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AGRICULTURAL ASSISTANCE TO DEVELOPING NATIONS

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Agricultural Assistance to Developing Nations

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Summary

Today there is need and opportunity for development in most countries of the Third World. The poor in many countries have a continual food deficit while the developed nations experience increasing abundance, even surpluses, of food.

Improvement of agriculture in less-developed nations facilitates economic growth and increases incomes, some of which is used for the import of food. Evidence of this relationship is found in the decade of the 1970s, when developing nations became important to world-wide trade in agricultural products.

Those who have critically examined the question of technical and economic assistance suggest that it is in our interest to continue our extension of assistance to agriculture in developing nations.

Table of Contents

Introduction	1
World Agricultural Trade	2
U.S. Agricultural Exports	5
Agricultural and Economic Development in Developing Nations	8
Issues and Policies: Technical and Economic Assistance	15

Introduction

Colorado farmers and ranchers with increasing frequency are asking: Is agricultural development assistance to Third World nations in the best interest of American agriculture?

Answers to the question, as they are reported in numerous publications, are mixed. Kenneth Bader, chief executive officer of the American Soybean Association, has said: "U.S. farmers are concerned and vocal over this seeming rush to export the production technology that once made them the world's most efficient producers We should insist that efforts be made to create demand for the product within the country so that the commodity does not end up competing with the United States in the export market" (Bader, 1987).

Gary Vocke, writing about development assistance, economic growth and trade, expressed a different judgment about the effect of agricultural assistance: "By increasing the productivity of the land, new agricultural technology can initiate broad based economic development leading to industrialization and rising per capita incomes. Rising per capita incomes create food demand that eventually outpaces growth in agricultural production . . ." (Vocke, 1987).

Directors of State Departments of Agriculture have responded to criticisms of agricultural assistance by resolving: "The National Association of State Departments of Agriculture . . . opposes the use of any federal money to subsidize foreign agricultural competition . . . NASDA also opposes the destruction of the American Farm System by . . . any agency which offers low-interest rates to foreign agricultural entities" (NASDA, 1986).

Orville Freeman, president of the Agricultural Council of America, advised his membership: "American farmers should be the first to advocate aid to developing countries, particularly agricultural technical assistance, to expand their economies and improve incomes. Only in that way can a poor country move into the economic mainstream and become a growth customer for U.S. farm products" (Freeman, 1984).

It is apparent that there is disagreement among leaders within the agricultural industry relative to the consequences of technical and economic assistance to developing nations. It is likely that bases exist for the differing points of view. It is worthwhile to find the facts, to ascertain the responses to agricultural assistance and to make them evident.

It is the purpose of this publication to report the careful analyses of assistance as it has affected

agricultural and economic development in Third World nations, and as it has influenced the competitive positions of developing nations in world-wide trading activities. The changing international market for agricultural products is reviewed, and the U.S. share of the market is noted to establish its significance. Data descriptive of U.S. exports are examined, with attention to the changing significance of developed and developing nations as our customers.

The economic circumstances of the developing nations are considered. The role of agriculture in development is noted, and the effects of development on employment, incomes, food consumption and imports/exports are reviewed.

The extent of competition of developing nations in world markets for agricultural products is examined by reference to imports and exports of these nations as development proceeds. The same data are examined to determine the extent to which developing nations have become our customers. By this means a measure of the net effects of assistance is developed, and insight into the extent of gains and losses which are attributable to agricultural assistance is gained.

Finally, there is suggestion of the policy choices which we must debate, as we answer the question posed earlier: Is agricultural development assistance in the best interest of American agriculture? Ultimately, we will choose a course of action — a retreat from assistance, a status-quo kind of policy, or an emphasis on assistance because of the merits of such a policy.

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World Agricultural Trade

Until the decade of the 1970s, neither world agricultural trade nor the U.S. share were significant proportions of global supplies and uses. In the 1950s, many of the developed nations were involved with recovery of economies from the distress of World War II. Western European nations were busy with the creation of economic unions. The Soviet block nations were developing their political and economic relations and struggling with economic recovery. The United States adjusted to peacetime levels of activity in the early 1950s, with attention to agriculture in the form of production limitations. The markets for agricultural products were chiefly domestic, with only \$3.5 billion to \$4.5 billion of exports (See Table 1).

In this decade the underdeveloped nations continued their struggle with survival, some making attempts to limit population growth and a few promoting expansion of agricultural sectors in an effort to improve food supplies. Assistance was limited largely to gifts of grain via the PL 480 program of the United States and other, modest programs of the developed nations.

In the 1960s there was some improvement in world agricultural exports, from about \$35 billion to \$50 billion, with virtually no change in the U.S. share. The PL 480 program continued to be important in the assistance given to underdeveloped nations, but programs of technical assistance grew in importance. Emphasis shifted to development of agricultural sectors and expansion of general economies of several political entities that we began to describe as the developing nations. For a few of these nations growth was sufficient enough that they began to be noticeable participants in world trade as importers and exporters.

The decade of the 1970s produced significant changes in world agricultural trade and a positive change in the U.S. share. World agricultural exports increased from \$58 billion in 1971 to \$251 billion in 1980, the peak value for exports from all nations (See Table 1). Exports from the United States increased from \$8 billion in 1971 to \$44 billion in 1980; U.S. share grew from 14.1 percent to 17.5 percent with the share highest in 1974.

In this decade, expansion of world agricultural exports was prompted by essentially three factors. The first was growth in the world's economy — led by the economic expansions in Japan and northern Europe (Hathaway). Important also was positive economic change in the high-growth, developing nations such as Korea, Taiwan and Brazil. The second factor was the population boom in the developing world, a consequence of both high birth rates and extended life spans as medical science affected human survival. Failure to achieve development in agriculture led to a requirement for

import of food. Availability of credit permitted imports to fill the "food-gap". The third factor was the failure of agriculture in the centrally-planned economies to produce enough food to satisfy increasing demands for food, especially meats. By 1980 these countries were importing 80 million tons of grains and oilseeds annually.

Table 1. World Agricultural Exports and U.S. Share; Averages 1951-70 and Annual 1971-81

	Agriculture ^a		
	World	United States	U.S. Share
	Billion Dollars		Percent
1951-55	26.80	3.41	12.7
1956-60	31.62	4.59	14.5
1961-65	38.65	6.04	15.6
1966-70	47.23	6.90	14.6
1971	58.43	8.24	14.1
1972	70.55	9.97	14.1
1973	103.08	18.84	17.9
1974	126.77	23.10	18.2
1975	129.65	22.83	17.6
1976	141.11	24.17	17.1
1977	161.16	24.97	15.5
1978	183.93	31.24	17.0
1979	218.31	37.21	17.0
1980	251.34	44.08	17.5
1981	248.21	46.11	28.6

^aIncludes values of agricultural inputs, e.g. fertilizer, seed, etc. Source: *The Dilemmas of Choice*, 1986.

The 1980s

In the decade of the 1980s one of the economic activities, identified by Hathaway as significant to expanded world trade in agricultural products, turned around. In a reaction to the expansionary period of the 1970s, which produced high rates of inflation and large and rapid capital movements, developed nations changed monetary policies. Actions were taken that reduced money supplies and raised interest rates. The consequence was a reduction of available credit and increased costs of existing debt (Miller, 1986).

Impacts of these changes in monetary policy were felt especially in the developing nations — those nations that were achieving growth and becoming important in international agricultural trade. Significant to their development had been foreign capital, i.e. credit, available at relatively low rates of interest. Suddenly, in 1981-82, that critical flow of capital was greatly reduced and the costs of existing debt rapidly increased. The certain result

was a slowing of growth — a reduced level of economic activity (See Table 2). Their involvement in trade was affected by a diversion of foreign exchange from imports to increased interest payments to international creditors.

Among the developed nations the changes in monetary policies had variable effects. Inflation rates were generally reduced, as was the intent, interest rates increased and economic activity was reduced but not to an equal extent among nations. A comparatively strong dollar developed in the United States. It attracted capital to debt and equity investments, and it stimulated economic activity (in both the public and private sectors) beyond that of some other developed nations.

Unfortunately the strong dollar influenced our involvement in international trade, such that imports increased and exports decreased in value. The trade balance became and remains negative. Reduced purchasing power of foreign currencies were an important reason for a changed balance of imports and exports of agricultural commodities. As is evident in Table 3 exports declined rapidly after 1981, and imports increased but at a slower rate. The trade balance has only recently begun to turn

around with a weakening dollar and more competitive prices.

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Table 2. World and Regional Economic Growth, the Mid-1980's:

Calendar Year	1984	1985	1986	1987	1988
	<i>Percent Change</i>				
World	4.1	3.0	2.8	2.6	3.0
United States	6.6	3.0	2.9	2.9	3.6
World Less U.S.	3.2	3.0	2.7	2.5	2.7
Developed Countries	4.5	3.1	2.6	2.4	2.8
Less U.S.	3.4	3.3	2.4	2.2	2.3
EC-12	2.3	2.4	2.4	2.1	2.2
Japan	5.1	4.7	2.5	2.5	2.7
Developing Countries	3.1	2.5	2.6	2.1	3.7
Oil Exporters	1.3	-0.1	-2.1	0.2	3.0
Non-oil Exporters	4.4	4.2	5.8	3.5	4.1
Latin America	3.3	3.6	3.7	1.4	2.7
Africa & Middle East	1.1	0.1	-1.2	0.1	3.3
Asia	5.4	4.0	5.8	5.5	5.3
Centrally Planned Countries	3.7	2.9	3.9	3.6	3.4

Source: *World Agriculture, Situation & Outlook Report*, 1987.

Table 3. Value of U.S. Foreign Trade and Trade Balance (Agricultural, Nonagricultural), October-September 1980-87)^a

Year	Agricultural	Nonagricultural	Total	Agricultural
				Proportion of Total
				Percent
		<i>Million Dollars</i>		
U.S. Exports:				
1980	40,481	169,846	210,327	19
1981	43,780	185,423	229,203	19
1982	39,097	176,308	215,405	18
1983	34,769	159,373	194,142	18
1984	38,027	170,014	208,041	18
1985	31,201	179,236	210,437	15
1986	26,309	176,628	202,937	13
1987	27,859	202,331	230,190	12
U.S. Imports:				
1980	17,276	223,590	240,866	7
1981	17,218	237,469	254,687	7
1982	15,485	233,349	248,834	6
1983	16,373	230,527	246,900	7
1984	18,916	297,736	316,652	6
1985	19,740	313,722	333,462	6
1986	20,875	342,855	363,730	6
1987	20,643	367,381	388,024	5
Trade Balance:				
1980	23,205	-53,744	-30,539	—
1981	26,562	-52,046	-25,484	—
1982	23,612	-57,041	-33,429	—
1983	18,396	-71,154	-52,758	—
1984	19,111	-127,722	-108,611	—
1985	11,461	-134,486	-123,025	—
1986	5,434	-166,227	-160,793	—
1987	7,216	-165,050	-157,834	—

Source: *Foreign Agricultural Trade of the United States*, 1987 Supplement.

Table 4. Value of Selected U.S. Commodity Exports, Fiscal Years 1972-86

Year ¹	Animals and Prods.	Wheat and Prods.	Feed Grains and Prods.	Rice	Oilseeds and Prods.	Fruits, Nuts and Vegetables	Total ²
							<i>Million Dollars</i>
1972	1,062	1,149	1,326	334	2,137	758	8,242
1973	1,438	3,284	3,017	439	3,663	893	14,984
1974	1,826	4,652	4,480	839	5,552	1,212	21,559
1975	1,666	5,292	4,904	941	4,753	1,374	21,817
1976	2,207	4,787	6,010	607	4,692	1,532	22,742
1977	2,646	3,054	5,391	704	6,388	1,724	23,974
1978	2,828	4,139	5,751	873	7,440	1,913	27,289
1979	3,643	4,862	6,709	884	8,555	2,247	31,979
1980	3,771	6,633	9,169	1,170	9,811	3,041	40,481
1981	4,107	8,052	10,497	1,537	9,305	3,558	43,780
1982	4,075	7,675	7,051	1,149	9,545	3,412	39,097
1983	3,748	6,223	6,582	874	8,721	2,871	34,769
1984	4,218	6,783	8,217	897	8,602	2,816	38,027
1985	4,075	4,526	6,884	677	6,195	2,832	31,201
1986	4,367	3,546	3,819	648	6,266	2,915	26,324

¹Year ending September 30.

²In addition to products listed, includes cotton, tobacco, feeds and fodders, seeds and refined sugar. Source: *National Food Review*, 1987.

U.S. Agricultural Exports

With this background it is instructive to look at the experience of the United States as a principal participant in world agricultural trade. Both the destinations and the components of exports are of interest, as they are relevant to the question of assistance. It is also worthwhile to consider the relationship of exports to imports of agricultural commodities, for sustained trading relationships require a two-way exchange between trading partners.

It has been noted previously that exports (trade) in agricultural commodities were relatively unimportant in the decades of the 1950s and 1960s. It was in the early 1970s that sales in the international markets really accelerated (see Table 1). And of course it was in the 1970s that farmers in the United States, sensing market opportunities, made the investments in technology that enabled them to be competitive in expanding markets. They were able to increase their shares of world exports.

Table 4 contains the reported values of agricultural commodity exports through the most recent decade and a half (values for cotton, tobacco and some minor commodities are excluded). It is apparent that oilseeds, feed grains, wheat, animals and related products have been the principal exports. The significance of each commodity group has varied through the 15-year period. Average values of exports for the 1980s show these commodities rank in the following order of

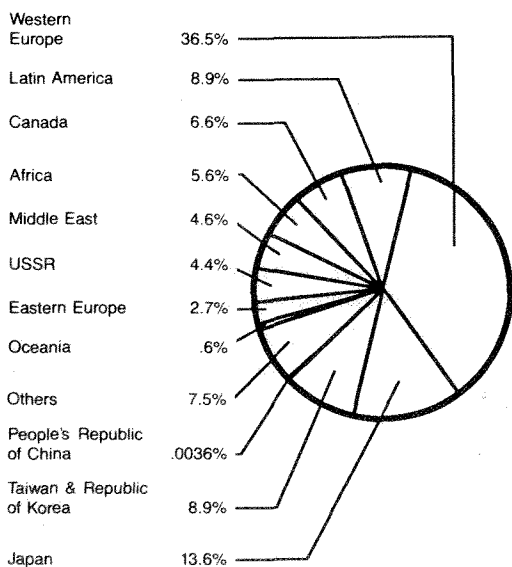
importance: (1) wheat; (2) oilseeds; (3) feed grains; (4) animals and products; (5) fruits, nuts and vegetables; and (6) rice.

That the average values of wheat, feed grains, and animals and animal products exported are 68 percent of the average total value of exports in the 1980-86 period is significant. These are Colorado's most important agricultural products. Although wheat is the only commodity that leaves Colorado in significant quantities for shipment to foreign users, the markets for wheat, feed grains and animal products are international and Colorado producers contribute importantly to them. Without the foreign outlets, possibilities for production and disposition of these commodities would be much constrained. Resources would be underutilized, production would be limited to domestic uses, and prices likely would be lower. Exports are important to the markets for the principle commodities of Colorado and the United States.

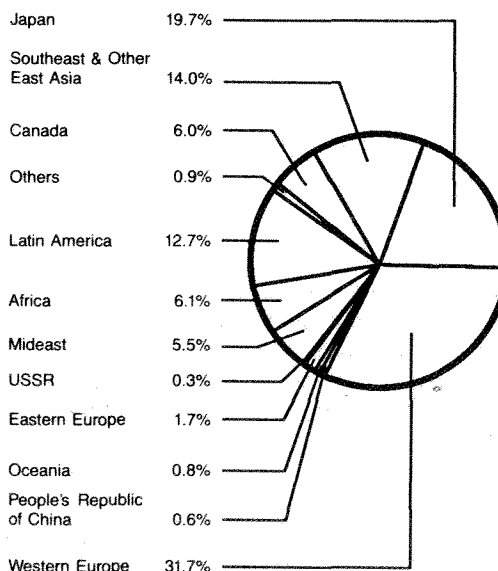
Indicators of destination of U.S. agricultural exports are in Figures 1 and 2. Notable in Figure 1 are the changes in shares of exports going to nations and regions as they are reported for the periods 1976-77 and 1985-86. As the figure is examined it should be recalled that within the 10 years which separate the two time periods U.S. exports grew by 80 percent (to 1981) then declined by 40 percent (to 1986) to a level which was little greater than the value of exports in 1976-77. Through the 10 years, exports to Western Europe declined sharply in importance. In the same time, exports to Japan and countries and regions that were developing grew in importance. Areas of significant growth in U.S.

Figure 1. U.S. Agricultural Export Percentage Shares to Selected Destinations, 1976-77 and Projected 1985-86 Fiscal Years

Fiscal Year 1976-77



Fiscal Year 1985-86

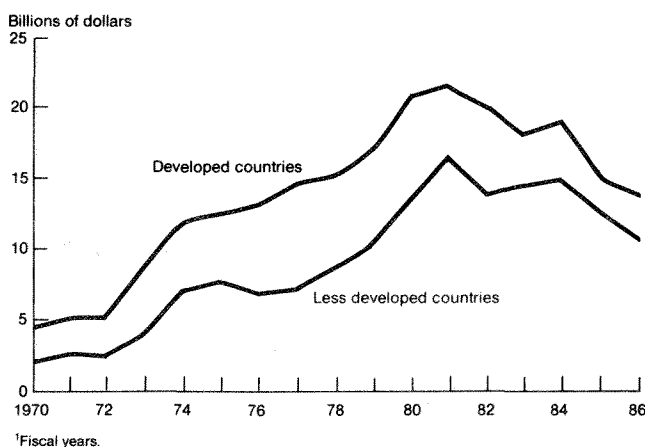


Source: *World Food Trade and U.S. Agriculture*, 1987.

exports were Latin America, Southeast and East Asia, and Japan. Moderate growth in exports was experienced in Africa, and exports to Eastern Europe declined somewhat.

A different summary of shares of exports is pictured in Figure 2 and reported in Table 5. Shown are exports to developed, less developed and (in the table) centrally planned countries. It is evident that growth in terms of shares has been experienced within the less developed countries. As agricultural production has developed within the European Community, exports to that region (which includes developed countries) have declined. Exports to China, Russia and other centrally planned economies have been variable and have depended greatly on their own levels of production. Added attention will be given to the exports to developing nations at a later place in this publication. It is sufficient to note here that they have been important to expansion of our export markets for major agricultural commodities.

Figure 2. U.S. Agricultural Exports to Developed and Less Developed Countries



Source: *National Food Review*, 1987.

The relationship of U.S. imports of agricultural products to corresponding exports is in Table 6. The identity and values of imports is in Table 7. As noted earlier there has been significant increase in the value of exports of agricultural commodities. The increase from 1970 to the peak year of 1984 was 446 percent. The decline in 1985 and 1986 changes the relationship to 278 percent of 1970 exports.

Imports are a somewhat different story. Imports of agricultural commodities grew from \$4.0 billion in 1960 to \$20.8 billion in 1986 with little variation in the rate of growth. The strong dollar in the 1980s caused some acceleration in the rate of change as prices of imported products became more favorable. Since 1986, the dollar has weakened relative to other major currencies and imports have stabilized and declined.

The identity of imported commodities is of interest. Commodities and values are noted in Table 7. It is apparent that several of the important imports are not commodities which are or can be produced in the U.S. (e.g. bananas, coffee, cocoa, and some vegetable oils). Other imports are more or less competitive with commodities produced here (e.g. fruits, nuts, vegetables, sugar, wines, etc.). When such produce are grown, harvested and imported at times when ours are not available, they are not competitive, rather they are complementary to our products.

Those commodities that have been most important in terms of values of imports are coffee, meats and meat products, fruits, nuts and vegetables. Wines and malt beverages were imported increasingly when their prices were competitive in the 1980s (the era of the strong dollar). Sugar imports are regulated and are sensitive to policy determinations. Vegetable oils not produced in the United States have been imported in increasing quantities.

As was the case with exports, imports of agricultural commodities from developed and developing nations are of interest. The data in Table 8 indicate some growth in imports from the developing nations in the 1970s with a corresponding reduction in imports from developed countries. This was the time period when the

Table 5. Share of U.S. Agricultural Exports by Major Development Category, Selected Fiscal Years, 1970-86

Year	Developed Market Economies	Less Developed Countries	Centrally Planned Countries
	Percent		
1970	66	29	5
1975	57	37	6
1980	52	34	14
1986	53	41	6

Source: *Foreign Agricultural Trade of the United States*, Selected Years.

Table 6. Value of U.S. Agricultural Exports and Imports, by Fiscal Year

	1960	1970	1984	1986
	Million Dollars			
U.S. Agricultural Exports	4,628	6,958	38,010	26,324
U.S. Agricultural Imports	4,010	5,686	18,910	20,875

Source: *Assistance to Developing Country Agriculture and U.S. Agricultural Exports*, 1987.

Table 7. Value of Selected U.S. Commodity Imports, Fiscal Years 1972-86

Year ¹	Bananas	Coffee (green)	Cocoa and Products	Meats and Products ²	Fruits, Nuts and Veg.	Sugar	Wine and Malt Bev.	Veg. Oils and Waxes	Total ³
<i>Million Dollars</i>									
1972	183	1,035	221	1,125	615	813	207	167	5,936
1973	189	1,511	300	1,451	771	862	317	191	7,737
1974	201	1,624	438	1,607	821	1,669	341	440	10,031
1975	216	1,413	435	1,085	763	2,348	336	549	9,435
1976	264	2,234	595	1,435	877	1,248	432	466	10,492
1977	310	3,974	877	1,289	1,202	916	545	545	13,357
1978	336	3,466	1,265	1,597	1,439	881	710	458	13,886
1979	378	3,644	1,287	2,476	1,663	852	912	607	16,186
1980	407	4,166	968	2,277	1,653	1,619	1,035	560	17,276
1981	501	2,800	953	2,222	1,966	2,170	1,131	522	17,218
1982	553	2,620	707	2,024	2,225	1,177	1,218	425	15,485
1983	554	2,652	825	2,092	2,418	974	1,317	399	16,373
1984	627	3,091	1,056	1,931	2,953	1,144	1,510	683	18,916
1985	713	3,048	1,285	2,214	3,481	912	1,550	670	19,740
1986	700	4,151	1,164	2,248	2,493	654	1,782	555	20,875

¹Year ending September 30. ²Excludes poultry. ³Includes products not listed.
Source: *National Food Review*, 1987.

Table 8. Share of U.S. Agricultural Imports, by Major Development Category, Selected Years, 1974-86

Year	Developed Countries	Less-Developed Countries	Centrally-Planned Countries
<i>Percent</i>			
1974	30	68	2
1977	26	71	3
1980	33	65	2
1983	39	58	3
1986	39	58	3

Source: Foreign Agricultural Trade of the United States.

developing nations were achieving economic development. They were increasingly active in worldwide trade and were competing successfully for a larger share of the U.S. market for agricultural imports.

With the worldwide recession of the early 1980s, from which many developing countries have not recovered, productive capability and export competitiveness declined. Developing countries lost shares of the U.S. market and as a group have not experienced recent recovery of shares.

The kind and extent of assistance to be extended by the United States and other developed nations to the economically depressed, less-developed nations has been a subject of debate. The

United States is anxious for recovery of developmental activity in the Third World. The United States profited from the increased involvement of developing nations in international markets in the 1970s. With other developed nations the United States has extended economic assistance in the form of debt relief measures and limited, additional credit. However, the United States has not yet adopted a policy of favored status in the purchases of agricultural and other products from foreign suppliers. Perhaps the near future will see some special efforts to help disadvantaged, less-developed nations get back on the track of economic growth.

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Agricultural and Economic Development in Developing Nations

The increased significance of the developing nations in international and United States agricultural trade in the 1970s is reason to examine the economic circumstances of those nations. What happened within the developing nations to cause their emergence as significant contributors to agricultural trade? How important is agriculture and trade to the general economic development of the Third World nations? Will the developing nations be important to U.S. agricultural exports in the future?

Development Within the Third World

Interest in economic development within those countries that comprise the Third World has existed for decades. But it was not until the achievement of independence among former European Colonies, after World War II, that serious efforts toward development were mounted. It was obvious that the underdeveloped nations should express their needs for and interests in economic growth to care for their people and to secure their freedom. But the developed nations also found their interests in economic development among the many poor nations. Assistance with development was the humanitarian thing to do; it promoted political stability and economic security, and it served the interests of developed nations that sought expanded trading relationships.

Developmental theorists of the 1940s and 1950s largely agreed that economic development is accomplished through large-scale investments in capital-intensive industries (Antle, 1987). Agriculture was judged to be a "tradition-bound repository of surplus labor" that could be drawn upon for service in the industrial sectors without loss of productivity in agriculture. It was reasoned by some that "governments could finance general economic development by taxing agriculture", e.g. by limiting the market for surplus produce to government agencies that prescribed pricing and distribution policies (Ballenger and Mabbs, 1987).

Such developmental policies met with little success. They were inappropriate to the traditions and experience of most under-developed nations. They placed demands on agricultural sectors that could not be satisfied, and they incited little enthusiasm among the people who were affected by such policies. It finally was realized that agriculture was the traditional and major source of employment and income for people in developing nations. The knowledge and skills of most people were learned

and employed in agriculture. The opportunities for productive, added investments were in agriculture — especially in the early stages of development.

With this understanding, developmental policies and practice were turned around to emphasize expansion of agricultural lands and increased use of appropriate technology. The decades of the 1960s and 1970s saw this change in practice. It was in this period that assistance to developing nations took the changed forms of education in the use of technology and financial assistance in the acquisition of useful equipment and tools. The consequence of investment in agriculture, in most areas of the developing world, was increases in food production as suggested in Table 9. While world food production grew at an annual rate of about 2.4 percent in the 20-year period 1960-64 to 1981-85, the growth in centrally planned economies and developing economies was 2.8 percent and 2.9 percent respectively. The rate of increase in Africa was below that of the world. The rates of increase among other developing economies exceeded that of the world. Interestingly, the growth rate in the developed economies, those associated in the Organization for Economic Cooperation and Development, was only 1.6 percent (Lee and Shane, 1986).

With increased food production in the developing nations there has generally been improvement in the diets of the populace. It has taken the form of increased food intake, and it has involved greater variety of foods within the diets of people. This has been generally accomplished, not by diversification of productive activities, but by specialization in those crops for which resources are well suited (Vocke, 1988). Production of such crops

Table 9. Rates of Increase in Indices of Food and Agricultural Production¹

	Food Production		Agricultural Production	
	Total	Per Capita	Total	Per Capita
	Percent			
World	2.4	0.4	2.3	0.4
OECD	1.6	0.7	1.5	0.6
Centrally Planned Economies	2.8	1.1	2.9	1.2
Developing Economies	2.9	0.5	2.8	0.4
Africa	2.1	-0.6	2.0	-0.6
Middle East	3.1	0.3	3.1	0.2
East Asia	3.7	1.3	3.6	1.2
South Asia	2.6	0.3	2.5	0.2
Latin America	3.5	0.9	3.1	0.5

¹Compound annual rates of growth between the average 1960-64 index of production and the end period being the average 1981-85 index of production.

Source: Lee and Shane, 1987.

expands to a point that surpluses are produced; surpluses are sold in international markets; and foreign exchange is acquired that can be used for imports of foods not produced within the regions of the developing nations.

The further benefit of increased agricultural productivity is the enhanced ability of farmers and rural residents to purchase needed and desired goods within their countries. Thus there is reason and opportunity for expanded activity in nonagricultural sectors. There are investments in appropriate plant and equipment, and employment is generalized for both urban and rural residents who have been unemployed or underemployed. The national product is increased, personal incomes rise, and development, fired by the agricultural engine, proceeds.

This growth phenomenon has been documented by numerous authors and for many of the developing nations. Paarlberg, in a review of several studies of development, noted:

“... rapid agricultural development can stimulate broad-based economic growth and eventually the industrial development, usually necessary to turn loose pent-up demands for dietary enrichment. The paradoxical result can be that local food consumption may grow even faster than local food production, and the net farm imports of agriculturally successful developing countries can then actually increase, to the presumed benefit of U.S. farmers” (Paarlberg, 1986).

Vocke, in one of the “Issues in Agricultural Policy” publications of the Economic Research Service, concurs with Paarlberg’s conclusion:

“Most developing countries are primarily agricultural. Thus the best way to raise incomes is to help improve agricultural productivity. ... Rising incomes transform a latent demand for better diets into real purchasing power. The effective demand for food generally outruns domestic production because few developing countries have sufficient resources to expand output enough to keep up with a rapidly expanding economy” (Vocke, 1987).

While these are generally accepted statements about agricultural and economic growth and the impacts on income, consumption and imports, differences among countries and regions should be noted. In an often-quoted study of development, Mellor and Johnston found that agricultural production growth rates, and production growth rates as a percent of population growth rates were higher for developing countries in Asia and Latin America (Table 10). In the African regions, especially Sub-Saharan Africa, production growth rates were lower than population growth rates in 1961-77, and have continued to be so.

Food consumption in developing countries grew at 111 percent of the population growth rate (Table 10). However this improvement in per capita consumption came only partially from increased domestic food production. Net imports were significant to increased consumption. The data of Table 11 show net imports for the developing countries in the four regions. Growth rates for imports exceeded those for exports for the 1961-65 to 1969-73 period. Countries with the slowest rates of income (GNP) growth, largely in Sub-Saharan Africa, had such poor agricultural growth records that per capita consumption fell in spite of high growth rates in imports (Mellor and Johnston, 1984).

Webb, Sharples, Holland and Paarlberg summarized the relationships noted above with identification of factors affecting growth in import demand for three classes of developing nations (Table 12). Population growth is usually the key factor influencing food needs of a country or region, but the rate at which needs are translated into demand depends on the availability of income to produce food. Income (GDP) growth rates among the three classes of developing nations differed widely in the 1970s. Because of oil exports income growth was high among the OPEC nations, but even the low income countries had an average growth rate of 4 percent.

The level of income is a major determinant of consumer food purchases. In Table 12 income elasticities are a measure of the responsiveness of consumer purchases of food to a change in income. Doubling per capita income would increase the demand for food (measured by calories) by 38 percent in low-income countries, 19 percent in newly industrialized countries and only 7 percent in developed nations. Income growth in developing countries is an essential objective. It allows dietary improvement and thus significant increases in the general welfare of the population.

Finally, growth in agricultural productivity affects demand for imports. In the 1970s developing countries lagged behind developed countries in agricultural productivity. Only newly industrialized countries were able to increase food production at a rate approaching the growth in demand. The developing nations could not keep pace with food demand growth. The significance of this generally-found relationship is that the stimulus to income growth of agricultural development is enough to create a heightened effective demand for food. Where agricultural productivity increases slowly, imports are required.

Agricultural Development and U.S. Exports

Agricultural and economic development in the developing nations has been important to the United States — to the exports of grains, oilseeds and other

Table 10. Growth Rates of Populations, Staple Food Production and Consumption in Developing and Developed Countries, 1961-1977^a

Country Group	Population		Production	Consumption	Production	Consumption	Production
	Growth Rate, 1961-1977	Millions 1977	Growth Rate, 1961-1977	Growth Rate, 1961-1977 ^c	Growth Rate as % of Population Growth Rate	Growth Rate as % of Population Growth Rate	Growth Rate as % of Consumption Growth Rate
Developing Countries ^b	2.6	2,092	2.7	2.9	103	111	93
By region							
Asia	2.5	1,207	2.8	2.5	112	103	109
North Africa/ Middle East	2.6	240	2.6	3.5	97	132	74
Sub-Saharan Africa	2.7	311	1.6	2.4	58	86	67
Latin America	2.7	333	3.2	3.6	118	132	89
By GNP/Capita Growth Rate, 1966-1977							
Less than 1.0%	2.5	338	1.3	2.3	53	94	56
1.0% to 2.9%	2.5	1,019	2.9	2.6	117	105	111
3.0% to 4.9% ^b	2.8	279	3.0	3.3	110	120	91
5.0% and over	2.7	456	2.8	3.3	101	123	83
Developed Countries	1.0	1,139	2.6	2.3	237	115	
EEC	0.6	269	1.8	1.1	290	178	163
East Europe and USSR	1.0	369	2.8	3.5	294	364	81
United States	1.0	217	3.0	0.9	291	91	321
Others	1.2	284	2.3	2.7	182	216	84
WORLD ^b	2.0	3,230	2.6	2.5	135	128	105

^aAs used here, "basic staple foods" include cereals, roots and tubers, pulses, groundnuts, and bananas and plantains; based on FAO data, these commodities accounted for about three-fourths of the average per capita intake in developing countries (about three-fifths, for the world as a whole) during 1973-1977.

The data are analyzed only through 1977 because the consumption data were available only through that date as of the writing of the paper.

^bChina, with a population of approximately one billion, is excluded from this table because the major disruptions occasioned by the Great Leap Forward in the early 1960s and the subsequent slow recovery make 1961-1977 a particularly biased period for the People's Republic of China. See footnote 2 for a discussion of trends for China.

^cBecause of the nature of available data sets the consumption growth rate is calculated between the 1961-1965 and 1973-1977 averages.

Source: Mellor and Johnston; 1984.

Table 11. Net Imports and Growth Rates for Imports and Exports, Food Staples, Developing Countries, 1961-1965, 1973-1977 and Projections^a of Net Imports to 2000

Country Group	Net Imports			Exports	Annual Growth Rate 1961-1965 to 1969-1973	
	1961-1965	1973-1977	2000 ^a		Imports	
	<i>Million Tons</i>			<i>Percent</i>		
Developing Countries ^b	5.3	23.0	80.3	2.1		5.4
By Region						
Asia ^b	6.3	10.9	-17.9	2.5		3.5
North Africa/ Middle East	3.6	10.6	57.3	-2.0		7.3
Sub-Saharan Africa	-0.9	2.9	35.5	-4.6		7.1
Latin America	-3.7	-1.4	5.4	3.6		6.9
By GNP Per Capita Growth Rate						
Less than 1.0%	1.6	8.0	39.5	-5.1		7.7
1.0% to 2.9%	2.8	-1.1	-48.5	1.8		3.3
3.0% to 4.9%	1.7	4.0	24.1	4.8		5.5
5.0% and over	4.7	12.1	65.2	2.9		6.6

^aThe projections are based on differences between extrapolations of 1961-1977 country trend production and the aggregate projections of demand for food, animal feed, and other uses; projections of demand for animal feed were assumed to follow the country growth rates of meat consumption, i.e. no change in feeding efficiency. A basis for such adaptation is being pursued at the International Food Policy Research Institute but the results are not yet available.

^bExcluding the People's Republic of China: See Table 1.

Source: Mellor & Johnston; 1984.

basic commodities. Data in Table 13, that also are displayed in Figure 3, reinforce the earlier-noted significance of developing countries as importers of agricultural products. While the largest export markets for food, feed grains and oilseeds during the 1970s (measured in metric tons) were the industrial

countries, primarily the European Community and Japan, other developing nations became the most significant markets in the 1980s. Exports to industrial countries declined in the first half of the 1980s; sales and shipments to China and the Soviet Union continued to be quite variable; while exports to the

Table 12. Factors Affecting the Growth in Food Demand in Developed and Developing Countries

Item	Developed		Developing			
	Total	U.S.	Total	OPEC	Newly industrialized	Low income
<i>Percent</i>						
Average annual growth, 1970-80:						
Population	0.90	1.00	2.40	2.60	2.30	2.30
Urban population	1.60	1.50	4.20	4.50	4.00	4.20
GDP	3.30	3.00	6.10	7.70	6.40	4.00
<i>Value</i>						
Income elasticities: ¹						
Total calories	.07	-.01	.35	.48	.19	.38
Animal calories	.21	.02	.70	.85	.63	.93
<i>1969/71 = 100</i>						
Index of food production per capita, 1980	111	115	102	99	115	99

¹These elasticities, while dated, provide an indication of the relative magnitude of the difference in food demand response to income changes across countries.

Sources: Webb, Sharples, Holland and Paarlberg; 1984.

Table 13. U.S. Exports of Agricultural Commodities, 1970-85 Total Food Grains, Coarse Grains and Oilseeds

	Destination					
	Developing Countries	Centrally Planned	China	USSR	Industrial Countries	World
<i>Thousands of Wheat Equivalent Metric Tons</i>						
1970	19,798	1,656	0	0	43,073	64,527
1971	19,884	2,971	0	271	38,918	61,773
1972	22,193	11,842	1,069	7,728	44,930	78,966
1973	28,856	23,460	4,910	14,746	53,422	105,737
1974	33,946	10,637	3,885	3,574	48,449	93,032
1975	34,043	11,813	0	8,081	53,101	98,957
1976	33,383	19,745	0	13,690	61,836	114,963
1977	36,978	12,908	291	8,551	60,327	110,213
1978	46,307	26,515	3,367	15,862	61,574	134,396
1979	45,261	39,513	5,185	22,554	60,059	144,832
1980	57,269	29,182	9,048	6,966	65,648	152,100
1981	56,337	28,577	8,435	10,337	64,989	149,902
1982	52,491	27,540	8,748	13,342	67,265	147,296
1983	66,683	16,616	3,946	8,931	59,304	142,603
1984	62,806	26,002	3,875	19,352	51,307	140,116
1985	48,554	19,020	804	16,208	43,740	111,314

Source: Lee and Shane, 1987.

developing countries increased by almost 39 percent — to 1985. At mid-decade trade with all classes of nations declined and only recently has it begun to recover. It is the expectation of most analysts that recovery will continue, with appropriate national and international policies and actions, and that developing nations will regain their status as the most significant importers of U.S. agricultural products.

But just as there has been difference among developing nations in agricultural productivity, economic growth, and income (GDP) increases, so will there be differences in their importance as importers of U.S. agricultural commodities. Because incomes are so important to imports, Vocke has classified and identified developing nations by income levels and documented the differences among them in terms of their exports and imports (Figure 4). The lower income nations increased imports, especially in the late 1970s and early 1980s, but not to the extent that the higher income nations did. Export levels, as a percent of 1961-63 average, were similar, but those nations with higher rates of growth and higher incomes increased imports by about 250 percent in the 1975-84 period (Vocke, 1987).

Helpful to the understanding of low income, high income, newly industrializing and OPEC countries is a list of countries developed by Vocke (Figure 5). Descriptions of these classes, excluding the OPEC countries, follows:

“Low-income countries: Although most low-income countries have rising productivity, their economies have not grown enough to bring them toward industrialization and higher incomes. These countries do not have the purchasing power to participate in world trade and are trending slightly toward self-sufficiency.”

“Middle-income countries: Diets in middle-income countries are beginning to include more animal and wheat products, which is opening the door to feed and food grain imports as demand outpaces production. These countries are trending away from self-sufficiency and can continue growth in imports as their economies industrialize and incomes rise.”

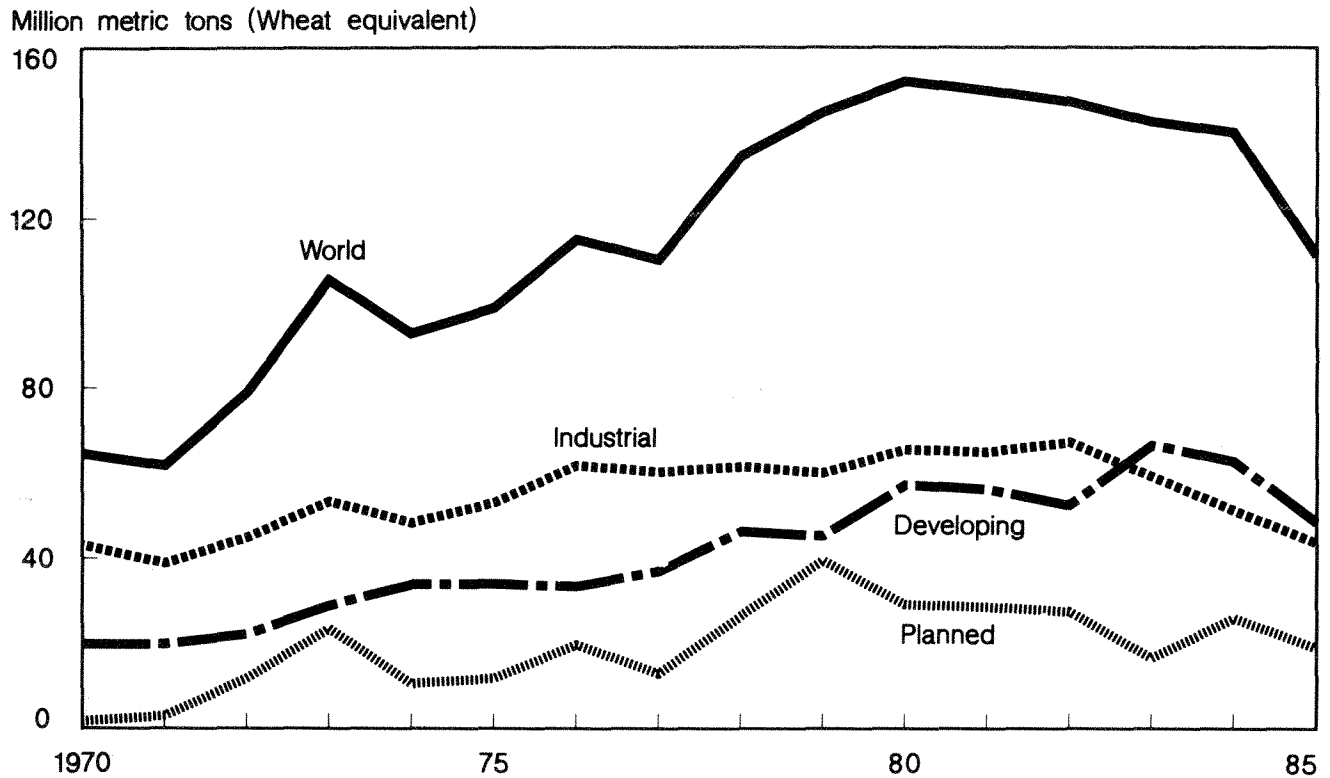
“Newly industrializing countries: These countries are no longer self-sufficient in grains and have been growth markets for the past two decades. Rapidly rising demand for meat and wheat products overwhelmed production so much that these countries shifted from net exporters of grain to net importers. These markets can continue growing as debt problems are eased and as developed countries import more products from the newly industrializing countries.” (Vocke, 1987)

Suggested by the classification, and the reference to levels of imports of U.S. agricultural commodities, is the need for development of different and relevant export policies and strategies — to match the import capabilities of developing nations — and the requirement for varied and appropriate kinds of assistance to developing countries — who may be or may become customers.

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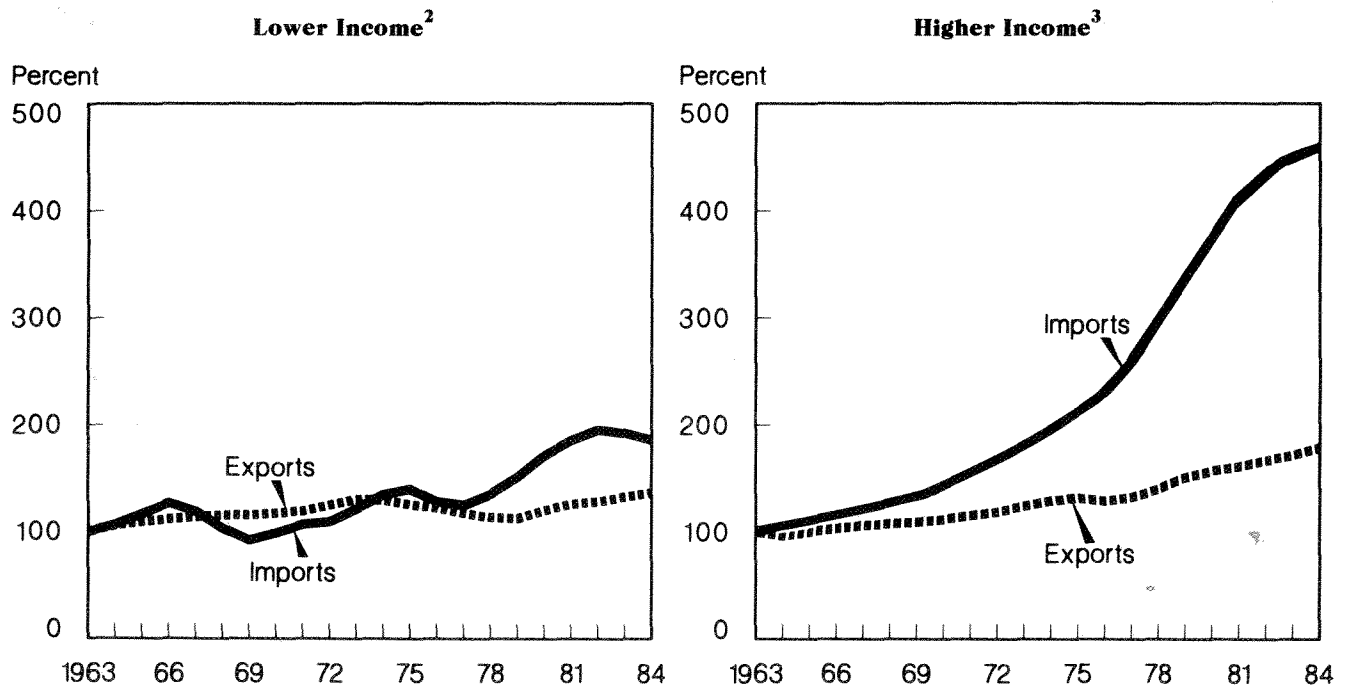
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Figure 3. United States Agricultural Exports



Source: Lee and Shane, 1987.

Figure 4. Agricultural Trade in Higher and Lower Income Developing Countries¹



¹Percentage of 1961-63 average using deflated 3-year averages.

²Includes 59 countries, such as India, Malawi, Burma, Morocco, and Colombia.

³Includes 23 countries, such as Taiwan, Mexico, Brazil, South Korea, and Argentina.

Source: Vocke, 1987.

Figure 5. A Classification of Developing Nations, with Identification of Nations Within Classes, 1988

High-Income OPEC Countries	Newly Industrializing Countries	Middle-Income Countries	Low-Income Countries
Oman	Argentina	Guatemala	Madagascar
Saudi Arabia	Malaysia	Papua New Guinea	Malawi
Libya	South Africa	Taiwan	Somalia
Kuwait	Israel	Ivory Coast	Kenya
	Chile	Mauritania	Sudan
	Algeria	Jamaica	Pakistan
	Singapore	Thailand	Zaire
	Brazil	Tunisia	Benin
	Mexico	Honduras	Mauritius
	Republic of Korea	Nigeria	Togo
	Iraq	Senegal	Burma
	Venezuela	Costa Rica	India
	Trinidad	Dominican Republic	Uganda
	Panama	Colombia	Rwanda
	Hong Kong	Zimbabwe	Chad
	Iran	Nicaragua	Sierra Leone
	Uruguay	Peru	Niger
	Jordan	Lebanon	Haiti
	Syria	Gabon	Mali
		Liberia	Ethiopia
		El Salvador	Mozambique
		Turkey	Guyana
		Ecuador	Nepal
		Cameroon	Tanzania
		Philippines	Burkina Faso
		Morocco	Bangladesh
		Zambia	Sri Lanka
		Yemen Arab Republic	Ghana
		Indonesia	
		Egypt	
		Paraguay	
		Bolivia	

Source: Vocke, May, 1988.

Issues and Policies: Technical and Economic Assistance

Edward Schuh, in a paper presented at the annual meeting of the U.S. Feed Grains Council, encouraged the support of agricultural assistance to developing nations by noting the issues, which he summarized in four propositions.¹

"First, future foreign markets for U.S. agriculture will be in the developing nations, not in other industrialized countries or in the centrally planned countries." Even with liberalized trade, i.e. significant reduction of trade barriers, markets for U.S. agricultural commodities will be increased little in Japan, the European Community and other developed nations. Their populations are growing only slowly, per capita incomes are high, and their people are well fed. Modest increases in sales are possible, but significant growth in exports is likely only with a new trading relationship with Japan.

"Second, the developing countries will constitute a growing market for U.S. producers only if they experience significant economic development." Growing populations are not enough by themselves to create effective demand for food. Also necessary are increasing per capita incomes, large proportions of which are spent on food. The research (previously cited) shows that people in developing nations put considerable emphasis on dietary improvements, substituting meat and cereal grains for rice and other staples that have been life-supporting but not especially appetizing. Often it has been necessary for the developing nations to import food — not only food not locally produced but the quantity of food and feed grains necessary to offset a growing deficiency in these products. A not-unusual phenomenon in the developing nations is food consumption increasing at a faster rate than food production. Thus there has been, and will be, the opportunity for expanded U.S. exports.

"Third, developing their agriculture is the key to economic growth in the developing countries." Much of the population within developing nations is employed in agriculture. Some countries have land and water resources suited to agriculture but underutilized. Increased productivity within agriculture is possible with appropriate capital and technology, and growth within this sector supports development in other industrial sectors. Agriculture is thus the engine that drives development, providing the increased incomes, the foreign exchange, and other resources necessary to industrialization and general economic development.

"Fourth, raising productivity in agriculture in the developing countries need not, as a general proposition, pose a competitive threat for U.S. producers." Many of the developing nations are located outside the temperate zones of the world,

where the food, feed grains and many livestock are produced. The products for which the developing nations have comparative advantage will be emphasized. They often are those that are not produced in the United States, or they are produced within seasons that are unlike our own. The agriculture of the developing nations thus is either non-competitive or complementary to our own in many instances. Exceptions are always found. But there is a tendency for increased exports of our principal commodities to nations experiencing economic development and within which there is increased productivity among agricultural enterprises. Often we have facilitated agricultural development by provision of technical and economic assistance (Schuh, 1986).

So what should be our attitude toward developmental assistance? What should be our policy relative to technical and economic aid to developing nations? Brady, writing about technology transfer policy, suggests some forms of assistance that should and should not be attempted in efforts to facilitate development. Because we have "a comparative advantage in policy dialogue and institution building, and in agricultural technology generation, adaptation, and application" Brady said the United States should do several things to promote development. (Brady, 1988)

1. Promote a country policy environment conducive to broad-based agricultural development. We should encourage those policies that do not distort the production incentives of farmers, but that create a positive environment for growth within the private sector and promote a positive impact on natural resource management.
2. Support cost-reducing (productivity increasing) technology development and transfer in agriculture. Experience tells us that agricultural research can have a high payoff. In application of technology we should give attention to the sustainability of agricultural production practices.
3. Encourage development within the private sector, with particular emphasis on small- and medium-scale enterprises and institutions. We should assist developing nations to improve the efficiency of public and semi-public agricultural (and agri-business) enterprises and to divest themselves of inappropriate or inefficient ones.
4. Utilize the PL 480 program to facilitate development when food aid is appropriate to food security and nutritional needs within low income countries. While food aid can be competitive with locally-produced food supplies, it is possible to use it to strengthen human and institutional resources and thus to enhance the development of the private sector.

Brady also points to some areas of assistance wherein we do not have a clear comparative advantage, and in these areas we should look to others for significant activity.

1. Compete with others in the provision of infrastructure, e.g. buildings and roads. Often developing countries finance buildings, roads, market structures, etc. with loans from other donors. The United States may contribute to the development of infrastructure, e.g. provide training of personnel who will occupy agricultural college campuses or marketing facilities, but that assistance is complementary to that which is given by other developed nations.
2. Contribute to activities which may result in clear disadvantage to U.S. farmers. Brady points out that "it is A.I.D. policy to avoid supporting the production of agricultural commodities for export by developing countries when the commodities would directly compete with exports of similar U.S. agricultural commodities to third world countries and have a significant impact on U.S. exporters." There are a few cases where programs of assistance have created competition for U.S. agricultural exporters. The A.I.D. policy demands careful planning of programs of assistance, recognition of potential trade-offs in export of commodities as they are affected by development, and extension of assistance that will provide for

development that is beneficial to developing and developed nations as well.

Today there is need and opportunity for development in most countries of the Third World. The poor in many countries have a continual food deficit problem while the developed nations experience increasing abundance, even surpluses, of food. Our own farm problem will be alleviated by helping others to improve their agriculture, to facilitate economic development and thus to increase incomes, some of which will be used for the import of food. The evidence supports this scenario of development. The data show the developing nations are important to world-wide demands for food. The consensus among those who have critically examined the questions of technical and economic assistance is that it is in our interest to continue our extension of assistance to agriculture in developing nations.

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