credits	Imports and other debits	Debt service	International reserves	Foreign exchange available	
					Total	Share to major food imports
	Million dollars					Percent
1980	537	1,296	242	98	295	73
1981	399	1,120	391	16	8	NA
1982	475	1,185	164	16	311	37
1983	588	1,310	161	16	427	11
1984	665	1,560	160	12	505	20
1985	746	1,590	111	12	635	18
1986	765	2,155	90	10	695	17
1987	880	2,191	184	10	696	
1988	900	2,300	135	10	761	18
1989	925	2,400	140	10	781	18

Additional food needs to support consumption for Vietnam, with stock adjustment and as constrained by maximum absorbable imports

Commodity/year	Commercial import capacity		Status quo		Nutrition-based	
	Quantity	Value	Quantity	Value	Quantity	Value
	1,000 tons	Million $	1,000 tons	Million $	1,000 tons	Million $
Cereal equivalent consumption						
1988/89	508	134	992	262	620	164
1989/90	601	138	977	224	590	135
Stock adjustment						
1988/89			0	0	0	0
1989/90			0	0	0	0
Total						
1988/89			992	262	620	164
1989/90			977	224	590	135
Maximum absorbable						
Cereal equivalent						
1988/89			992	262	620	164
1989/90			977	224	590	135

GLOSSARY OF TERMS

Status quo	A measure of per capita food availability in recent years
Nutrition-based	Per capita food availability sufficient to meet internationally accepted minimum caloric standards
Cereal equivalent	Cereal required to meet both cereal shortfalls and cereal equivalent
Import requirement	Imports necessary to achieve either status quo or nutrition based food availability, including both commercial and concessional food shipments
Rice	Milled, unless otherwise noted
Tons	Metric tons
Dollars	US dollars unless otherwise specified
GNP	Gross national product
GDP	Gross domestic product

APPENDIX A
REVISIONS IN REGIONAL ANALYSIS

The number of countries included in the *World Food Needs and Availabilities* has been reduced from 69 to 55. This has been done so as to allocate resources for food needs analysis to those countries which are the most likely recipients of a significant quantity of U.S. food assistance. Countries have been dropped in Africa, Asia and Latin America. The criteria for continued inclusion was share of U.S. food assistance, share of calculated food needs, and the year-to-year change in the share of food aid in food imports. The countries dropped from the report are Cameroon, Djibouti, Botswana, Comoros, Mauritius, Congo, Equatorial Guinea, Lebanon, North Yemen, South Yemen, Cambodia, Laos, Columbia and Ecuador. In the following table the sub-regional country groupings for Africa have been revised from the previous. The Central Africa regional summary is no longer prepared. The former Central African countries still assessed are Angola, Central African Republic (C.A.R.) and Zaire. The C.A.R. and Zaire are now included in the East Africa total and Angola is included in the Southern Africa total.

The reduction in country coverage is analyzed here in terms of the influence on 1987/88 food needs reported in *World Food Needs and Availabilities, May, 1988*. While the global change would be similar in other years, regional changes would be more marked. The total need for consumption is reduced by 4.17 percent for status quo and 5.77 percent for nutrition-based. Stocks adjusted needs are reduced somewhat less at 2.86 and 3.61 percent, respectively. The reduction differs among regions, ranging from .73 percent in Sub-Saharan Africa to 18.8 percent in Latin America. The 1987/88 import requirements of the 69 countries was 61.3 million tons as compared to 57.3 for the 55, a reduction of 6.5 percent.

Regional estimates for 55 and 69 country regional groupings, World Food Needs and Availabilities, 1987/88, May, 1988. (Thousand tons)

C[1]	Country	Major Cereal Prod.	Cereal Equiv. Prod.	Cereal equivalent Total Use: Status quo	Cereal equivalent Total Use: Nutrition based	Import Requirement	Import Capacity	Status quo: Cons. needs	Status quo: Cons. needs + stocks	Nutrition-based: Cons. needs	Nutrition-based: Cons. needs + stocks	Max
B	Benin	394	1012	1181	1193	169	91	78	58	91	71	71
B	Burkina	1685	1685	1425	1611	-255	63	0	0	44	0	0
X	Cameroon * [2]	1001	2415	2636	2629	215	191	24	24	23	23	24
B	Cape Verde	6	6	79	52	73	3	66	60	33	33	60
B	Chad	593	675	769	1059	94	3	91	86	360	370	244
B	Gambia	106	106	152	144	46	53	0	0	0	0	0
B	Ghana	800	2578	2852	3197	242	356	0	0	324	243	243
B	Guinea	437	652	814	988	162	112	50	58	224	233	146
B	Guinea-Bissau	142	157	172	166	14	19	0	1	0	0	1
B	Liberia	185	260	387	424	127	86	41	43	77	79	79
B	Mali	1403	1403	1492	1744	89	161	0	0	180	164	148
B	Mauritania	126	126	292	279	166	141	25	25	12	12	25
B	Niger	1637	1637	1983	2119	346	40	306	234	442	359	369
B	Senegal	830	830	1496	1506	666	661	34	67	44	77	77
B	Sierra Leone	350	629	757	769	128	76	52	52	64	64	64
B	Togo	368	693	821	857	129	106	23	23	58	58	58
	W. Africa (69)	10063	14864	17302	18737	2411	2162	784	731	1996	1802	1609
	W. Africa (55)	9062	12449	14672	16108	2196	1971	760	707	1973	1779	1585
B	Burundi	359	652	680	959	28	21	8	8	287	287	56
X	Djibouti *	0	0	59	0	59	51	8	10			10
B	Ethiopia	5000	5000	6794	8884	1794	179	1614	1616	3704	3706	2734
B	Kenya	2894	3459	3819	4669	360	137	223	291	1073	1140	593
B	Rwanda	351	1620	1706	1914	86	9	77	77	285	285	285
B	Somalia	589	589	886	1153	297	140	144	143	398	398	170
B	Sudan	1962	2292	4128	4454	1836	137	1698	678	2025	1005	984
B	Tanzania	3550	5390	5673	5501	283	132	151	165	0	0	165
B	Uganda	1575	3752	3700	3833	-52	8	0	0	72	72	72
	E. Africa (69)	16280	22754	27445	31367	4691	814	3923	2988	7844	6893	5069
	E. Africa (55)	16280	22754	27386	31367	4632	763	3915	2978	7844	6893	5059
X	Botswana *	26	26	191	162	165	282	0	0	0	0	0
X	Comoros *	3	26	59	95	34	28	6	6	42	42	12
A	Lesotho	140	140	319	377	179	115	64	64	122	122	122
A	Madagascar	1632	1632	1861	1831	229	165	64	64	34	34	64
A	Malawi	1226	1226	1469	1585	243	24	219	264	336	380	380
X	Mauritius *	0	0	173	133	173	369	0	0	0	0	0
A	Mozambique	433	1596	2258	3213	662	108	554	554	1509	1509	786
A	Swaziland	92	92	147	139	55	98	0	0	0	0	0
A	Zambia	821	821	1232	1637	441	134	277	166	682	571	438
A	Zimbabwe	1462	1462	2216	2413	754	332	422	0	619	0	0
	S. Africa (69)	5835	7021	9925	11585	2935	1655	1606	1118	3344	2658	1802
	S. Africa (55)	5806	6969	9502	11195	2563	976	1600	1112	3302	2616	1790
A	Angola [to South]	251	996	1500	1515	504	328	176	176	191	191	191
B	C.A.R. [to East]	109	612	670	687	58	28	29	29	46	46	46
X	Congo *	22	253	347	364	93	83	10	10	27	27	27
X	Eq. Guinea *	0	33	37	0	4	3	1	1	0	0	1
B	Zaire [to East]	978	6039	6441	6524	403	248	155	167	238	250	250
	C. Africa (69)	1360	7933	8995	9090	1062	690	371	383	502	514	515
	C.Afr merged	1338	7647	8611	8726	965	604	360	372	475	487	487

1 Country classification: (A) Current full update. (B) Reduced update in current report. (X) No longer included in World Food Needs and Availabilities

2 Countries marked with (*) are dropped from the food needs analysis for 1988/89.

Regional estimates for 55 and 69 country regional groupings, World Food Needs and Availabilities, 1987/88, May, 1988. (Thousand tons) -- continued

C	Country	Major Cereal Prod	Cereal Equiv. Prod.	Cereal equivalent Total Use: Status quo	Cereal equivalent Total Use: Nutrition based	Import Requirement	Import Capacity	Status quo: Cons. needs	Status quo: Cons needs + stocks	Nutrition-based: Cons. needs	Nutrition-based: Cons. needs + stocks	Max
A	Egypt	8909	8909	17597	14848	8688	6711	1977	2466	0	0	2466
A	Morocco	4210	4210	6924	6740	2714	2488	227	149	43	0	149
A	Tunisia	1898	1898	2422	2105	524	2170	0	0	0	0	0
	N. Afr. (69&55)	15017	15017	26943	23693	11926	10369	2204	2615	43	0	2615
	Sub Sahara (69)	33538	52572	63667	70779	11099	5321	6684	5220	13686	11867	8995
	Sub Sahara (55)	32486	49819	60171	67396	10356	4314	6635	5169	13594	11775	8921
	Difference	1052	2753	3496	3383	743	1007	49	51	92	92	74
	Percent	3.14	5.24	5.49	4.78	6.69	18.93	0.73	0.98	0.67	0.78	0.82
	Africa total (69)	48555	67589	90610	94472	23025	15690	8888	7835	13729	11867	11610
	Africa total (55)	47503	64836	87114	91089	22282	14683	8839	7784	13637	11775	11536
X	Lebanon *	17	17	602	549	585	262	323	336	270	283	336
X	North Yemen *	642	642	1485	1328	845	485	358	393	291	236	393
X	South Yemen *	110	110	388	393	278	273	5	14	10	19	19
	Mid. East (69&55)	769	769	2475	2270	1706	1020	686	743	461	538	748
B	Afghanistan	3825	3825	4338	4375	513	94	419	419	456	456	456
B	Bangladesh	16150	16150	19293	22325	3143	843	1964	2161	5006	5203	3370
B	India	117605	117605	139084	144843	21479	4735	12925	7281	18443	12799	10082
B	Nepal	3136	3136	3358	3899	222	28	194	194	735	735	414
A	Pakistan	16228	16228	17637	18556	1409	831	0	0	0	0	0
A	Sri Lanka	1500	1735	2854	2714	1119	505	568	468	428	328	568
	S. Asia (69&55)	158444	158679	186564	196712	27285	7036	16070	10523	25068	19521	14890
A	Indonesia	31100	36292	37782	34547	1489	2045	0	0	0	0	0
X	Cambodia *	840	840	1130	1367	290	47	243	245	480	481	481
X	Laos *	750	750	854	709	104	46	58	58	0	0	58
B	Philippines	10294	11392	11991	12800	599	2011	0	0	0	0	0
A	Vietnam	10675	10675	12038	11702	1363	633	731	731	395	395	731
	S.E. Asia (69)	53659	59949	63795	61125	3845	4782	1032	1034	875	867	1270
	S.E. Asia (55)	52069	58359	61811	59049	3451	4689	731	731	395	395	731
	Asia total (69)	212103	218628	250359	257837	31730	11818	17102	11557	25943	20388	16160
	Asia total (55)	210513	217038	248375	255761	31336	11725	16801	11254	25463	19916	15621
	Difference	1590	1590	1984	2076	394	93	301	303	480	472	539
	Percent	.75	.73	.79	.81	1.24	.79	1.76	2.62	1.85	2.32	3.34

Regional estimates for 55 and 69 country regional groupings, World Food Needs and Availabilities, 1987/88, May, 1988. (Thousand tons) -- continued

C	Country	Major Cereal Prod.	Cereal Equiv Prod.	Cereal equivalent Total Use: Status quo	Cereal equivalent Total Use: Nutrition based	Import Requirement	Import Capacity	Status quo: Cons needs	Status quo: Cons needs + stocks	Nutrition-based: Cons. needs	Nutrition-based: Cons. needs + stocks	Max
B	Dominican Rep	370	660	1122	1117	462	564	0	0	0	0	0
B	Haiti	370	440	682	656	242	155	87	93	61	66	93
B	Jamaica	11	60	458	442	398	497	0	0	0	0	0
	Carib (69&55)	751	1160	2262	2215	1102	1216	87	93	61	66	93
B	Costa Rica	230	230	375	347	145	303	0	0	0	0	0
B	El Salvador	624	624	877	964	253	104	149	160	237	247	247
B	Guatemala	1145	1145	1372	1529	227	152	75	103	232	259	244
B	Honduras	500	500	628	726	128	107	20	26	120	126	101
B	Nicaragua	295	295	424	357	129	158	0	0	0	0	0
	C. Amer (69&55)	2794	2794	3676	3923	882	824	244	289	589	632	592
B	Bolivia	630	896	1249	1451	353	259	94	94	296	296	180
X	Columbia *	2120	3432	4210	3664	778	1929	0	0	0	0	0
X	Ecuador *	555	985	1355	1393	371	252	99	99	132	132	110
B	Peru	1592	2233	3578	3912	1346	1480	0	0	200	257	257
	S. America (69)	4897	7546	10392	10420	2848	3920	193	193	628	685	547
	S. America (55)	2222	3129	4827	5363	1699	1739	94	94	496	553	437
	Lat. Amer. (69)	8442	11500	16330	16558	4832	5060	524	575	1278	1383	1232
	Lat. Amer. (55)	5767	7083	10765	11501	3683	3779	425	476	1146	1251	1122
	Difference	2675	4417	5565	5057	1149	2184	99	99	132	132	110
	Percent	31.69	38.41	34.08	30.54	23.78	36.59	18.89	17.22	10.33	9.54	8.93
	TOTAL (69)	269869	298486	359774	371137	61293	34468	27200	20710	41431	34176	29750
	TOTAL (55)	263783	288957	346254	358351	57301	30187	26065	19514	40246	32942	28279
	Difference	6086	9529	13520	12786	3992	4301	1135	1196	1185	1234	1471
	Percent	2.26	3.19	3.76	3.45	6.51	12.47	4.17	5.77	2.86	3.61	4.94

APPENDIX B

POPULATION

North Africa

Year	Egypt	Morocco	Tunisia
1981	43,717	21,046	6,629
1982	45,122	21,546	6,762
1983	46,427	22,065	6,892
1984	47,765	22,612	7,046
1985	49,133	23,178	7,215
1986	50,525	23,762	7,387
1987	51,930	24,361	7,562
1988	53,348	24,976	7,738
1989	54,778	25,606	7,916

West Africa

Year	Benin	Burkina	Cape Verde	Chad	Gambia	Ghana	Guinea	Guinea Bissau
1981	3,544	7,233	301	4,083	660	10,986	5,594	867
1982	3,660	7,386	307	4,268	675	11,193	5,708	826
1983	3,782	7,546	313	4,418	691	11,939	5,828	845
1984	3,911	7,714	320	4,429	707	12,609	6,073	865
1985	4,047	7,891	327	4,442	724	13,004	6,373	886
1986	4,189	8,078	335	4,534	742	13,552	6,571	907
1987	4,339	8,276	344	4,646	760	13,949	6,738	928
1988	4,497	8,486	354	4,778	779	14,360	6,909	951
1989	4,664	8,707	364	4,914	799	14,786	7,086	974

West Africa

Year	Liberia	Mali	Mauritania	Niger	Senegal	Sierra Leone	Togo
1981	1,960	7,166	1,576	5,748	5,909	3,383	2,674
1982	2,025	7,353	1,618	5,938	6,086	3,454	2,756
1983	2,091	7,549	1,663	6,145	6,269	3,528	2,842
1984	2,161	7,753	1,710	6,349	6,458	3,607	2,933
1985	2,235	7,967	1,759	6,554	6,653	3,689	3,027
1986	2,307	8,190	1,810	6,771	6,855	3,776	3,125
1987	2,384	8,423	1,863	6,989	7,064	3,868	3,229
1988	2,463	8,666	1,919	7,214	7,281	3,963	3,336
1989	2,544	8,918	1,977	7,448	7,506	4,064	3,449

Central Africa

Year	Central African Republic	Zaire
1981	2,322	27,339
1982	2,375	28,248
1983	2,428	28,966
1984	2,484	29,671
1985	2,543	30,537
1986	2,605	31,425
1987	2,669	32,343
1988	2,736	33,294
1989	2,806	34,279

East Africa

Year	Burundi	Ethiopia	Kenya	Rwanda	Somalia	Sudan	Tanzania	Uganda
1981	4,180	39,165	17,409	5,471	6,703	19,486	19,393	13,065
1982	4,295	40,081	18,141	5,690	6,971	20,117	20,005	13,401
1983	4,467	41,187	18,910	5,911	7,155	20,747	20,651	13,769
1984	4,592	42,435	19,717	6,120	7,298	21,500	21,327	14,187
1985	4,724	43,567	20,566	6,345	7,368	22,407	22,021	14,717
1986	4,862	45,017	21,453	6,575	7,512	23,082	22,745	15,331
1987	5,006	46,709	22,378	6,811	7,742	23,525	23,502	15,909
1988	5,156	48,265	23,342	7,058	7,990	24,014	24,295	16,447
1989	5,312	49,762	24,346	7,322	8,248	24,509	25,125	17,008

Southern Africa

Year	Angola	Lesotho	Madagascar	Malawi	Mozambique	Swaziland	Zambia	Zimbabwe
1981	6,954	1,383	8,953	6,188	12,428	601	5,817	7,574
1982	7,116	1,419	9,218	6,376	12,757	617	6,040	7,798
1983	7,262	1,457	9,495	6,572	13,090	636	6,288	8,093
1984	7,415	1,496	9,784	6,775	13,435	655	6,530	8,404
1985	7,571	1,537	10,086	6,986	13,795	676	6,761	8,723
1986	7,726	1,579	10,402	7,207	14,157	696	7,015	9,041
1987	7,950	1,622	10,731	7,438	14,536	715	7,282	9,372
1988	8,236	1,666	11,073	7,679	14,948	735	7,546	9,729
1989	8,534	1,711	11,430	7,932	15,376	756	7,823	10,099

South Asia

Year	Afghanistan	Bangladesh	India	Nepal	Pakistan	Sri Lanka
1981	14,085	90,664	704,193	15,367	88,417	15,152
1982	13,642	93,279	719,808	15,755	91,265	15,402
1983	13,703	95,943	735,596	16,150	93,713	15,607
1984	13,817	98,658	751,559	16,554	96,241	15,799
1985	13,886	101,427	767,681	16,966	98,953	15,987
1986	13,981	104,240	783,940	17,386	101,769	16,183
1987	14,184	107,088	800,326	17,814	104,601	16,407
1988	14,481	109,964	816,828	18,252	107,467	16,640
1989	14,825	112,855	833,422	18,700	110,407	16,870

Southeast Asia

Year	Indonesia	Philippines	Vietnam
1981	158,521	52,258	54,904
1982	162,133	53,693	56,234
1983	165,767	55,179	57,612
1984	169,413	56,710	59,033
1985	173,065	58,279	60,506
1986	176,717	59,884	62,024
1987	180,368	61,525	63,585
1988	184,016	63,199	65,185
1989	187,651	64,907	66,821

Caribbean

Year	Dominican Republic	Haiti	Jamaica
1981	5,981	5,555	2,258
1982	6,140	5,650	2,298
1983	6,300	5,753	2,324
1984	6,460	5,859	2,347
1985	6,623	5,968	2,375
1986	6,789	6,078	2,403
1987	6,961	6,187	2,431
1988	7,137	6,296	2,458
1989	7,317	6,403	2,485

Central America

Year	Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua
1981	2,366	4,658	7,398	3,931	2,887
1982	2,435	4,676	7,627	4,069	2,962
1983	2,506	4,791	7,802	4,205	3,029
1984	2,581	4,904	7,996	4,351	3,099
1985	2,658	5,019	8,205	4,503	3,165
1986	2,735	5,137	8,414	4,659	3,237
1987	2,812	5,260	8,622	4,815	3,319
1988	2,888	5,389	8,831	4,972	3,407
1989	2,964	5,522	9,040	5,129	3,503

South America

	Bolivia	Peru
1981	5,519	17,755
1982	5,645	18,229
1983	5,774	18,712
1984	5,905	19,204
1985	6,038	19,707
1986	6,173	20,218
1987	6,310	20,739
1988	6,448	21,269
1989	6,589	21,807

APPENDIX C
METHODOLOGICAL NOTES

Calculating Food Needs

World Food Needs and Availabilities provides two measures of total consumption of major food staples and corresponding estimates of security stock levels for food grains. The framework used for calculating that portion of such consumption that may not be met by domestic production or commercial imports is outlined below. These unmet food requirements are henceforth referred to as *additional food needs*. All quantities are reported in thousand metric tons and all values in millions of U.S. dollars.

The first step in the process of calculating additional food needs is to estimate import requirements to support consumption:

(1) $$IRC = DR - PR$$

where:

IRC = import requirements to support consumption

DR = total domestic requirements (total use)

PR = forecast total domestic production (ERS)

Import requirements should not be confused with forecasts of imports for two important reasons. First, the factors that determine actual total use (domestic requirements) may be much different than those used in deriving the status quo and nutrition-based estimates of total requirements used in this report. The only demand factor that governs import requirements is population growth. As such, equation (1) above is merely a gap between forecast production and two measures of consumption (described below) that are purposely derived in such a way as to be directly comparable across a wide range of countries. Second, production is implicitly assumed to be independent of import requirements as defined above, whereas actual imports and production are certainly related.

Stocks are held constant. A discussion of the food security adjustment for stocks appears below.

The second step in the procedure separates the import requirement into the portion that may be purchased commercially and the portion that may be unmet. Estimates of additional food needs are the differences between total import requirements and those imports that a country can afford to purchase commercially in world commodity markets, herein referred to as the commercial import capacity:

(2) $$AFNC = IRC - CIC$$

where:

AFNC = additional food needs to support consumption

CIC = commercial import capacity

The last step in estimating additional food needs involves adding an estimated stock adjustment to additional food needs to support consumption:

(3) $$AFNT = AFNC + SA$$

where:

AFNT = total additional food needs

SA = stock adjustment

Commodity Coverage

The commodities included in the food needs assessment for each country were selected to cover important food staples in each country. An attempt was made to include at least two-thirds of the average daily caloric intake in each country to ensure that assumptions regarding domestic food availability and requirements in each country are representative of the total food supply situation. For a few countries, less than two-thirds of the diet is covered. This is due either to great diversity in the average diet; to limited availability of current, reliable data; or to both. Coverage is more complete in Asian and African countries where relatively few food staples account for the bulk of the average diet, and less complete in Latin American countries, where diets are more diversified. The specific commodities included in the food needs assessment for each country and their share in daily per capita caloric intake is listed in the tables.

Food Substitution Assumption

Assumptions regarding the substitutability of foods are necessary in assessing food needs because shortages in some items can be compensated for by surpluses or imports of others. Also, some items that figure prominently in diets in low-income countries, particularly roots and tubers, are not commonly traded and, therefore, are not available to meet commercial import or additional requirements.

In this report, all cereals (including wheat, milled rice, and coarse grains) are considered substitutable on a one-for-one basis. Roots and tubers (cassava, potatoes, bananas, and plantains are also included) are assumed substitutable for cereals on a caloric-equivalent basis. The treatment of pulses depends on their importance and role in the diet.

Calculation of Import Requirements

Import requirements are reported in the text for individual countries in quantity only. Additional food needs appear as both quantities and values. The generic calculations for import requirements and additional food needs are based on the following variables:

AFNCQ = additional food needs to support consumption, quantity;

AFNCV = additional food needs to support consumption, value;

IRCQ = food import requirements to support consumption, quantity;

CICV = commercial food import capacity, value;

CICQ = commercial food import capacity, quantity.

The following subscripts are added to the above: t denotes total additional food needs and import requirements for an individual country (value only); j denotes one of four major commodity groupings; k denotes the number of major commodity groups included for a single country; and i denotes individual commodities within one of the major groups.

The general framework for calculating $IRCV_t$ $IRCV_k$ and $IRCQ_k$ is as follows:

(4) $$IRCV_t = \sum_{j=1}^{k} IRCV_j;$$

subject to

$$IRCV_j > 0$$

(5) $$IRCV_j = IRCQ_j \times IUV_j$$

where:

IUV = estimated import unit values in dollars (see section below on import unit value calculations); and for the cereal equivalent group only:

(6) $$IRCQ_j = \sum_{i=1}^{n} (IRCQ_i \times WE_i)$$

where:

WE = wheat-equivalent conversion factors for a commodity if the commodity is a non-cereal and is assumed to be substitutable for cereals on a caloric-equivalent basis. If a commodity group is not substitutable with cereals (i.e., vegetable oils, milk, pulses) then $IRCQ_j$ is not converted to a wheat equivalent.

The procedures used for calculating IRCQ in status quo and nutrition-based estimates are described in separate sections below. The common structure for both of these IRCQ calculations is as follows:

(7) $$IRCQ_i = DR_i - PR_i$$

(8) $$DR_i = DRNF_i + DRF_i$$

where:

DR = domestic requirement (quantity);

DRNF = domestic requirement for non-feed use (quantity);

DRF = domestic requirement for feed use (quantity; see section below on calculating feed use)

subscript "i" denotes the commodity.

The procedure for calculating $CICV_t$ is:

(9) $$CICVt = \sum_{i=1}^{k} CICVj$$

The method of calculating $CICV_j$ and $CICQ_j$ is described in a separate section below.

The following points should be noted on the treatment and interpretation of negative values in import requirements and additional food needs calculations:

A negative import requirement for a commodity group in quantity and value terms ($IRCQ_j < O$, $IRCV_j < O$) implies a 'surplus' in domestic production above what is needed to support consumption. The surplus is, by definition, not substitutable for any shortfalls in any of the other commodity groups. For example, a surplus vegetable oil import requirement may not offset a deficiency in grains.

While the above negative values, where they occur, are carried in the tables containing estimates of import requirements to support consumption, they are factored in as zeros when calculating additional food needs to support consumption for that commodity group ($AFNCQ_j$, $AFNCV_j$), and in calculating country total import requirements ($IRCV_t$) and additional food needs (FAN_t). Inclusion of the negative value would imply exports of the calculated surplus (and an addition

to commercial import capacity). If the country is a traditional exporter of the surplus commodity, the impact of the export earnings on additional food needs is already accounted for in the commercial import capacity calculation. If the country is not a traditional exporter of the surplus commodity, imposition of an export requirement for the purpose of food need calculations would be an unnecessarily rigid assessment.

When a negative additional food need value occurs for a commodity group ($AFNCV_j < 0$), this calculated surplus is made to offset any positive additional food need ($AFNCV_j > 0$) for other commodity groups in that country. This is appropriate because of conditions imposed on the calculating of additional food needs for commodity groups ($AFNCQ_j$, $AFNCV_j$) described above. Negative unmet food need values imply a surplus of estimated commercial import capacity in a food group; the surplus can appropriately be diverted to purchases in another food group without violating the assumption that one food group cannot substitute for another. These situations are footnoted in the country tables. Negative additional food need totals for a country imply a surplus in commercial import capacity ($CICV_t$), over and above what imports are needed to support consumption in all commodity groups ($IRCV_t$) in the country. They do not imply food available for export commercially or concessionally. Such negative values, when they occur, are shown as zeros in the additional food need tables. However, $AFNCV_t$, whether positive or negative, is the value used in the additional food need ranking provided in the May issue of the report.

With estimates derived in this way, the larger the gap between domestic food availabilities and food requirements, or the smaller the capacity to import food commercially, the larger the additional food need. Other things being equal, gains in domestic production or lower levels of feed use will reduce estimated import requirements and these additional food needs to support consumption. To the extent that the food staples selected for a country are judged to be substitutable, any estimated food surpluses are applied to filling the gap for commodities estimated to be in deficit. Also, for any commodity group where a surplus commercial import capacity exists, that surplus is applied to any estimated deficits for other commodity groups. No allowance is made for the effects of stock adjustments, positive or negative, on import requirements or additional food needs. The need for stock adjustments and their impact on additional food needs are estimated separately, as described in the following sections.

Calculating Status Quo Import Requirements

Status quo import requirements for a particular country, commodity, and year are calculated, following equation (7) in the previous section, as:

(10) $$IRCQS = (DRNFS + DRF) - (PR)$$

where DRF and PR are as defined elsewhere. Status quo estimates of domestic requirements for non-feed use (DRNF) are calculated as:

(11) $$DRNFS = P^{*}PCC_B/100$$

where:

P = population in millions;

PCC = per capita nonfeed consumption of a commodity in

subscript B = the base period years for which PCC is averaged.

One or more years of unusually low (or unusually high) per capita food availability during the base period will raise (lower) import requirements. A simple average of the most recent 4 years gives a per capita food availability which fluctuates sharply. To stabilize estimates of per capita food availability, they are calculated as the mean of the most recent 4 years that deviate less than one standard deviation from the mean of the most recent 8 years of record.

Calculating Nutrition-based Import Requirements

The general form of the nutrition-based import requirement equation is the same as shown in (7) above. However, because the nutrition-based method uses a fixed minimum consumption norm rather than the status quo, it is necessary to assess domestic availabilities and domestic nonfeed requirements on a net basis--net of milling, seed, waste, and non-food use. With these adjustments, the nutrition-based import requirement calculations for a particular country, commodity, and year are as follows:

(12) $$IRCQN = ([DRNF_m - DA_m]/MR) + DRF$$

(13) $$DRNF_m = (PCCAL_B/PCCAL_{TB})*(RMPCCAL_T)*(CALCF_m)*(365)*(P)/1000$$

(14) $$DA_m = [(PR)*(1 - (NFUR + WR + AUR)) - (SR * PR) - DRF]*(MR)*(1 - NFUR_m + WR_m)$$

The subscript m indicates a variable expressed in milled (extracted) terms;

The variables IRCQ, DRNF, DRF, P, and PR have been described elsewhere. The new variables in the nutrition-based equation are:

DA = domestic availability;

MR = milling/extraction rate of a particular commodity (source: FAO);

DRF = feed use as calculated in the section below;

PCCAL = daily per capita consumption of a particular commodity in calories (source: FAO and ERS; see notes below);

RMPCCAL = recommended minimum total daily caloric intake (source: FAO);

CALCF = kilograms per capita, assumes base period average caloric intake (source: FAO);

NFUR = average rate of utilization for non-food purposes for a particular commodity during 1979-81 (source: FAO);

WR = rate of waste for a particular commodity (source: FAO);

AUR = average rate of use of alcoholic beverages manufactured from a particular commodity during 1971-81 (source: FAO); and

SR = average rate of seed use from domestic production for a particular commodity during 1979-81 (source: FAO).

Thus, in the nutrition-based method, domestic requirements for nonfeed use (DRNF) in milled/extracted terms are calculated by first determining commodity caloric shares in the total diet in a base period and, on the basis of those shares, determining the per capita caloric amounts needed to achieve the FAO recommended minimum. These per capita daily caloric estimates are then converted to annual countrywide requirements in terms of tons of milled commodity. Domestic availability (DA) is calculated in milled terms by adjusting coarse domestic production (PR) for non-food use, waste, alcoholic beverage use, and seed use, and milling/extraction losses using rates derived from the FAO food balances. Import requirements in coarse terms are then computed as the un-milled difference between the domestic requirement for nonfeed use (DRNF) and domestic availability (DA) plus requirements for feed use (DRF). It is important to note that the import requirement estimates derived from this procedure do not allow for reductions for waste, non-food use, or alcoholic beverage and seed use from imported commodities; only reductions for feed use and milling/extraction are accommodated.

The appropriate measure of coarse domestic production (PR) for the nutrition-based method is identical to that used in the status quo method. The calculation of import requirements (IRCQ) in coarse terms is shown above, and the appropriate calculation of coarse domestic requirements (DR) for the nutrition-based method is:

(15) $$DRN = PR + IRCQN$$

The following points should be noted on procedures used in the nutrition-based calculations:

1. Calories available from a commodity are derived using the 1979-81 FAO food balance data for a particular commodity and country. Where significant differences exist between ERS and FAO production, trade, or consumption, ERS revises the caloric estimates for consistency with ERS supply and use data.

2. The base period used in calculating each commodity's caloric share in the diet in each country is 1979-81, unless the average suggests use of 1 of the 3 years individually.

3. Calculations of coarse per capita consumption from the targeted coarse total use and population data provided may yield slightly different levels for 1988/89 and 1989/90. They may vary from year to year because no nonfood use (other than feed use), waste, alcoholic beverage use, or seed use is deducted from imports and the mix of imports and domestic availability may change from year to year. At the levels shown for targeted coarse total use and population, however, actual per capita consumption of a commodity will be identical in both years.

4. For many countries, the proportion of feed use implied in the 1979-81 FAO food balances is very similar to that implied by the estimates of feed use (DRF) in this report. Where significant differences occurred, adjustments were made in the base-period human consumption levels ($PCCAL_{iB}$ and $PCCAL_{TB}$) for the purposes of the nutrition-based calculations. These alterations were judged necessary to allow the use of a common assumption on feed use for both methods, and to prevent differences in feed assumptions from interfering with the interpretation of the two food need estimates.

5. Because rice is normally traded on a milled (as opposed to paddy) basis, and all rice production, stock, and trade data presented in this report are on a milled basis, the nutrition-based import requirement equations used for rice are modified to accommodate this difference.

Import requirements estimated this way would provide enough food per person to meet the FAO recommended minimum daily caloric intake level. The FAO caloric standards have been criticized for overestimating minimum requirements and the FAO food balance assumptions used in the calculations have also been criticized for their accuracy. In regard to the caloric standards, the key issue is whether they introduce any bias across the countries examined. Because the caloric standards are derived using a similar methodology across all countries, it is unlikely that significant bias is introduced. In any event, errors in absolute levels of estimates do not prevent the use of those estimates in generating country ranking.

The FAO food balance assumptions are considered to be of comparable reliability for all countries covered, and the methods used for calculating food balances are consistent. Therefore, it is considered unlikely that significant bias across countries is introduced by their use.

Calculating Feed Use

The same levels of estimated feed use are included in the calculation of both the status quo and nutrition-based estimates of total and import requirements. The procedure used to calculate feed use (DRF) of a particular commodity in a given country and year is:

(16) $$DRF = P * PCCF_B/100$$

where P is population in thousands as defined earlier, and

PCCF = per capita utilization of a commodity for livestock feed (source: ERS estimates), and the subscript B designates the base period years over which PCCF is averaged.

With this method of calculation, feed use grows from the base period average at the same rate as population. The implication, which is intended for the purpose of additional food need estimates, is that no growth in per capita feed use is provided for. The representativeness of the base period average must, however, be scrutinized when interpreting the calculated levels of feed use. Import requirement estimates for countries experiencing rapid growth in feed use (and livestock production) are constrained by this procedure.

Calculating Food Security Stock Adjustments

The Stocks-to-Consumption Ratio Method

This report provides separate estimates of countries' cereal stock levels to ensure food security. Stock requirements are segregated from consumption requirements because, for allocation purposes, ensured food supplies to support consumption may be viewed as the first priority. In addition, the reliability of stock information across countries varies much more widely than consumption. Nevertheless, a program that adjusted additional food need allocations to recipient countries' stock positions could help prevent food emergencies in these countries, and also help reduce abrupt swings in additional food needs from year to year. This would be achieved by allowing for stock building in relatively good years, or when stocks are relatively low, and for stock draw-down in relatively bad years, but only when stocks are relatively high.

In this report, estimates of stock adjustments are made only for the commodity group comprising cereals and cereal equivalents for countries where historical stock data are available. Stock adjustment estimates are limited to the cereal-equivalent category because historical stock data commonly are available only for this commodity group, and because cereals are the predominant food staple in the countries covered in this report. The procedures for estimating stock adjustments outlined below use historical relationships between stocks and consumption in each country. The observed historical ratios of stocks to consumption are used to define the range of adjustment, in the absence of consistent data on stock-building targets and minimally acceptable stock levels to be drawn down to in each country. The next section discusses an alternative approach employed when projected stocks are exceptionally large and stock-building targets are know or can be surmised.

The procedures are outlined below in algebraic form. Stock levels are calculated in absolute terms and in terms of increments to be added to (or subtracted from) existing stocks. These increments are then added to estimates of import requirements and additional food needs to support consumption in order to obtain an estimate of total additional needs to support both consumption and stocks. The following variables are used in estimating stock adjustments:

TPCE = total production of cereals and cereal equivalents (quantity);

TCEES = total ending stocks of cereals and cereal equivalents (quantity);

ESR = ratio of ending stocks to total use;

$MNESR_B$ = average ratio of ending stocks to total use for cereal equivalents during base period B;

$MXESR_B$ = maximum ratio of ending stocks to total use for cereal equivalents during base period B;

$MINESR_B$ = minimum ratio of ending stocks to total use for cereal equivalents during base period B;

DRS = status quo based estimate of domestic requirements (DRNFS + DRF quantity);

ASL = adjusted stock level (quantity);

SAQ = stock adjustment in terms of the increment to existing stocks (quantity); and

SAV = stock adjustment (value).

Using the above-named variables, the adjusted stock level (ASL) for year t (the first forecast year) is calculated in the following way:

If $TPCE_t$ > trend and $ESR_{t-1} < 1.1 * MNESR_B$:

$$ASL_t = (ESR_{t-1} + (MXESR_B - ESR_{t-1})/3)*DRS_t$$

If $TPCE_t$ > trend and $ESR_{t-1} > 1.1 * MNESR_B$:

$$ASL_t = ESR_{t-1} * DRS_t$$

If $TPCE_t$ < trend and $ESR_{t-1} < .9 * MNESR_B$:

$$ASL_t = (ESR_{t-1} + (MXESR_B - ESR_{t-1})/3) * DRS_t$$

If $TPCE_t$ < trend and $1.1 * MNESR_B > ESR_{t-1} > .9 *MNESR_B$:

$$ASL_t = ESR_{t-1} * DRS_t, \text{ and}$$

If $TPCE_t$ < trend and $ESR_{t-1} > 1.1 * MNESR_B$:

$$ASL_t = (ESR_{t-1} + MINESR_B)/2 *DRS_t.$$

The stock adjustment for year t in quantity (SAQ_t) and value (SAV_t) terms is calculated as:

$$SAQ_t = ASL_t - FCEES_{t-1}, \text{ and}$$

$$SAV_t = SAQ_t * IUV_t$$

where IUV_t is the estimated import unit value for cereals in year t as defined in the following section.

The adjusted stock level for (ASL) for year t+1 (the second out year) is calculated using the identical equations as for year t with the following substitutions:

1. The subscript t+1 is substituted for the subscript t.
2. The variable $AESR_t$ (adjusted ending stock ratio in year t) is substituted for ESR_{t-1}, where $AESR_t = ASL_t/DRS_t$

The stock adjustment for year t+1 in quantity (SAQ_{t+1}) and value (SAV_{t+1}) is calculated as:

$$SAQ_{t+1} = ASL_{t+1} - ASL_t, \text{ and}$$

$$SAV_{t+1} = SAQ_{t+1} * IUV_{t+1}.$$

Stock adjustments calculated by the procedures described above have the following characteristics:

1. If production is above trend, stocks are built up if they are relatively low and are allowed to remain "high" if they are already "high." High is defined as a ratio of stocks to total use greater than 10 percent above the average for the base period. If production is below trend, stocks are built up if they are "low" (10 percent or more below that given by the average base period ratio of ending stocks to total use), left unchanged if they are around the base period mean, and drawn down if they are high. If stocks are low, stock building is allowed for in both above- and below-trend production situations for reasons of food security.

2. The rates of stock adjustment used in the calculations are, when building, one-third of the difference between the base period maximum stock ratio and the current stock ratio, and when drawing down, one-half the difference between base period minimum stock ratio and the current stock ratio. A faster rate is used for drawing down than for building because stocks are generally drawn down more rapidly than they are rebuilt. The one-third rate used for stock building implies a 3-year stock building period.

3. The procedures assume the reasonableness of working with minimum, maximum, and mean ending stock ratios observed during the base period, given the lack of consistent data on appropriate stock targets and minimum acceptable stock levels. Moreover, government stock targets, where available, may not be consistent with either historically achieved stock levels or existing storage facilities. The use of adjustments toward, rather than to, the base-period levels diminishes the effect of errors caused by atypical base period observations.

4. The magnitude of year-to-year stock adjustments (SAQ, SAV) depends on both the calculated change in the ending stock ratio in t+1 and the difference between actual total nonfeed use in t and status quo-based nonfeed use (SQNFU) in t+1. In some cases, abrupt changes in actual and calculated nonfeed use between t and t+1 may distort the intended direction of the stock adjustment. (For example, even if the situation calls for an increase in the ending stock ratio (ESR), stocks could decline from t to t+1 if the status quo estimate of nonfeed use (SQNFU) for t+1 was sharply below actual use in t.) These situations are described in the country narratives.

5. The stock adjustment estimates (SAQ, SAV) can be applied to the consumption estimates for cereals to obtain an overall estimate of import requirements ($IRTQ_{ce}$, $IRTV_{ce}$) and additional food needs ($AFNTQ_{ce}$, $AFNTV_{ce}$) for cereals in the following way:

   a. If $IRCQ_{ce}$ and $IRCV_{ce}$ are negative (implying a surplus of cereals for consumption purposes that can be applied to stock adjustments):

$$IRTQ_{ce} = IRCQ_{ce} + SAQ;$$

$$IRTV_{ce} = IRCV_{ce} + SAV;$$

$$AFNTQ_{ce} = AFNCQ_{ce} + SAQ$$

   subject to

$$IRTQ_{ce} > 0;$$

$$AFNTV_{ce} = AFNCV_{ce} + SAV,$$

   subject to

$$IRTV_{ce} > 0.$$

If import requirements remain negative after adding the stock adjustment, additional food needs are not affected. This situation implies a surplus of cereals above what is needed to support consumption and stock adjustment, but a surplus that cannot be exported for foreign exchange or applied against deficits in other non-substitutable food categories.

   b. If $IRCQ_{ce}$ and $IRCV_{ce}$ are positive (implying a deficit in cereals and no surplus of cereals that can be applied to stock adjustments):

$$IRTQ_{ce} = IRCQ_{ce} + SAQ;$$

$$IRTV_{ce} = IRCV_{ce} + SAV;$$

$$AFNTQ_{ce} = AFNCQ_{ce} + SAQ; \text{ and}$$

$$AFNTV_{ce} = AFNCV_{ce} + SAV.$$

Target Stocks

The adjusted stock levels (ASL's) computed by the stocks-to consumption ratio method are based on historical relationships, not projected stock holdings. When it is known that governments have stocks objectives, or it is reasonable to surmize that to be the case, the Target Stocks method of computing ending stock levels may be invoked. The resulting computations of food needs, unlike the ratio method, reflect the influence of held stocks on projected food aid needs. The change required in the food needs analysis from invoking the target stocks adjustment is just in the computation of the ASLs. The stock adjustment is then calculated in the same manner as for the ratios method. The procedure for status quo described here is identical for nutrition-based needs, except for the supstitution of IRCQN for IRCQS. The following three additional variables are introduced:

TARGET the proposed closing stock level for year t

MIN the minimum ending stock quantity in the eight year base period

MID (TARGET - MIN)/2

Using these and previously-named variables, the target adjusted stock level (ASL) for year t is calculated in the following way:

If $TPCE_t$ > trend and TCEES < TARGET:

ASL_t = TCEES + (TARGET - TCEES)/3

If $TPCE_t$ > trend and TCEES >= TARGET and TCEES - TARGET >= $IRCQS_t$

ASL_t = TCEES - $IRCQS_t$

If $TPCE_t$ > trend and TCEES >= TARGET and TCEES - TARGET < $IRCQS_t$

ASL_t = TARGET

If $TPCE_t$ < trend and TCEES < TARGET and TCEES < MID

ASL_t = TCEES + (TARGET - TCEES)/3

If $TPCE_t$ < trend and TCEES < TARGET and TCEES > MID

ASL_t = TCEES - (TCEES - MIN)/2

IF $TPCE_t$ < trend and TCEES > TARGET and (TCEES - TARGET) + (TARGET - MIN)/2 >= $IRCQS_t$

ASL_t = TCEES - IRCQS

IF $TPCE_t$ < trend and TCEES > TARGET and (TCEES - TARGET) + (TARGET - MIN)/2 < $IRCQS_t$

ASL_t = TCEES - (TCEES - TARGET) + (TARGET - MIN)/2

The adjusted stock level when total production of cereals equivalent is great than trend:

When production is above trend and the stock target exceeds current inventory, stocks are built toward the target. The target becomes the ASL when opening stocks exceed the target by a quantity less than import requirements, otherwise the ASL is the excess of current stocks over import requirement in the first estimated year.

The adjusted stock level when total production of cereals equivelent is less than trend:

> When production is below trend and current stocks are below the target, stocks are built toward the target, with the increment adjusted in accordance with the magnitude of the gap. When current stocks are above the target, the ASL becomes the target plus the target margin over the stocks midpoint. If the resultant stocks drawdown exceeds import requirements, the ASL is computed as the excess of current stocks over import requirements in the first estimated year.

Adjusted stock levels for the second estimated year (ASL_{t+1}) are computed similarly, substituting ASL_t for TCEES.

Calculating Maximum Absorbable Food Needs

The calculation of maximum absorbable imports and additional food needs is an attempt to estimate the level of imports that could be handled if the highest historical levels of per capita total use and absolute carry-over stocks could be attained. The implicit assumption is that the food delivery systems of many of the countries involved have been fully "loaded" by past high levels of consumption. In addition, the highest level of stocks maintained over the previous 8 years is assumed, in the absence of better information, to be the largest level that can currently be maintained. The estimate is intended to provide a crude measure of the amount of food that can be physically absorbed. This level may then be used to scale back nutrition-based additional food need estimates that may be beyond the physical limits of a country's transportation, distribution, and storage capabilities. No attempt is made (here or elsewhere in the report) to assess the impact of such maximum levels on domestic prices or production incentives. These estimates are for individual countries only. No accounting is made of the impact of "loaded" ports in other countries on the capacity to make shipments to landlocked countries. This can be an especially acute problem in Southern and East Africa.

The maximum absorbable level of imports for commodity group j is:

(17) $$MAXIM_j = P * MAX(PCC_j) + MAX(ES) - PR_j,$$

where:

MAXIM = the maximum absorbable level of imports,

$MAX(PCC_j)$ = the maximum of per capita total use in the base period;

P = forecast population;

MAX (ES) = largest absolute level of ending stocks over the last 8years;

PR_j = forecast production of commodity group k.

The maximum level of absorbable imports is used as a constraint on the nutrition-based additional food needs, which become the smallest of (in quantity terms):

(18) $$MAXIMQ_j - CICQ_j$$

or:

(19) $$IRCQ_j + SAQ_j - CICQ_j$$

where IRCQ is nutrition-based import requirements to support consumption, and SAQ is the food security stock adjustment in the case of the cereal equivalent commodity group.

Calculating Import Unit Values

Import unit value (IUV) estimates are used in this report to convert tonnage import requirements (IRCQ) to value estimates (IRCV), and to convert estimated commercial import capacities in dollars (CICV) to tonnage terms (CICQ). Import unit values are computed for each country, year, and commodity group j as follows:

(20) $$IUV_j = (IUV_{jB}/USXUV_{jB})*FUSXUV$$

where:

IUV_{jB} = a country's average import unit value for commodity j during base period B (1984-86 in this report). In some cases, lack of current data has necessitated the estimation of country import unit values from those of nearby countries (sources: FAO and ERS).

$USXUV_{jB}$ = the average U.S. export unit value for commodities in group j during a base period B. The average U.S. export unit values used for each commodity group in the report are as follows: cereal equivalent = wheat; vegetable oils = soybean oil, pulses = dry beans, milk = nonfat dry milk converted to fluid equivalent.

$FUSXUV_j$ = the forecast U.S. export unit value for commodities in group j for the appropriate year (source: ERS).

Estimated import unit values are, therefore, dependent on a base-period ratio between a country's import unit value and the U.S. export unit value for a particular commodity, and on the forecast U.S. export unit value of that commodity. The use of the base-period ratio is intended to compensate for differences in transportation costs to various countries from both U.S. and non-U.S. ports, depending on who the base period suppliers were, as well as quality differences between what a country normally purchases and the U.S. average quality.

Calculating Commercial Import Capacity

A country's capacity to pay for imports of food staples is calculated in two steps. The first formula measures the country's available foreign exchange and is as follows: (all values are in million US $):

(1) $$FEA = MEE - [(IR_B/MI_B * MI) - IR] - DS;$$

where:

FEA = estimated foreign exchange availability;

MEE = projected merchandise export earnings (sources: World Bank and ERS);

IR_B = international reserves during the base period (sources: IMF and World Bank);

MI_B = merchandise imports during the base period (sources: IMF and World Bank);

MI = projected merchandise imports (sources: World Bank and ERS);

IR = projected international reserves (sources: World Bank and ERS);

DS = projected debt service (sources: World Bank and ERS); and

B = the base period over which IR and MI are averaged, (in this report, 1984-87).

Simply put, this formula states that the foreign exchange available for commercial food imports depends on export earnings, less any allowance for the accumulation or draw-down of reserves and debt service payments. The allowance for reserves is based on the notion that during the projection period a country be permitted to maintain a ratio of reserves to imports equal to the ratio in the base period. The term within the brackets determines the allowance for the accretion of reserves.

To illustrate, take the case of Sri Lanka, where, for 1988:

$$MEE = 1925$$

$$IR_B = 399$$

$$MI_B = 2279$$

$$MI = 2645$$

$$IR = 250$$

$$DS = 550$$

(2) $$FEA = 1925 - [(399/2279 * 2645) - 250] - 550$$

(3) $$FEA = 1925 - [(.1751 * 2645) - 250] - 550$$

(4) $$FEA = 1925 - [462 - 250] - 550$$

(5) $$FEA = 1925 - [212] - 550$$

(6) $$FEA = 1163$$

Equation (3) indicates that, from 1984 to 1987, Sri Lanka held reserves equal to about 18 percent of imports. After multiplication of this figure by the 1988 import projection, equation (4) shows that $463 million of reserves are needed to maintain the same reserves/imports ratio. Equation (5) shows the amount of reserves that Sri Lanka will accumulate--the difference between reserves needed to maintain the base-period ratio and projected reserves. Equation (6) indicates the available foreign exchange for Sri Lanka in 1988.

The next step in the formula determines the amount of available foreign exchange to be applied toward commercial imports of foods in a particular group of substitutable foods (cereals, roots and tubers, pulses, vegetable oils, etc.) designated by the subscript j. This step is specified as follows:

(7) $$CICV_j = FEA * (CFI_j/MEE)_B$$

where:

$CICV_j$ = Estimated commercial import capacity for food commodities in group j;

FEA = estimated foreign exchange available as derived from part 1 of the formula;

CFI_{jB} = commercial food imports of commodities in group j during the base period (sources: FAO and ERS);

MEE_B = merchandise export earnings during the base period (sources: IMF and World Bank); and

B = the base period over which CFI and MEE are averaged (in this report, 1984-87)

This method projects the ability of a country to purchase food imports, based on the percentage of export earnings spent on food imports during the base period.

To continue the illustration with Sri Lanka for the food group consisting of cereals, where:

$$FEA = 1163$$

$$CFI_{jB} = 82.2$$

$$MEE_B = 1350$$

(8) $$CICV_j = 1163 * (82.2/1632)$$

(9) $$CICV_j = 1163 * (.06)$$

(10) $$CICV_j = 70$$

Equation (9) indicates that Sri Lanka spent roughly 6 percent of its export earnings on imports of cereals during the base period. For the purpose of additional food needs assessment, it is expected that the same percentage, or $70 million, of its available foreign exchange will be committed to import cereals in 1988/89. In addition, $10 million is reallocated from vegetable oil commercial import capacity as the import requirement for that commodity group is negative.

A few shortcomings of this method should be noted. Countries that historically have spent a greater share of export earnings on food imports will be expected, for the purpose of this assessment, to spend the same share in forecast years. In contrast, countries that spend relatively little on food will be expected to continue spending that lower ratio.

Furthermore, countries whose base-period reserves-to-imports ratio is high may be permitted to accumulate reserves at a faster rate than countries with a lower ratio. Finally, because debt service projections, in many cases, are based on historical levels of actual payment in relation to export earnings and not on actual debt service obligations, forecasts of debt service may be understated.

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