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**A Review of
"Prospects For Food Aid Needs and
Global Food Supplies"**

by

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for the Winrock Colloquium**

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Prospects For Food Aid Needs and Global Food Supplies

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OVERVIEW

This brief paper summarizes recent trends in the global food market and makes some predictions about where these trends are headed during the next decade. Trostle foresees faster growth in world food demand than in production, particularly among low and middle income countries. These global market trends will spark rising volumes of food imports in developing nations, as more countries will switch from being net agricultural exporters to become net agricultural importers.

HIGHLIGHTS OF PAPER

Global Market Trends

Although world food demand growth slackened during the period 1981-86, it will probably heat up again over the next ten years. Four forces are likely to contribute to greater world food demand:

- (1) continued population growth, with an estimated 80 million new mouths to feed every year;
- (2) faster income growth, particularly among LDCs;
- (3) continuing low commodity prices;
- (4) greater consumption demand resulting from lessening of the current world debt burden.

Demand growth is likely to be the strongest for high-protein foods, as more people in the developing world seek to improve the quality of their diets.

Supply growth will likely fall behind demand growth during the coming decade; it may even fall below the 2.4 percent growth rate it achieved during the last decade. The continued presence of agricultural surpluses in certain countries will depress world food prices—which will contribute to slower overall production growth. Furthermore, several countries who enjoyed high growth rates over the past 10 years are unlikely to keep on growing at such rates.

Given that demand growth is likely to outstrip supply growth, it follows that those countries which continue to produce agricultural surpluses will increase the volume of their agricultural exports. Indeed, the total volume of food traded on the world market will almost certainly rise during the next decade. Trostle foresees a rise in world agricultural trade flows of around 3-4 percent per year—less than the 4-5 percent of the 1970s, but more than during the stagnation of the 1980s. World trade in certain commodities will show particularly sharp gains. These products are: wheat, poultry, feed grains, and oilseeds.

Focus on Developing Countries

The outlook for developing countries is extremely varied. While some countries are making significant gains, the food gap is widening in many others. Parts of Latin America and Africa will probably become more dependent on food aid.

Developing country agricultural exports suffered greatly from the low world prices accompanying the 1981–82 recession and from their slow recovery. The debt problems of many nations have also eaten into their export revenues. Increasing export revenues will require greater investment in industry, particularly export-oriented industry.

Although many LDCs have exhibited impressive rates of agricultural growth, these gains have largely been negated by equally sharp population growth. As a result, little progress has been made towards food self-sufficiency. As an example, self sufficiency in cereals declined from 55 percent during the 1960s to 50 percent during the 1980s.

One particularly disturbing trend is the increasingly intensive use of fragile soils and rapid environmental degradation which results from such practices. The declining productivity of much of the land in the developing world makes it extremely unlikely that large production gains can be realized simply by changing land-use patterns.

The volume of agricultural imports by developing countries has risen since 1967 at a 3.2 percent compound growth rate, outstripping total agricultural export growth at 2.1 percent. Most of this widening gap has been filled by rising volumes of food aid, which exhibited a 3.7 growth rate from 1974 to 1987. The volume of all food aid products as grown at an average of 350,000 tons a year over the past decade.

PROSPECTS FOR FOOD AID NEEDS
AND GLOBAL FOOD SUPPLIES

Ronald G. Trostle ¹

Fifteen years ago, the developing countries had a \$15 billion agricultural trade surplus. That surplus has now disappeared. Self-sufficiency for most categories of basic commodities has declined, indicating a growing gap between consumption and production. The volume of food aid to these nations has risen sharply during the last decade. These trends raise some disturbing questions about the future.

- * Will the reliance by developing countries on food imports and food aid continue to grow?
- * If so, will food supplies and low prices be available to accommodate the need?

This paper presents a set of 10-year projections for production, consumption, and trade of agricultural products for the world and for developing countries. The underlying long-term trends in world agricultural production, consumption, and trade suggest abundant supplies during the coming decade. However, increases in production and consumption will not be evenly spread among all countries. A rising reliance on food imports and food aid is expected in a number of low-income countries.

The projections are based on assumptions about production technology and resource use, agricultural and trade policies, world commodity price levels, and international economic growth and credit availabilities. These assumptions appear to have a relatively high probability of occurrence compared to other scenarios. However, other developments, such as changes in international economic and financial integration or developing country growth in non-agricultural exports and foreign exchange could also have an impact.

Agricultural production in developing countries has trended upward about 2.9 percent a year since 1950. The per capita rise was 0.8 percent a year. But, demand increased even faster and the growth in agricultural imports exceeded exports. Self-sufficiency (production/ consumption) for total cereals fell from more than 55 percent in the early 1960's to nearly 50 percent in the 1980's. Self-sufficiency also declined for vegetable oils (from 128 to nearly 100 percent) and for cotton (from 160 to 125 percent).

Agricultural imports by the developing countries has climbed 3.2 percent a year since the mid-1970's. Food aid flowing to these countries has risen about 3.7 percent a year and has been accounting for an increasing proportion of total agricultural imports.

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GLOBAL DEMAND AND SUPPLY FACTORS

Most world agricultural commodity markets are characterized by large stocks and low prices. The projections presented here assume that these excess supplies will cause minor changes to be made in agricultural or trade policies in the major producing/exporting countries. These changes will help balance world markets during the next 5 years, but will fall short of a degree of trade liberalization that would help sustain a balance in world markets.

Demand

Forces that generate demand--like population and income growth--were weaker in 1981-86, compared with 1970-81 (table 1). Population growth has generally slowed, except in low- and middle-income developing countries. Per capita income growth has fallen and even slipped to negative values. Only the centrally planned economies have seen growth. Export growth has similarly declined, except for low-income and centrally planned economies. And, prices for agricultural products, increasing in 1970-81, declined sharply in 1981-86. These forces, their weakened states combined, imply declines or smaller increases in agricultural trade. Can we anticipate a strengthening in these forces?

The answer is yes for some forces, but no for others. World demand for agricultural products will likely grow more slowly during the coming decade than during the boom of the 1970's, but faster than in the past 5 years. Several conflicting forces shape this outlook.

- * World population growth peaked during the 1960's at nearly 2 percent a year. The trend to slower population growth, now about 1.6 percent a year, is expected to continue. But even that relatively slow rate will produce about 80 million more people to feed and clothe each year. A significant demand-building fact of life.
- * Many countries will experience slower income growth than in the 1970's. But, income is likely to grow faster than in the early 1980's, particularly in developing countries.
- * Most commodities will be available on world markets at low prices, frequently with favorable credit terms.
- * The debt problem will continue to constrain both income and import demand in debtor countries, but to a lesser degree over time as debt is retired, restructured, forgiven, or otherwise resolved.

Total and per capita demand growth will continue to be fastest in the developing countries, particularly in the newly industrialized countries. Growth of agricultural demand in developing countries has been projected at 3 percent per year, well above that of the middle-income countries (FAO, 1987). Demand growth will continue to be strong in the centrally planned economies, especially in China.

Demand for agricultural products is not only growing but also shifting to higher quality and more highly processed foods. More of the world's population will seek higher quality diets. We will see a continuing gradual shift toward higher valued and processed products, particularly in developing countries. Distribution and processing margins will account for a growing share of total food expenditures.

People with rising incomes will want more protein, generating a growing demand for feedstuffs. World use and trade of feed grains are expected to climb faster than for food grains. Developing countries use 35 percent of their wheat and coarse grain for feed and they will likely increase that percentage. Many middle-income developing countries will maintain imports of feed grains rather than meat in order to generate employment at home.

World demand for high-protein feedstuffs will rise even faster than for feed grains. Livestock feeding in the centrally planned economies is inefficient, principally because of the composition of feed rations. The average protein content is low, particularly in the USSR and Eastern Europe. The ratio of high protein feeds to feed grain there is about 6 percent, compared with more than 25 percent in Western Europe.

Supply

World agricultural production trended steadily upward between 1950 and 1986 at 2.4 percent a year (fig. 1). The per capita increase averaged 0.5 percent a year. Growth in production was not evenly distributed: some countries and regions became large surplus producers while others experienced rising deficits. Although the growth in production has fallen below the long-term growth rate during the last 7 years, it is unclear that this represents a slowing in production growth.

Technical change and increased use of purchased inputs have significantly affected production. Area for major crops increased substantially in the 1950' and 1960's, but most production increases over the last 15 years were due to increasing yields per acre (figs. 5 and 8). Government-supported research and extension programs helped boost productivity as did price support programs.

World grain and soybean yields have risen an average 2.3 and 1.8 percent a year during the last 25 years. We have seen most of the effect of the "green revolution" in rice and wheat, but other technologies and productivity-enhancing production practices continue to emerge. The growth in crop yields has recently shown minor signs of slowing down, perhaps responding to lower world producer prices rather than the lack of technical innovations. Increasing feed efficiency will likely continue to boost livestock productivity. There are a number of new technological developments for the livestock sector, although their dissemination and adoption will likely be slow because of environmental and health concerns and constraints imposed by investment or management requirements.

The growth in agricultural production will likely fall below the last decade's 2.4-percent rate.

- * Some countries enjoyed high growth rates during the last 10 years which will be difficult to sustain. Examples are China, Malaysia, Saudi Arabia, and the Ivory Coast.
- * Low world prices and slower demand growth will probably slow yield growth rates. Average yields for wheat and rice will likely climb at a slower pace than in the past 15 years, during which use of high-yielding varieties rapidly expanded in major producing areas. The growth in coarse grain yields may also slide below the 2.3-percent long-term trend.

- * Low world market prices are likely to discourage countries with rapidly expanding production and self-sufficiency from becoming significant agricultural exporters. China and India are examples.
- * Low world prices will also deter production expansion in other countries, particularly those with high costs of production.

The Soviet Union, China, and the European Community (EC) will play critical roles in world production. The Soviet push for greater efficiency will probably not result in the same type of fundamental restructuring and investment in agriculture that caused China's spurt in output. And, China will find it difficult to sustain recent trends in agricultural output and trade. The EC will likely continue to restrain its production incentives; its rate of growth in output will probably slow.

Trade Prospects

Even with little multilateral movement toward trade liberalization, a confluence of factors are moving us towards the long-term rising trend in world agricultural trade--3.5 percent a year since 1960, faster in the 1970's, but slower in the 1980's (fig. 2). There has been a trend toward world integration of agricultural markets. In addition, world commodity and financial markets are becoming more closely linked. During the early 1980's, a number of countries responded to balance-of-payments and debt problems by curtailing imports, income growth, and investment. The debt problems are being slowly resolved. Full resolution, though not likely within the next 5-10 years, will mean brighter trade prospects. The current agricultural surplus implies relatively low agricultural prices for some time. Thus, we can expect:

- * Somewhat slower growth of supply than in the last decade.
- * Somewhat faster consumption growth than during the 1980's.
- * A shift of the production/consumption balance so that the current large stocks of grains gradually drop.
- * Growth in world trade moving back toward historical rates.

The gains in world agricultural trade flowing from this scenario will be gradual. Prices, particularly for grains, are likely to remain relatively depressed. World trade in farm products may expand 3-4 percent per year, below the 4-5 percent of the 1970's, but well above the stagnation of the 1980's.

World demand for wheat should continue to show strong growth, particularly in the developing and centrally planned countries. China will account for the largest increment of world wheat demand as the per capita consumption gains of the last decade continue. Expanding feed use is a relatively new factor contributing to the growth prospects for wheat. With consumption growing, the several-year-old recovery of world wheat trade will continue. World trade has recovered three-fourths of the 22-million-ton drop of 1985/86. Although gains will be slower, the upward trend is clear. World wheat trade will probably grow about 3 million tons over each of the next 5 years, only slightly slower than the pace of the 1970's and early 1980's.

Demand for livestock products will expand at a somewhat slower rate than in the 1970's as slower growth in incomes and population offset consumer preferences for improved diets. Beef will continue to dominate world trade in meat. But, poultry meat trade should expand, with the major poultry meat

importers of North Africa and the Middle East together with several Asian markets providing much of the gain. Poultry meat will likely account for virtually all of the per capita increase in the world's meat consumption.

Growing feed use will account for all of the gains in coarse grain use. Large gains in feed use are expected in Mexico, North Africa, the Middle East, and East Asia as poultry and livestock operations expand to supply the meat demand generated by growing population and income. Large gains are also expected in the centrally planned economies. World coarse grain trade has shown virtually no increase over the last 2 years after its precipitous decline in 1984/85. But, an anticipated increase in demand for coarse grain in importing countries will translate into growing world imports. Developing country markets, where consumption is rising, are particularly likely to increase feed imports, as will China and newly industrialized countries in Asia. Total world trade in coarse grains is likely to increase by 2-3 million tons a year, roughly half the rate of the 1970's. Large supplies of feed-quality wheat on world markets will add to the pressure on coarse grain prices. Competition among various feed grains will be intense.

Growing world demand will expand trade in oilseeds and products, although growth will be restrained by the EC's continuing move toward self-sufficiency. The strongest growth in import demand is likely to come from the centrally planned economies whose increasing oilseed and protein meal imports will enable them to more efficiently use feed grains.

World cotton trade over the last 2 years differs from the grain pattern. Cotton trade has jumped to a record level, world stocks have dropped precipitously, and prices have strongly recovered. Cotton trade will expand only modestly over the next decade because trade levels are already high and consumption is growing slowly. Trade grew by only about 100,000 bales a year during the 1960's and 1970's. Growth is unlikely to greatly exceed those gains. Increasing barriers to textile trade will mean a smaller volume of world cotton trade and lower prices for the world's cotton exporters.

Excess Capacity Remains

While grain, oilseed, and cotton stocks are beginning to drop, world agriculture will continue to have excess capacity for the rest of this century, particularly in the developed exporter nations. Growth of agricultural production in the developed market economies would need to be cut to approximately 1 percent per year, half of the projected expansion in productive capacity, to balance output with domestic and export demand according to FAO (1985).

Prices

Fierce competition between exporters for world markets burdened with surpluses have caused a sharp drop in world prices in the 1980's. Average cereals prices during the last 3 years, measured in 1982 constant dollars, were 40-50 percent below levels of the early 1960's. Soybean and soybean oil prices declined 35-40 percent and cotton prices are 45 percent lower. Wheat prices have trended downward at about 2 percent a year since 1960. Other cereals and oilseeds have followed similar trends.

Price patterns have been erratic however. After a sharp but short spike in prices in the mid 1970's, prices of most commodities have continued to decline sharply in the 1980's. Just as the 1970's price peak was an anomaly, the current low prices are below long run market-clearing equilibriums. Prices are expected to rise during the next several years as some of the current surpluses are worked off. However, the major producing/exporting countries will have problems in idling excess production capacity and will continue to compete for foreign markets. Other countries will promote exports to earn badly needed foreign exchange. Thus, world prices are expected to remain low for an extended period unless major regional production problems emerge.

OUTLOOK FOR DEMAND, SUPPLY, AND TRADE IN DEVELOPING COUNTRIES

Developing countries are increasing their food production, but growth in population and per capita consumption are causing food use to rise faster. The growth in production and in food demand is unequally distributed among the developing countries. Some countries are gradually becoming more self-sufficient, but the food gap in other low income countries is widening. Some parts of Africa and Latin America will probably become more dependent on food aid in the coming decade.

Demand

Growing demand would brighten prospects for global agricultural exports if sustainable economic growth generated the revenues to pay for increased food imports while meeting debt payments. However, despite the recovery from the world recession of 1981-82, the debt repayment problem continues to constrain developing countries' agricultural imports. Resolution of this problem is one major precondition for the return to a normal world trading environment.

The process of adjusting to the over accumulation of debt in the 1970's has had several major consequences. For the developing countries, there has been a decline in per capita income growth, a direct result of policies to constrain imports at least partially by inhibiting aggregate demand. Imports have also declined as countries attempted to control balance-of-trade deficits. Falling prices for their exportable products have been an additional constraint on many countries' ability to buy imports with export revenues.

Export revenues have not grown as expected, partly because of increased competition for export markets. The increasing competition, resulting from various attempts to generate revenues for debt repayment, has driven down commodity prices, further exacerbating the repayment problems.

Renewed growth in developing countries will require investment in new industries or in existing export industries. The world's creditor nations have withdrawn credit or been reluctant to extend more credit to the debtor nations. This has resulted in reductions in gross domestic capital in the debtor countries. The ability of the developing countries to generate renewed growth is predicated on their capacity to increase investment and exports. Therefore, if a substantial number of countries are simultaneously reducing their capital

formation as well as their imports, increased export sales become extremely difficult. Such has been the case since 1982.²

Supply

Agricultural production in all developing countries rose steadily during the last 35 years, averaging 2.9 percent a year, compared with 2.4 percent for the world. Per capita production rose nearly 0.8 percent a year. Although production has risen faster than population growth, consumption has risen even faster. As a result, self-sufficiency has tended to decline for a number of commodities, and imports have risen.

The cereals sector is the best, and most important, example of these trends. Between 1960 and 1987, the growth in production of total cereals averaged 2.7 percent a year in developing nations. The 1.9-percent growth rate of average yields contributed more to increasing production than did the average 0.8-percent annual expansion in area (fig. 5). The growth in area tapered off during the 1980's and average yields have not risen for the past 3 years. However, the long-term outlook is for cereals production to continue to rise, although at a slower rate.

Self-sufficiency in cereals in developing countries has declined from an average of more than 55 percent in the early 1960's to about 50 percent during the 1980's (fig. 6). Net cereal imports by these nations increased from less than 10 million tons a year during the early 1960's to more than 50 million tons last year. Net cereal imports climbed slightly more than 8 percent a year since 1960 (fig. 7). During the 1980's, net cereals imports have risen about 2.5 million tons a year. The rate of increase in cereal imports is expected to slow slightly.

Oilseeds present a similar story (fig. 8). Total oilseed production has increased rapidly since 1973, averaging 3.5 percent a year. Increasing average yields, 1.9-percent growth rate, contributed more than did area expansion, 1.6 percent. Oilseed area climbed significantly faster than cereals area. Average oilseeds yields, as with cereals, have not risen for 3 years.

Although developing country self-sufficiency in oilseeds has remained relatively constant, self-sufficiency for the byproducts--vegetable oils and protein meals--has declined (fig. 9). The self-sufficiency ratio in vegetable oils declined from about 128 percent in the late 1960's to nearly 100 percent in 1980, but recovered to 108-112 percent in recent years. Vegetable oil net exports declined from the 1965-75 average of 1.2 million metric tons to less than 1 million tons in the late 1970's and early 1980's (fig. 10). Vegetable oil exports have risen during the last 3 years as Malaysian palm oil production and exports increased and are expected to continue rising in the 1990's.

Cotton has been a major export crop for some developing countries. Yield increases contributed to nearly all of the 2-percent growth rate in output, since planted area changed little. As with cereals and vegetable oils, both cotton self-sufficiency and net exports declined. Self-sufficiency fell from

²For a more complete discussion of the effect of the Third World debt problem on agricultural trade, see Shane and Stallings (1987).

more than 160 percent in the early 1960's to around 120 percent in the last several years. Net exports fell more than 15 percent during the same period.

Natural Resource and Technology Concerns

Future agricultural production gains in the developing countries will depend on land use and the continued adoption of yield-enhancing technology. The expansion in area planted to major crops (cereals, oilseeds, and cotton) has fallen well below the 0.7-percent long term growth trend during the last 6 years. Although productivity gains continued to boost production, the future for technological advances is uncertain.

Land is being used more intensively in the developing countries. Multiple cropping and increasing intensity of slash and burn agriculture are mining soil fertility and, in some cases, causing permanent loss of productive capacity, as well as siltation of downstream irrigation and flood control infrastructure. Deforestation and desertification are resulting from intense competition for food and fuel. It is unlikely that changes in land use will make significant additional contributions to production in the future unless producer prices increase significantly.

Gains in agricultural output will depend more on technological advances because of the constraints on increasing planted area. However, the "green revolution" technology has already been widely distributed. Indeed, appropriate application rates for fertilizer and pesticides have been exceeded in some areas. And, there does not appear to be radical technological breakthroughs immediately on the horizon which can have the same impact on output as did the high yielding varieties. Management constraints and health concerns will limit the use of livestock growth hormone technologies in the developing countries during the next 10 years. Meat production will likely rise, even on a per capita basis, but only as a result of better management of traditional production and feeding practices.

Trade

In the 1960's, the developing countries' total net agricultural exports averaged \$15 billion (in real 1974-76 dollars). Since the early 1970's, the trade surplus has disappeared (fig. 12). The volume of agricultural imports by developing countries has risen at a 3.2-percent compound growth rate since 1967, while exports grew at only 2.1 percent. The gap widened rapidly in the late 1970's and early 1980's as rising per capita income and the availability of international credit boosted demand. Commercial agricultural imports by developing countries declined in 1985 and 1986 as the debt problem intensified and the growth in credit slowed.

Food aid shipments to developing countries trended upward at a 3.7-percent growth rate (1974-87). The volume of all food aid products (13.3 million tons in 1987) has grown an average of 350,000 tons a year during the last decade.

An estimated additional 19.7 million tons of cereals are needed in 69 developing countries in 1987/88 to meet minimum nutritional standards. Increases in food aid to meet nutritional need are largest in South Asia (6 million tons) and in East Africa (5.7 million) (ERS, 1987).

Although cereals dominate total food aid (92 percent of volume during the last 3 years), contributions of dairy products and other noncereals have been growing much faster. During the last 10 years, the trend growth rates for cereals was 1 percent, compared with 9.7 percent for dairy products and 13.7 percent for other noncereal products.

Food aid as a percentage of total imports rose significantly the last several years. During the late 1970's and early 1980's, cereals imported as food aid accounted for 12-18 percent of total cereals imports. Since the mid 1980's, cereal food aid comprised more than 20 percent of total imports.

One of the reasons for increased food aid in recent years has been the limited foreign exchange that developing countries have had available for commercial imports. In 1984 and 1985, 69 developing countries spent about 10 percent of their collective foreign exchange availabilities (defined as foreign exchange reserves plus export earnings minus debt service obligations) on commercial food imports; 30 countries used more than 10 percent, 8 used more than 20 percent, and 2 more than 30 percent.

CONCLUSIONS

Many of the long-term trends, interrupted in the 1970's and 1980's, may reemerge during the coming decade.

World agricultural production will continue to rise during the next decade, but at a slower pace than in the past. Surpluses will continue to persist, but will gradually decline from their current high levels. Real agricultural prices will rise slowly from current depressed levels, but excess production capacity in major exporting countries will keep real prices low for an extended period. International agricultural trade will pick up again, but not reach the growth rates of the 1970's.

Demand growth in developing countries will rise from current depressed levels, but stay below the 1970's because of lower population and income-growth rates. A few middle-income developing countries will enjoy rising per capita consumption, as well as quality improvements in diet. For the bulk of the low income countries, however, per capita consumption will stagnate. The growth in agricultural output will slow slightly as land resources increasingly become a constraint to expanded output. Productivity increases could slow somewhat during the next decade because "green revolution" technology is already widely distributed and no major new readily applicable technology breakthroughs are on the immediate horizon. Developing countries will continue to shift from being net agricultural exporters to becoming net importers. The need for both commercial food imports and food aid will rise significantly if current nutrition levels are to be maintained in the low-income countries.

REFERENCES

- Economic Research Service, U.S. Department of Agriculture. World Food Needs and Availabilities, 1987/88. 1987.
- Food and Agriculture Organization of the United Nations. Agriculture: Towards 2000. 1987.
- Lee, John E., Jr. and Mathew D. Shane. "U.S. Agricultural Interest and Growth in the Developing Economies: The Critical Linkage," in U.S. Agriculture and Third World Economic Development: Critical Interdependency, Washington, D.C. (National Planning Association), Feb. 1987, pp. 54-78.
- Shane, Mathew D. and David Stallings. The Third World Debt Crisis and Its Resolution. FAER-231, Econ. Res. Ser., U.S. Dept. Agr., Aug. 1987.
- Vocke, Gary. "The Outlook for Cereal Production in the Third World," Agricultural Outlook. Econ. Res. Serv.. U.S. Dept. Agr., Sept. 1987.
- Longmire, Jim. "Longer-Term Developments in the World Cereals' Markets: Looking Towards 2000," Mimeo, CIMMYT, Mexico, June 1987.

Table 1: Determinants of global agricultural demand

Item	World		Developing		Developed		Centrally	planned
	Total	Low income	High income	Total	EC	U.S.	economies	
Share of world population, 1985	100	54.51	42.15	12.37	14.72	5.35	5.07	30.76
Annual population growth rates:								
1970-81	1.84	2.41	2.45	2.31	0.77	0.34	1.05	1.48
1981-86	1.65	2.39	2.45	2.19	.54	.10	.92	.93
GDP per capita								
1970	2,363	637	420	2,217	8,496	8,249	9,790	1,407
1975	2,576	974	468	2,658	7,453	7,186	10,534	1,577
1980	2,808	1,084	482	3,104	10,803	10,521	11,805	1,694
1986	2,931	1,073	484	3,082	12,027	11,356	13,056	1,869
Annual growth rate in GDP per capita								
1970-81	1.61	2.40	1.32	3.11	2.34	2.21	1.93	1.72
1981-86	.60	-1.25	-1.06	-.15	1.87	1.60	1.56	1.94
Exports per capita								
1970	376	236	112	646	1,293	1,018	674	101
1975	441	245	111	694	1,658	1,375	908	128
1980	526	270	93	863	2,166	1,056	1,197	141
1986	603	263	64	873	2,746	4,059	1,018	180
Annual growth rate in exports per capita								
1970-81	3.14	.92	-2.97	2.72	5.11	5.18	5.16	2.72
1981-86	2.68	.14	.31	.10	4.20	5.09	-2.78	5.82
Change in agricultural export prices								
1970-81	8.59	9.67	9.82	9.61	9.59	9.59	9.58	6.21
1981-86	-3.46	-4.68	-5.42	-4.56	-2.84	-2.91	-1.64	-2.62

Source: Lee and Shane; updated.

Figure 1

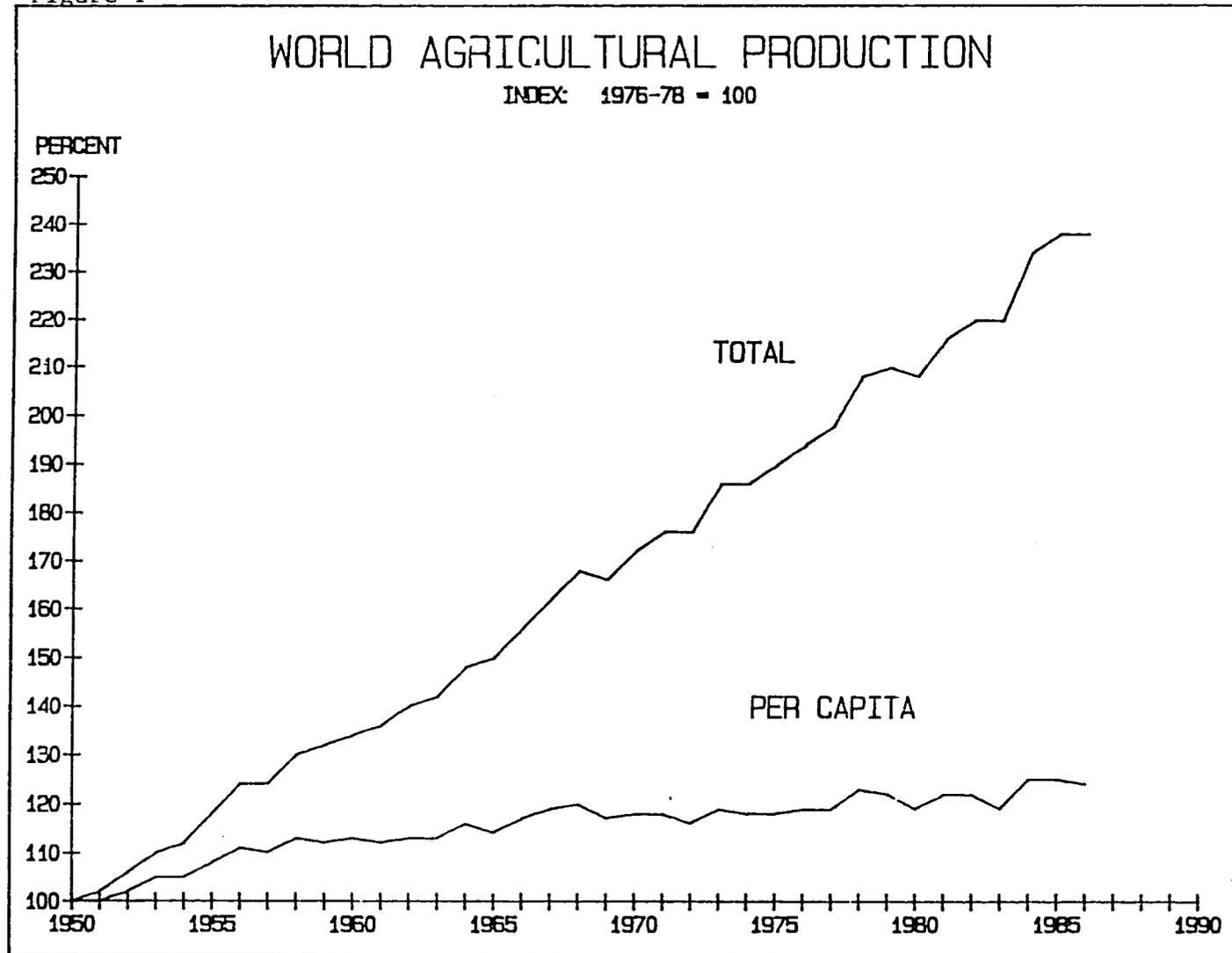


Figure 2

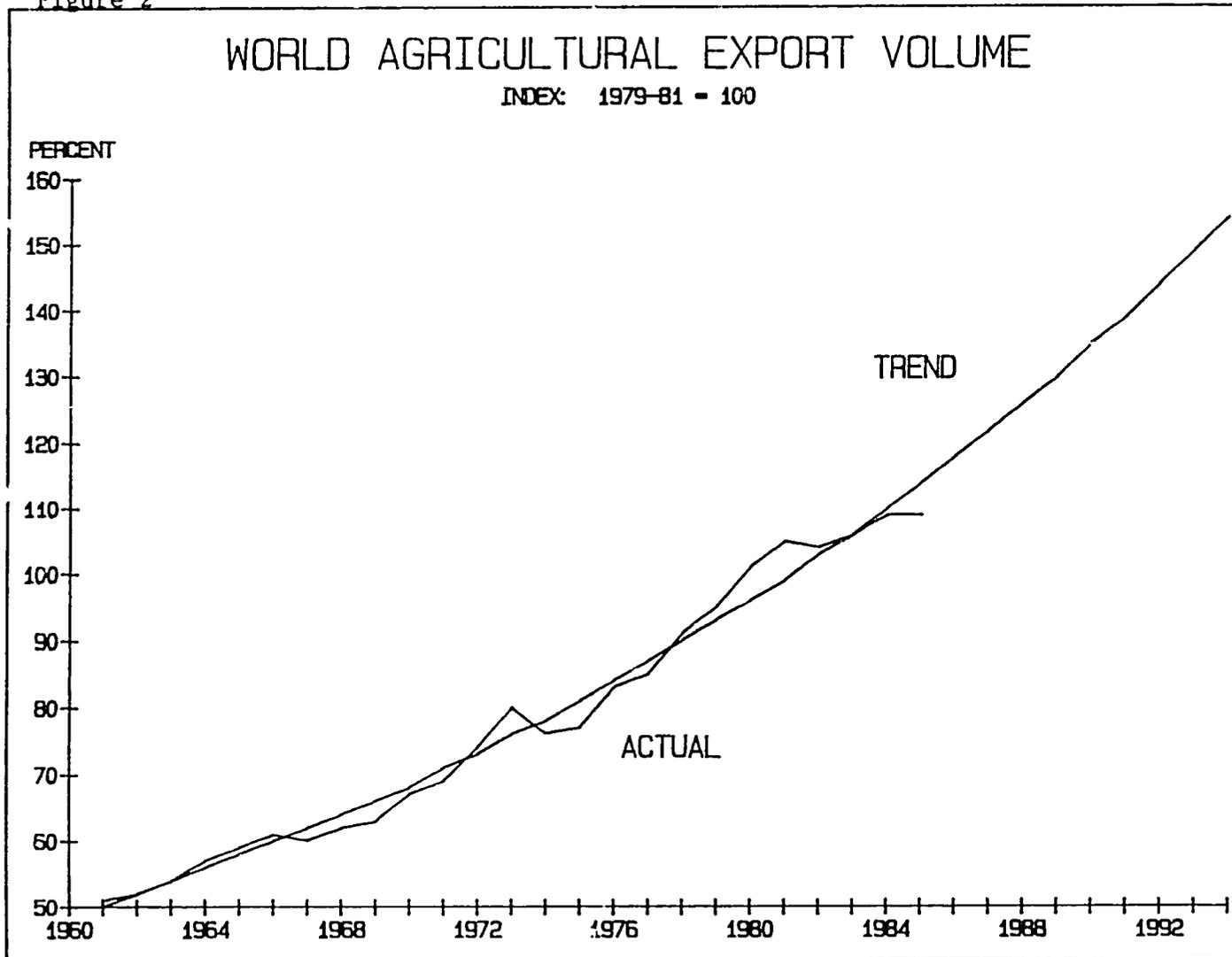
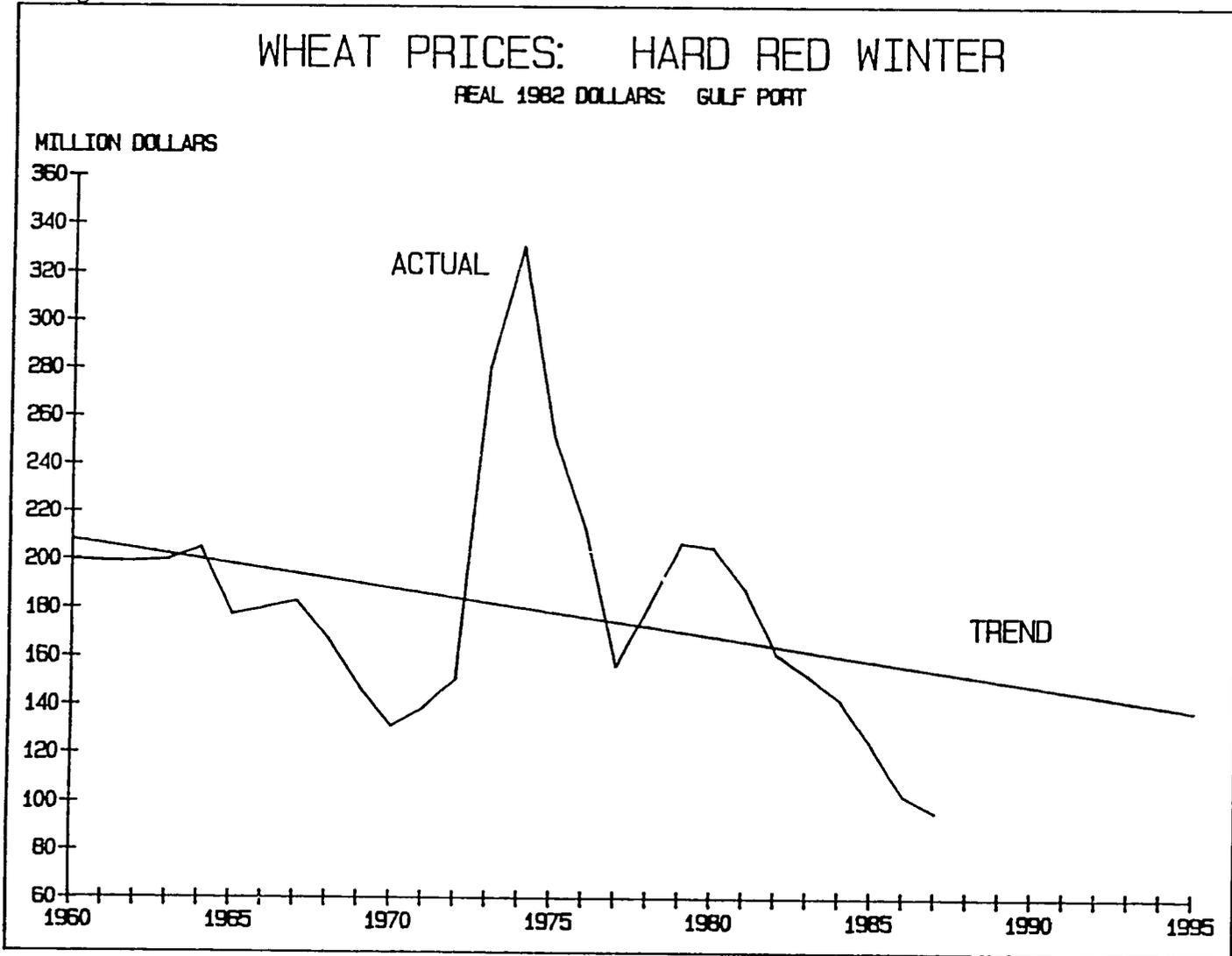


Figure 3



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Figure 4

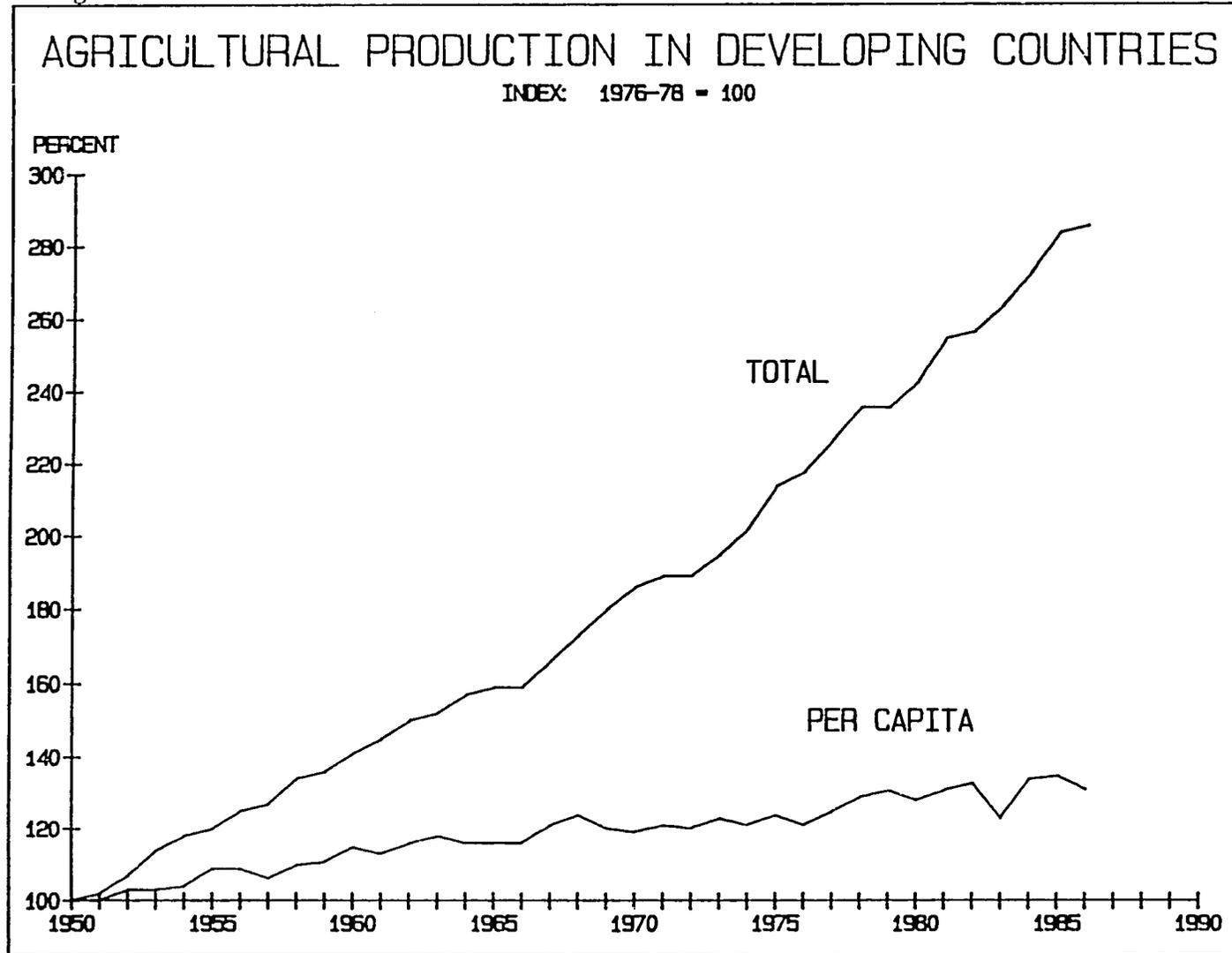


Figure 5

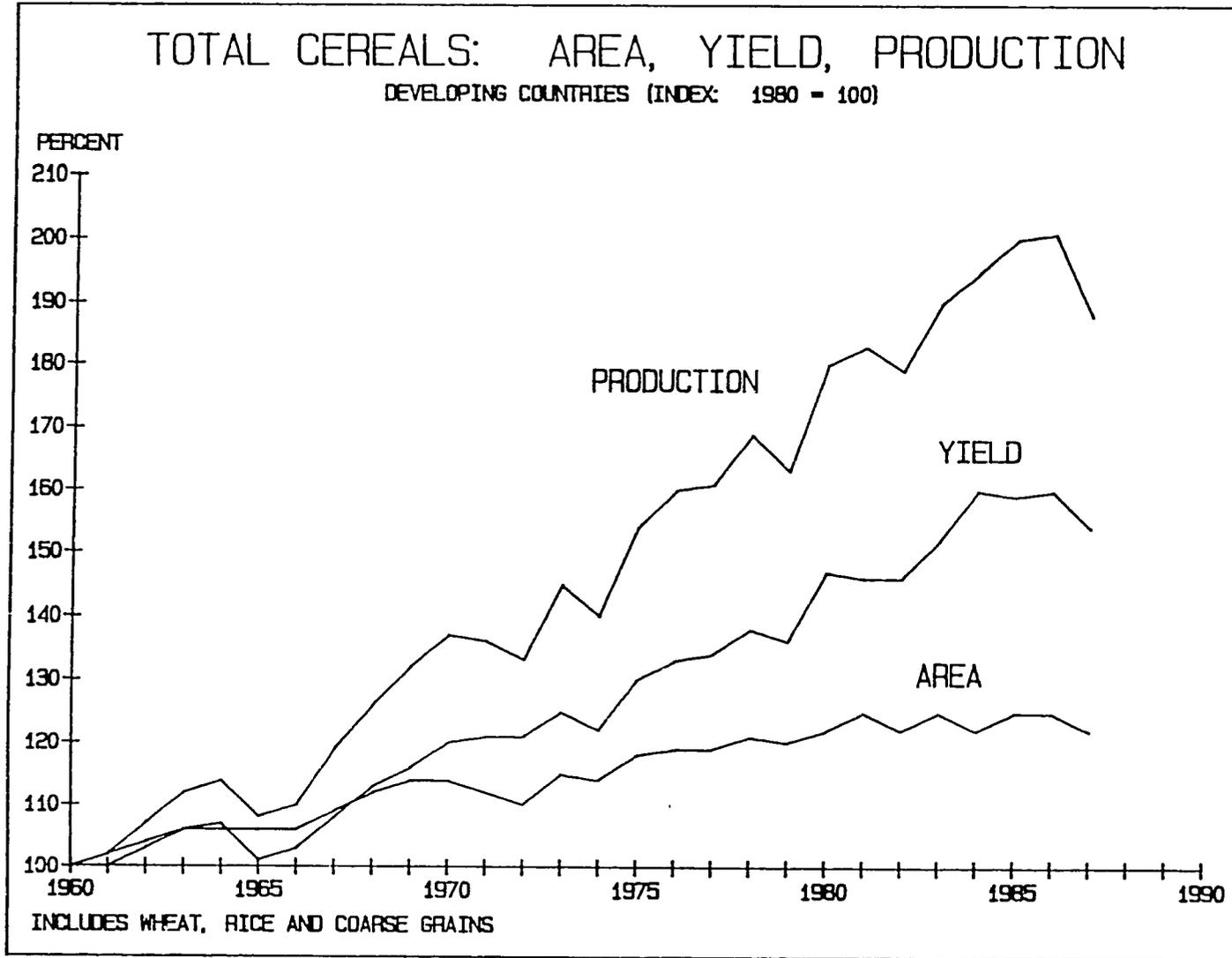


Figure 6

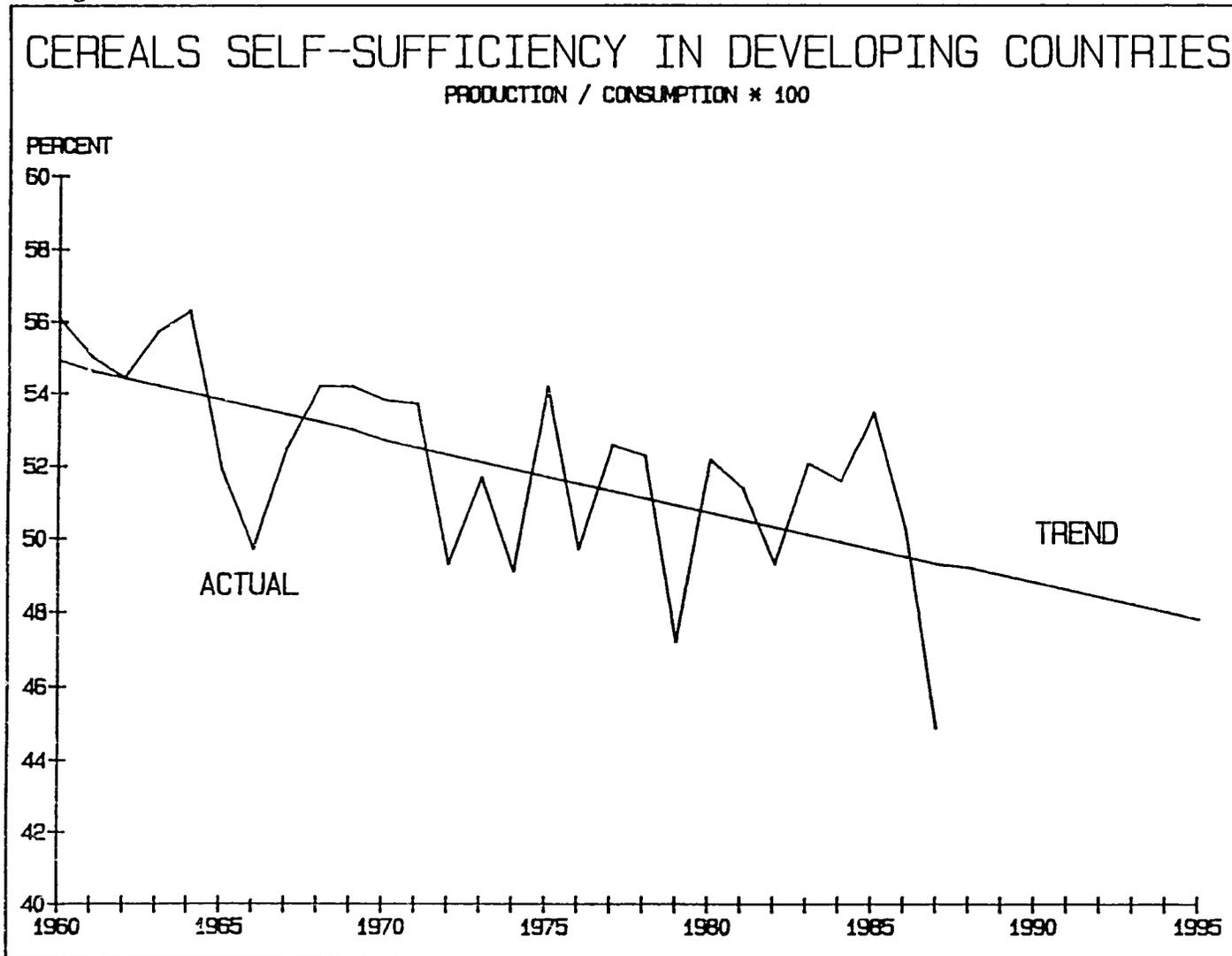


Figure 7

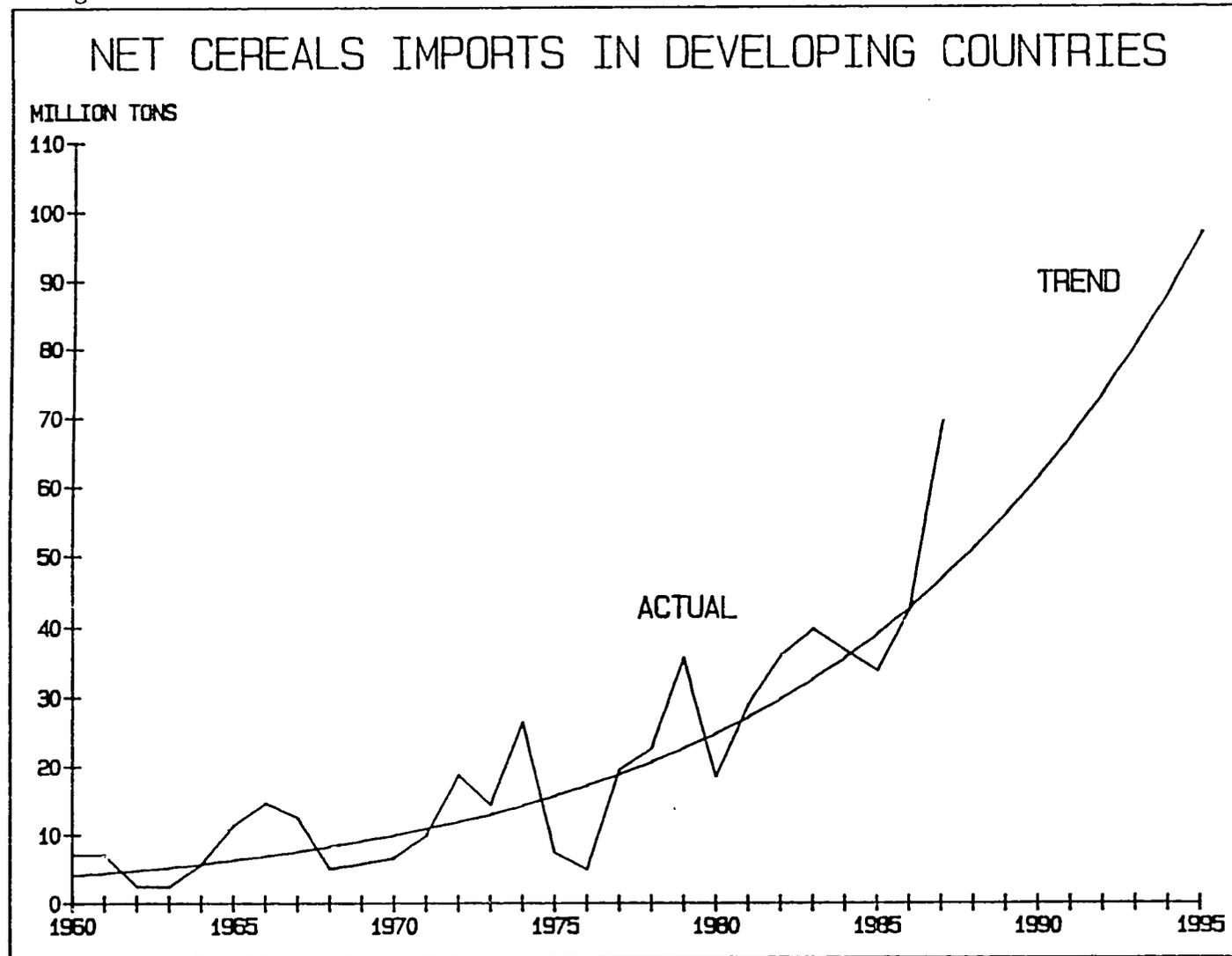


Figure 8

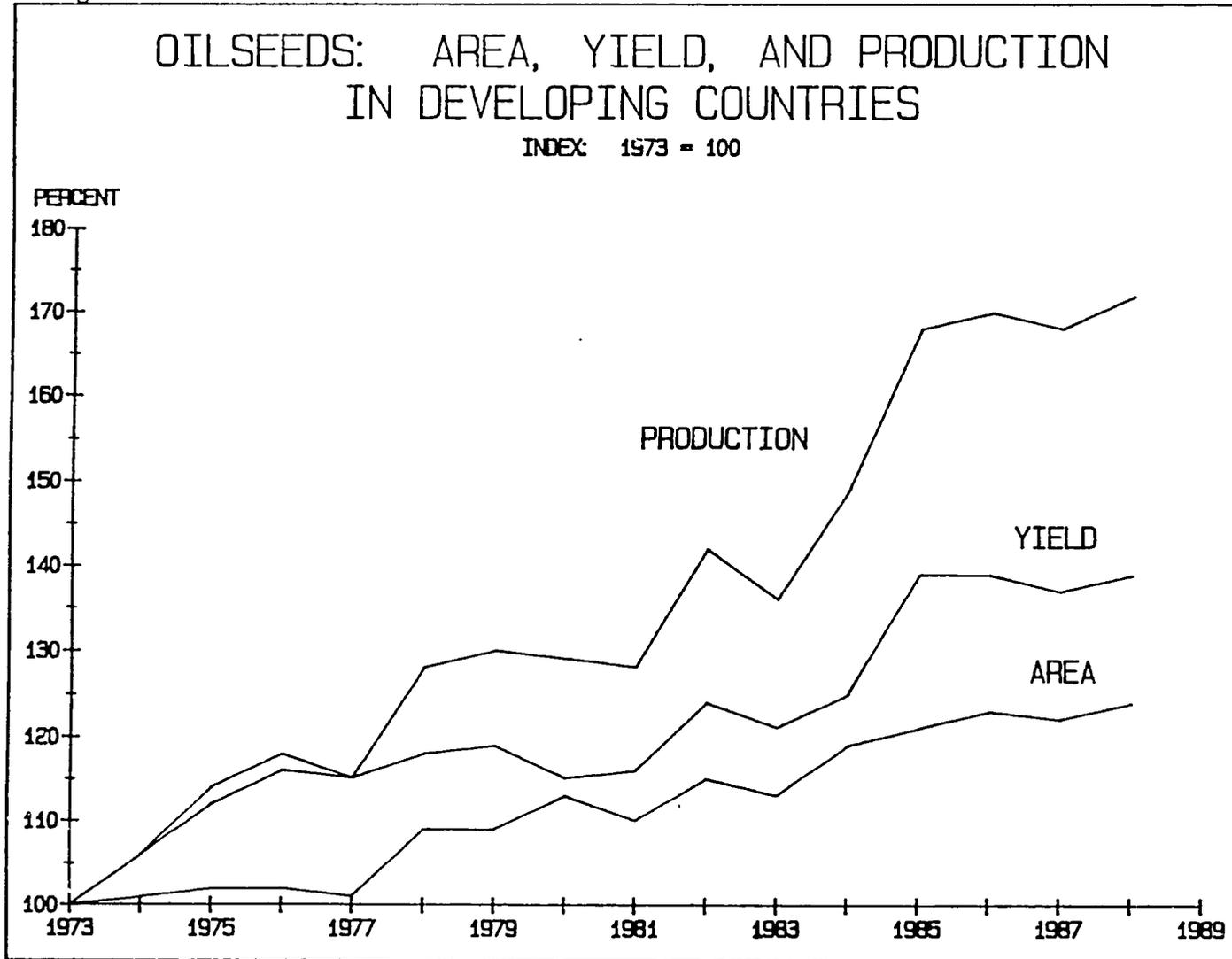


Figure 9

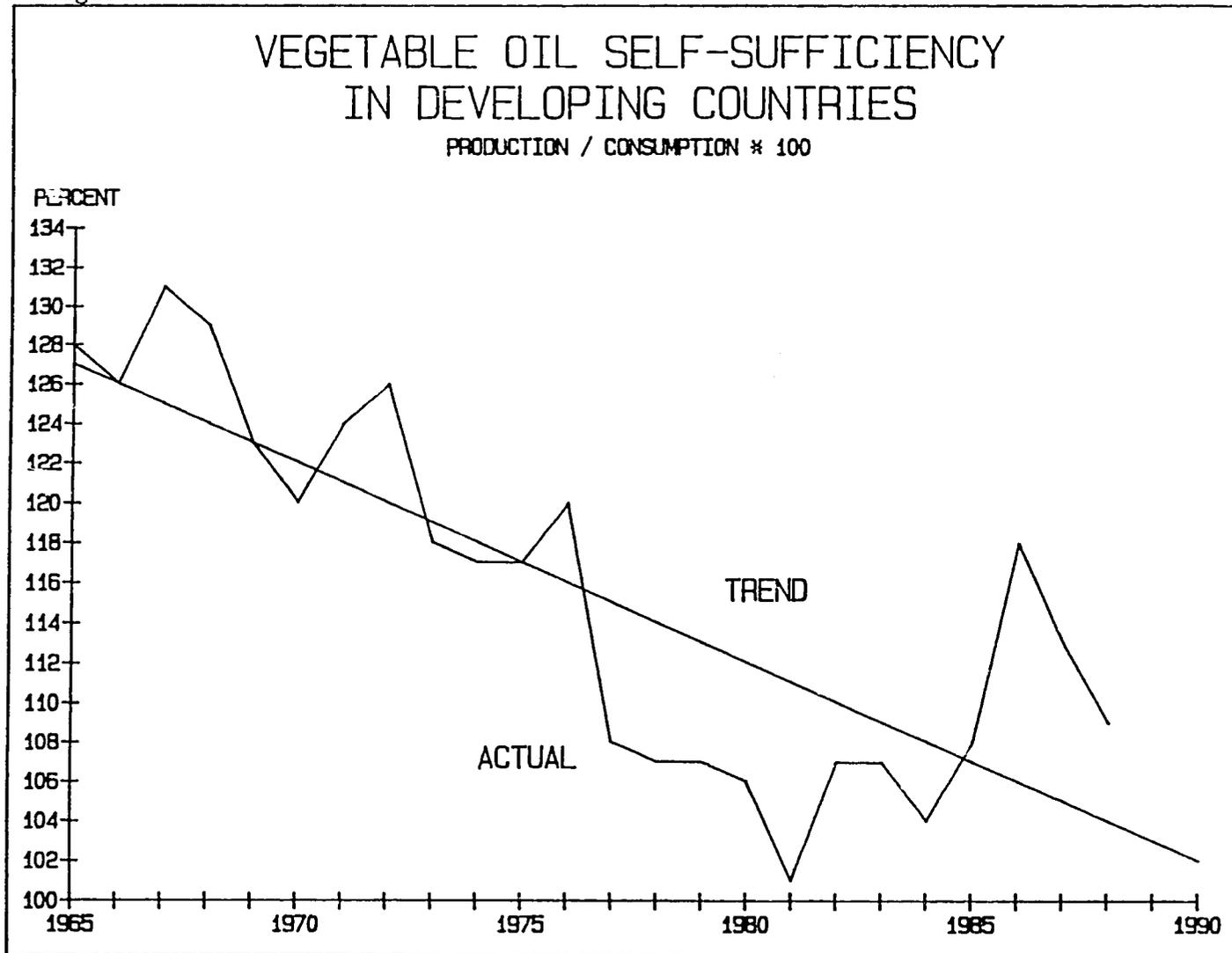


Figure 10

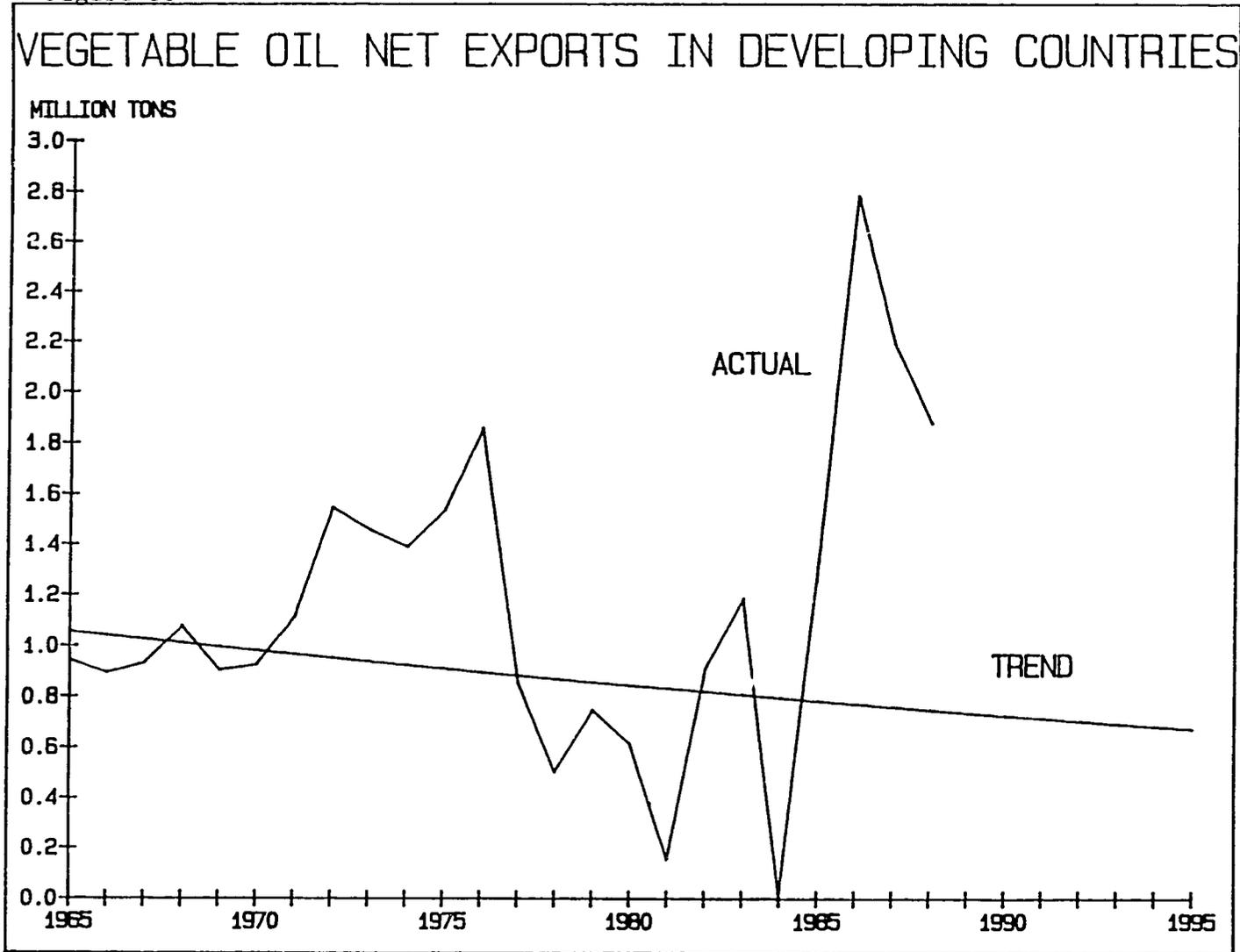


Figure 11

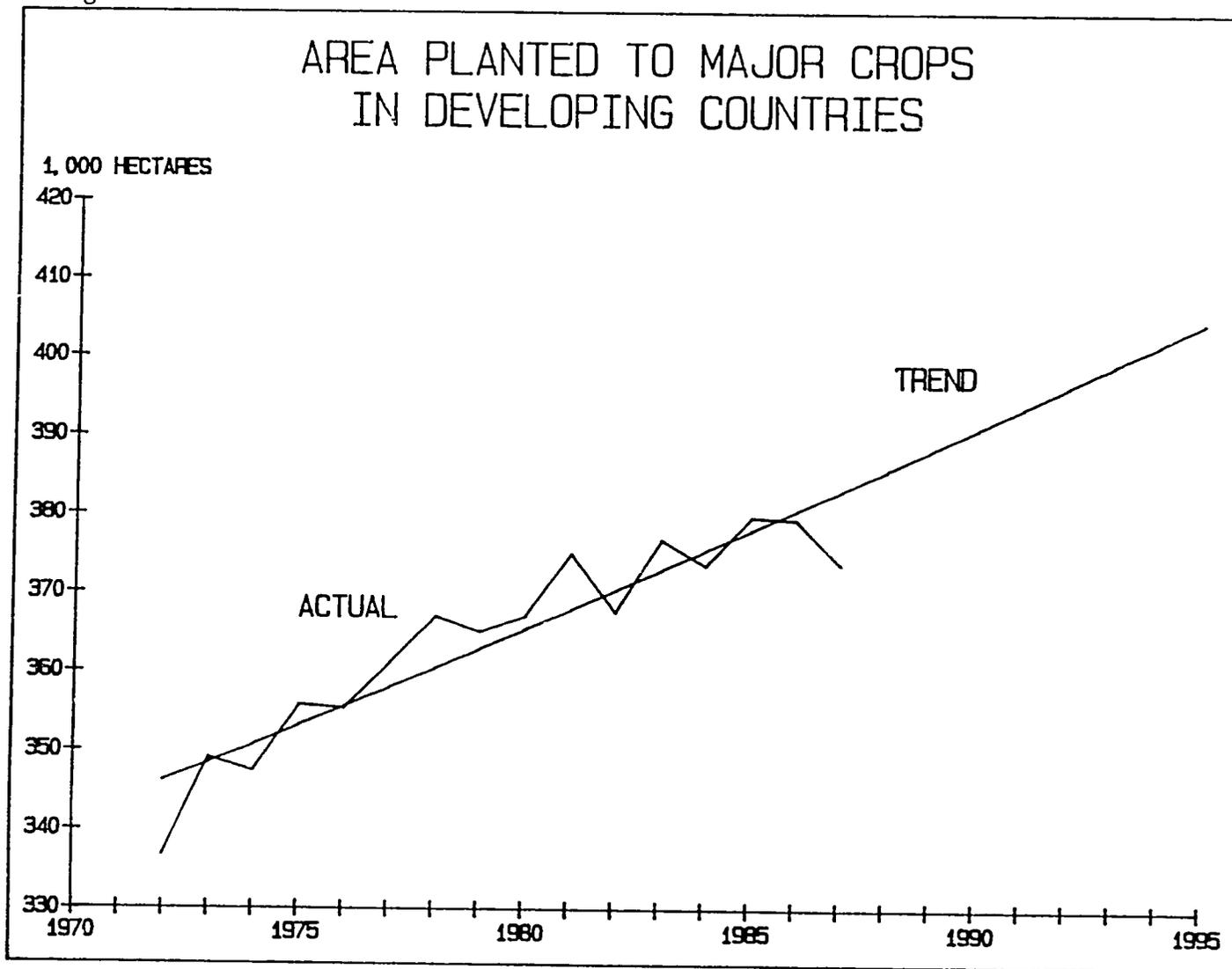


Figure 12

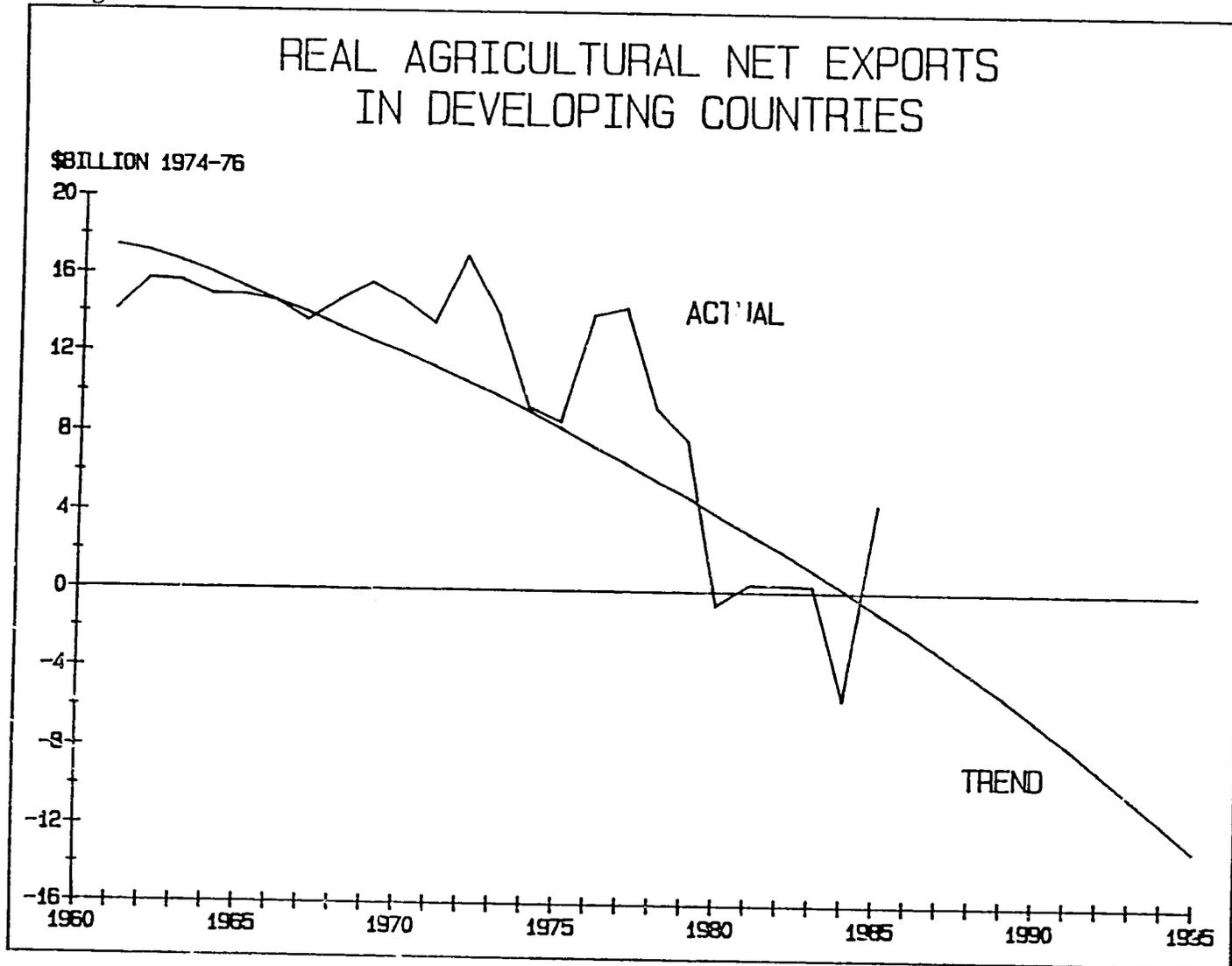


Figure 13

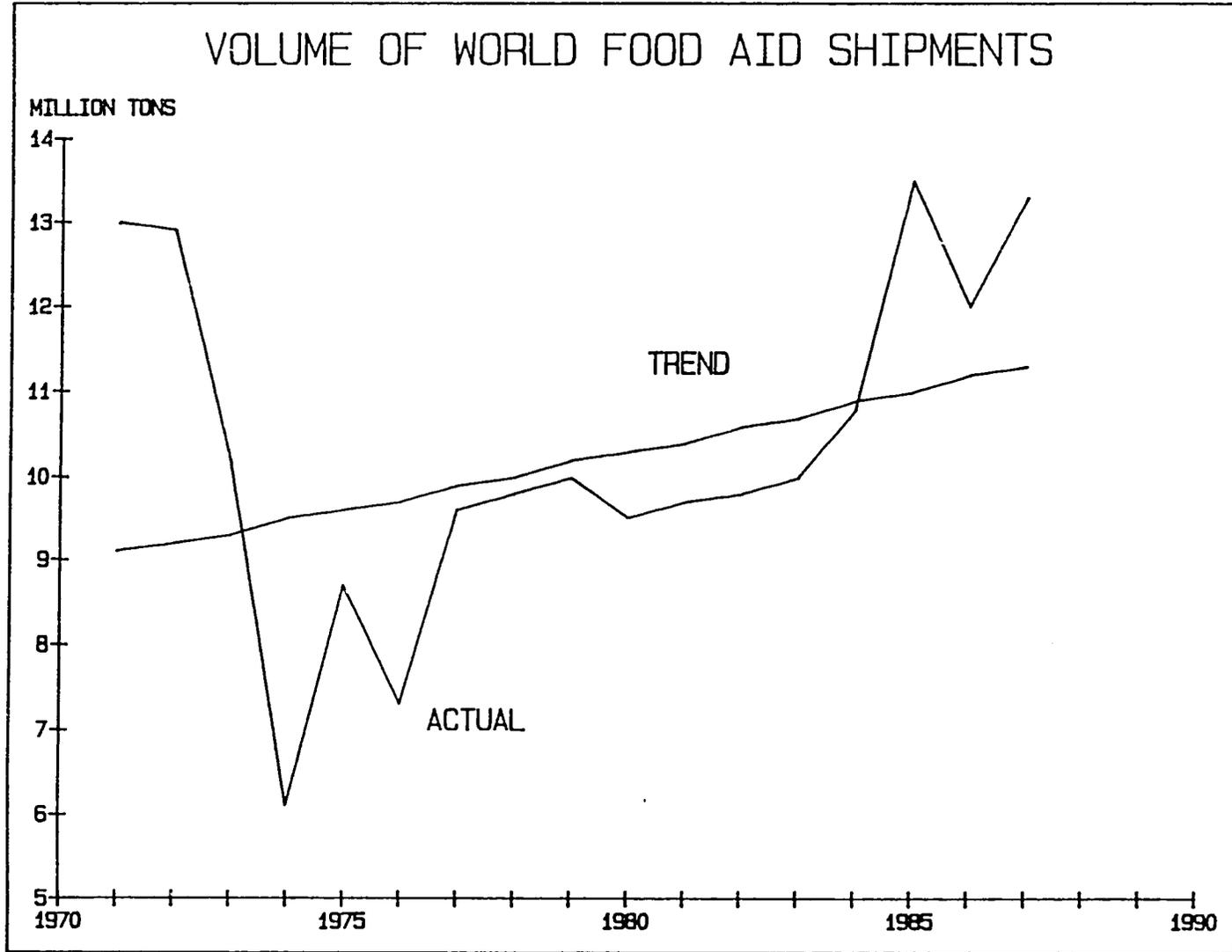
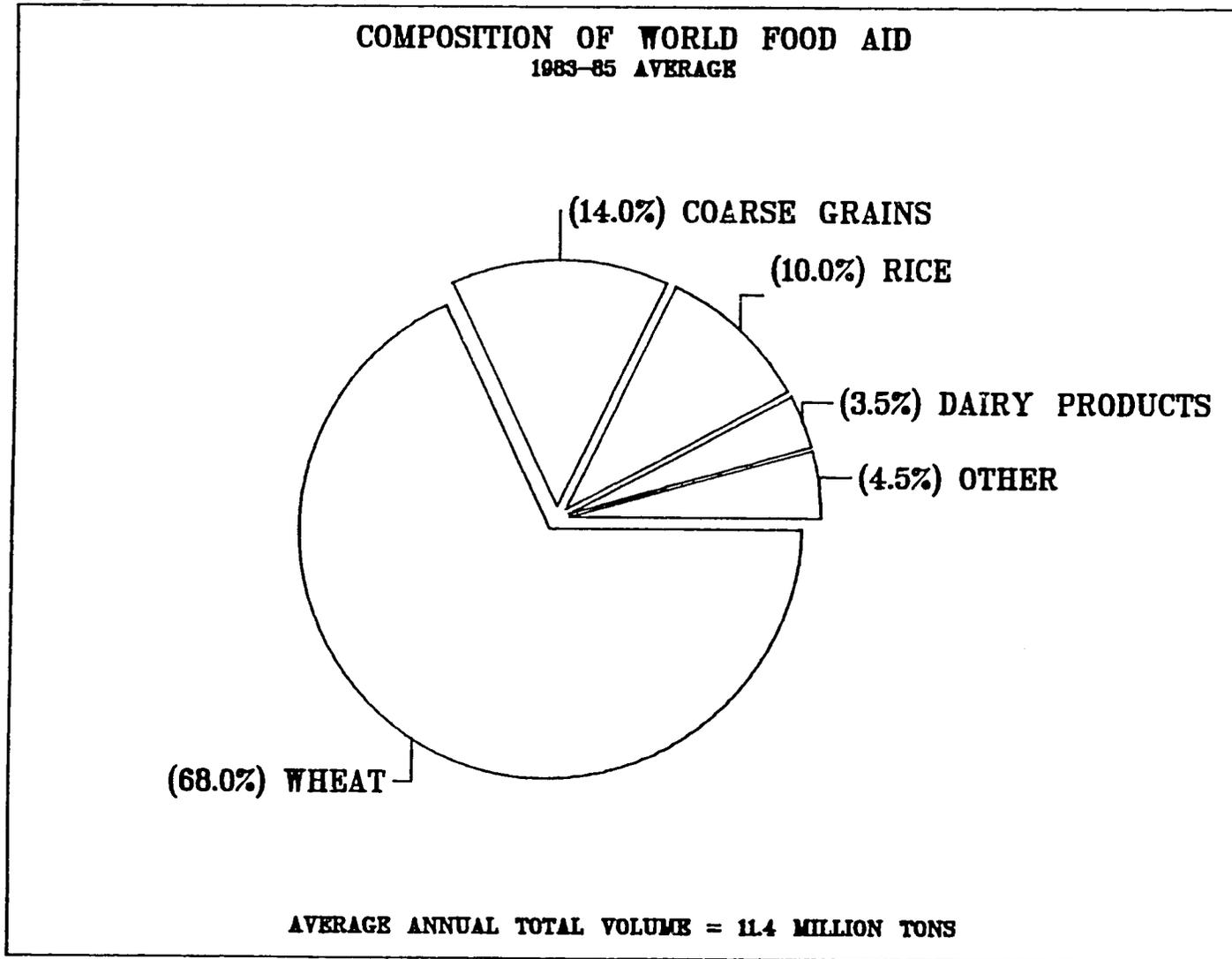


Figure 14



12