

AGRICULTURE AND RAPESEED IN A CHANGING WORLD:
THE IMPACTS OF GLOBAL ISSUES¹

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The focus of this Conference is on rapeseed in a changing world. Of course we cannot talk about the future of rapeseed without discussing its competitors in supply--other oilseeds and other crops--and its competitors in end-use--other edible oils and other protein meals both nationally and internationally. But it is not enough to confine the discussion to the oilseed/oil/meal complex. Supplies of alternative crops are influenced by their relative prices which in turn are shaped by technology, weather, income and population growth, public policy and other global events. The picture is further complicated by the almost complete lack of substitution in consumption between oils and meals, the latter being derived from the demand for livestock products. These two markets are driven globally by different countries at different stages of economic development--that is with different population sizes and growth rates and very different income levels and rates of income growth. In sum, as you well know, it is an incredibly complex situation where it is too easy to lose sight of the forest for the niceties of a particular tree.

Houck, Ryan and Subotnik (1972) took four chapters of their path breaking book to describe the basis of the U.S. soybean market. Röbbelen, Downey and Ashri (1989) required 532 pages to describe the components of the global oilseed complex. Our task is to place that complex in the global agricultural, economic and political environment and do it all in 15 pages! Specifically we are asked to explore the future impacts on the complex and rapeseed in particular, of what we see as significant global events. We wrote this paper in a period of enormous global uncertainty: turbulence in the Middle East; GATT negotiations are incomplete because of almost intractable disputes over agriculture policy; the USSR and Eastern Europe (major producers and consumers of oilseeds) are in a state of political turmoil with no clear resolution in sight; China's future economic course remains clouded; the European Community (EC) is focused on 1992 when the future course of the world's largest economic block will be shaped; scientists are increasingly worried about global climate change but can't agree on what's happening; and world population will double again within the next fifty years.

Surely only naive economists are foolish enough to even contemplate undertaking such a task. Yet we agreed to do so. We first describe the global oilseed complex. We then present a simplified schematic diagram of the oilseed complex identifying where and how potential global events will impact on the

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complex. We then discuss some major global influences, and finally we conclude with comments on future prospects.

CURRENT STRUCTURE OF WORLD OILSEED ECONOMY

This discussion of the world vegetable oilseed economy is divided into three sections: the market for oilseeds, vegetable oil; and meal. Although the three markets are highly inter-related we choose to treat each as a separate component for the sake of clarity.

Oilseeds

As shown in "Table 1" the major oilseeds produced around the world are soybeans (49.9% of world production), cottonseed (14.9%), rapeseed (10.2%), sunflower (10%), and peanuts (10%). Production of major oilseeds² has increased from under 75 mmt to over 215 mmt in the past 30 years (1960-90). This represents an annual average growth rate of over 4%, which is extremely rapid compared to other crops that substitute in production³. Over the last 25 years the international oilseed trade has grown at a slightly higher annual rate of 4.7%.

The expansion of oilseed production reflects the growing demand for its byproducts: oil and meal. In order of importance the five largest oilseed producing countries include the United States (soybeans, cottonseed, peanuts, flaxseed), China (soybeans, rapeseed, cottonseed, peanuts), Brazil (soybeans), India (cottonseed, rapeseed, peanuts, copra, flaxseed), and Argentina (soybeans, sunflower, flaxseed). These five countries produce about two-thirds of the world's oilseeds⁴.

Turning to soybeans, by far the largest oilseed crop, we find that over 90% of the world's soybeans are produced in four countries: the U.S., Brazil, China, and Argentina (see Table 2). The U.S. typically exports one-half to three-quarters of its crop, while Argentina and Brazil export a larger share of their crop in processed form, compared to the U.S. The major soybean importer is the EC--accounting for about 50% of world imports. The leading processors are the U.S., Brazil, Argentina, and the EC.

One of the major developments in soybean production over the past 20 years has been the rapid increase in production in Argentina and Brazil. Combined output of soybeans in these two countries, as a percent of U.S. production, has gone from 7% in 1970 to 60% in 1990.

Oil

Soyoil is the most important vegetable oil in terms of world production (30% of production) but palm oil is the world's most widely traded oil (39.4% of trade). The U.S. is the largest producer of soybeans but the EC dominates exports of

² Includes soybean, cottonseed, peanut, rapeseed, sunflowerseed, flaxseed, copra, and palm kernal nut.

³ For example, over the same time period world wheat production grew at only about 2.7% per year and coarse grains at 1.9%. However most of the increase in grains came from yield increases unlike oilseeds where area expansion accounted for the majority of the increase.

⁴ Palm oil is not discussed in this section. Palm oil dominates the "oil" market but it is not a factor in the "oilseed" and "meal" market.

soybean oil. Malaysia is the world's largest producer and exporter of palm oil. "Table 1" reports summary production and trade statistics for the other oils.

International trade in vegetable oil has grown an average of 7.6% per year over the past 25 years--much faster than the trade in oilseeds. See "Figure 1" for historical trends in the oil import market. This market is more complicated than either the oilseed or meal market. Unlike these latter two markets, the vegetable oil market is not dominated by one major product (e.g. soybeans and soy meal); rather, soyoil faces strong competition from palm oil, rapeseed oil, and sunflowerseed oil. An added complication is that key market participants like the EC and the U.S. are large exporters of one type of oil and simultaneously large importers of another oil.

Malaysia is by far the largest exporter of vegetable oil. The most important group of importers are the developing countries (especially India, Pakistan, Iran and Egypt), followed by the EC and the Centrally Planned Economies (CPEs) (mainly, the USSR) (see Table 2). In high income countries most oils are readily substitutable for one another in consumption (Griffith and Meilke) and technological developments have increased substitutability. However, in recent years the consumer demand in rich countries for tropical oils (palm and coconut) has fallen because they contain high levels of saturated fat.

The rapid development of the palm oil industry in Malaysia is the 1970s and 1980s is the most significant structural change that has taken place in the oil market. Malaysia supplied around 10% of the world oil market in the early 1970s, compared to over 30% today.

Meal

Soybean meal completely dominates the meal market. It accounts for about 64% of the world's high protein meal production and over 75% of the trade. Production of soybean meal is concentrated in the U.S., EC, Argentina and Brazil. The U.S. produces over one-third of the meal but Brazil has emerged as the largest exporter. The large importers of soybean meal include the EC, CPEs (primarily the USSR), and the LDCs. The demand for soybean meal is sensitive to livestock numbers--particularly poultry and hogs. The strongest competition comes from rapeseed meal in the EC.

International trade in meal has grown at approximately 6.5% per year. "Figure 2" displays trends in the meal trade since 1966. The EC is by far the largest importer--accounting for about 50% of the market. It is followed by the CPEs (mainly E. Europe and the USSR) and the LDCs.

THE GLOBAL OILSEED COMPLEX

"Figure 3" provides a much simplified conceptualization of the global oilseed complex. On the left hand side of the diagram we identify the two distinct and separate markets for oilseed products. The demand for meal is derived almost exclusively from human demand for livestock products, primarily meat. How much meat will be consumed depends basically on the initial level of income, the rate of income growth, and on the rate of population growth. The demand for edible fats and oils also depends on income level (and growth) and population. Per capita

consumption of meat is greatest in countries with high levels of income, i.e. in developed countries where population growth is slow and additional income is generally spent on things other than food. In developing countries, per capita consumption of edible oils generally rises at lower levels of income and before meat consumption begins to increase, i.e. at a much earlier stage of development when population growth rates are still high and people still spend significant portions of new income on food. Therefore the stage of development, national policies on growth and development and international policies on trade and development greatly influence both the oil and meal markets but in different ways. The demands from these two markets feed into a composite demand for oilseeds. The relative demands for particular oilseeds will be influenced by the strength of the oil versus meal market.

On the right hand side annual production (including palm oil) is the product of area harvested and yield, each of which in turn is influenced by public policies regarding research and technology development, price supports, income transfers, and input subsidies. Annual production can either be marketed or stored. If stocks from previous years exist, these could enter the market. Stocks as shown are influenced by expected prices which are in turn influenced by some of the same policies which influence acreage. The annual production, plus or minus net changes in stock, yield a commercial supply which interacts with demand to produce market prices and trade flows. The value of the diagram is that it allows us to identify the pressure points to consider--the stage of development and income growth, national policies for food and agriculture, international policies for trade and aid, and the places where global or regional shocks could be important. We use it as the framework for the fourth section of this paper.

As we proceed to our analysis of potential future impacts, we must keep certain market fundamentals, that are peculiar to the oilseed complex, clearly fixed in our minds. On the left side of "Figure 3" markets for meal and oil are independent in the economic sense of there being no direct substitution in use of oil and meal. Thus to the extent that different variables influence meal demand versus oil demand the markets can and do perform quite independently. Houck, Ryan, and Subotnik (1972) found, for example, a correlation coefficient of +.03 (very low) between meal and oil prices. Our own analysis for the period 1965-1990 of changes in oil and meal prices results in a partial correlation coefficient of +.053. Because oil and meal are joint products produced in basically fixed proportions from the crush of each oilseed you cannot expand the availability of meal, in response to an increase in demand, without simultaneously expanding the supply of oil. The result is that factors causing prices to rise in one market, e.g. meal, which stimulates an increased crush, will cause prices in the other market, e.g. oil, to fall (Bickerton and Glauker, 1990). In the 1950s and 1960s rapid increases in meal consumption in developed countries created a strong demand for meal leading to an increased volume of crush which created low prices and growing stocks of oil, particularly in the United States. Conversely strong demand for oil in the early 1980s drove oil prices up and meal prices down. Thus on the demand side, factors which influence one final product market more than the other will cause prices

in the other market to move in the opposite direction. The resulting impact on oilseed prices could be to cause them to rise or fall depending on the change in the relative price of meal and oil and the technical crush yield coefficient.

On the other hand, if the shock to the complex comes from the supply side, i.e. good or bad crops or a change in a major producers policy, prices of oil and meal will move in the same direction as happened for example in 1972-73. Thus as we proceed we must be clear as to whether a shock impacts supply or demand and, if the latter, if it will have different impacts on the demand for oil vs. meal.

GLOBAL DEVELOPMENTS AFFECTING WORLD AGRICULTURAL SUPPLY, DEMAND, AND TRADE

The basic factors in the analysis of the global oilseed complex are five in number:

- (1) land area available for planting (depends on prices of competing crops and policy),
- (2) expected changes in yield (primarily a function of land quality, research and crop management),
- (3) level of income of consumers (which clearly influences consumption patterns),
- (4) changes in consumption patterns with changes in income, and
- (5) rate of population growth.

When we disaggregate to countries or regions each of these variables will be different resulting in country or regional surpluses and deficits at a given set of prices. Thus international trade enters as a vehicle to equate global supply and demand balances. Clearly the global variables which impact on income, population, trade, physical resources (land) and on yield are the ones of greatest concern.

In this section we quickly enumerate these under three headings: (1) Political/Economics Issues; (2) Physical/ Biological Issues and (3) Agricultural Issues. In the next section we focus these variables on the oilseed complex and rapeseed in particular.

Political/Economic Issues

Global and Regional Security: Overriding all projections is the question of the presence or absence of military conflict. At this point the basic question is does the apparent collapse of the USSR as a Super Power, portend a realignment of world power balances with the possibility of increasing regional conflicts. We do not go further but recognize that geopolitical developments are critical.

Economic Inequality and Development: The most critical economic challenge for the Global Village is to foster and sustain real economic development in the low income countries of the world which contain three quarters of the world's population. Despite three decades of sustained efforts by developed countries and multilateral development agencies to assist (technically and financially) the economic development of poor countries, the gap in per capita incomes continues to widen. Part of this results from continuing high rates of population growth in developing countries, especially in Africa. But it also is heavily influenced by developing country debt crisis and

the protective policies of developed countries. While a few developing countries have "graduated"--the so called NICs (Newly Industrialized Countries)--the challenge, particularly in India and China which contain nearly half of the world's poor population, remains enormous. Success or failure will have significant impacts on the demand for agricultural products as well as on the capacity of developing countries to develop viable agriculture.

Macroeconomic Instability: The global economic events of the 1970s: the breakdown of three decades of exchange rate management under the IMF which led to exchange rate instability; the evolution of a global capital market, initiated by the oil price increases by OPEC; and rapidly expanding trade all led to a degree of global economic integration and interdependency unprecedented in history. Depression, inflation and unstable interest rates are no longer phenomena that can be contained within national boundaries. The experience of the 1970s and 1980s makes it clear that macroeconomic instability had far greater impacts on the agricultural economy than agricultural policies themselves. There is nothing to suggest that the degree of interdependence will lessen, nor is there evidence that the countries of the world will learn how to manage these macroeconomic issues any better. Instability will continue to be the hallmark of the 1990s.

Trade: Multilateralism vs. Regionalism: The Uruguay Round of GATT negotiations remains stalled in fundamental conflict over agricultural policies, between the U.S. and the Cairns Group on one side and the European Community on the other side. While agriculture is only one of many issues on the table, it has become the lead issue, resolution of which, is deemed critical to other topics. While it seems inconceivable that developed nations will scuttle an accord in GATT, an international mechanism which has contributed so substantially to world economic performance, that possibility nevertheless remains. Without a GATT accord, there is a real possibility that the world could disintegrate into several massive regional trading blocks (see below for discussions on Western Europe and the former Eastern Bloc). U.S.-Canada-Mexico free trade discussions may presage a push, led by the U.S., to develop a Western Hemisphere trading block to counter Europe. Would that development lead Japan, Australia, and others to develop an Asian trading block? The development of regionalism as an alternative to a global multilateral trading system is viewed by many economists as an outcome which would decrease the volume of international trade, lead to slower economic growth and heighten inequalities between poor and rich regions. While a modest GATT accord would not be a panacea, it would continue a trend towards more open markets which is vital to the economic development of third world countries. It would be ironic if GATT, considered a rich countries' club in its first four decades, were to falter at the very time that increasing numbers of developing countries are joining.

The Collapse of the Eastern Bloc: In the last two years unbelievable political change has occurred in the Soviet Union and Eastern Europe. While the political changes may be irreversible, the economic consequences are unclear. If a quasi-market system emerges, which improves the efficiency of resource use, both productivity and incomes should rise rapidly. This

will impact on both sides of the food equation--expanded supplies from the enormous physical resources of Eastern Europe and the USSR and increased demand especially for livestock products. Recall that the emergence of the Soviet Union and Eastern Europe as food importers is a phenomena of the last three decades. Historically they have been exporters. Rapid economic growth in this area could create another trading block equivalent to the European Community. This would be a major structural change with potentially great consequences for agriculture.

Europe After 1992: Will the next steps result in the minimum dismantling of inter-country barriers to maintain the appearance of an economic community or will it truly lead to economic and political union creating an enormous economic power house? Further, how will the EC-12 react to Eastern Europe and the USSR? Is the reunification of Germany a forerunner of an expansion of the unified Europe to include all of Europe including the USSR? If so the economic power would be substantial and its impact on the rest of the world would depend on whether it turned inwards, i.e. became a protectionist trading bloc or whether it openly participates in a global environment of freer trade.

Physical/Biological Issues

Continued Population Growth: Population growth rates have declined in most of Asia and some of Latin America but remain high in Sub-Saharan Africa. Medium U.N. projections forecast a world population of 7.2 billion by 2010 and nearly 8.5 billion by 2025. By the latter year 83% will live in the developing countries, up from the current 75%,--52% will live in Asia, 15% in Africa. Equally significant is the rate of urbanization in the developing world. At present about 31% of the population of developing countries live in urban areas, but by 2025 it is forecast that 57% of the total will live in cities. The combination of growth and urbanization, will increase city dwellers in the developing countries by 3 billion people. The consequences of these numbers for food production requirements (basically must be doubled, given modest income growth) and for the form of food (much more must be transportable and storable) are phenomenal. Given basically fixed global arable land availability, the increase must come from yield increases, which in turn will depend on both improved genetic potential and increased use of inputs, e.g. fertilizer.

The Environment and Sustainability: The destruction of the Amazon forest has captured world attention. It is decried for its impact on (1) CO₂ emissions, which contribute to a yet undocumented greenhouse effect and global warming, (2) biodiversity, and (3) forest resources and environmental stability. But clearly developed country concerns about environmental degradation and unsustainable production systems in developing countries, mask past forest destruction and current pollution production in their own countries. Developing countries understand very well that environmental impacts are inextricably linked to poverty and population growth. The imperative to feed a growing population next year dominates longer term considerations. Fuel wood and food are issues of today, bio-diversity and greenhouse effects in their view must wait.

The challenge ahead is to develop production systems of food and forest that are both more productive and sustainable. This will require new farming systems which consist of more productive plants, using more inputs to produce increased output, without degrading the long-run resource base. Unfortunately the world abounds in simplistic partial solutions. If environmental concerns lead to policies which significantly constrain productivity increases, the global consequences for future food supply are serious.

The Miracle of Biotechnology? If past history is our guide, we should not expect miracle solutions from this source. New developments in molecular biology will help breeders in their difficult task of continuously developing better and more resistant varieties and in contributing to better crop management. But in the long run improvement of the overall profitability of production will require the proper combinations of varieties, cropping systems, resource management and policy.

Agricultural Issues

The preceding two issues--sustainability and biotechnology are obviously agricultural issues of critical importance to future supply capacity. But how they will play out will be heavily influenced by how national governments choose agricultural policy. From a global perspective, agricultural policies seem peculiar. In general rich countries, where farmers are few and technically advanced, governments subsidize agriculture at the expense of far more numerous consumers and taxpayers. In poor countries, where farmers are many, governments tend to tax farmers and subsidize less numerous urban consumers. These policy regimes, encourage production expansion in countries where slow population growth and high incomes constrain demand growth while discouraging production growth where high rates of population and income growth are rapidly expanding demand. The result over the last forty years has been to shift developed countries, most recently the European Community, to being surplus producers while developing countries have become increasingly dependent on imports. It is these basic trends that underlie the agricultural crisis in GATT as developed country exporters try to dump surpluses, using export subsidies, while supporting domestic farm income. If the GATT negotiations fail over agriculture, this pattern will surely continue. This is why for many success in GATT is so critical. It would open markets to developing countries and provide better incentives to contribute to necessary productivity improvements. These issues are obviously critical to the oilseed complex and we develop the implications more in the next section. Suffice it to say here that the continuation of inward looking protectionist agricultural policies in developed countries is the major agricultural issue for the 1990s.

CONSEQUENCES FOR THE GLOBAL OILSEED COMPLEX

The moment of truth has now arrived. It is our remaining task, in a few pages, to distill the consequences of the preceding for the oilseed complex and rapeseed in particular. To begin let us review developments in the complex over the past three decades. Production of oilseeds, meal and oil have increased at a rate more than double that for food and feed

grains. But unlike grains where most of the increase came from yield increases, most of the increase in oilseeds came from area expansion. On the demand side, early expansion was fueled by increased per capita incomes in developed countries which expanded meat consumption. Now per capita consumption of meat in developed countries has plateaued (and may decline). In the 1970s and 1980s, the demand for vegetable oils in the developing and centrally planned economies rapidly increased. Global consumption of vegetable oils more than doubled between 1970 and 1990 (Röbbelen, Downey and Ashri; 1985) basically because total consumption in developing countries more than tripled (per capita consumption more than doubled). Yet consumption globally is about 10 Kg per capita where as consumption in the U.S. and EC appear to have plateaued at about 25 Kg per capita. Much of the additional oil supplies have come from new sources, namely palm oil, thus not depressing the already soft meal market.

To aid in evaluating future directions we conducted an analysis of economic causes of changes in trade in oil and meal. We divided world trade of oil and meal into 6 regions (Developed countries, Latin America, Soviet Union, Eastern Europe, Middle East-North Africa, Sub-Saharan Africa, and Asia) and ran a multiple regression with imports as the regressand and the following variables as the regressors: per capita GNP, per capita domestic meal (oil) production, per capita meat production (in the meal equation), and world prices of meal (oil). All variables were expressed as natural logarithms⁵. We ran the regression in double log form with 1970 to 1986 annual data.

The Developed countries are the most important meal importers. We find their imports are most responsive to growth in real GNP (elasticity of 1.5). In each of the six regions, per capita GNP is statistically significant and is the most important explanatory factor behind meal imports. In the developing country regions the GNP elasticity is high and significant, ranging from 2.89 for the Soviet Union to 6.40 for the Middle East and North Africa. These results suggest that future demand growth will be driven by income growth in the developing and centrally planned countries.

Turning to the estimated trade elasticities for oil, it is also the case that per capita GNP is the most consistent explanatory variable across the six regions. The Developed countries and Asia are the largest importers of oil and in both of these regions, GNP is the only significant variable. The income (GNP) elasticity of imports is 4.45 in Asia, compared to 2.05 in the Developed countries. The result of this analysis is that per capita income (i.e. GNP) growth largely explain imports of oil and meal and we fully expect this to be the case for the foreseeable future.

The basic question for the next twenty years is can we use this past performance as a guide for the future. Our judgement is that that would be too simplistic. Clearly, the major source of demand growth for meal from the now developed countries is likely past. Future demand growth will depend on how many new countries graduate to high income status. Future expansion of oil demand will depend on a new complex of variables which will impact developing countries in many ways. On the supply side

⁵ Our approach for estimated trade elasticities is roughly the same as that of Warner and Kreinin.

the basic question is whether oilseeds can continue to compete land away from other crops. Our analysis follows under three headings--supply side, demand side and general factors.

Supply side

Increased supplies of oil and meal to meet anticipated future growth will come either from high yields or expanded land area. Prospects for yield increases are addressed in subsequent papers by authors more qualified than we are. We have noted that most of the expansion over the past 30 years came from increased land area. Our judgement is that continuation of that path will be more difficult in developing countries because of demands for basic grain resulting from population growth and the lack of new cultivatable land. Greater relative productivity improvements in other crops will further limit this avenue. For example, it is argued that part of the reason for growing oil imports by India results from the new technical possibilities of double cropping rice and wheat in Northern India. Thus our basic prognosis is that if the rates of production expansion experienced in the last 30 years are to continue, more of it will have to come from yield increase.

Demand side

In high income countries, it now seems clear that aggregate per capita meat consumption has plateaued. This coupled with low population growth rates and health concerns suggest limited impact on the aggregate demand for meat. Since 1985 per capita consumption of meat in the United States has been constant. Within the aggregate, beef consumption fell and was replaced by poultry. Similarly it is possible that oil demand has also plateaued. There may be shifting among oils depending on relative prices and health concerns, i.e. to lower saturated oils, but aggregate demand will probably only expand with population growth.

In developing countries, there still appears to be substantial room for expanded consumption of oil but this will be constrained by income growth and the availability of foreign exchange for imports. Whether per capita consumption will again triple is questionable. Meal/meat demand will expand as countries with already medium levels of income graduate to higher income status. In the 1960s and 1970s, the rapid increases in per capita income in first Japan and then South Korea and Taiwan were powerful factors in expanding trade and consumption of meal. Will there be a second generation of NIC's (Newly Industrialized Countries)? Possibilities suggested include Malaysia, Indonesia, and the Philippines, but global economic difficulties in the 1980s (i.e. debt and recession) has slowed these developments. The other possible area is Latin America, but already high levels of (grass fed) meat consumption mitigates against expanded demand for meal. How fast development occurs will depend critically on developed countries' trade and macroeconomic policies. Finally we note that the big players are India and China. We do not foresee rapid increases in incomes in either country. Clearly their potential demand for oil is high, but is constrained by affordable supplies. Expanded demand for livestock products is more questionable.

The USSR and Eastern Europe are the potential wild cards. Better economic policies should lead to rising incomes and

demand for both oil and, particularly, meat. But improved agricultural policies could also lead to rapid increases in agricultural production. On balance the impact on international demand for oil and meal could go either way. Given lags in agricultural production we would expect an early demand impact, but in the longer term supply should catch up.

In sum, basic economic factors suggest slower global demand growth particularly for meal unless the performance of developing countries in the 1990s is much better than in the 1980s. The bottom line then is a relatively stronger market for oil which is good for oilseeds (and oil palm) which are high oil producers but not so good for oilseeds such as soybeans which yield high proportions of meal. Rapeseed seems middle of the road. In high income countries it has the advantage of low saturated fat levels, but in this it must compete with soyoil.

Broader Issues

In the oilseed complex policy developments in and outside GATT will be crucial. Among these none is more important for the immediate future than the EC decision on oilseeds. A continuing part of the EC's proposal in GATT have included the notion of rebalancing. The general objective of most participants is to reduce aggregate levels of support (subsidies) to agriculture. For U.S. and the Cairns Group this means reducing subsidies and barriers to trade. The European Community wants to be able to reduce some and increase others but still meet overall targets. Their particular desire is to raise currently very low or zero tariffs on non-grain feed inputs--particularly oilseeds and meal. Given the importance of the EC to global oilseed and meal markets (about 40% in each) a significant increase in European tariffs would reduce import demand and expand internal production. Exporters have been adamant in opposing rebalancing but the final outcome is not clear. In the absence of a GATT agreement, it seems that the EC will continue attempts to reduce import dependence to accommodate expanding internal production. But beyond this particular issue, a GATT agreement which liberalized agricultural and other trade would benefit the economic growth of developing countries. In turn, as already mentioned, this would strengthen markets for both oil and meal.

Finally we underline again that development policies and capital availability are critical to the developing world. Further macroeconomic policies in the rich countries will determine rates of growth and inflation and will impact on global stability. In this regard current slow (or negative) growth rates in major developed countries portend difficult times ahead.

This recitation of potential external impacts on the oilseed complex, and rapeseed in particular, underlines the difficulty in projecting future prospects. Projections using traditional agricultural trade models, which assume external stability, are of questionable value. A bad number may be worse than no number at all. Thus if you came to listen to this paper because you wanted quantitative projections of future prospects, you are disappointed. But if you came to get a global view of major issues that will influence future outcomes, we hope we have contributed to your understanding of an extremely complicated and dynamic global oilseed complex.

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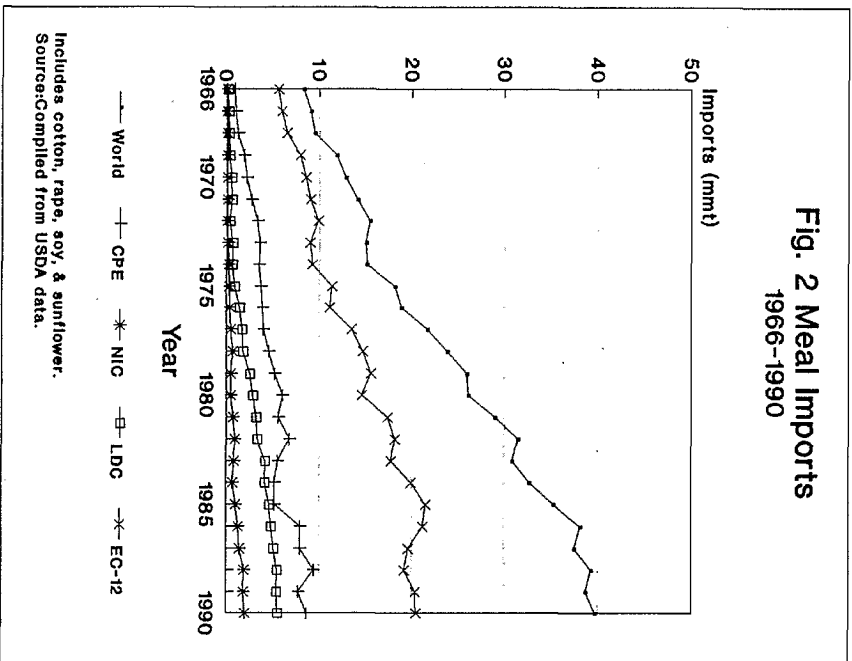
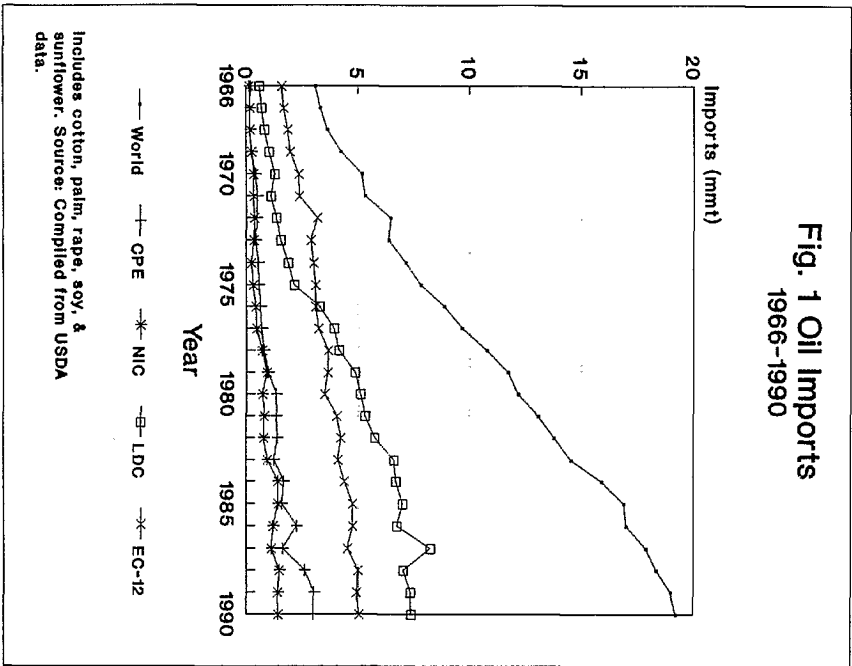
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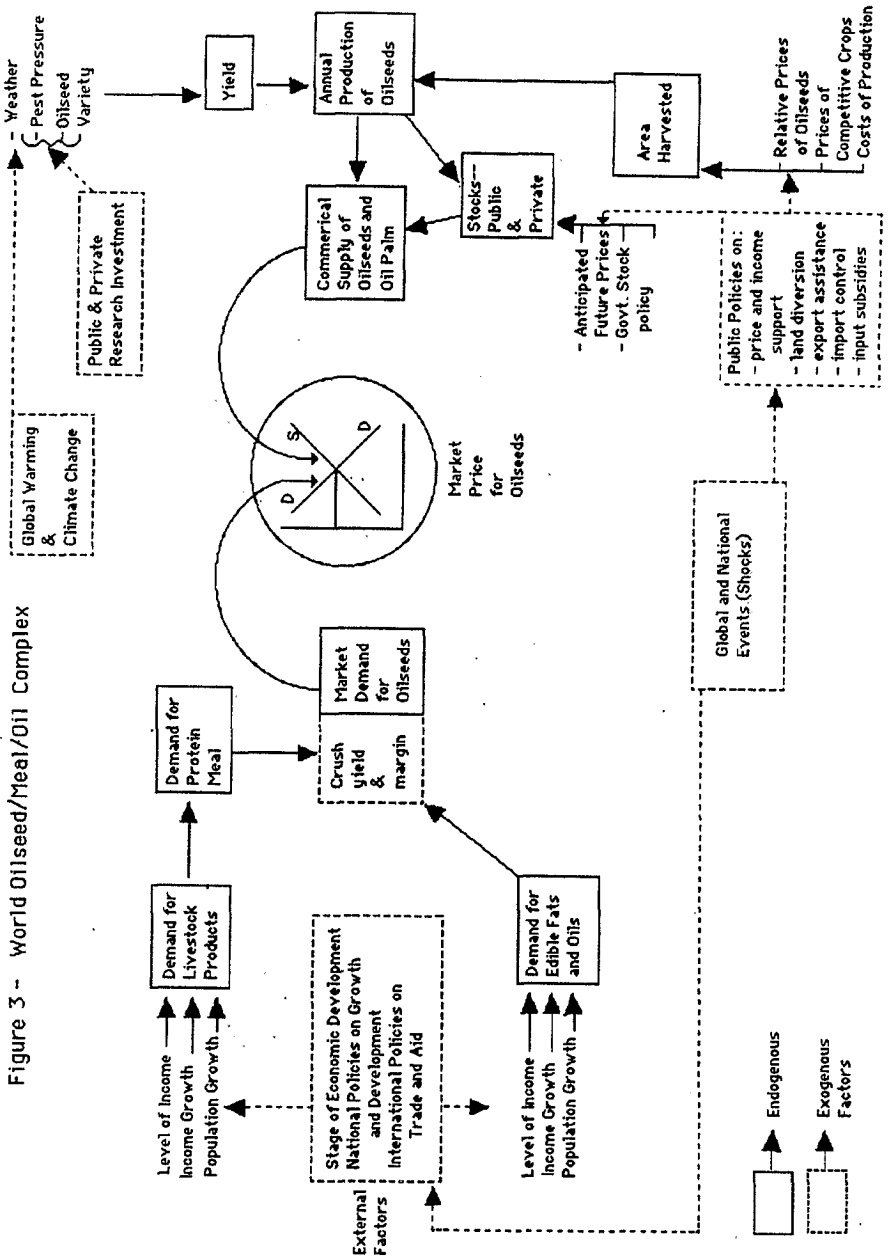


Table 1: Summary Statistics on Production & Trade of Major Oilseeds

Commodity	RAW PRODUCT		OIL		MEAL	
	% of World Prodn	% of World Trade	% of World Prodn	% of World Trade	% of World Prodn	% of World Trade
Soybean	49.9	75.8	30.0	22.3	63.4	76.5
Rapeseed	10.2	11.5	13.9	9.5	10.8	5.3
Sunflower	10.0	5.3	13.8	12.0	7.5	5.1
Cottonseed	14.9	0.7	6.7	1.9	10.3	2.7
Peanuts	10.1	3.5	6.0	2.0	4.1	2.0
Copra	2.4	0.9	6.0	8.8	1.7	3.6
Palm	1.3	0.4	19.0	39.4	1.3	3.1
Flaxseed	1.2	1.9	1.3	1.5	1.1	1.7
Olive	n/a	n/a	3.4	2.7	n/a	n/a

All numbers are 1985/86 - 1987-88 averages.
Source: Bickerton and Glauber.

Table 2: Summary Statistics on Major International Market Participants

Country/ Region	RAW PRODUCT		OIL		MEAL	
	% of World Prodn	% of World Trade	% of World Prodn	% of World Trade	% of World Prodn	% of World Trade
U.S	28.7	52.4	12.6	0.4	23.6	14.0
China	15.3	4.4	7.3	(5.2)	9.5	6.5
Brazil	9.7	8.9	5.4	3.8	10.3	22.4
India	8.1	0.0	6.8	(6.3)	6.2	3.5
Argentina	6.5	6.8	4.7	10.8	5.8	16.8
USSR	6.0	(3.7)	5.9	(4.1)	5.5	(7.6)
EC-12	5.1	(40.6)	14.1	(3.7)	14.0	(37.0)
Indonesia	1.7	(1.4)	4.8	4.6	0.7	0.7
Malaysia	0.8	(1.0)	11.6	28.2	1.0	1.6

Note: Trade figures in parentheses denotes net imports; otherwise trade figures are net exports. All numbers are 1985-1990 averages. Source: Compiled from USDA data.