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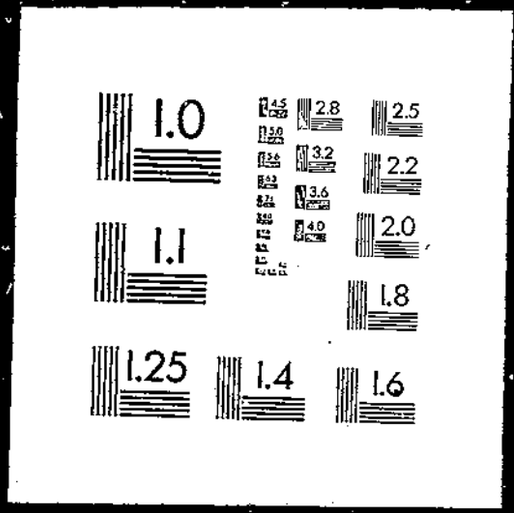

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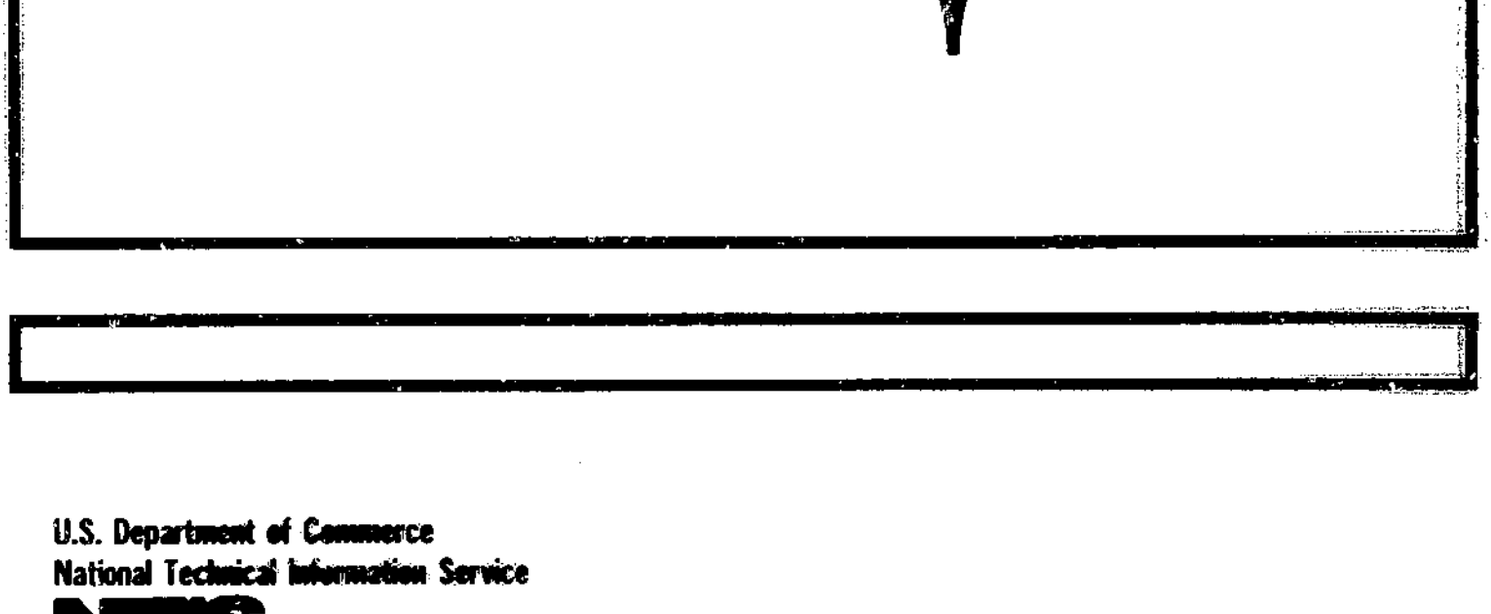

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If the Soviet Union is to significantly improve livestock productivity and raise per capita vegetable oil consumption, it will have to continue to import large quantities of oilseeds and oilseed products. The Soviet oilseed sector performed poorly over the first half of the current decade. The outlook for appreciably improved performance for the remainder of the decade is not good. Although the Government has called on Soviet producers to sharply increase their oilseed output in the 1980's, it has shown relatively little inclination to allocate additional inputs to domestic oilseed producers. Consequently, the Soviet Union's ability to increase domestic meal and vegetable oil consumption depends on its willingness to remain a major importer of oilseeds and oilseed products for the foreseeable future.

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Abstract

If the Soviet Union is to significantly improve livestock productivity and raise per capita vegetable oil consumption, it will have to continue to import large quantities of oilseeds and oilseed products. The Soviet oilseed sector performed poorly over the first half of the current decade. The outlook for appreciably improved performance for the remainder of the decade is not good. Although the Government has called on Soviet producers to sharply increase their oilseed output in the 1980's, it has shown relatively little inclination to allocate additional inputs to domestic oilseed producers. Consequently, the Soviet Union's ability to increase domestic meal and vegetable oil consumption depends on its willingness to remain a major importer of oilseeds and oilseed products for the foreseeable future.

Keywords: Oilseeds, meal, vegetable oil, trade, oils and fats industry, USSR, Soviet Food Program.

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Contents

Conversions

Metric units are used throughout.

1 metric ton = 2,204.6 pounds
1 kilogram = 2.2046 pounds
1 hectare = 2.471 acres

Note. Maximum use was made of official Soviet data in the tables that appear in this publication. Since most published Soviet processing and trade data refer to calendar year periods, the supply and utilization tables appearing in this report are based on a split year that combines Soviet crop production data from one calendar year with reported processing and trade totals from the subsequent calendar year. This methodology means that, in a small number of instances, data presented in this report differ from official USDA data. A detailed explanation of the sources and methodology used appears in this report's appendixes.

Summary

The Soviet Union appears incapable of meeting its growing need for oilseed meal and vegetable oil from its domestic oilseed crops. Inputs needed for the expansion of oilseed output, such as land, plant protectants, fertilizers, and machinery, have remained relatively scarce. As a result, the Soviets have not been able to implement the programs for expanded oilseed output that they announced at the beginning of the current decade.

In view of the frequency with which USSR agricultural production targets have not been met in the past, the Soviets' failure to meet their high 1981-85 output goals came as no surprise. What was surprising, as outlined in this report, was the magnitude of the Soviet oilseed production shortfall and the apparent lack of effort made by the Government to reach its sharply increased production targets.

At the beginning of the decade, Soviet 1981-85 average annual production of sunflowerseed was targeted to rise by more than one-quarter (to 6.7 million tons); soybean output was to almost triple (to 1.4 million tons); and rapeseed production was to increase by almost 40 times (to 0.5 million tons). In contrast, inputs allocated to domestic producers were not targeted to increase significantly.

Actual average annual Soviet production in 1981-85 not only fell far short of targeted levels but even declined compared with 1976-80 output. For example, compared with the previous 5-year period (1976-80), 1981-85 average annual sunflowerseed production declined 7 percent to 5 million tons, and soybeans fell 5 percent to 504,000 tons. Only rapeseed, a minor oilseed, increased, as output doubled to more than 50,000 tons.

To compensate for the failure of the domestic oilseed sector to increase output, the Soviet Government implemented, often inconsistently, a protein import program on an unprecedented scale. For example, between 1980 and 1983, Soviet meal imports increased fourfold to almost 2.4 million tons. The following year, meal imports plummeted by about 95 percent. The volatility of Soviet meal imports has sent confusing and contradictory signals to the major world soybean producers. Soviet oilseed imports have also fluctuated but not as greatly as meal imports.

Among Soviet oilseed product imports, only vegetable oil has reflected a relatively stable upward trend, which suggests that the Soviets attached a higher priority to their targeted vegetable oil consumption level in 1981-85 than they attached to their announced domestic oilseed output targets. Although the publicly stated goal for vegetable oil consumption by 1990 is likely beyond reach, the USSR is probably going to be far closer to it than to any of its oilseed output targets, barring any significant change in Soviet behavior.

The likelihood of significantly increased Soviet meal output from domestic sources is not good. The Soviet press has acknowledged that the domestic oilseed sector is providing only about one-third of the meal needed by the USSR's livestock sector.

The inability of the Soviet oilseed sector to increase domestic production has important implications. Unless the Soviets expand their imports of oilseeds and oilseed products, the gap between supply and demand will continue to widen and retard the growth rate of their livestock sector. Thus, Soviet livestock productivity growth is tied to continued large purchases of oilseeds and their products from the United States and other foreign suppliers.

USSR Oilseed Production, Processing, and Trade

Thomas W. Bickerton*

Introduction

This report contains a comprehensive data base for the Soviet oilseed sector consisting of both aggregate and individual oilseed supply and utilization tables. Because published Soviet data on the production and trade of oilseeds such as sunflowerseed and cottonseed are limited, a need exists for such a statistical compendium. This report also surveys the development of the Soviet oilseed sector since 1955 and evaluates its ability to meet USSR Food Program goals through 1990.

Since the mid-1970's, the volume of published Soviet agricultural data has gradually declined. In 1982, this trend was highlighted by the Soviet decision to withhold 1981 domestic grain production numbers and to delay publication of statistics on the output of certain categories of oilseeds. Several factors likely influenced that decision. Agricultural output in 1981 was embarrassingly poor, discrediting the Government's longer term output targets for the 11th Five-Year Plan (1981-85). Also, the Soviets may have been more sensitive than usual about making public unfavorable information on inputs intended for their livestock sector because only months earlier (January 1980-April 1981) the Soviet feed-livestock sector had been the target of a U.S. sales suspension.

As the volume of published Soviet agricultural data declined, the need for such information increased because of the USSR's recent emergence as a major importer of oilseeds and oilseed products. This report's objective is to satisfy the increased demand for data on the Soviet oilseeds sector in order to chronicle past and current Soviet achievements. It also provides an empirical basis for judging how much progress the Soviets are likely to make during the rest of this decade, based on what they achieved since 1955.

This report examines three aspects of the USSR's oilseed progam: domestic oilseed production, the current state of the processing industry, and Soviet oilseed trade behavior.

The first section reviews the past performance of the USSR oilseed sector and forecasts oilseed output levels for 1990. The outlook indicates that total oilseed area will probably remain relatively stable. Despite Soviet claims that soybeans and rapeseed are to be expanded on a mammoth scale by 1990, sunflowerseed and cottonseed likely will remain their primary domestic sources of vegetable oil and protein meal. Soviet production goals for 1990 appear unrealistic for two reasons: implied targeted yield increases would have to be far higher than those achieved in the past, and the inputs that would be required to reach the higher targeted levels are not expected to be forthcoming. The oilseed sector therefore does not appear to have been given a sufficiently high priority to permit the accelerated development called for by State authorities.

The second section surveys the Soviet oilseed crushing industry. Current capacity appears sufficient to handle present and anticipated output from domestic oilseed producers. Idle capacity, however, can be reduced only by maintaining high levels of imports. Furthermore, lack of an accelerated program to expand processing capacity appears to be inconsistent with the extraordinarily high 1990 production targets for sunflowerseed, soybeans, and rapeseed.

Section three focuses on Soviet oilseed trade behavior. Since the Soviet domestic oilseed sector lacks the ability to significantly increase oilseed meal output for the livestock sector, the USSR will have to rely on continued heavy imports of oilseeds and oilseed products if it is to upgrade the diets of its herds and of the average Soviet consumer. There is

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no reason to believe that Soviet imports of oilseeds and oilseed products will be any less volatile in the future than they have been in the past.

The appendixes identify the sources used and describe the methodology employed to estimate Soviet meal production from domestic vegetable oil data for those years in which data are unavailable. The report concludes with a comprehensive set of supply and utilization tables for USSR oilseed and oilseed products.

Oilseed Production in the USSR

The Soviet Union is a major producer of three of the world's six primary oilseeds. In 1985, the USSR ranked first in sunflowerseed production, second in cottonseed output, and fourth in flaxseed output (figs. 1 and 2). It is also a minor producer of soybeans, rapeseed, and peanuts.

Background

In 1981-85, Soviet oilseed output averaged almost 11 million tons annually, with sunflowerseed and cottonseed accounting for more than 90 percent of total oilseed production. Since the mid-1970's, the share of cottonseed relative to sunflowerseed output has gradually increased.

Soviet oilseed output peaked in 1973 when sunflowerseed production approached 7.4 million tons and has since trended downward because of disease and reductions in area (fig. 3). Only cottonseed production achieved a relatively steady growth rate over the last 30 years (table 1).

During the same period, the total area allocated to oilseeds has remained relatively constant (fig. 4). The share of total crop area sown to oilseeds in 1985 was about 5 percent, the same as in 1955.

Table 1—USSR: Average output of primary oilseeds, 1955-85

Years	Total	Cottonseed	Flaxseed	Soybeans	Sunflowerseed
			Million tons		
1955-60	7.3	2.8	0.5	0.2	3.7
1961-65	9.2	3.2	.4	.4	5.1
1966-70	10.9	3.4	.5	.5	6.4
1971-75	11.4	4.3	.4	.5	6.0
1976-80	11.0	4.7	.3	.5	5.3
1981-85	10.8	4.9	.2	.5	5.0

Sources: (*7, 14*). (Italicized numbers in parentheses refer to items cited in References at the end of this report.)

The Soviets have reduced sunflowerseed area in an attempt to control disease and increase yields. Areas previously sown to sunflowerseed have been reallocated to rapeseed and nonoilseeds. In contrast, cotton area has expanded (table 2). This expansion has been made possible by enlarging the irrigated areas of Central Asia. (The combined share of sunflowerseed and cottonseed to total oilseed area is actually larger than it appears in table 2 because 80-90 percent of the area allocated to flax is used to produce fiber rather than oil or meal.)

Soviet Production Policy in the 1980's

At the beginning of the current decade, the USSR announced a program for massively expanding

Figure 1
World Sunflowerseed Production, 1985/86

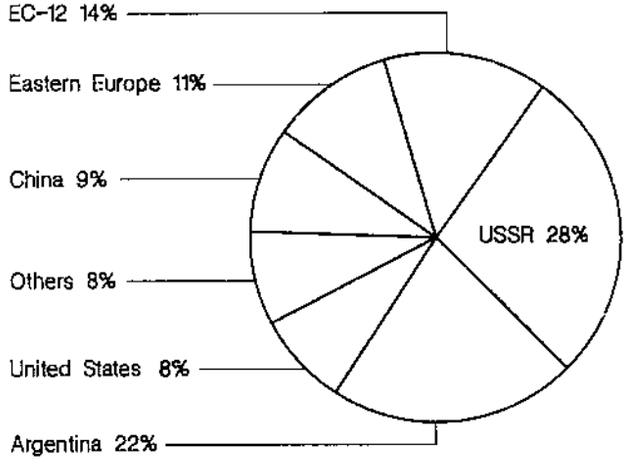
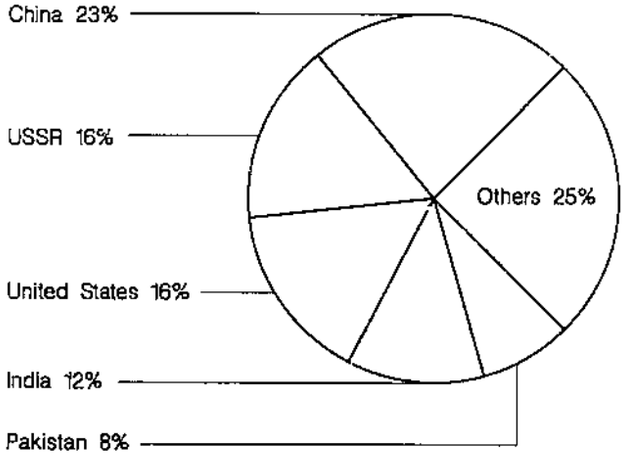


Figure 2
World Cottonseed Production, 1985/86



domestic oilseed production that Soviet authorities hoped would meet the growing needs of the livestock sector for protein meal and of the population for vegetable oil. In it, former General Secretary Brezhnev called on Soviet farmers to reach annual average sunflowerseed outputs of 6.7 million tons by 1985 and 7.2-7.5 million tons by 1990. Soybean production was to expand to 1.4 million tons by 1985 and to 2.2-2.3 million tons by 1990. Similarly, rapeseed production was to reach 0.5 million tons by 1985 and 1.5-1.6 million tons by 1990. Per capita vegetable oil consumption was to increase from 8.8 kilograms in 1980 to 13.2-15.7 kilograms in 1990. These unrealistic targets have yet to be revised downwards.

The major means by which Soviet agriculture is to reach these targets are through increased use of plant protectants, fertilizers, and mechanization. Soviet authorities have not announced plans to significantly expand sunflowerseed area. Although the Government has stated that sown area is to sharply expand for soybeans and rapeseed, it has not indicated that there is to be any reallocation of nonoilseed crop area to oilseed production. Without such a large reallocation, there appears to be little chance that the Soviets can reach their production targets.

Although proposals for significantly reallocating crop area have appeared in Soviet journals, there has been no indication that the authorities would be willing to implement them. For instance, in December 1985, the Deputy Director of the All-Union Agricultural Academy of Lenin proposed a plan to dramatically increase the overall area sown to oilseeds by shifting 2 million hectares out of sugarbeet production (*15*). The plan is totally unrealistic because it would slash domestic sugarbeet area by more than one-half, forcing the Soviet economy to become even more dependent on foreign sugar. In recent years, sugar has been the USSR's most costly food import item, after grain. Thus, the economic cost would be high since the Soviets would likely have to buy even more sugar from Cuba than now, at prices several times the world price.

Table 2—USSR: Average area allocated to primary oilseeds, 1955-85

Years	Total	Cottonseed	Flaxseed	Soybeans	Sunflowerseed
			Million hectares		
1955-60	9.1	2.1	2.0	0.4	4.0
1961-65	10.1	2.4	1.9	.8	4.5
1966-70	10.2	2.5	1.6	.9	4.8
1971-75	10.1	2.8	1.5	.8	4.5
1976-80	10.1	3.0	1.3	.8	4.5
1981-85	9.9	3.2	1.2	.8	4.1

Sources: (*7, 14*).

Output Results

The 11th Five-Year Plan (1981-85) has been a relative disaster for the Soviet oilseeds sector. Average output of sunflowerseed, the Soviets' primary domestic source of oilseed meal and vegetable oil, fell to its lowest levels since the 1950's. Soybean output, instead of increasing threefold as called for under the plan, declined. Rapeseed production averaged just 55,000 tons, falling far short of its 500,000-ton target.

Figure 3
USSR Total Oilseed Production, 1955-85

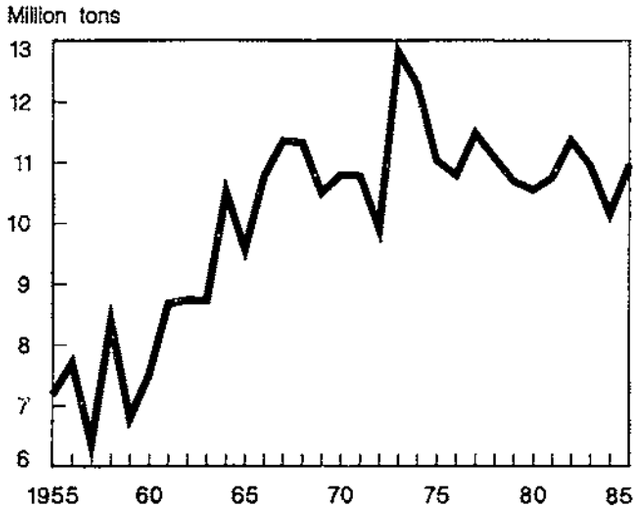
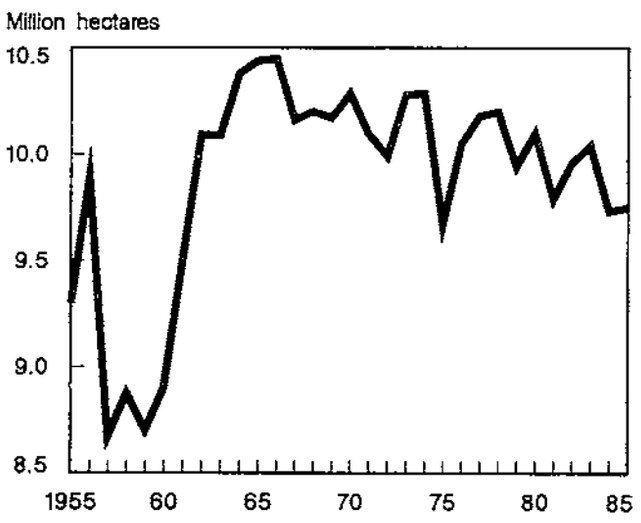


Figure 4
USSR Total Oilseed Area, 1955-85



Weather cannot be cited as a major reason for the poor results. Rather, the main reason for the production shortfalls is the Soviets' apparent unwillingness to make increased oilseed output a priority. The failure of yields to rise is indirect evidence that scarce inputs of plant protectants, fertilizers, and machinery have not been shifted to the oilseed sector from grain and other nonoilseed crops. Direct evidence, such as data on the flow of inputs to the oilseed sector, is unavailable. (The Soviets publish limited data on chemical and fertilizer application for only five crop categories: grains, corn, cotton, sugarbeets, and potatoes.)

Soviet behavior throughout 1981-85 suggests that the bulk of future increases in inputs is likely to continue going to grain and feed crops because of their higher expected rates of return. For example, the priority of grain production over oilseeds is reflected in the continued Soviet practice of using sunflower fields for fodder each time the grain crop is in trouble. A review of the situation and outlook for individual oilseeds follows.

Sunflowerseed. The Soviet Union produces about one-quarter of world sunflowerseed output. Its share of world production has been declining in recent years as its area sown to sunflowerseed has fallen while that of Argentina, currently the world's second largest producer, has risen.

Sunflowerseed, the USSR's primary oilseed crop, serves as a major source of vegetable and industrial oils. Sunflowerseed's contribution to the national economy has increased as a result of efforts made by Soviet scientists since the 1920's. The average amount of oil processed from certain strains of sunflowerseed has risen from 27 percent to 57 percent. Soviet success in this area drew worldwide attention. A number of these high-content varieties were brought to the United States and have been grown successfully since the mid-1960's.

The importance of the sunflower crop to the Soviet economy is not limited to oil. A large quantity of protein cake is made from sunflowerseed for the livestock sector. Plant stalks are used for fertilizer, and leaves are made into silage.

Area planted to sunflowers has declined in recent years (fig. 5). Sunflowers are primarily grown in the west European region of the USSR. Optimal growing areas are Moldavia, the southern Ukraine, northern Caucasus, and the Central Chernozem region of the Russian Republic (fig. 6). Good but less than ideal areas are located in the autonomous republics of the northern Caucasus. The Volga region, Altai Krai, Georgia, the Urals, west Siberia, and much of Kazakhstan are more marginal areas for cultivating sunflowerseed. Most, if not all, the sunflowers grown in the non-Chernozem region are used for silage. In the next few years, some cropland currently planted to sunflowers in the northernmost reaches of these regions will likely be replaced by rapeseed; in the south, by soybeans.

The amount of land sown to sunflowerseed has been declining since the early 1970's. Between 1981-85, it fell by about 10 percent. Since the mid-1970's, about 2,100 state farms have stopped cultivating the crop. Area has declined over the long term because farms reallocated land to crops with higher priorities. Cutbacks have also been made to reduce the spread of disease caused by improper crop rotation practices and a lack of plant protectants.

For years Soviet farmers have ignored proper crop rotation cycles and replanted fields with sunflowers every 3-5 years instead of every 8-10 as specified by Government norms. As a result, fields remain contaminated with pathogens such as broomrape, white and grey mold, and downy mildew that have the ability to survive in fields for long periods of time. The situation is especially severe in the Ukraine, the USSR's most important sunflower-growing region.

It will take several years before soil contamination is sufficiently reduced through adherence to proper rotational norms. The shortage of chemicals to combat these diseases will hinder efforts to return sunflowerseed area to its past levels. Table 3 shows how returning sunflowers too quickly to the same fields dampens yields.

Figure 5
USSR Sunflowerseed Area, 1955-85

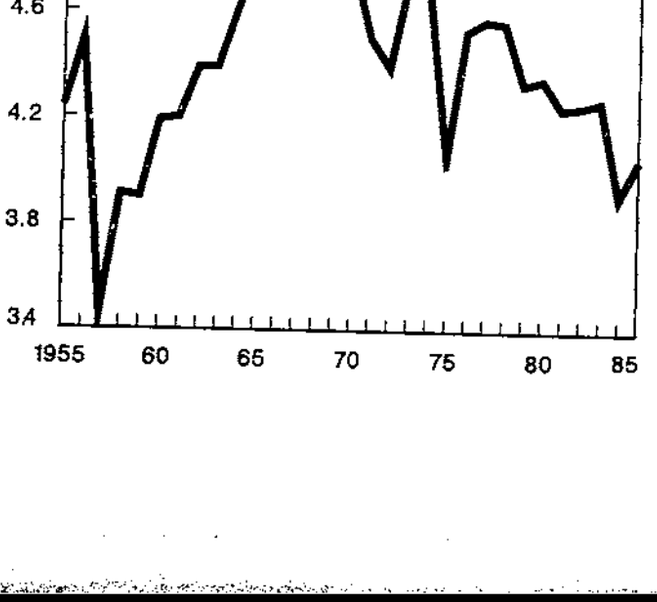
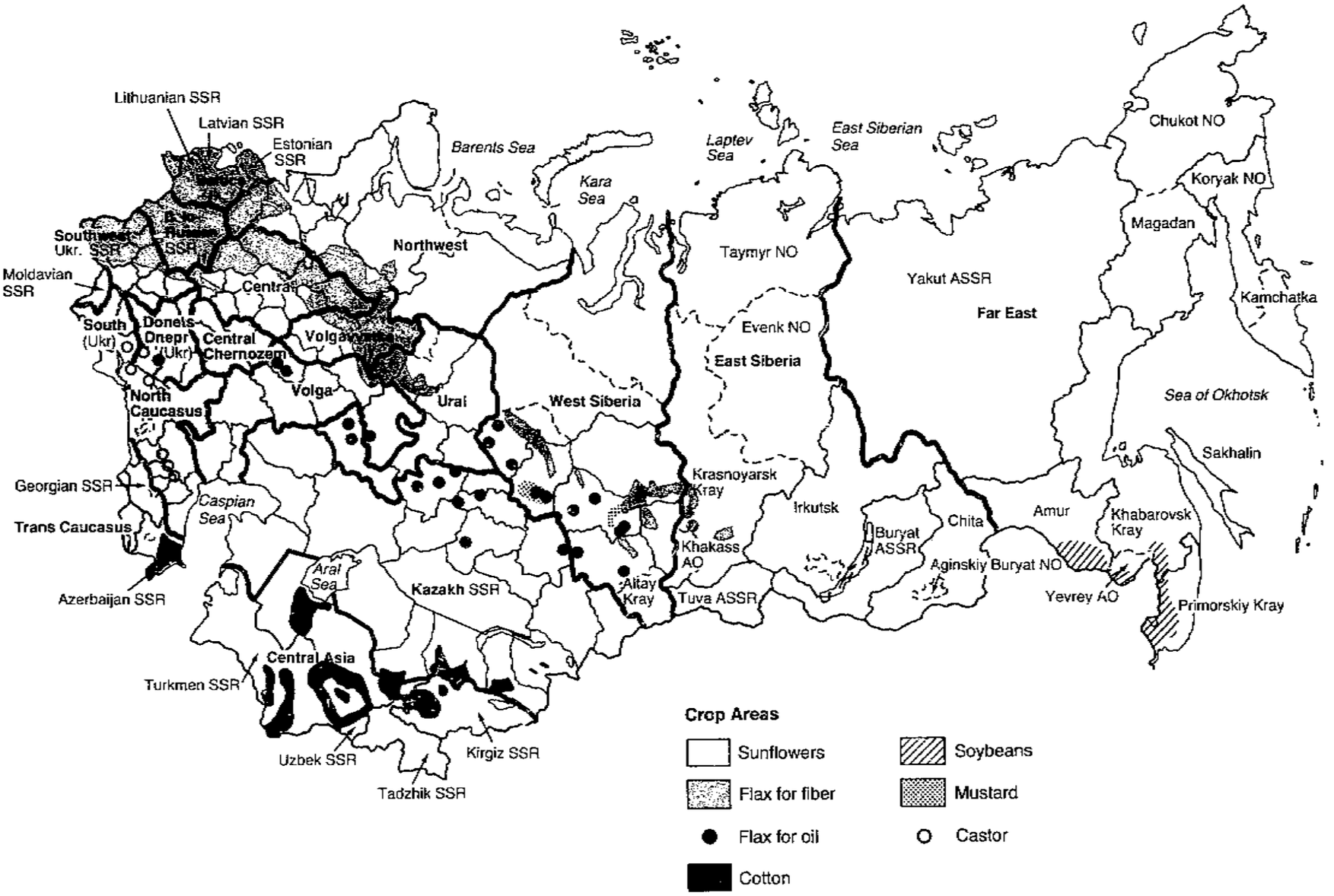


Figure 6

Economic Regions of the USSR



Sunflowerseed yields and production peaked in the mid-1970's when they reached 1.56 tons per hectare (figs. 7 and 8). In 1981-85, yields averaged just 1.20 tons per hectare. Nonetheless, by world standards, Soviet yields in 1981-85 were about average. In fact, 1984 and 1985 yields of 1.16 and 1.29 tons per hectare, respectively, were slightly higher than those recorded in the United States. As expected, yields vary considerably with soil and weather conditions. In good years, the best Soviet farms have recorded yields in the 2.5- to 3.5-ton-per-hectare range. Individual republics, however, produce much lower average yields: in the Ukraine, 1.5-1.6 tons per hectare; in Moldavia, 1.8-2.0 tons per hectare.

Crop yields have declined for a number of reasons. Plant resistance was weakened as a result of trying to develop plants with high oil-yielding seed. In the 1970's, Soviet geneticists inadvertently developed sunflowerseed varieties that were much more susceptible to pathogens than were the lower oil-yielding varieties. In breeding for higher oil content, they produced thinner seed coats that were more vulnerable to cracking *(12)*.

Difficulty in developing better sunflower hybrids was not just a Soviet problem. When the first sunflower hybrids were developed in the United States, they were highly susceptible to disease. U.S. plant breeders succeeded in using dominant genes to improve resistance, reducing losses among hybrids *(1)*. And in contrast to their Soviet counterparts, U.S. farmers have ready access to chemicals to combat such disease.

The Soviets should achieve moderate yield increases primarily by putting a larger proportion of area sown and cultivated under industrial crop technology (ICT). ICT acreage is cropland allocated larger quantities of machinery and chemicals which, together with regionalized crop varieties and specialized cropping practices, are designed to increase yields and reduce labor input. The Soviets have claimed that ICT, on average, increased yields by 0.47 tons per hectare in recent years.

Soviet authorities introduced ICT to the sunflowerseed sector in 1979. By 1984, ICT acreage encompassed about one-third of the crop. By the end of the decade, a majority of sown sunflowerseed area is likely to be cultivated by this method. Total conversion over to ICT is not expected to be attainable by 1990 because of continued serious shortages of the machinery, spare parts, fertilizers, and plant protectants needed to implement this form of cultivation.

Table 3—Effect of crop rotation length on Soviet sunflowerseed yields

Agricultural experimental station[1]	Crop rotation period			
	9 years	6 years	4 years	3 years
	Tons per hectare			
Station 1	2.14	1.72	1.62	1.49
Station 2	2.07	1.88	NA	1.72
Station 3	2.17	NA	1.38	NA

NA =Not available. (Data are not available for these locations.)
[1] All three stations are located in the European USSR.

Source: *(13)*.

Figure 7
USSR Sunflowerseed Yield, 1955-85

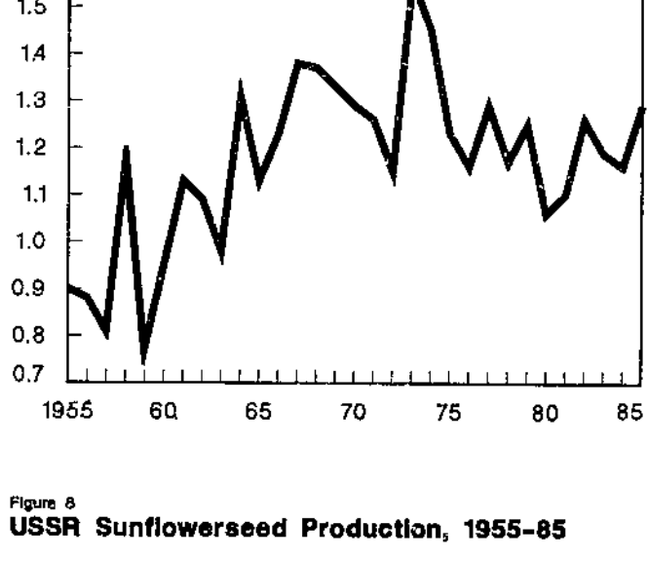
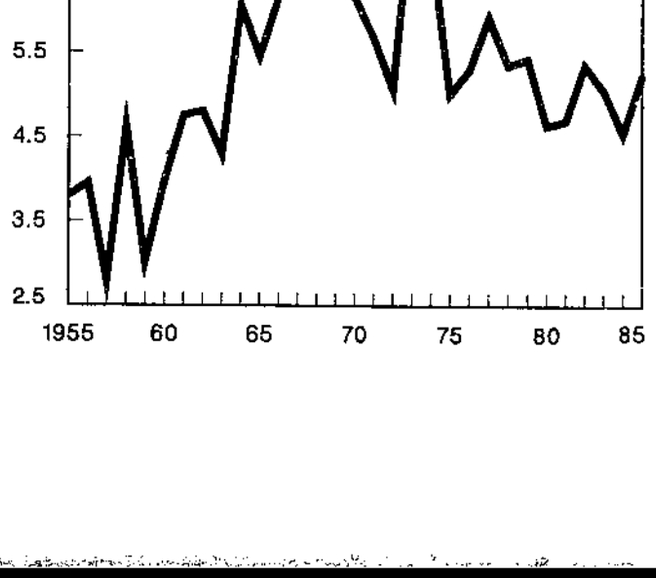


Figure 8
USSR Sunflowerseed Production, 1955-85



A major benefit of expanding the area cultivated under ICT is that labor productivity should increase. In 1983, the Soviets claimed that labor productivity rose by 40 percent in some ICT areas. An envisioned related benefit was to curtail rising unit costs of sunflowerseed production. In reality, ICT has only slowed the rise in costs. Slightly more than one-third of the sunflowerseed crop is cultivated under that method. Thus, by 1984, the unit cost of producing 1 ton of sunflowerseed increased by only one-third over the 1976-80 levels, or from 80 rubles to 106 rubles.

Yield declines in the USSR's sunflowerseed crop can also be attributed to the fact that producers sow too much substandard seed. The agricultural sector remains behind schedule in introducing improved varieties. Because of seed shortages, improved hybrids were cultivated in only 37 percent of the 1.5 million hectares targeted for 1985. Although 17,500 tons of improved seed were to be produced in 1984, output reached only 14,700 tons; more than one-half was considered unsuitable because of its low quality.

Given the disappointing record of Soviet sunflowerseed production over the last 10 years, it is unlikely that producers will return to either the high levels of output or yields recorded in the 1970's. If the past is any guide, sunflowerseed output targets are likely to remain unrealistically high as economic planners remain unable or unwilling to recognize the difficult conditions facing domestic sunflower producers. For example, the record of Soviet planners in determining realistic production targets has been abysmal. Soviet farmers have not met an overall sunflowerseed procurement target since 1973. Since 1981, only one-third of the farms in the entire country, amounting to just one republic (Moldavia) and two oblasts (Sumskiy and Vinnitskiy), have met their planned sales to the State.[1] As a consequence, cynicism about meeting announced production targets is likely to persist, and the economy's ability to reduce the number of bottlenecks caused by false expectations is unlikely to improve.

Sunflowerseed yields would have to increase at an astronomical rate to reach the implied targeted yield level of 1.75-1.80 tons per hectare. The Soviets' failure to improve yields in 1981-85 underscores the improbability of their chances of meeting 1990 targets. For example, production targets set in the 11th Five-Year Plan (1981-85) implied that Soviet farmers were to achieve more than a one-third increase in sunflowerseed yields.

[1] An oblast is a political subdivision of a republic in the USSR.

In actuality, Soviet farmers managed to raise their average annual sunflowerseed yields less than 1 percent. Average yields during 1981-85 equaled 1.20 tons per hectare compared with 1.19 tons per hectare during 1976-80. This minimal improvement raises doubt about the proclaimed effectiveness of the highly promoted ICT program which by 1985 encompassed more than one-third of the USSR sunflowerseed crop.

Based on past performance, average annual sunflowerseed yields in the USSR are likely to range between 1.30-1.38 tons per hectare by 1990. This forecast is premised on 1981-85 results, long-term linear trend projections of yield growth, policy statements reported in the Soviet press, and the assumption that the Soviets can successfully implement the ICT program for most of the crop by 1990.

Compared with past levels, sunflowerseed area is expected to remain low. By 1990, the area sown to sunflowerseed could recover to 4.2-4.3 million hectares from its 1984 low of 3.9 million hectares. If such a scenario were realized, 1990 Soviet sunflowerseed output would reach 5.5-5.9 million tons, about 1.0-1.3 million tons short of 1990 targeted output.

Cottonseed. According to preliminary reports, the USSR produced about 16 percent of world cottonseed in 1985. Since the beginning of this decade, the Soviet share of global cottonseed output declined by about 3 percent, mostly as a result of China's increased output.

In the USSR, cottonseed is the second most important source of vegetable oil. Cottonseed is also an important source of meal and cake that is used for livestock feed.

Cotton growing is currently concentrated in the republics of Uzbekistan (60 percent), Turkmenistan (16 percent), Tadzhikistan (9 percent), and Azerbaijan (7 percent). Lesser amounts of cotton are grown in Kazakhstan and Kirgizia.

From 1955 through 1984, cotton area expanded almost continuously at an average rate of more than 35,000 hectares annually (fig. 9). However, this trend was reversed in 1985 when cotton area fell by about 30,000 hectares. The Soviets are reported to be considering stabilizing current cotton area to allow fodder crops to expand in Central Asia and to effectively cope with salinization problems.

Just as cottonseed area has been characterized by almost continual growth, so too have cottonseed out-

put and yields, at least until the early 1980's (figs. 10 and 11). The long-term growth in cottonseed yields is attributed to the crop's relative insulation from the vagaries of Soviet weather (cotton is cultivated entirely on irrigated land) and to relatively disease-free production.

By 1981, yields reached 1.67 tons per hectare, the highest recorded among major world producers. However, yields have generally trended downward since then, falling to 1.42 tons per hectare in 1984 and inching up to 1.45 tons per hectare in 1985. Nonetheless, they remain among the highest in the world. For example, in 1985, China, the world's largest cotton producer, achieved yields of 1.37 tons per hectare and the United States attained yields of 1.16 tons per hectare.

One possible reason for the recent reduction in cottonseed yield and output figures is that Soviet central authorities have been much more careful in monitoring the production results reported by Central Asian republics, particularly those submitted by Uzbekistan. Reported corruption in the cotton industry may have led to inflated figures for past harvests. In 1984-85, the Soviet press carried stories of "gross padding" of harvest results that were "particularly flagrant in the cotton-growing and cotton-ginning sectors" *(10)*.

Projecting 1990 Soviet cottonseed output is difficult, particularly because of uncertainties about the reliability of Soviet yield data and about the central authorities' current planting intentions. Should the Soviets stabilize cotton area, they would forego the opportunity to raise output by any means other than increasing nonland inputs. One indicator that area is unlikely to expand significantly is the Government's apparent abandonment of a grandiose river diversion plan which envisioned redirecting massive volumes of water from the northern USSR into Central Asia.

If nonland inputs could be stepped up, Soviet cottonseed yields would likely reach 1.5 tons per hectare by 1990. Assuming the area sown to cotton remains at about 3.3-3.5 million hectares, Soviet cottonseed output could reach 5.0-5.2 million tons by the end of the decade.

Soybeans. The Soviet Union is not a major soybean producer. The USSR produces only about 500,000

Figure 9
USSR Cottonseed Area, 1955-85

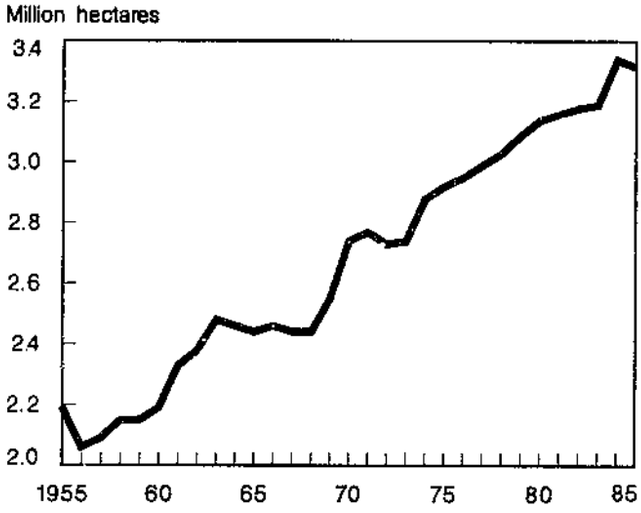


Figure 10
USSR Cottonseed Production, 1955-85

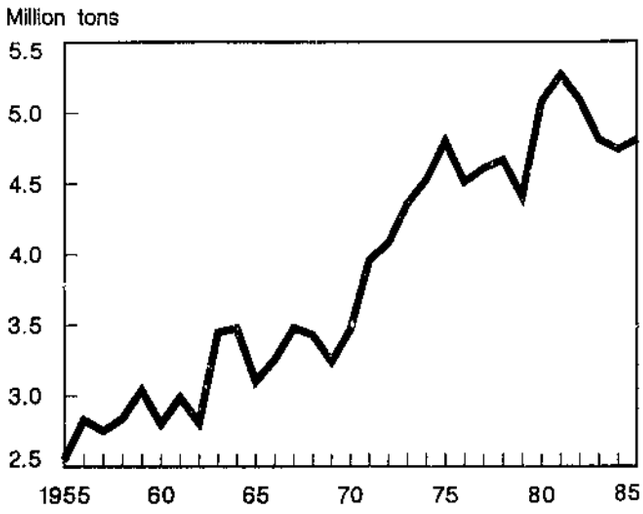
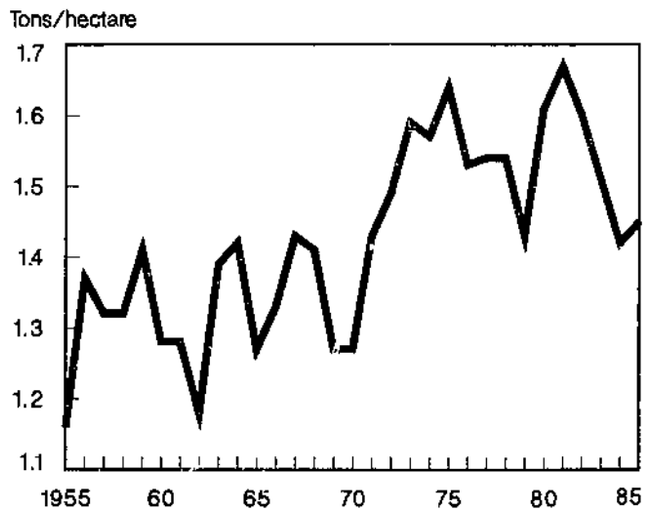


Figure 11
USSR Cottonseed Yield, 1955-85



tons annually (fig. 12), just a fraction of the 57 million tons produced by the United States in 1985 and the 14 million tons produced by Brazil, the world's two largest soybean growers.

As Soviet authorities have become increasingly aware of the economic benefits of greater protein meal use, articles advocating greater soybean utilization have proliferated in the general press and in specialty journals. The USSR's massive purchases of foreign soybeans and soybean meal reflect growing realization of the nutritional benefits to be derived from soybeans. In support of that goal, the Soviets launched a program at the beginning of the decade to dramatically raise domestic soybean output to 1.4 million tons by 1985 and to 2.2-2.3 million tons by 1990.

This expansion program, if implemented, would require a sharp increase in the proportion of soybeans produced in the European USSR. Until the late 1970's, producers sowed about 90 percent of the Soviet soybean crop in the Far Eastern region of the Russian Republic (RSFSR). Since then, the Soviets have increased soybean cultivation in the European USSR; for example, in the southern Ukraine, the European RSFSR, Georgia, and Moldavia.

Despite the magnitude of the called-for increase in domestic soybean output, Soviet authorities have not reallocated land from other crops to soybean cultivation. They have not even been able to stop area from declining from early 1980 levels. In fact, the country has been unable to achieve any significant growth in soybean area since the late 1950's when the crop area approximately tripled to 886,000 hectares over an 8-year period (fig. 13).

Two obstacles stand in the way of soybean expansion efforts in the European USSR: weather and lack of familiarity with soybean cultivation techniques. Since 1981, expansion of sown area has been made difficult by unfavorable weather in the eastern regions and a lack of cooperation by farm managers in the western regions. Farm managers have resisted sowing a crop with which producers are unfamiliar. To maximize farm revenues and to reduce risks, managers would prefer to continue cultivating more traditional oilseed crops like sunflowers, whose requirements are well-known.

As a result, many farms have sown no more than 15-20 hectares to soybeans. These small plots do not lend themselves to mechanization and to other cost- and laborsaving sowing methods that the Government has been eager to implement. Some farms have been publicly reprimanded for failing to sow a single hectare to soybeans.

In the Far East, soybean acreage has contracted because of recurrent storm and flood damage. Another problem is the long distance separating producers and users. Locating growing areas far from the European population and livestock centers is costly because the Soviets have to ship more than 50 percent of Far Eastern output westward for crushing.

The Soviets have talked about enlarging soybean sowings in Kazakhstan on a scale akin to

Figure 12
USSR Soybean Production, 1955-85

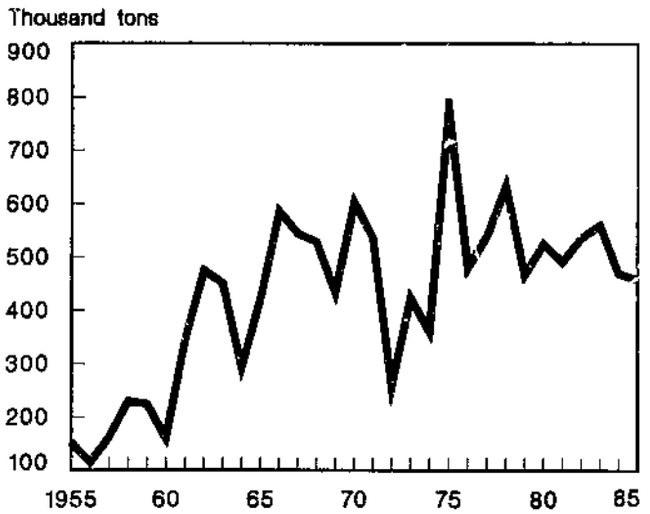
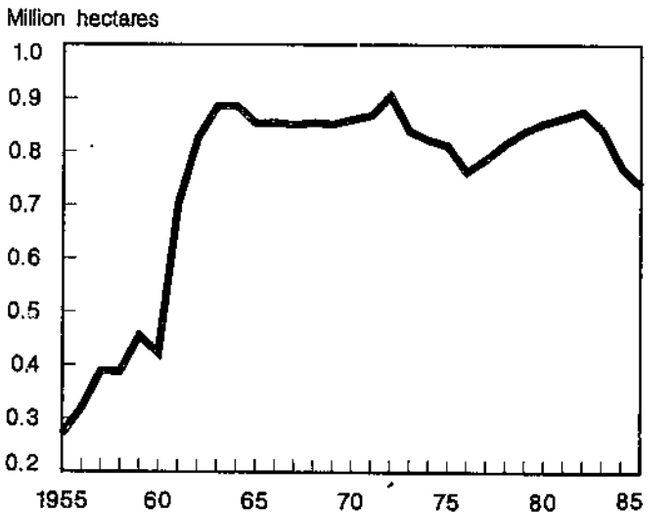


Figure 13
USSR Soybean Area, 1955-85



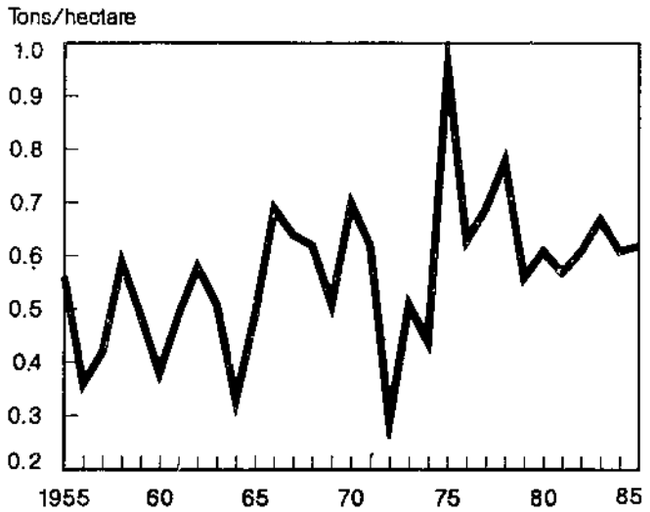
Khrushchev's massive expansion of grain cultivation in the Virgin Lands during the 1950's. Since 1973, Kazakhstan soybean area has increased from 3,800 hectares to at least 16,000 hectares. A Soviet plan calls for increases to 120,000 hectares by 1985; however, it is unlikely that this goal was attained in 1985 or could even be reached by 1990.

In recent years, Soviet farmers recorded low yields. Yields in 1981-85 slipped to 0.62 tons per hectare, compared with 0.65 tons per hectare during the previous 5-year period (fig. 14). Soybean yields in the United States, by contrast, reached 2.29 tons per hectare in 1985; in Argentina, 2.18 tons per hectare; and in neighboring China, 1.36 tons per hectare.

Soviet soybean yields are unlikely to improve much in the short term as the Government attempts to force farm managers to introduce or expand soybean cultivation in the European USSR. The Soviets would do well to gradually approach yields at 0.90-0.95 tons per hectare. Recent efforts to expand the area sown to soybeans do not portend well for the immediate future. Since 1981, when the area expansion program was supposedly well underway, the area sown to soybeans has trended downwards. By 1985, soybean sown area had fallen to its lowest level in about 25 years.

If the Soviets were able to increase soybean sown area by 20,000-25,000 hectares annually over the next 5 years, total area would reach only about 860,000 hectares. Under an even more optimistic scenario of 900,000 hectares, soybean output would still remain 1.4-1.5 million tons short of its target.

Figure 14
USSR Soybean Yield, 1955-85



Rapeseed. The Soviet Union produces only a fraction of the world's rapeseed output. In recent years, Soviet output averaged about 55,000 tons. In contrast, the USSR's neighbor to the south, China, produced 5.6 million tons in 1985, and her neighbors to the west, Czechoslovakia, the German Democratic Republic, Poland, and Yugoslavia, all outproduced the Soviet Union in rapeseed. This situation irritated Soviet agricultural officials, who publicly chided Baltic and Belorussian farmers for managing to produce only 2,500 tons of rapeseed while their Polish neighbors achieved an output of 1.1 million tons. Soviet officials have called on domestic producers to increase their output to 1.6-1.7 million tons by 1990.

Rapeseed's primary value to the Soviet economy is as a source of livestock protein. Yet the effort to expand area has not followed the scenario expected in a planned economy. Many farm managers simply have ignored planners' directives to expand rapeseed output because they know they can depend on deliveries of sunflowerseed and soybean meal from the State.

Rapeseed is grown in much of the European region of the USSR. The Soviets plan further large increases in other regions including the western Ukraine, Belorussia, the Baltics, the Central Chernozem, Volga and Ural regions, Siberia, and northern Kazakhstan.

Since 1980, the Soviets have made good progress in increasing the total cropland sown to rapeseed. Area rose from 20,000 hectares to 123,000 hectares by 1985. Authorities have called on producers to increase the area to 1.6-2.0 million hectares by the end of the decade. Officials eventually want to reach the 3-million-hectare mark. Numerous articles in support of this goal have appeared in the Soviet press since 1984.

Rapeseed yields have reflected a good deal of variability because of poor weather and hurried expansion. For instance, the Soviet press indicated that the large 44-percent increase in sown area during 1983 was not carried out everywhere according to proper agricultural practices. In many places, rape was planted in fields unsuited to its growth and proper crop rotation norms were not observed. Slipshod cultivation techniques resulted in improper crop densities, making mechanization difficult and expensive in many regions.

The outlook for steady yield increases hardly seems likely given Soviet performance over the past three

decades. Yields have been highly variable. Moreover, efforts to accelerate rapeseed expansion are unlikely to result in improvements over the short run as farmers reluctantly move away from more familiar crops. During the last 6 years of area expansion, average annual rapeseed yields fell by almost one-seventh, declining from 0.7 tons per hectare to about 0.6 tons per hectare. By contrast, yields in Eastern Europe averaged 2.25 tons per hectare in 1985.

Problems are likely to increase as expansion efforts continue. Yields will probably not exceed 0.60-0.70 tons per hectare by the end of the decade. The expansion rate is not expected to significantly exceed 30,000 hectares annually. By 1990, the rapeseed area could approach 275,000-300,000 hectares. Part of this growth in area is likely to take place in northern regions now cultivated to sunflowers. Under this scenario, Soviet rapeseed output would reach about 185,000 tons by 1990, 1.4-1.5 million tons short of target.

Other Oilseeds. The remaining Soviet oilseed crops, such as flaxseed, safflowerseed, sesameseed, castor beans, mustardseed, and peanuts, now account for a very small fraction of overall oilseed output. By 1990, this share will likely decrease as cropland planted to soybeans and rapeseed continues to expand.

Flaxseed grown for oil products contributes little to the Soviet oilseed sector; the vast bulk of the crop is used to make fiber. There is no evidence that the Soviets intend to change the primary role of flax from a source of fiber to a source of oil by the end of the decade. Area sown and output are expected to remain stable.

Proposals have surfaced in the Soviet press about expanding the area allocated to mustardseed. More mustard oil is needed to satisfy the needs of the breadmaking industry. Mustardseed area, which has averaged 267,000 hectares since 1980 could approach 280,000 hectares by 1990. Mustardseed output would likely exceed 100,000 tons.

Similar calls have been voiced for expanded castorseed production. A modest effort on the Soviets' part could return castorseed area to about 150,000 hectares by 1990.[2] Castorseed output is likely to remain at about 60,000-70,000 tons. Sesameseed and peanut output is expected to remain at less than 10,000 and 3,000 tons, respectively.

Production Prospects

The Soviets will not likely increase inputs to the oilseed sector more than marginally by 1990. Rather, the Soviets are likely to depend on expanding area under ICT as the primary means of achieving higher output. Soviet officials claim that applying ICT to the oilseed sector has increased yields by 0.47 tons per hectare. However, the magnitude of ICT's effect on yields may be somewhat overstated since this form of cultivation is likely to have been carried out under ideal conditions in its initial phase. Until more empirical evidence is published, it is prudent to assume that Soviet yield increases will remain small despite ICT.

The Soviets are, however, hoping to improve oilseed output by offering incentives to producers. For example, in March 1986, the Government passed a resolution outlining a new program of countersales to farmers.

Enterprises are to be paid with oilseed meal cake and mixed feed in addition to the standard ruble payment for sales of sunflowerseed and soybeans to the state. Countertrade terms were announced earlier for rapeseed.

These measures, however, appear to be insufficient to bridge the chasm between demand for oilseed products and projected domestic oilseed output. As more marginal land is brought into use, oilseed area is likely to rise slightly to a range of 10.1-10.5 million hectares by 1990, a level just barely higher than the 9.9 million hectares averaged since 1980. Most of this growth in area will likely go to rapeseed, soybeans, and sunflowers if disease problems can be controlled. Therefore, no significant increase in oilseed output can be expected. By 1990, the USSR's oilseed output could reach 12 million tons, somewhat less than that achieved more than a decade ago.

The Soviet Oils and Fats Industry

The Soviet oils and fats industry is estimated to have an annual crushing capacity of 12-13 million tons. Its current daily crushing capacity is estimated at almost 47,200 tons (table 4).

Background

Between 1971 and 1980, daily crushing capacity increased at an annual rate of about 3 percent.

[2] See appendix table 15 for annual statistics for the period 1955-85.

The number of Soviet oilseed processing plants ranges between 110-120. Of this number, 65-75 are believed to be oil-extracting plants. The remainder still operate by the press method. Since 1961, the number of oil extraction plants doubled and their annual average capacity increased 1.5 times. In contrast, factories employing the press method declined by 2.2 times.

The Soviets have been shifting to the extraction method because of its greater efficiency. For instance, extracting plants obtain about 10 percent more output of sunflowerseed oil than do pressing plants. For cottonseed oil, the percentage increases to 20 percent.

The processing industry follows a seasonal pattern of operation. Work peaks during the fourth quarter of the calendar year when procured oilseeds are shipped to processing plants (table 5). The pace gradually slackens until the start of the second quarter with the arrival of imported soybeans. Third-quarter utilization is relatively light because processors perform maintenance and overhaul equipment to prepare for delivery of the new domestic crop.

Sources of Production Inefficiencies

A number of major problems exist that drive up costs and reduce processors' profits: excessive shipping distances between farms and processing plants, high variability in oilseed quantity and quality, and excessive down time in plant operations.

Table 4—USSR: Daily crushing capacity for selected years, 1971-85

Method	1971	1976	1978	1980	1985[1]
			Tons		
Extraction	25,515	30,803	32,928	34,718	41,200
Press	6,920	6,342	6,370	6,320	6,000
Total	32,435	37,145	39,298	41,038	47,200

[1] Values are estimated.

Source: *(4)*.

Table 5—USSR: Capacity utilization, by quarter, 1979-81

Year	Quarter I	Quarter II	Quarter III	Quarter IV
		Percent		
1979	86	87	67	98
1980	70	82	57	86
1981	65	72	66	86

Source: *(4)*.

Processors too often are located far from growers. As a result, transportation costs are far from minimized. For instance, Soviet Turkmenistan produces 14 percent of the USSR cottonseed but refines only 8 percent. Costs inevitably rise when processing schedules are disrupted. Unrealistic procurement goals set by economic planners likely contribute to the situation. Plant managers are frequently told to plan for larger than realized deliveries of procured oilseeds. Moreover, sharp swings in oilseed import levels increase the potential for disrupting planned processing schedules.

At times, fluctuations in both domestic output and purchases of foreign oilseeds have combined to sharply reduce inventories. For instance, in 1984, cottonseed and sunflowerseed, which account for the bulk of Soviet domestic oilseed output, fell about 0.6 million tons below that of the previous year. At the same time, soybean imports, which make up almost 90 percent of all oilseeds purchased from abroad, declined sharply.

The extent to which capacity is used varies from year to year, according to Soviet data published in 1982 (table 6). It peaked between 1976-78.

Another factor that has driven down processors' profits is the decline in the quality of seed. The share of procured high-quality cottonseed has fallen since the mid-1970's (table 7).

Table 6—USSR: Utilization of oilseed crushing capacity in selected years, 1970-81

Method	1970	1975	1977	1979	1981
			Percent		
Extraction	82.9	88.4	94.2	82.7	74.3
Press	54.4	69.2	84.6	65.7	63.4
Total	77.1	85.0	92.6	79.9	72.7

Source: *(4)*.

Table 7—USSR: Cottonseed quality, by share, 1975-82

Year	1st class	2nd class	3rd class	4th class
		Percent		
1975	41.5	20.9	24.5	13.1
1976	43.1	18.4	20.2	18.3
1977	42.9	15.4	17.9	21.1
1978	43.1	16.6	19.7	18.8
1979	41.1	14.4	21.2	21.4
1980	37.9	13.8	21.9	23.9
1981	38.2	15.6	23.3	21.8
1982	34.2	15.6	24.7	23.9

Source: *(5)*.

The deteriorating seed quality is reflected in the declining amounts of oil obtained from a unit of input (table 8).

As a consequence, more seed is now required to produce vegetable oil than in the past. For example, the decline in cottonseed oil content meant that 633 more kilograms of cottonseed had to be crushed to obtain 1 ton of oil in 1984 than in 1975. Adding to processors' costs are rising seed prices. The price of cottonseed increased from 1975 to 1984 by more than 21 rubles ($29) per ton.

Meal Production

Oilseed meal and cake processing has taken on increased importance in recent years as the Soviets have become more keenly aware of the benefits to be gained from feeding livestock more meal. The Soviets acknowledge that they have at least a 3.5-million-ton deficit of digestible protein. Because of this protein feed imbalance, the country is annually over-expending approximately 40 million tons of feed units. In 1981-85, Soviet meal production (excluding fish meal) was estimated to average 3.7 million tons (soybean meal equivalency). Total utilization, because of high levels of imported oilseed meal, was higher, about 4.8 million tons.

Since the late 1970's, output of oilseed meal from domestic sources has trended downward. However, because of imports, total average annual meal output increased but by less than 1 percent.

Sources. Until the mid-1970's, more than 80 percent of all oilseed meal consumed in the USSR came from domestic cottonseed and sunflowerseed. However, in the wake of the 1975 grain shortfall, the Soviets began to increase their imports of oilseeds, primarily soybeans. In recent years, soybean meal has grown to about 30 percent of total oilseed meal produced. Of the more than 5 million tons of soybean meal processed from 1981-85, about two-thirds originated from foreign soybeans.

Cottonseed remains the USSR's largest domestic source of processed oilseed meal, accounting for about one-third of total production since 1981. Ranking second is sunflowerseed meal, which makes up slightly more than one-quarter of overall production. Table 9 presents the most recent official data on USSR oilseed crush and meal to appear in the Soviet press.

From table 9, it is possible to derive extraction rates for each of the oilseeds identified (table 10).

Outlook. If domestic oilseed output were to approach 11.8 million tons and if oilseed imports (primarily soybeans) were to average 2.0-2.4 million tons by 1990, Soviet oilseed meal output could approach 5.0-5.6 million tons.

Vegetable Oil Output

The announced goal of the Soviet oils and fats industry is to raise per capita consumption of

Table 8—USSR: Oil content of cottonseed, by class, 1975-82

Year	1st class	2nd class	3rd class	4th class
		Percent		
1975	20.4	19.2	17.2	15.0
1976	20.4	19.1	17.5	15.8
1977	20.0	18.6	17.2	15.4
1978	19.8	18.6	17.1	14.8
1979	19.5	18.4	16.4	15.0
1980	19.4	18.0	16.2	14.1
1981	19.4	17.7	16.3	14.5
1982	19.3	17.1	16.0	14.1

Source: *(5)*.

Table 9—USSR: Oilseed crush and meal production, 1976-78

Oilseed type	1976		1977		1978	
	Crush	Meal	Crush	Meal	Crush	Meal
			1,000 tons			
Sunflowerseed[1]	3,220	1,212	3,652	1,410	3,868	1,465
Cottonseed	3,984	1,796	3,957	1,730	4,173	1,770
Soybeans	1,814	1,382	2,068	1,563	1,304	999
Flaxseed	83	48	73	25	52	30
Other	204	117	293	118	208	154
Total	9,306	4,556	9,970	4,845	9,605	4,407

[1] From State sources only.

Source: *(6)*.

vegetable oil from the 1980 level of 8.8 kilograms to a 1990 target of 13.2-15.7 kilograms. By 1985, Soviet per capita consumption averaged about a 2-percent annual rate of increase (table 11).

Although Soviet per capita vegetable oil consumption already exceeds the Government-recommended norm of 9.1 kilograms, it is not very high compared with that of other nations. For example, during 1973-84, the USSR ranked 29th in terms of per capita vegetable oil disappearance *(11)*. If the Soviets were able to realize their 1990 target levels of domestic oilseed output and imports, per capita vegetable oil consumption could rise to 11-12 kilograms.

State Dietary Policy. Because the Soviet people consume large amounts of potatoes, bread, and sugar, planners are considering changing the desired caloric content of the standard food ration. It currently exceeds by 15-20 percent the official physiological nutritional norms. For example, average per capita sugar consumption has reached 44-45 kilograms a year despite the official Soviet norm of 18-37 kilograms. By comparison, U.S. per capita sugar consumption is lower, but its total per capita sweetener consumption is higher.

To improve the carbohydrate-to-fat ratio in the Soviet diet, officials are considering cutting back on sugar intake and raising nonanimal fat consumption, particularly vegetable oil. In contrast to the high sugar consumption, fat consumption is below target; the annual consumption requirement of 38 kilograms per person has yet to be attained.

Animal fat consumption is not targeted to increase because it is now considered too high. Animal fats account for more than 70 percent of all fats currently consumed. In view of this, the Deputy Director of the All-Union Agricultural Academy of Lenin called for the share of vegetable oils to increase.

Both production costs and dietary considerations appear to have motivated this decision. For example, sunflowerseed oil costs 10 percent less to produce than butter. To change the population's consumption pattern, officials will have to allocate funds to expand the processing capabilities of the oils and fats industry *(15)*.

The Soviets have succeeded in raising per capita vegetable oil consumption primarily by stepping up vegetable oil imports. Total domestic production generally has declined since the mid-1970's (table 12). This fall-off would be even more pronounced if oil produced from imported soybeans were not included.

In the past, sunflowerseed often provided almost three-fourths of all vegetable oil. In recent years, its share declined because of the drop in sunflowerseed production and the steady rise in the volume of vegetable oil processed from imported soybeans.

Sunflowerseed Oil Production. Boosting sunflowerseed oil production is a problem for the Soviets. To accomplish that goal, farmers must combat widespread disease that has dampened yields, and processors must crush seeds that are of lower quality than those processed in years past. Oil losses have risen during processing as a result of increased production inefficiencies and the need to use new but more fragile types of seeds.

However, not all Soviet breeding efforts have been unsuccessful in producing better seed. The Soviets claim to have developed sunflowerseed varieties with

Table 10—USSR: Meal extraction rates, 1976-78

Oilseed type	1976	1977	1978
		Percent	
Sunflowerseed	38	39	38
Cottonseed	45	44	42
Soybeans	76	76	77
Flaxseed	58	34	58

Source: *(6)*.

Table 11—USSR: Per capita vegetable oil consumption, 1960-90

Year	Consumption
	Kilograms
1960	5.3
1970	6.8
1980	8.8
1985	9.7
1990[1]	13.2-15.7

[1] Projected consumption rate called for in the plan for 1990.

Source: *(7)*.

Table 12—USSR: Vegetable oil production, 1956-85

Years	Total	Cottonseed	Sunflowerseed	Others
		Million tons		
1956-60	1.6	0.4	1.0	0.2
1961-65	2.2	.5	1.6	.1
1966-70	2.9	.5	2.2	.2
1971-75	3.0	.7	2.2	.1
1976-80	2.8	.7	1.8	.3
1981-85	2.6	.7	1.6	.3

Source: (7).

improved oil quality. These hybrids yield oil with a higher aliphatic acid content. Unsaturated aliphatic acid is extremely important for human consumption. Such oil compares favorably with olive oil.

Despite the need to produce more sunflowerseed oil for Soviet and foreign consumers, far too much oil still goes for industrial uses. The Soviets note that large, unspecified amounts of sunflowerseed oil are used to produce lacquer, paints, textiles, soaps, leathers, lubricants, and perfumes.

In the past, the USSR exported large quantities of sunflowerseed oil to earn hard currency. However, increased domestic needs have reduced sunflowerseed oil exports to just one-fourth the levels reached in the early 1970's.

Proposals have been made to significantly reduce the volume of vegetable oil now going to industry by substituting raw petrochemicals. The price decline of world petroleum prices may make these proposals more attractive to state planners.

Cottonseed and Soybean Oil Production. Two other seeds, cottonseed and soybeans, account for most other vegetable oil production in the USSR. The oil content of these two seeds, ranging between 14-21 percent and 15-26 percent respectively, is lower than that of most other oilseeds: copra (64 percent), palm kernel (48 percent), sunflowerseeds (40-45 percent), rapeseed (35-40 percent), peanuts (35 percent), and linseed (34 percent) *(3)*.

Although the Soviets have succeeded in increasing cottonseed output over the long term, it has become more difficult to obtain and process high-quality edible oils for food use. Since the mid-1970's, cottonseed quality has significantly deteriorated and oil content has fallen (table 13).

A number of factors contributed to the decrease in oil content. First, plants have not been given the optimal mix of fertilizers. Because of a shortage of mineral fertilizer, Soviet farmers have had to use nitrogen fertilizers which build up plant proteins but hinder oil formation. The Soviets acknowledge that if more mineral fertilizer had been available, they would have experienced fewer problems with plant growth and poor oil content.

Table 13—USSR: Oil content of cottonseed by class, 1975-81

Year	1st class	2nd class	3rd class	4th class
		Percent		
1975	20.26	19.23	17.17	14.99
1976	20.35	19.06	17.51	15.81
1977	20.03	18.63	17.20	15.40
1978	19.85	18.59	17.13	14.78
1979	19.50	18.38	16.40	14.99
1980	19.39	18.03	16.20	14.11
1981	19.37	17.12	15.99	14.10

Source: (5).

Second, Soviet cotton producers have had to cultivate seed possessing less than optimal oil-producing properties. This situation is attributed to the side effect of breeding more wilt-resistant varieties such as Tashkent-1 and Tashkent-3. A number of the varieties in widespread use produce seed that has a low oil content and poor quality oil.

Third, overuse of pesticides together with improper and slipshod preharvest defoliating and desiccating techniques have reduced oil output and quality. Finally, expanding cotton area cropland to marginal growing areas has adversely affected oil content.

The result is that unit costs have increased. The cost of oil has increased significantly in most processing plants, causing cottonseed oil to change from a profit-making to a net-loss product. If Soviet farmers could increase cottonseed oil content by merely 1 percent, vegetable oil output would rise over 40,000 tons *(5)*.

Most soybean oil used in the USSR is of foreign origin. Of total vegetable oil production, soybean oil accounts for less than 10 percent. Soybean oil production was insignificant before 1976. In terms of aliphatic oil composition, soybean oil is almost identical to sunflowerseed oil.

Like sunflowerseed oil, soybean oil is also diverted to industrial uses. Soybeans are used in the processing of more than 400 products, including soap, lacquer, paint, paste, lubricants, plastics, artificial wools, and glycerine. However, soybean oil has a number of important food uses in the Soviet economy: it is an ingredient in the production of fatty acids, flour, margarine, baked goods, candy, milk, cottage cheese, and dry meat products.

As domestic oilseed production increases, Soviet use of products from the oils and fats industry probably will become more varied. Given the constraints that limit more output from domestic oilseed sources, the Soviets will continue to depend significantly on imports of oilseeds, oil meal, and vegetable oil throughout the decade.

Outlook. By 1990, Soviet vegetable oil production is expected to return to a level of 3.1-3.2 million tons,

which is about 200,000-300,000 tons less than the industry turned out in the mid-1970's. In this projection, two assumptions are implicit. First, the Soviets must avert a series of poor grain and oilseed harvests. If serious grain shortfalls were to occur, fewer oilseeds would be available for processing. The reason is that Soviets tend to reallocate oilseed fields, particularly those in which sunflowers are grown, to fodder use during grain shortages. Second, the Soviets are expected to continue increasing their imports of oilseeds. If such a scenario is realized, per capita vegetable oil consumption in the USSR could reach 11-12 kilograms by the decade's end.

Soviet Oilseed and Oilseed Product Trade

In the late 1970's, the USSR began importing significant amounts of oilseeds, oilseed meal, and vegetable oil after being largely self-sufficient. These imports reflected a high degree of variability.

Background

The decision to increase imports was a response to a decline in domestic oilseed production during the mid-1970's. In the early 1980's, the USSR further accelerated its foreign purchases of oilseeds and oilseed products. This sharp upswing in imports was the result of severe shortfalls in domestic output, particularly of sunflowerseed, and to growing but belated Soviet awareness of the potential benefits to be gained by feeding livestock herds larger amounts of protein meal.

As interest in the feasibility of using larger amounts of protein meal rose in the 1980's, the USSR began to seek technical advice from other countries, including the United States, from which the Soviets have not purchased soybean meal since 1979.

In October 1982, the USSR decided to cosponsor a seminar on soybean meal with the U.S. National Soybean Processors Association. The 2-day conference, which took place in Moscow, focused on the use of soybean meal in compound feed production. In April 1986, the USSR and the American Soybean Association cosponsored a seminar on mixed feed. As a result, plans were discussed for setting up joint cattle-feeding trials featuring local ingredients and meal processed from U.S. soybeans (*2*).

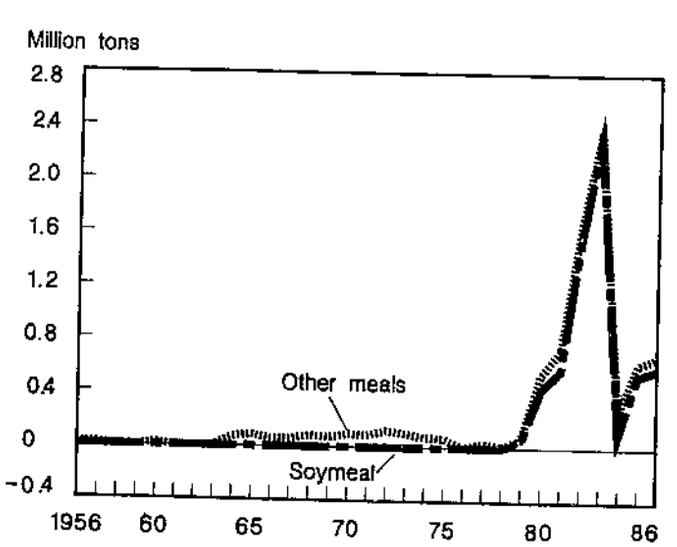
As Soviet interest in protein meal escalated in recent years, oilseed imports rose. However, the pattern of purchases has been very erratic since the early 1980's. For example, between 1980 and 1983, soybean meal imports rose from 400,000 tons to an estimated 2.3 million tons (fig. 15). USDA shipping reports in 1984 showed that Soviet soybean meal imports plunged to about 100,000 tons. Soybean imports showed similar volatility, falling from 1.4 million tons in 1983 to 0.6 million tons in 1984. After rising slightly in 1985, Soviet soybean imports increased sharply the following year. In fact, the USSR purchased in excess of 1.5 million tons from the United States alone during the first few months of 1986.

Although the Soviet press frequently has carried articles stressing the importance of increased protein meal for its livestock sector, Soviet commodity trade journals have had little to say about past or current oilseed and oilseed product imports. Nor have explanations surfaced about the sharp import fluctuations of recent years.

Several explanations have surfaced in the West regarding the Soviets' erratic soybean meal trade behavior between 1983 and 1984. However, many of these explanations seem ad hoc and do not account for the full extent of the sharp cutback in Soviet soybean meal imports.

The explanation heard most often is that in 1984 the Soviets sharply scaled back soybean meal imports from the prior year's 2.3-million-ton level because they realized they had been too optimistic about their transportation system's ability to handle such an unprecedented volume of imported meal.

Figure 15
USSR Oilseed Meal Imports, 1956-86



As a result, they incurred large losses while trying to distribute the huge volume of foreign meal. Because of the USSR's backward infrastructure, lack of storage facilities, and the short storage life of soybean meal, it is likely that such losses would occur. According to these explanations, authorities reacted to this unforeseen waste by severely restricting further soybean meal imports until large soybean meal imports could be handled more efficiently.

However, this argument fails to explain the full magnitude of the cutback. The Soviets were estimated to have handled soybean meal imports in excess of 400,000 tons during the 3 previous years. For example, the year before their decision to increase soybean meal imports to 2.3 million tons was taken, the Soviets handled more than 1.5 million tons of these imports. Unless the central authorities were confident of the USSR's ability to handle at least 400,000 tons of imported meal annually, Soviet trade officials likely would not have signed a 5-year trade agreement committing Brazil to supply a minimum of 2 million tons of soybean meal during 1982-86.

An alternate theory suggests that the Soviets chose to divert hard currency from soybean meal purchases in anticipation of a poor 1984 domestic grain crop. However, it is questionable whether they could have known far enough in advance that their 1984 grain crop was in serious trouble. Also, in times of a grain shortage, producers could economize on grain use by feeding more soybean protein meal to livestock. For instance, when the Soviets were in the midst of a disastrous 1981 grain harvest, they increased both their soybean and soybean meal imports (figs. 15 and 16).

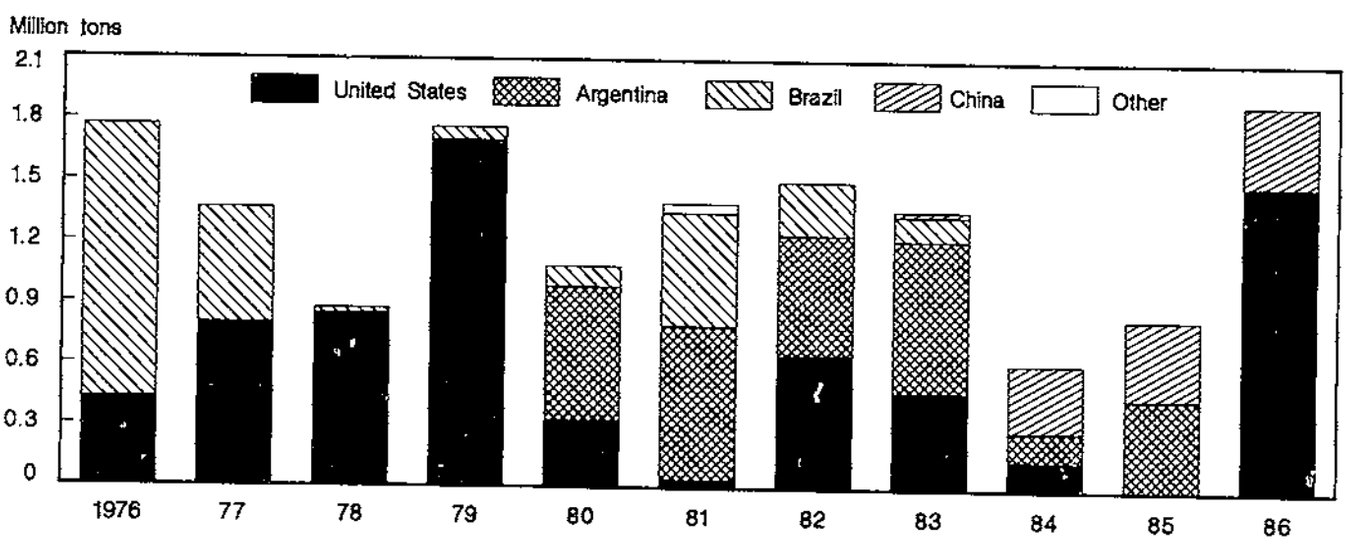
One explanation is that the Soviets cut back on soybean meal imports in 1984 because they likely carried over an unusually large stock of soybeans from 1983. As evidence, I cite a more than 100,000-ton jump in soybean crush that the Soviets reported in 1984.

Unless large stocks of soybeans were carried over from 1983, the 1984 Soviet soybean crush should have fallen markedly because 1984 soybean imports fell by more than one-half. The methodology that I used in developing the supply and utilization tables presented in this report suggests that the Soviets carried over sizable amounts of soybeans in other years; otherwise it would be difficult to account for the level of soybean oil and meal output in some years. No Soviet confirmation of this assertion is possible because the USSR publishes no data on the size, much less the existence, of carryover stocks.

Others have suggested that the Soviets imported more meal than USDA shipping reports showed in 1984. As a result, Soviet soybean meal imports could have reached the 400,000-ton range.

Regardless of whether Soviet soybean meal imports fell to 100,000 tons or 400,000 tons, the 1984 cutback is interpreted as a temporary measure rather than a permanent reversal of the USSR's recent import program. As soon as Soviet authorities feel that soybean meal inflows can be handled more effi-

Figure 16
USSR Soybean Imports, 1976-86



ciently, the USSR is expected to resume large imports to spur the growth of livestock and livestock product outputs.

Oilseed Imports

Since the mid-1970's, Soviet oilseed imports exceeded 1 million tons in all but 3 years (fig. 17). The bulk of these shipments consisted of soybeans. The only other notable oilseed import was peanuts, representing less than 5 percent of total oilseed purchases.

Sources. According to Soviet data, the United States captured the largest share of the USSR soybean import market during 1976-85 (fig. 16). Of the 12.1 million tons of soybeans that the USSR imported during this period, 44 percent originated from the United States, 28 percent was from Brazil, 24 percent came from Argentina, and the remaining 4 percent was unspecified. In 1986, the U.S. share likely increased because the Soviets purchased 1.5 million tons of U.S. soybeans.

The United States has managed to capture a large share of the Soviet market even though the Soviets have not been bound under the U.S.-USSR long-term grain agreement to purchase a minimum level of soybeans and soybean meal. Until October 1983, soybeans and soybean products were not even a part of the U.S.-USSR grain agreements. When these commodities were finally incorporated into the latest grain agreement that runs from October 1983 through September 1988, soybeans were included as an option. The Soviets may substitute soybean and soybean meal purchases for 1 of the 9 million tons of grain that they are obligated to buy under the new agreement.

The Soviets maintain long-term soybean and soybean product supply agreements with a number of countries. They signed a long-term oilseed and oilseed product supply agreement with Argentina in 1980, which coincidentally was the same year the United States imposed a sales suspension on farm product exports to the USSR that could be used for livestock. The initial Argentine-Soviet agreement called for annual deliveries of 500,000 tons from 1980-85. During this period, actual annual Argentine soybean exports to the USSR averaged about 560,000 tons and ranged from a high of 758,000 tons in 1981 to a low of 146,000 tons in 1984. On January 21, 1986, the two parties extended the agreement through 1990.

Brazil also signed a long-term supply agreement with the Soviet Union in the early 1980's, under which 2.5 million tons of soybeans were to be exported to the USSR from 1982-86. During the first 3 years of the pact, Brazilian deliveries averaged 128,000 tons. Since then, the USSR has not reported taking any further Brazilian soybean shipments.

In 1984, China entered the USSR soybean import market on a large scale, supplying 329,000 tons. A year later, China shipped 388,000 tons to the Soviet Union. China has signed a commitment to provide the Soviets with 2.3 million tons during 1986-90. If China were able to step up its shipments to the USSR, U.S., Argentine, and Brazilian market shares could erode.

Outlook. The Soviets should raise soybean imports above the 1.1-million-ton level averaged in 1981-85 if they are serious about raising their population's per capita consumption of vegetable oil and livestock's per head consumption of protein meal. Soviet soybean imports could average slightly more than 2 million tons by 1990, particularly if their soybean meal imports remain relatively low. Imports are not projected to be higher because the Soviets have yet to significantly expand the capacity of their soybean processing plants, which has remained unchanged over the past decade. The domestic processing picture could gradually change. Negotiations are reportedly underway to build several soybean processing plants valued at $100 million.

Oilseed Meal Imports

Soviet oilseed meal imports have been very volatile since 1980. Since peaking at 2.3 million tons in 1983, they have fallen to less than a million tons.

Sources. Although the Soviets do not publish comprehensive data on their oilseed meal imports, shipping reports suggest that the Netherlands and Brazil were their primary sources of supply. The Federal Republic of Germany, Belgium, Luxembourg, India, and Argentina have supplied small amounts. More than 90 percent of oilseed meal imports consisted of soybean meal; the remainder is believed to have been made up of cottonseed meal, peanut meal, and sunflowerseed meal.

The Soviet Union has met all of its oilseed meal import needs from non-U.S. sources since the imposition of the U.S. sales suspension. The last Soviet purchase of U.S. soybean meal occurred in 1979,

totaling only 27,000 tons. Though the Soviets have an option under the current U.S.-USSR grain agreement of substituting soybean meal for grain, they have not exercised this right.

Soviet officials have offered various explanations for their absence from U.S. soybean meal markets. For example, they indicated that Dutch meal, made in small shipments, is easier to handle and that the close proximity of the Netherlands facilitates timing of deliveries. The Netherlands has no formal supply agreement with the Soviet Union. The United States, however, benefits indirectly from Dutch sales to the Soviets because the Dutch often obtain 90 percent of their soybeans from the United States.

The Soviet Union had a formal agreement with Brazil to supply a minimum of 2 million tons of meal during 1982-86. In 1981-83, average annual Brazilian shipments are estimated to have surpassed 800,000 tons. Since then, Brazilian deliveries were cut back sharply. Although U.S. and Brazilian soybean meal are competitively priced, the Soviets are said to prefer Brazilian meal for two reasons: it has a higher protein content than U.S. soybean meal (48 percent versus 44 percent) and it is shipped in pellet form for easier storing and handling.

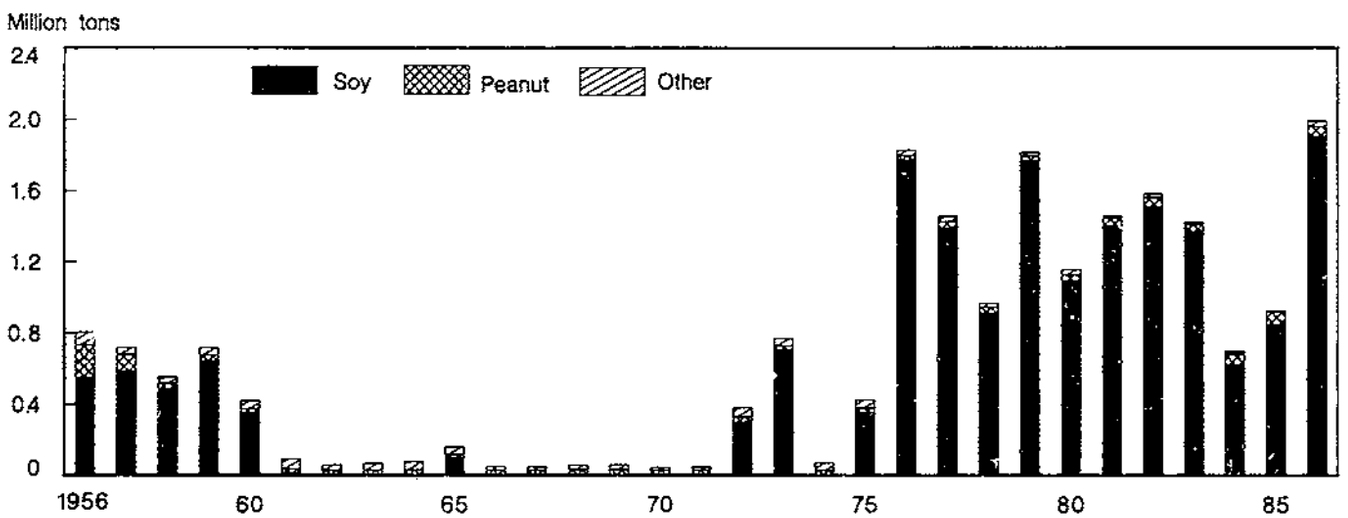
Outlook. Based on an analysis of the data, meal imports exceeding 2 million tons could pose problems for the Soviets. Although the Soviets can use far more than this volume of imports, they cannot quickly correct the problems in their infrastructure and transportation systems that likely caused them distribution difficulties in 1983. Furthermore, large imports of soybeans are reducing the need for massive inflows of foreign meal. Finally, the prospect that future short-term grain shortfalls will be offset by relatively low international grain prices further reduces the need for larger meal imports. Therefore, until the Soviets indicate otherwise, their average annual oilseed meal imports are projected to expand to 2.0-2.3 million tons by 1990. Because of the volatility of soybean meal imports in the past, however, Soviet behavior in this area is far from predictable.

Vegetable Oil Imports

Soviet vegetable oil imports began to accelerate after the USSR's poor 1979 oilseed harvest. During 1980-85, Soviet vegetable oil imports are estimated to have averaged more than 700,000 tons annually (fig. 18). Three types of vegetable oil accounted for the bulk of imports: sunflowerseed, palm oil, and soybean oil. The remainder consisted of coconut, linseed, olive, palm kernel, and rapeseed oil.

Sources. The USSR's major supplier of sunflowerseed oil is Argentina. Annual shipments of Argentine sunflowerseed oil from 1980-85 averaged about 200,000 tons. The United States, by contrast, has been a minor supplier. Only in 1982 did it sell sunflowerseed oil to the USSR, amounting to about 41,000 tons.

Figure 17
Total USSR Oilseed Imports, 1956-86

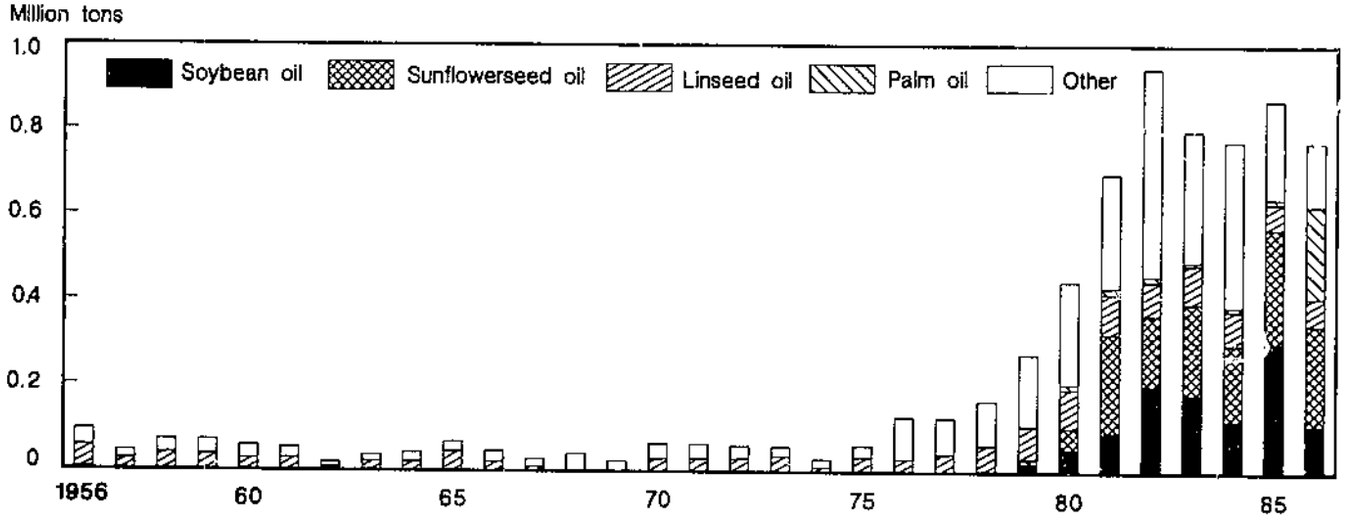


The USSR satisfies most of its palm oil needs from one country, Malaysia. During 1980-85, Malaysian shipments averaged about 150,000 tons annually. Indonesia and Singapore supplied the USSR with several thousand tons during the same period.

In contrast, the Soviets depend on several suppliers for soybean oil: Spain, Brazil, and the Netherlands. The Soviet-Brazilian supply agreement that covered the period 1982-86 called for Brazil to supply the USSR with 40,000 tons of soybean oil annually. Together, Brazil and Spain satisfy most Soviet needs, with the Netherlands accounting for less than 4 percent of trade.

Outlook. If the Soviets are to increase per capital vegetable oil intake, imports must remain high in light of the projected slow growth of domestic oilseeds. By the end of the decade, Soviet edible oil imports could average about 1.0-1.1 million tons if the USSR continues to seriously pursue its goals for vegetable oil consumption.

Figure 18
Total USSR Vegetable Oil Imports, 1956-86



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Appendix A—Methodology

In compiling the statistical information contained in this report, I made maximum use of all available Soviet data published on Soviet oilseeds. I obtained data from East European bloc yearbooks, Soviet annual handbooks, and commodity journals to create the tables that make up the statistical part of this oilseed compendium. The Soviets regularly publish aggregate data on oilseeds and some oilseed products. In addition, I included data from materials obtained through the information exchange channel of the United States-USSR Agricultural Cooperation Agreement, an information avenue that the Soviets have unilaterally closed even though other areas of this agreement are still functioning.

In cases where data were unavailable from published Soviet sources, I used data from the statistical yearbooks on production and trade published by the Food and Agriculture Organization of the United Nations. In instances in which data were unavailable from any source, I made estimates. Crush and meal production statistics frequently fell in this category.

If data on meal production were unavailable, estimates were made by applying traditional or derived extraction rates to the amount of oilseeds crushed annually by the Soviets. Crush totals for individual oilseeds were either available from Soviet sources or were estimated by making use of the information available on vegetable oil production. By dividing the individual vegetable oil production numbers by their respective oil extraction rates, I derived an estimate of total crush for individual oilseeds. Once crush was established, meal output could be solved for by multiplying crush by the respective meal extraction rates.

A number of assumptions had to be made in setting up the Soviet oilseed supply and utilization tables. First, it was hypothesized that Soviet initial and end stocks are usually zero from year to year. In the few cases in which the assumption of zero stocks required implausible crush rates, this assumption was dropped and nonzero stocks were introduced to assure a reasonable crush rate.

Second, the supply and utilization tables were set up so that domestic oilseed output in a given year was aligned with crush, import, and export data for the following year. Although this assumption is not totally realistic (the Soviets actually begin crushing harvested seeds in the last quarter of each year), the methodology produced remarkably good results. For example, in those cases in which official Soviet crush and meal data were compared with those estimated by this methodology, the variance typically was quite small.

In this text, forecasts for 1990 were arrived at by considering long-term linear trend projections (based upon 1955-84 data); recent 5-year averages; and factors reported in the Soviet press on disease, production incentives, and related topics that are difficult to quantify.

Appendix B—Data Sources

Despite the increasing importance of the oilseed sector in Soviet agriculture in recent years, the quantity of published data on oilseeds has decreased and its publication has become increasingly irregular. There continues to be no single Soviet statistical publication that contains more than a few columns of information on domestically produced or imported oilseeds and oilseed products. The Soviets' most important statistical annual, *Narodnoe khozyaystvo*, currently provides total area and production numbers for oilseeds and specific area and production numbers only for selected major oilseeds. It also provides limited data on vegetable oil production. Information about Soviet oilseeds of lesser importance is sometimes published in the statistical journal *Vestnik statistiki.* Aggregated oilseed area and production data are available from the Soviets' annual statistical handbook on member countries of the Council for Mutual Economic Assistance (CMEA), *Statisticheskiy ezhegodnik stran—chlenov soveta ekonomicheskoy vzaimopomoshchi.*

The Soviet trend of providing less information about agriculture began in the mid-1970's. This trend became particularly noticeable in 1981 when the Soviets began to withhold their annual grain production numbers. Soviet data on crushing and meal production for the three major oilseeds (cottonseed, soybeans, and sunflowerseed) are often available in the journal *Maslo-zhirovaya promyshlennost'*. The same source provides vegetable oil production totals, by type. Although trade data are generally available for oilseeds and vegetable oils, little trade data have been published on meal.

Appendix C—Soviet Practices on Publishing Agricultural Data

The absence of a large volume of statistical data on oilseeds in the USSR can be attributed to a general Soviet lack of concern for the need to publish comprehensive data on its agricultural sector. Official censorship, too, has reduced the flow of data to the

outside world. Since the mid-1970's, the Soviets' annual statistical economic yearbook gradually fell from 850 pages in 1975 to 630 pages in 1984. With each new edition, fewer and fewer tables appeared.

Beginning in 1981, the Soviet omission of certain agricultural data became increasingly blatant despite the existence of an agreement on exchanging information between the United States and the USSR. In the agreement, renewed in 1978 and again in 1983, the Soviets pledged to cooperate with the United States through the "regular exchange of relevant information, including forward estimates, on production, consumption, demand, and trade of major agricultural commodities." (Soviet treaty obligations are spelled out fully in the text of the United States-USSR Agricultural Cooperation Agreement, signed on June 19, 1973.)

Appendix D—List of Appendix Tables (1955-85)

Aggregate Tables

1. Oilseed area
2. Oilseed production
3. Oilseed imports
4. Oilseed exports
5. Oilseed crush
6. Oilseed meal production
7. Oilseed meal production (soybean meal equivalent)
8. Oilseed meal imports
9. Oilseed meal exports
10. Oilseed meal utilization (soybean meal equivalent)
11. Vegetable oil production
12. Vegetable oil imports
13. Vegetable oil exports
14. Vegetable oil utilization

Supply and Utilization Tables

15. Castor beans
16. Castor bean meal
17. Castor bean oil
18. Copra
19. Copra meal
20. Coconut oil
21. Cottonseed
22. Cottonseed meal
23. Cottonseed oil
24. Flaxseed
25. Linseed meal
26. Linseed oil
27. Mustardseed
28. Mustardseed meal
29. Mustardseed oil
30. Olive oil
31. Palm oil
32. Palm kernel
33. Palm kernel meal
34. Palm kernel oil
35. Peanuts
36. Peanut meal
37. Peanut oil
38. Rapeseed
39. Rapeseed meal
40. Rapeseed oil
41. Safflowerseed
42. Safflowerseed meal
43. Safflowerseed oil
44. Soybeans
45. Soybean meal
46. Soybean oil
47. Sunflowerseed
48. Sunflowerseed meal
49. Sunflowerseed oil

Appendix E—Appendix Tables

Appendix table 1—Oilseed area

Year[1]	Total area	Castor	Cottonseed	Flaxseed[2]	Mustard	Peanut	Rapeseed	Safflower	Soybean	Sunflower	Other
					1,000 hectares						
1955/56	9,303	42	2,198	1,895	270	1	69	10	270	4,238	310
1956/57	9,926	11	2,065	2,395	301	1	32	10	319	4,510	282
1957/58	8,637	7	2,092	2,141	266	1	30	10	389	3,455	246
1958/59	8,894	32	2,149	1,964	240	1	30	10	387	3,907	174
1959/60	8,737	51	2,152	1,850	185	1	15	10	455	3,896	122
1960/61	8,979	79	2,192	1,840	173	1	11	10	422	4,190	61
1961/62	9,530	73	2,335	1,875	214	1	29	10	702	4,217	74
1962/63	10,094	101	2,387	2,020	280	1	29	11	825	4,389	51
1963/64	10,095	137	2,480	1,770	360	1	12	13	885	4,393	44
1964/65	10,381	170	2,461	1,951	262	1	4	11	886	4,607	28
1965/66	10,446	179	2,442	1,784	279	1	8	14	853	4,807	79
1966/67	10,458	165	2,463	1,676	261	1	7	11	854	5,004	16
1967/68	10,164	173	2,442	1,665	234	0	9	15	850	4,776	0
1968/69	10,205	184	2,445	1,593	234	1	7	17	854	4,863	7
1969/70	10,174	175	2,550	1,577	221	1	3	13	851	4,772	11
1970/71	10,286	188	2,746	1,460	225	1	4	10	860	4,777	15
1971/72	10,095	196	2,770	1,470	259	1	6	10	868	4,498	17
1972/73	9,989	212	2,735	1,460	249	1	5	15	905	4,394	13
1973/74	10,283	206	2,742	1,470	246	1	15	10	838	4,745	10
1974/75	10,288	197	2,879	1,410	257	1	11	7	822	4,686	18
1975/76	9,673	190	2,924	1,403	256	1	13	6	811	4,045	24
1976/77	10,048	186	2,950	1,361	219	1	14	10	762	4,534	11
1977/78	10,187	181	2,992	1,362	181	1	14	8	786	4,574	88
1978/79	10,201	152	3,038	1,339	271	1	14	11	815	4,558	2
1979/80	9,948	184	3,090	1,212	268	1	11	7	838	4,334	3
1980/81	10,108	185	3,147	1,266	274	1	20	6	854	4,353	2
1981/82	9,793	139	3,168	1,057	261	1	59	6	864	4,235	3
1982/83	9,961	149	3,188	1,126	262	1	100	5	876	4,250	4
1983/84	10,048	142	3,192	1,173	274	1	144	5	842	4,266	9
1984/85	9,731	137	3,347	1,159	268	1	109	13	772	3,907	18
1985/86	9,751	134	3,316	1,100	265	1	123	11	738	4,053	10

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

[2] The Soviets use only about 10-35 percent of total area to produce flaxseed for oil; the bulk of the area is used to produce flax for fiber.

Source: See appendixes for detailed discussion of data sources.

Appendix table 2—Oilseed production

Year[1]	Total	Castor	Cottonseed	Flaxseed[2]	Mustard	Peanut	Rapeseed	Safflower	Soybean	Sunflower	Other[3]
					1,000 tons						
1955/56	7,182	16	2,550	486	59	1	66	3	151	3,797	53
1956/57	7,717	2	2,837	614	68	1	22	3	114	3,947	109
1957/58	6,379	3	2,758	516	40	1	25	3	162	2,801	70
1958/59	8,376	14	2,843	502	84	1	42	3	229	4,626	32
1959/60	6,788	11	3,042	395	20	1	11	3	224	3,019	62
1960/61	7,503	15	2,804	443	75	1	6	3	160	3,967	29
1961/62	8,670	13	2,990	440	57	1	25	3	344	4,753	44
1962/63	8,729	20	2,819	480	112	1	19	3	475	4,795	5
1963/64	8,714	35	3,454	420	47	1	6	4	450	4,285	12
1964/65	10,508	45	3,485	447	151	1	2	4	293	6,058	22
1965/66	9,563	70	3,104	449	53	1	8	3	421	5,449	5
1966/67	10,774	68	3,265	607	80	1	8	5	586	6,150	4
1967/68	11,352	82	3,487	519	95	1	9	6	543	6,608	2
1968/69	11,317	89	3,436	485	80	1	4	6	528	6,685	3
1969/70	10,488	67	3,247	344	28	1	3	5	434	6,358	1
1970/71	10,790	64	3,479	404	83	1	4	6	603	6,144	2
1971/72	10,777	70	3,961	464	66	1	6	6	535	5,663	5
1972/73	9,898	53	4,085	413	20	1	7	8	258	5,048	5
1973/74	12,821	85	4,363	407	134	1	12	4	424	7,385	6
1974/75	12,275	76	4,531	388	122	1	8	3	360	6,784	2
1975/76	11,016	52	4,807	340	33	1	9	2	780	4,990	2
1976/77	10,779	41	4,511	337	106	1	16	5	480	5,277	5
1977/78	11,480	45	4,609	300	64	1	15	4	540	5,904	-2
1978/79	11,071	43	4,669	250	121	1	15	6	634	5,333	-1
1979/80	10,682	62	4,411	254	63	1	8	3	467	5,414	-1
1980/81	10,539	31	5,082	196	64	1	14	3	525	4,618	5
1981/82	10,739	42	5,279	165	45	1	29	4	491	4,678	5
1982/83	11,358	89	5,094	150	94	1	47	4	536	5,341	2
1983/84	10,937	65	4,815	259	97	1	69	6	560	5,063	2
1984/85	10,151	58	4,740	248	37	2	55	5	469	527	10
1985/86	10,956	65	4,815	201	93	2	74	4	458	4,234	10

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

[2] About 10-35 percent of total flax production is actually crushed for oil; the bulk of flax output is used for fiber production.

[3] Negative entries are the result of rounding to the nearest 1,000 tons.

Source: See appendixes for detailed discussion of data sources.

Appendix table 3—Oilseed imports

Year[1]	Total	Castor	Copra	Cottonseed	Linseed	Mustard	Palm kernel	Peanut	Rapeseed	Sesame	Soybean	Sunflowerseed	Other[2]
						1,000 tons							
1955/56	802	24	0	0	17	0	0	182	0	6	549	0	24
1956/57	716	9	0	0	9	0	0	99	0	2	579	0	18
1957/58	552	10	0	0	7	0	0	39	0	8	478	0	10
1958/59	715	8	0	0	8	0	0	35	0	4	639	0	21
1959/60	418	8	1	0	8	0	0	21	0	6	351	0	23
1960/61	90	2	22	0	13	0	5	24	0	12	10	0	2
1961/62	57	3	10	0	4	0	4	27	0	8	0	0	1
1962/63	65	3	14	0	9	0	2	26	0	10	0	0	1
1963/64	75	1	10	0	15	0	4	29	0	12	0	0	4
1964/65	157	0	7	0	13	0	4	21	0	8	93	0	11
1965/66	49	0	6	0	9	0	8	27	0	0	0	0	-1
1966/67	45	0	3	0	3	0	4	27	0	8	0	0	0
1967/68	55	0	5	0	8	0	4	30	0	9	0	0	-1
1968/69	58	6	4	0	10	0	3	30	0	0	0	0	5
1969/70	43	0	1	0	4	0	2	27	0	9	0	0	0
1970/71	45	0	3	0	2	0	4	28	0	9	0	0	-1
1971/72	379	0	35	0	7	0	4	29	0	6	297	0	1
1972/73	768	0	28	0	7	0	2	21	0	5	705	0	0
1973/74	70	0	29	0	7	0	2	27	0	5	0	0	0
1974/75	424	0	29	0	7	0	4	27	0	8	349	0	0
1975/76	1,827	0	10	0	11	0	3	28	0	6	1,769	0	0
1976/77	1,455	0	20	0	3	0	2	40	0	5	1,384	0	1
1977/78	966	0	10	0	1	0	4	37	0	8	906	0	0
1978/79	1,814	0	10	0	1	0	2	30	0	7	1,765	0	-1
1979/80	1,155	0	15	0	1	0	3	40	0	11	1,085	0	0
1980/81	1,459	0	5	0	1	0	0	48	0	9	1,396	0	0
1981/82	1,582	0	10	0	0	0	0	53	0	0	1,506	0	13
1982/83	1,422	0	10	0	0	0	0	41	0	5	1,366	0	0
1983/84	696	6	5	0	0	0	3	60	0	7	615	0	0
1984/85	924	10	0	0	0	0	3	61	0	10	839	0	1
1985/86	1,991	20	10	0	0	0	2	59	0	0	1,900	0	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

[2] Values were derived by subtracting individual oilseed imports from aggregate levels. Rounding of import levels has resulted in negative entries in some cases.

Source: See appendixes for detailed discussion of data sources.

Appendix table 4—Oilseed exports

Year[1]	Total	Castor	Copra	Cottonseed	Linseed	Mustard	Palm kernel	Peanut	Rapeseed	Sesame	Soybean	Sunflowerseed	Other[2]
							1,000 tons						
1955/56	60	0	0	0	0	0	0	0	0	0	0	52	8
1956/57	50	0	0	0	0	0	0	0	0	0	0	49	1
1957/58	47	0	0	0	0	0	0	0	0	0	0	46	1
1958/59	83	0	0	0	0	0	0	0	0	0	0	68	15
1959/60	110	0	0	0	0	0	0	0	0	0	31	74	5
1960/61	121	0	0	0	0	0	0	0	0	0	10	84	27
1961/62	113	0	0	0	0	0	0	0	0	0	0	109	4
1962/63	101	0	0	0	0	0	0	0	0	0	0	99	2
1963/64	114	0	0	0	0	0	0	0	0	0	0	109	5
1964/65	88	0	0	0	0	0	0	0	0	0	0	84	4
1965/66	147	0	0	0	0	0	0	0	0	0	0	142	5
1966/67	341	0	0	26	0	0	0	0	0	0	0	304	11
1967/68	405	0	0	28	0	0	0	0	0	0	0	361	16
1968/69	380	0	0	35	0	0	0	0	0	0	0	345	0
1969/70	182	0	0	40	0	0	0	0	0	0	0	143	-1
1970/71	113	0	0	29	0	0	0	0	0	0	0	84	0
1971/72	99	0	0	25	0	0	0	0	0	0	0	74	0
1972/73	82	0	0	9	0	0	0	0	0	0	0	73	0
1973/74	105	0	0	42	0	0	0	0	0	0	0	63	0
1974/75	113	0	0	52	0	0	0	0	0	0	0	61	0
1975/76	103	0	0	103	0	0	0	0	0	0	0	0	0
1976/77	72	0	0	72	0	0	0	0	0	0	0	0	0
1977/78	56	0	0	47	0	0	0	0	0	0	0	0	9
1978/79	52	0	0	43	0	0	0	0	0	0	0	0	9
1979/80	37	0	0	37	0	0	0	0	0	0	0	0	0
1980/81	9	0	0	9	0	0	0	0	0	0	0	0	0
1981/82	9	0	0	9	0	0	0	0	0	0	0	0	0
1982/83	14	0	0	10	0	0	0	0	0	0	0	0	4
1983/84	10	0	0	0	0	0	0	0	0	0	0	0	10
1984/85	10	0	0	0	0	0	0	0	0	0	0	0	10
1985/86	10	0	0	0	0	0	0	0	0	0	0	0	10

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

[2] Values were derived by subtracting individual oilseed exports from aggregate levels. Rounding of import levels has resulted in negative entries in some cases.

Sources: See appendixes for detailed discussion of data sources.

Appendix table 5—Oilseed crush

Year[1]	Total	Castor	Copra	Cottonseed	Linseed	Mustard	Palm kernel	Peanut	Rapeseed	Safflower	Soybean	Sunflowerseed
						1,000 tons						
1955/56	5,611	29	0	1,911	129	31	0	147	60	3	465	2,836
1956/57	6,343	9	0	2,274	261	56	0	93	27	3	541	3,079
1957/58	5,552	14	0	2,040	235	42	0	42	34	3	567	2,575
1958/59	6,939	20	0	2,192	125	38	0	24	24	3	565	3,948
1959/60	5,277	18	1	2,080	110	26	0	25	10	3	575	2,430
1960/61	5,550	9	21	2,128	145	31	5	6	5	3	76	3,121
1961/62	6,342	22	10	2,172	138	60	4	38	23	3	165	3,709
1962/63	6,670	16	13	2,217	91	52	2	31	18	3	312	3,915
1963/64	6,815	38	10	2,602	88	52	4	34	5	4	294	3,684
1964/65	8,283	49	7	2,715	151	47	4	13	3	4	176	5,117
1965/66	8,244	62	6	2,796	201	34	7	22	8	3	229	4,876
1966/67	9,136	53	3	2,953	299	47	4	19	8	5	341	5,405
1967/68	9,472	64	5	2,925	230	55	4	25	8	6	365	5,786
1968/69	8,815	67	4	2,605	236	36	3	19	5	6	318	5,517
1969/70	8,446	53	1	2,903	135	26	2	16	3	5	194	5,110
1970/71	9,011	47	3	3,346	154	44	4	3	3	6	371	5,031
1971/72	8,982	49	33	3,672	179	23	4	3	5	6	232	4,776
1972/73	9,054	44	27	3,767	201	36	2	3	5	8	994	3,968
1973/74	10,101	73	28	3,744	135	75	2	6	10	4	153	5,872
1974/75	10,138	67	28	4,148	63	60	4	6	8	3	136	5,616
1975/76	9,306	51	10	3,984	83	39	3	3	8	2	1,814	3,695
1976/77	9,970	38	19	3,957	73	57	2	3	15	5	2,068	4,076
1977/78	9,605	36	10	4,173	52	49	4	6	10	4	1,304	4,313
1978/79	9,417	33	10	3,843	28	62	2	3	15	6	1,486	3,930
1979/80	9,261	47	14	4,112	31	42	3	3	8	3	1,285	3,714
1980/81	9,277	28	5	4,369	13	34	0	3	14	3	1,304	3,505
1981/82	9,524	36	10	4,142	13	31	0	3	29	4	1,709	3,548
1982/83	9,140	56	10	3,642	19	57	0	3	47	4	1,264	4,039
1983/84	8,927	64	5	3,450	31	52	3	3	62	6	1,386	3,866
1984/85	8,424	53	0	4,075	25	20	3	3	50	3	911	3,282
1985/86	10,363	75	10	4,141	25	50	2	3	67	4	2,011	3,975

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 6—Oilseed meal production

Year[1]	Total[2]	Castor	Copra	Cottonseed	Linseed	Mustard	Palm kernel	Peanut	Rapeseed	Safflower	Soybean	Sunflowerseed
						1,000 tons						
1955/56	2,464	23	0	835	64	18	0	57	34	2	353	1,078
1956/57	2,798	7	0	994	130	33	0	36	15	2	411	1,170
1957/58	2,491	11	0	891	117	25	0	16	19	2	430	978
1958/59	3,012	16	0	958	62	22	0	9	14	2	429	1,500
1959/60	2,371	14	0	909	55	15	0	10	6	2	436	923
1960/61	2,288	7	7	930	72	18	2	2	3	2	58	1,186
1961/62	2,640	18	3	949	69	35	2	14	13	2	125	1,409
1962/63	2,812	13	5	969	46	31	1	12	10	2	237	1,488
1963/64	2,889	30	3	1,137	44	31	2	13	3	2	223	1,400
1964/65	3,419	39	2	1,186	75	28	2	5	1	2	134	1,944
1965/66	3,439	50	2	1,222	100	20	4	8	4	2	174	1,853
1966/67	3,840	42	1	1,290	149	28	2	7	4	3	259	2,054
1967/68	3,973	51	2	1,278	115	32	2	10	4	4	277	2,199
1968/69	3,685	54	1	1,138	118	21	1	7	3	4	241	2,096
1969/70	3,494	42	0	1,269	67	15	1	6	1	3	147	1,942
1970/71	3,805	38	1	1,462	77	26	2	1	1	4	282	1,912
1971/72	3,759	39	12	1,605	89	14	2	1	3	4	176	1,815
1972/73	4,084	35	9	1,646	100	21	1	1	3	5	754	1,508
1973/74	4,175	58	10	1,636	67	44	1	2	6	2	116	2,231
1974/75	4,003	54	10	1,900	31	35	2	2	4	2	105	1,858
1975/76	4,556	41	3	1,796	48	23	1	1	4	1	1,382	1,212
1976/77	4,845	30	7	1,730	25	34	1	1	9	3	1,563	1,410
1977/78	4,407	29	3	1,770	30	29	2	2	6	2	999	1,465
1978/79	4,311	26	3	1,679	14	37	1	1	9	4	1,152	1,385
1979/80	4,241	38	5	1,797	16	25	1	1	4	2	939	1,413
1980/81	4,163	22	2	1,908	6	20	0	1	9	2	994	1,199
1981/82	4,400	29	3	1,810	6	18	0	1	16	2	1,300	1,214
1982/83	4,180	45	3	1,592	9	34	0	1	29	2	964	1,501
1983/84	4,177	25	2	1,508	15	18	1	1	35	4	1,060	1,508
1984/85	3,860	43	0	1,781	13	12	1	1	28	2	700	1,280
1985/86	5,048	60	4	1,810	12	29	1	1	38	3	1,539	1,550

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

[2] Totals may not add due to rounding.

Source: See appendixes for detailed discussion of data sources.

Appendix table 7—Oilseed meal production (soybean meal equivalent)

Year[1]	Total[2]	Copra	Cottonseed	Linseed	Palm kernel	Peanut	Rapeseed	Safflower	Soybean	Sunflowerseed
					1,000 tons					
1955/56	2,186	0	677	49	0	64	24	1	353	1,018
1956/57	2,472	0	805	99	0	40	11	1	411	1,105
1957/58	2,199	0	722	89	0	18	14	1	430	924
1958/59	2,691	0	776	47	0	11	10	1	429	1,416
1959/60	2,103	0	737	42	0	11	4	1	436	872
1960/61	1,996	3	754	55	1	3	2	1	58	1,120
1961/62	2,307	2	769	53	1	16	9	1	125	1,331
1962/63	2,486	2	785	35	0	14	7	1	237	1,405
1963/64	2,521	2	921	33	1	15	2	2	223	1,322
1964/65	2,998	1	961	57	1	5	1	2	134	1,836
1965/66	3,013	1	990	76	1	9	3	1	174	1,750
1966/67	3,378	0	1,046	113	1	8	3	2	259	1,939
1967/68	3,494	1	1,036	87	1	11	3	3	277	2,076
1968/69	3,247	1	922	90	0	8	2	3	241	1,979
1969/70	3,071	0	1,028	51	0	7	1	2	147	1,833
1970/71	3,336	0	1,185	59	1	1	1	3	282	1,805
1971/72	3,270	5	1,300	68	1	1	2	3	176	1,714
1972/73	3,600	4	1,334	76	0	1	2	4	754	1,424
1973/74	3,613	4	1,326	51	0	3	4	2	116	2,107
1974/75	3,435	4	1,540	24	1	3	3	1	105	1,754
1975/76	4,026	2	1,455	37	0	1	3	1	1,382	1,144
1976/77	4,328	3	1,402	19	0	1	6	2	1,563	1,331
1977/78	3,850	2	1,434	23	1	3	4	2	999	1,383
1978/79	3,844	2	1,361	11	0	1	6	3	1,152	1,308
1979/80	3,751	2	1,456	12	0	1	3	1	939	1,334
1980/81	3,687	1	1,546	5	0	1	6	1	994	1,132
1981/82	3,934	1	1,467	5	0	1	11	2	1,300	1,146
1982/83	3,703	1	1,290	7	0	1	20	2	964	1,417
1983/84	3,748	1	1,222	12	0	1	25	3	1,060	1,424
1984/85	3,384	0	1,443	10	0	1	20	1	700	1,208
1985/86	4,511	2	1,466	9	0	1	27	3	1,539	1,464

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

[2] Totals may not add due to rounding.

Source: See appendixes for detailed discussion of data sources.

Appendix table 8—Oilseed meal imports

Year[1]	Total	Castor	Copra	Cottonseed	Linseed	Mustard	Palm kernel	Peanut	Rapeseed	Safflower	Soybean	Sunflowerseed	Other
						1,000 tons							
1955/56	15	0	0	0	0	0	0	0	0	0	0	0	15
1956/57	15	0	0	0	0	0	0	0	0	0	0	0	15
1957/58	0	0	0	0	0	0	0	0	0	0	0	0	0
1958/59	0	0	0	0	0	0	0	0	0	0	0	0	0
1959/60	18	0	0	0	0	0	0	0	0	0	0	0	18
1960/61	0	0	0	0	0	0	0	0	0	0	0	0	0
1961/62	0	0	0	0	0	0	0	0	0	0	0	0	0
1962/63	0	0	0	0	0	0	0	0	0	0	0	0	0
1963/64	70	0	0	0	0	0	0	70	0	0	0	0	0
1964/65	88	0	0	0	0	0	0	88	0	0	0	0	0
1965/66	64	0	0	0	0	0	0	64	0	0	0	0	0
1966/67	64	0	0	0	0	0	0	64	0	0	0	0	0
1967/68	87	0	0	0	0	0	0	87	0	0	0	0	0
1968/69	75	0	0	0	0	0	0	75	0	0	0	0	0
1969/70	99	0	0	0	0	0	0	99	0	0	0	0	0
1970/71	92	0	0	0	0	0	0	92	0	0	0	0	0
1971/72	126	0	0	0	0	0	0	126	0	0	0	0	0
1972/73	106	0	0	0	0	0	0	106	0	0	0	0	0
1973/74	79	0	0	0	0	0	0	79	0	0	0	0	0
1974/75	70	0	0	0	0	0	0	70	0	0	0	0	0
1975/76	2	0	0	2	0	0	0	0	0	0	0	0	0
1976/77	39	0	0	20	0	0	0	19	0	0	0	0	0
1977/78	11	0	0	3	0	0	0	8	0	0	0	0	0
1978/79	69	0	0	4	0	0	0	0	0	0	52	13	0
1979/80	546	0	0	14	0	0	0	78	0	0	438	16	0
1980/81	737	0	0	43	0	0	0	101	0	0	583	10	0
1981/82	1,661	0	0	46	0	0	0	40	0	0	1,550	25	0
1982/83	2,394	0	0	37	0	0	0	11	0	0	2,331	15	0
1983/84	262	0	0	70	0	0	0	27	50	0	100	15	0
1984/85	636	0	0	0	0	0	0	31	55	0	550	0	0
1985/86	693	0	0	0	0	0	0	43	50	0	600	0	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 9—Oilseed meal exports

Year[1]	Total	Cottonseed	Sunflowerseed	Other
		1,000 tons		
1955/56	112	0	112	0
1956/57	193	0	193	0
1957/58	365	0	365	0
1958/59	575	0	575	0
1959/60	496	0	496	0
1960/61	386	0	386	0
1961/62	349	0	347	2
1962/63	193	0	193	0
1963/64	46	0	46	0
1964/65	129	0	129	0
1965/66	390	0	390	0
1966/67	388	0	388	0
1967/68	325	0	325	0
1968/69	321	0	321	0
1969/70	54	29	24	1
1970/71	44	29	12	3
1971/72	52	27	6	19
1972/73	44	41	3	0
1973/74	12	10	2	0
1974/75	6	5	1	0
1975/76	0	0	0	0
1976/77	20	20	0	0
1977/78	1	1	0	0
1978/79	0	0	0	0
1979/80	0	0	0	0
1980/81	0	0	0	0
1981/82	0	0	0	0
1982/83	0	0	0	0
1983/84	0	0	0	0
1984/85	0	0	0	0
1985/86	0	0	0	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 10—Oilseed meal utilization (soybean meal equivalent)

Year[1]	Total	Copra	Cottonseed	Linseed	Palm kernel	Peanut	Rapeseed	Safflower	Soybean	Sunflowerseed
					1,000 tons					
1955/56	2,080	0	677	49	0	64	24	1	353	912
1956/57	2,290	0	805	99	0	40	11	1	411	922
1957/58	1,855	0	722	89	0	18	14	1	430	579
1958/59	2,148	0	776	47	0	11	10	1	429	873
1959/60	1,635	0	737	42	0	11	4	1	436	403
1960/61	1,632	3	754	55	1	3	2	1	58	755
1961/62	1,979	2	769	53	1	16	9	1	125	1,003
1962/63	2,303	2	785	35	0	14	7	1	237	1,222
1963/64	2,556	2	921	33	1	94	2	2	223	1,279
1964/65	2,975	1	961	57	1	104	1	2	134	1,714
1965/66	2,710	1	990	76	1	81	3	1	174	1,381
1966/67	3,078	0	1,046	113	1	80	3	2	259	1,573
1967/68	3,285	1	1,036	87	1	109	3	3	277	1,769
1968/69	3,028	1	922	90	0	92	2	3	241	1,676
1969/70	3,136	0	1,004	51	0	118	1	2	147	1,811
1970/71	3,405	0	1,161	59	1	105	1	3	282	1,794
1971/72	3,384	5	1,278	68	1	143	2	3	176	1,708
1972/73	3,683	4	1,301	76	0	120	2	4	754	1,421
1973/74	3,692	4	1,318	51	0	92	4	2	116	2,105
1974/75	3,509	4	1,536	24	1	81	3	1	105	1,753
1975/76	4,027	2	1,457	37	0	1	3	1	1,382	1,144
1976/77	4,350	3	1,402	19	0	23	6	2	1,563	1,331
1977/78	3,861	2	1,436	23	1	12	4	2	999	1,383
1978/79	3,911	2	1,364	11	0	1	6	3	1,204	1,320
1979/80	4,302	2	1,467	12	0	89	3	1	1,377	1,349
1980/81	4,427	1	1,581	5	0	115	6	1	1,577	1,142
1981/82	5,590	2	1,504	5	0	46	11	2	2,850	1,170
1982/83	6,090	2	1,320	7	0	14	20	2	3,295	1,431
1983/84	3,985	1	1,278	12	0	32	61	3	1,160	1,438
1984/85	4,008	0	1,443	10	0	36	59	1	1,250	1,208
1985/86	5,195	2	1,466	9	0	50	63	3	2,139	1,464

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 11—Vegetable oil production

Year[1]	All sources	State sources	Castor	Cottonseed	Linseed	Mustard	Palm kernel	Peanut	Rapeseed	Soybean	Sunflowerseed	Other
						1,000 tons						
1955/56	1,526	1,221	13	344	41	12	0	47	24	79	936	30
1956/57	1,685	1,495	4	396	88	14	0	36	11	78	1,016	42
1957/58	1,465	1,224	6	360	78	10	0	18	14	84	860	35
1958/59	1,886	1,509	9	381	58	10	0	10	10	96	1,279	33
1959/60	1,586	1,279	8	404	35	10	0	8	4	93	1,001	23
1960/61	1,815	1,414	4	406	46	12	2	2	2	13	1,286	42
1961/62	2,114	1,647	10	427	44	23	2	12	9	28	1,528	31
1962/63	2,195	1,695	7	432	29	20	1	10	7	53	1,613	23
1963/64	2,249	1,749	17	496	28	20	2	11	2	50	1,518	105
1964/65	2,770	2,208	22	502	48	18	2	4	1	29	2,108	36
1965/66	2,732	2,290	28	530	64	13	3	7	3	39	2,009	36
1966/67	3,021	2,532	24	550	95	18	2	6	3	58	2,227	38
1967/68	3,145	2,664	29	531	73	21	2	8	3	62	2,384	32
1968/69	2,979	2,546	30	467	75	14	1	6	2	54	2,295	35
1969/70	2,784	2,344	24	495	43	10	1	5	1	30	2,146	29
1970/71	2,923	2,628	21	608	49	17	2	1	1	63	2,133	28
1971/72	2,827	2,557	22	647	57	9	2	1	2	39	2,044	4
1972/73	2,676	2,396	20	648	64	14	1	1	2	169	1,714	43
1973/74	3,411	3,101	33	668	43	29	1	2	4	26	2,560	45
1974/75	3,344	3,059	30	738	20	23	2	2	3	23	2,471	32
1975/76	2,787	2,566	23	714	26	15	1	1	3	323	1,637	44
1976/77	2,943	2,757	17	697	23	22	1	1	6	367	1,777	32
1977/78	2,967	2,766	16	722	17	19	2	2	4	221	1,932	32
1978/79	2,819	2,622	15	637	9	24	1	1	6	253	1,796	77
1979/80	2,650	2,458	21	665	10	16	1	1	3	219	1,634	80
1980/81	2,606	2,416	14	714	4	13	0	1	6	227	1,542	85
1981/82	2,629	2,430	16	660	4	12	0	1	11	284	1,561	80
1982/83	2,782	2,577	25	597	6	22	0	1	20	215	1,777	119
1983/84	2,676	2,494	29	597	10	20	1	1	25	237	1,701	55
1984/85	2,401	2,221	24	692	8	12	1	1	20	152	1,444	47
1985/86	2,945	2,724	34	704	8	12	1	1	27	360	1,749	50

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 12—Vegetable oil imports

Year[1]	Total	Coconut	Cottonseed	Linseed	Olive	Palm oil	Palm kernel	Peanut	Rapeseed	Soybean	Sunflowerseed	Other
						1,000 tons						
1955/56	96	10	0	52	0	0	0	0	0	0	5	29
1956/57	46	15	0	24	2	0	0	0	0	0	2	3
1957/58	73	12	0	39	2	0	0	0	0	0	2	18
1958/59	72	5	0	38	1	0	0	0	0	0	0	28
1959/60	59	2	0	26	2	1	0	0	0	0	2	26
1960/61	54	3	0	29	3	1	0	0	0	0	0	18
1961/62	20	8	0	8	3	1	0	0	0	0	0	0
1962/63	37	11	0	20	2	2	0	0	0	0	2	0
1963/64	43	13	0	21	5	2	0	0	0	0	0	2
1964/65	68	10	0	45	8	3	0	0	0	0	0	2
1965/66	47	17	0	21	6	3	0	0	0	0	0	0
1966/67	28	8	0	10	7	2	0	0	0	0	0	1
1967/68	41	32	0	0	7	1	0	0	0	0	0	1
1968/69	24	15	0	0	7	2	0	0	0	0	0	0
1969/70	65	23	0	30	8	0	0	0	0	0	0	4
1970/71	64	24	0	30	9	0	0	0	0	0	0	1
1971/72	60	13	0	30	7	0	0	0	0	0	0	[illegible]
1972/73	58	3	0	36	4	0	0	0	0	0	0	15
1973/74	29	6	0	10	10	3	0	0	0	0	0	0
1974/75	61	20	0	34	5	2	0	0	0	0	0	0
1975/76	129	71	0	30	9	10	0	0	8	0	0	1
1976/77	126	32	0	42	6	44	0	0	0	0	0	2
1977/78	167	51	0	59	9	41	0	0	4	3	0	0
1978/79	275	48	0	76	7	105	1	0	0	20	11	7
1979/80	446	79	0	89	12	102	12	0	0	52	52	48
1980/81	698	66	2	94	15	130	13	0	8	92	232	46
1981/82	946	89	0	80	12	265	13	0	10	201	166	110
1982/83	799	70	0	91	15	189	7	0	13	181	214	19
1983/84	776	64	0	80	19	164	10	0	13	120	178	128
1984/85	873	55	0	60	26	137	11	0	12	301	270	1
1985/86	775	60	0	65	15	215	15	0	10	110	235	50

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 13—Vegetable oil exports

Year[1]	Total	Cottonseed	Soybean	Sunflowerseed	Other[2]
			1,000 tons		
1955/56	56	0	0	49	7
1956/57	48	0	0	45	3
1957/58	52	0	0	49	3
1958/59	82	0	0	77	5
1959/60	92	0	0	86	6
1960/61	122	0	0	114	8
1961/62	152	0	0	152	0
1962/63	259	0	0	237	22
1963/64	190	0	0	169	21
1964/65	242	0	0	221	21
1965/66	456	29	0	428	-1
1966/67	707	30	0	670	7
1967/68	770	0	0	714	56
1968/69	696	0	9	656	31
1969/70	372	0	0	351	21
1970/71	408	25	3	379	1
1971/72	423	26	3	394	0
1972/73	371	0	5	342	24
1973/74	512	0	2	481	29
1974/75	416	0	0	388	28
1975/76	295	0	0	293	2
1976/77	231	0	0	231	0
1977/78	148	1	0	148	-1
1978/79	113	0	0	113	0
1979/80	124	0	0	123	1
1980/81	116	0	0	112	4
1981/82	113	0	0	109	4
1982/83	115	0	0	103	12
1983/84	110	0	0	100	10
1984/85	106	0	0	100	2
1985/86	102	0	0	100	2

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

[2] Values were derived by subtracting individual oilseed imports from aggregate levels. Rounding of import levels has resulted in negative entries in some cases.

Source: See appendixes for detailed discussion of data sources.

Appendix table 14—Vegetable oil utilization

Year[1]	Total	Castor	Coconut	Cottonseed	Linseed	Mustard	Olive	Palm	Palm kernel	Peanut	Rapeseed	Soybean	Sunflower	Other
							1,000 tons							
1955/56	1,566	13	10	344	93	12	0	0	0	47	24	79	892	52
1956/57	1,683	4	15	396	112	14	2	0	0	36	11	76	973	42
1957/58	1,486	6	12	360	117	10	2	0	0	18	14	84	813	50
1958/59	1,876	9	5	381	96	10	1	0	0	10	10	96	1,202	56
1959/60	1,553	8	3	404	61	10	2	1	0	8	4	93	917	42
1960/61	1,747	4	16	406	75	12	3	1	2	2	2	13	1,172	39
1961/62	1,982	10	14	427	52	23	3	1	2	12	9	28	1,376	25
1962/63	1,982	7	20	432	49	20	2	2	1	10	7	53	1,378	1
1963/64	2,102	17	19	496	49	20	5	2	2	11	2	50	1,349	80
1964/65	2,596	22	14	502	93	18	8	3	2	4	1	29	1,887	13
1965/66	2,323	28	21	501	85	13	6	3	3	7	3	39	1,581	33
1966/67	2,342	24	10	520	105	18	7	2	2	6	3	58	1,557	30
1967/68	2,442	29	35	531	73	21	7	1	2	8	3	62	1,670	0
1968/69	2,307	30	17	467	75	14	7	2	1	6	2	45	1,639	2
1969/70	2,477	24	24	495	73	10	8	0	1	5	1	30	1,795	11
1970/71	2,579	21	26	583	79	17	9	0	2	1	1	60	1,754	26
1971/72	2,471	22	34	621	87	9	7	0	2	1	2	36	1,650	0
1972/73	2,363	20	20	648	100	14	4	0	1	1	2	164	1,372	17
1973/74	2,930	33	24	668	53	29	10	3	1	2	4	24	2,079	0
1974/75	3,003	30	38	738	54	23	5	2	2	2	3	23	2,083	0
1975/76	2,621	23	77	714	56	15	9	10	1	1	11	323	1,344	37
1976/77	2,838	17	44	697	65	22	6	44	1	1	6	367	1,546	22
1977/78	2,986	16	57	721	76	19	9	41	2	2	8	224	1,784	27
1978/79	2,981	15	54	637	85	24	7	105	2	1	6	273	1,694	78
1979/80	2,972	21	88	665	99	16	12	102	13	1	3	271	1,563	117
1980/81	3,188	14	69	716	98	13	15	130	13	1	14	319	1,662	124
1981/82	3,462	16	95	660	84	12	12	265	13	1	21	485	1,618	180
1982/83	3,466	25	76	597	97	22	15	189	7	1	33	396	1,888	120
1983/84	3,342	29	67	597	90	20	19	164	11	1	38	357	1,779	170
1984/85	3,312	24	55	692	68	12	26	137	12	1	32	453	1,614	63
1985/86	3,614	34	66	704	73	12	15	215	16	1	37	470	1,884	87

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 15—Castor beans

Year[1]	Area	Yield	Production	Initial stocks	Imports	Supply	Exports	Crush	Crush rate	Other use	End stocks
	1,000 hectares	*Tons/ hectare*	*1,000 tons*						*Pro-portion*	*—1,000*	*tons—*
1955/56	42	0.38	16	0	24	40	0	29	0.725	11	0
1956/57	11	.18	2	0	9	11	0	9	.818	0	2
1957/58	7	.43	3	2	10	15	0	14	.933	1	0
1958/59	32	.44	14	0	8	22	0	20	.909	2	0
1959/60	51	.22	11	0	8	19	0	18	.947	1	0
1960/61	79	.19	15	0	2	17	0	9	.529	0	8
1961/62	73	.18	13	8	3	24	0	22	.917	2	0
1962/63	101	.20	20	0	3	23	0	16	.696	0	7
1963/64	137	.26	35	7	1	43	0	38	.884	0	5
1964/65	170	.26	45	5	0	50	0	49	.980	1	0
1965/66	179	.39	70	0	0	70	0	62	.886	8	0
1966/67	165	.41	68	0	0	68	0	53	.779	15	0
1967/68	173	.47	82	0	0	82	0	64	.780	18	0
1968/69	184	.48	89	0	6	95	0	67	.705	28	0
1969/70	175	.38	67	0	0	67	0	53	.791	14	0
1970/71	188	.34	64	0	0	64	0	47	.734	17	0
1971/72	196	.36	70	0	0	70	0	49	.700	21	0
1972/73	212	.25	53	0	0	53	0	44	.830	9	0
1973/74	206	.41	85	0	0	85	0	73	.859	12	0
1974/75	197	.39	76	0	0	76	0	67	.882	9	0
1975/76	190	.27	52	0	0	52	0	51	.981	1	0
1976/77	186	.22	41	0	0	41	0	38	.927	3	0
1977/78	181	.25	45	0	0	45	0	36	.800	9	0
1978/79	152	.28	43	0	0	43	0	33	.767	10	0
1979/80	184	.34	62	0	0	62	0	47	.758	13	2
1980/81	185	.17	31	2	0	33	0	28	.848	0	6
1981/82	139	.30	42	6	0	48	0	36	.750	5	12
1982/83	149	.60	89	12	0	101	0	56	.554	45	0
1983/84	142	.46	65	0	6	71	0	64	.885	10	0
1984/85	137	.42	58	0	10	68	0	53	.885	15	0
1985/86	134	.49	65	0	20	85	0	75	.885	10	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 16—Castor bean meal

Year[1]	Crush	Extraction rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*	*1,000 tons*						
1955/56	29	0.800	23	0	0	23	0	23	0
1956/57	9	.800	7	0	0	7	0	7	0
1957/58	14	.800	11	0	0	11	0	11	0
1958/59	20	.800	16	0	0	16	0	16	0
1959/60	18	.800	14	0	0	14	0	14	0
1960/61	9	.800	7	0	0	7	0	7	0
1961/62	22	.800	18	0	0	18	0	18	0
1962/63	16	.800	13	0	0	13	0	13	0
1963/64	38	.800	30	0	0	30	0	30	0
1964/65	49	.800	39	0	0	39	0	39	0
1965/66	62	.800	50	0	0	50	0	50	0
1966/67	53	.800	42	0	0	42	0	42	0
1967/68	64	.800	51	0	0	51	0	51	0
1968/69	67	.800	54	0	0	54	0	54	0
1969/70	53	.800	42	0	0	42	0	42	0
1970/71	47	.800	38	0	0	38	0	38	0
1971/72	49	.800	39	0	0	39	0	39	0
1972/73	44	.800	35	0	0	35	0	35	0
1973/74	73	.800	58	0	0	58	0	58	0
1974/75	67	.800	54	0	0	54	0	54	0
1975/76	51	.800	41	0	0	41	0	41	0
1976/77	38	.800	30	0	0	30	0	30	0
1977/78	36	.800	29	0	0	29	0	29	0
1978/79	33	.800	26	0	0	26	0	26	0
1979/80	47	.800	38	0	0	38	0	38	0
1980/81	28	.800	22	0	0	22	0	22	0
1981/82	36	.800	29	0	0	29	0	29	0
1982/83	56	.800	45	0	0	45	0	45	0
1983/84	31	.800	25	0	0	25	0	25	0
1984/85	53	.800	43	0	0	43	0	43	0
1985/86	75	.800	60	0	0	60	0	60	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 17—Castor bean oil

Year[1]	Crush	Extraction rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*	*1,000 tons*						
1955/56	29	0.450	13	0	0	13	0	13	0
1956/57	9	.450	4	0	0	4	0	4	0
1957/58	13	.450	6	0	0	6	0	6	0
1958/59	20	.450	9	0	0	9	0	9	0
1959/60	18	.450	8	0	0	8	0	8	0
1960/61	9	.450	4	0	0	4	0	4	0
1961/62	22	.450	10	0	0	10	0	10	0
1962/63	16	.450	7	0	0	7	0	7	0
1963/64	38	.450	17	0	0	17	0	17	0
1964/65	49	.450	22	0	0	22	0	22	0
1965/66	62	.450	28	0	0	28	0	28	0
1966/67	53	.450	24	0	8	32	0	32	0
1967/68	64	.450	29	0	15	44	0	44	0
1968/69	67	.450	30	0	9	39	0	39	0
1969/70	53	.450	24	0	11	35	0	35	0
1970/71	47	.450	21	0	19	40	0	40	0
1971/72	49	.450	22	0	18	40	0	40	0
1972/73	44	.450	20	0	13	33	0	33	0
1973/74	73	.450	33	0	12	45	0	45	0
1974/75	67	.450	30	0	20	50	0	50	0
1975/76	51	.450	23	0	25	48	0	48	0
1976/77	38	.450	17	0	28	45	0	45	0
1977/78	36	.450	16	0	16	32	0	32	0
1978/79	33	.450	15	0	21	36	0	36	0
1979/80	47	.450	21	0	33	54	0	54	0
1980/81	31	.450	14	0	23	37	0	37	0
1981/82	36	.450	16	0	25	41	0	41	0
1982/83	56	.450	25	0	25	50	0	50	0
1983/84	64	.450	29	0	25	54	0	54	0
1984/85	53	.450	24	0	25	49	0	49	0
1985/86	75	.450	34	0	30	64	0	64	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 18—Copra

Year[1]	Area	Yield	Production	Initial stocks	Imports	Supply	Export	Crush	Crush rate	Other use	End stocks
	1,000 hectares	*Tons/ hectare*	*1,000 tons*						*Pro-portion*	*1,000 tons*	
1955/56	0	0	0	0	0	0	0	0	0.950	0	0
1956/57	0	0	0	0	0	0	0	0	.950	0	0
1957/58	0	0	0	0	0	0	0	0	.950	0	0
1958/59	0	0	0	0	0	0	0	0	.950	0	0
1959/60	0	0	0	0	1	1	0	1	.950	0	0
1960/61	0	0	0	0	22	22	0	21	.950	1	0
1961/62	0	0	0	0	10	10	0	10	.950	0	0
1962/63	0	0	0	0	14	14	0	13	.950	1	0
1963/64	0	0	0	0	10	10	0	10	.950	1	0
1964/65	0	0	0	0	7	7	0	7	.950	0	0
1965/66	0	0	0	0	6	6	0	6	.950	0	0
1966/67	0	0	0	0	3	3	0	3	.950	0	0
1967/68	0	0	0	0	5	5	0	5	.950	0	0
1968/69	0	0	0	0	4	4	0	4	.950	0	0
1969/70	0	0	0	0	1	1	0	1	.950	0	0
1970/71	0	0	0	0	3	3	0	3	.950	0	0
1971/72	0	0	0	0	35	35	0	33	.950	2	0
1972/73	0	0	0	0	28	28	0	27	.950	1	0
1973/74	0	0	0	0	29	29	0	28	.950	1	0
1974/75	0	0	0	0	29	29	0	28	.950	1	0
1975/76	0	0	0	0	10	10	0	10	.950	0	0
1976/77	0	0	0	0	20	20	0	19	.950	1	0
1977/78	0	0	0	0	10	10	0	10	.950	0	0
1978/79	0	0	0	0	10	10	0	10	.950	0	0
1979/80	0	0	0	0	15	15	0	14	.950	1	0
1980/81	0	0	0	0	5	5	0	5	.950	0	0
1981/82	0	0	0	0	10	10	0	10	.950	0	0
1982/83	0	0	0	0	10	10	0	10	.950	0	0
1983/84	0	0	0	0	5	5	0	5	.950	0	0
1984/85	0	0	0	0	0	0	0	0	.950	0	0
1985/86	0	0	0	0	10	10	0	10	.950	0	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 19—Copra meal

Year[1]	Crush	Extraction rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*	*1,000 tons*						
1955/56	0	0.350	0	0	0	0	0	0	0
1956/57	0	.350	0	0	0	0	0	0	0
1957/58	0	.350	0	0	0	0	0	0	0
1958/59	0	.350	0	0	0	0	0	0	0
1959/60	1	.350	0	0	0	0	0	0	0
1960/61	21	.350	7	0	0	7	0	7	0
1961/62	10	.350	3	0	0	3	0	3	0
1962/63	13	.350	5	0	0	5	0	5	0
1963/64	10	.350	3	0	0	3	0	3	0
1964/65	7	.350	2	0	0	2	0	2	0
1965/66	6	.350	2	0	0	2	0	2	0
1966/67	3	.350	1	0	0	1	0	1	0
1967/68	5	.350	2	0	0	2	0	2	0
1968/69	4	.350	1	0	0	1	0	1	0
1969/70	1	.350	0	0	0	0	0	0	0
1970/71	3	.350	1	0	0	1	0	1	0
1971/72	33	.350	12	0	0	12	0	12	0
1972/73	27	.350	9	0	0	9	0	9	0
1973/74	28	.350	10	0	0	10	0	10	0
1974/75	28	.350	10	0	0	10	0	10	0
1975/76	10	.350	3	0	0	3	0	3	0
1976/77	19	.350	7	0	0	7	0	7	0
1977/78	10	.350	3	0	0	3	0	3	0
1978/79	10	.350	3	0	0	3	0	3	0
1979/80	14	.350	5	0	0	5	0	5	0
1980/81	5	.350	2	0	0	2	0	2	0
1981/82	10	.350	3	0	0	3	0	3	0
1982/83	10	.350	3	0	0	3	0	3	0
1983/84	5	.350	2	0	0	2	0	2	0
1984/85	0	.350	0	0	0	0	0	0	0
1985/86	10	.350	4	0	0	4	0	4	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 20—Coconut oil

Year[1]	Crush	Extraction rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*	*1,000 tons*						
1955/56	0	0.640	0	0	10	10	0	10	0
1956/57	0	.640	0	0	15	15	0	15	0
1957/58	0	.640	0	0	12	12	0	12	0
1958/59	0	.640	0	0	5	5	0	5	0
1959/60	1	.640	1	0	2	3	0	3	0
1960/61	21	.640	13	0	3	16	0	16	0
1961/62	10	.640	6	0	8	14	0	14	0
1962/63	13	.640	9	0	11	20	0	20	0
1963/64	10	.640	6	0	13	19	0	19	0
1964/65	7	.640	4	0	10	14	0	14	0
1965/66	6	.640	4	0	17	21	0	21	0
1966/67	3	.640	2	0	8	10	0	10	0
1967/68	5	.640	3	0	32	35	0	35	0
1968/69	4	.640	2	0	15	17	0	17	0
1969/70	1	.640	1	0	23	24	0	24	0
1970/71	3	.640	2	0	24	26	0	26	0
1971/72	33	.640	21	0	13	34	0	34	0
1972/73	27	.640	17	0	3	20	0	20	0
1973/74	28	.640	18	0	6	24	0	24	0
1974/75	28	.640	18	0	20	38	0	38	0
1975/76	10	.640	6	0	71	77	0	77	0
1976/77	19	.640	12	0	32	44	0	44	0
1977/78	10	.640	6	0	51	57	0	57	0
1978/79	10	.640	6	0	48	54	0	54	0
1979/80	14	.640	9	0	79	88	0	88	0
1980/81	5	.640	3	0	66	69	0	69	0
1981/82	10	.640	6	0	89	95	0	95	0
1982/83	10	.640	6	0	70	76	0	76	0
1983/84	5	.640	3	0	64	67	0	67	0
1984/85	0	.640	0	0	55	55	0	55	0
1985/86	10	.640	6	0	60	66	0	66	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 21—Cottonseed

Year[1]	Area	Yield	Production	Initial stocks	Imports	Supply	Exports	Crush	Crush rate	Other use	End stocks
	1,000 hectares	*Tons/ hectare*			*1,000 tons*				*Pro-portion*	*1,000 tons*	
1955/56	2,198	1.16	2,550	0	0	2,550	0	1,911	0.749	639	0
1956/57	2,065	1.37	2,837	0	0	2,837	0	2,274	.802	563	0
1957/58	2,092	1.32	2,758	0	0	2,758	0	2,040	.740	718	0
1958/59	2,149	1.32	2,843	0	0	2,843	0	2,192	.771	651	0
1959/60	2,152	1.41	3,042	0	0	3,042	0	2,080	.684	962	0
1960/61	2,192	1.28	2,804	0	0	2,804	0	2,128	.759	676	0
1961/62	2,335	1.28	2,990	0	0	2,990	0	2,172	.726	818	0
1962/63	2,387	1.18	2,819	0	0	2,819	0	2,217	.786	602	0
1963/64	2,480	1.39	3,454	0	0	3,454	0	2,602	.753	852	0
1964/65	2,461	1.42	3,485	0	0	3,485	0	2,715	.779	770	0
1965/66	2,442	1.27	3,104	0	0	3,104	0	2,796	.901	308	0
1966/67	2,463	1.33	3,265	0	0	3,265	26	2,953	.904	312	0
1967/68	2,442	1.43	3,487	0	0	3,487	28	2,925	.839	562	0
1968/69	2,445	1.41	3,436	0	0	3,401	35	2,605	.766	796	0
1969/70	2,550	1.27	3,247	0	0	3,207	40	2,903	.905	304	0
1970/71	2,746	1.27	3,479	0	0	3,450	29	3,346	.970	104	0
1971/72	2,770	1.43	3,961	0	0	3,936	25	3,672	.933	264	0
1972/73	2,735	1.49	4,085	0	0	4,076	9	3,767	.924	309	0
1973/74	2,742	1.59	4,363	0	0	4,321	42	3,744	.866	577	0
1974/75	2,879	1.57	4,531	0	0	4,479	52	4,148	.926	331	0
1975/76	2,924	1.64	4,807	0	0	4,704	103	3,984	.847	720	0
1976/77	2,950	1.53	4,511	0	0	4,439	72	3,957	.891	482	0
1977/78	2,992	1.54	4,609	0	0	4,562	47	4,173	.915	389	0
1978/79	3,038	1.54	4,669	0	0	4,626	43	3,843	831	783	0
1979/80	3,090	1.43	4,411	0	0	4,374	37	4,112	.940	262	0
1980/81	3,147	1.61	5,082	0	0	5,073	9	4,369	.861	704	0
1981/82	3,168	1.67	5,279	0	0	5,270	9	4,142	.786	1,128	0
1982/83	3,188	1.60	5,094	0	0	5,084	10	3,642	.716	1,442	0
1983/84	3,192	1.51	4,815	0	0	4,600	0	3,450	.750	1,150	0
1984/85	3,347	1.42	4,740	0	0	4,740	0	4,075	.860	665	0
1985/86	3,316	1.45	4,815	0	0	4,815	0	4,141	.860	674	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 22—Cottonseed meal

Year[1]	Crush	Extraction rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*	*1,000 tons*						
1955/56	1,911	0.437	835	0	0	835	0	835	0
1956/57	2,274	.437	994	0	0	994	0	994	0
1957/58	2,040	.437	891	0	0	891	0	891	0
1958/59	2,192	.437	958	0	0	958	0	956	0
1959/60	2,080	.437	909	0	0	909	0	909	0
1960/61	2,128	.437	930	0	0	930	0	930	0
1961/62	2,172	.437	949	0	0	949	0	949	0
1962/63	2,217	.437	969	0	0	969	0	969	0
1963/64	2,602	.437	1,137	0	0	1,137	0	1,137	0
1964/65	2,715	.437	1,186	0	0	1,186	0	1,186	0
1965/66	2,796	.437	1,222	0	0	1,222	0	1,222	0
1966/67	2,953	.437	1,290	0	0	1,290	0	1,290	0
1967/68	2,925	.437	1,278	0	0	1,278	0	1,278	0
1968/69	2,605	.437	1,138	0	0	1,138	0	1,138	0
1969/70	2,903	.437	1,269	0	0	1,211	29	1,211	0
1970/71	3,346	.437	1,462	0	0	1,404	29	1,404	0
1971/72	3,672	.437	1,605	0	0	1,551	27	1,551	0
1972/73	3,767	.437	1,646	0	0	1,564	41	1,564	0
1973/74	3,744	.437	1,636	0	0	1,616	10	1,616	0
1974/75	4,148	.437	1,900	0	0	1,890	5	1,890	0
1975/76	3,984	.451	1,796	0	2	1,798	0	1,799	0
1976/77	3,957	.437	1,730	0	20	1,710	20	1,710	0
1977/78	4,173	.424	1,770	0	3	1,771	1	1,771	0
1978/79	3,843	.437	1,679	0	4	1,683	0	1,683	0
1979/80	4,112	.437	1,797	0	14	1,811	0	1,811	0
1980/81	4,369	.437	1,908	0	43	1,951	0	1,951	0
1981/82	4,142	.437	1,810	0	46	1,856	0	1,856	0
1982/83	3,642	.437	1,592	0	37	1,629	0	1,629	0
1983/84	3,450	.437	1,508	0	70	1,578	0	1,578	0
1984/85	4,075	.437	1,781	0	0	1,781	0	1,781	0
1985/86	4,141	.437	1,810	0	0	1,810	0	1,810	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 23—Cottonseed oil

Year[1]	Crush	Extraction rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*	*1,000 tons*						
1955/56	1,911	0.180	344	0	0	344	0	344	0
1956/57	2,274	.174	396	0	0	396	0	396	0
1957/58	2,040	.176	360	0	0	360	0	360	0
1958/59	2,192	.174	381	0	0	381	0	381	0
1959/60	2,080	.194	404	0	0	404	0	404	0
1960/61	2,128	.191	406	0	0	406	0	406	0
1961/62	2,172	.197	427	0	0	427	0	427	0
1962/63	2,217	.195	432	0	0	432	0	432	0
1963/64	2,602	.191	496	0	0	496	0	496	0
1964/65	2,715	.185	502	0	0	502	0	502	0
1965/66	2,796	.190	530	0	0	501	29	501	0
1966/67	2,953	.186	550	0	0	520	30	520	0
1967/68	2,925	.182	531	0	0	531	0	531	0
1968/69	2,605	.179	467	0	0	467	0	467	0
1969/70	2,903	.171	495	0	0	495	0	495	0
1970/71	3,346	.182	608	0	0	583	25	583	0
1971/72	3,672	.176	647	0	0	621	26	621	0
1972/73	3,767	.172	648	0	0	648	0	648	0
1973/74	3,744	.178	668	0	0	668	0	668	0
1974/75	4,148	.178	738	0	0	738	0	738	0
1975/76	3,984	.179	714	0	0	714	0	714	0
1976/77	3,957	.176	697	0	0	697	0	697	0
1977/78	4,173	.173	722	0	0	721	1	721	0
1978/79	3,843	.166	637	0	0	637	0	637	0
1979/80	4,112	.162	665	0	0	665	0	665	0
1980/81	4,369	.163	714	0	2	716	0	716	0
1981/82	4,142	.159	660	0	0	660	0	660	0
1982/83	3,642	.164	597	0	0	597	0	597	0
1983/84	3,450	.173	597	0	0	597	0	597	0
1984/85	4,075	.170	692	0	0	692	0	692	0
1985/86	4,141	.170	704	0	0	704	0	704	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 24—Flaxseed

Year[1]	Area	Yield	Production	Initial stocks	Imports	Supply	Exports	Crush	Crush rate	Other use	End stocks
	1,000 hectares	*Tons/ hectare*	*1,000 tons*						*Pro-portion*	*1,000 tons*	
1955/56	1,895	0.26	486	0	17	503	0	129	0.256	374	0
1956/57	2,395	.26	614	0	9	623	0	261	.419	362	0
1957/58	2,141	.24	516	0	7	523	0	235	.449	288	0
1958/59	1,964	.26	502	0	8	510	0	125	.245	385	0
1959/60	1,850	.21	395	0	8	403	0	110	.273	293	0
1960/61	1,840	.24	443	0	13	456	0	145	.317	311	0
1961/62	1,875	.23	440	0	4	444	0	138	.312	306	0
1962/63	2,020	.24	480	0	9	489	0	91	.186	398	0
1963/64	1,770	.24	420	0	15	435	0	88	.202	347	0
1964/65	1.951	.23	447	0	13	460	0	151	.328	309	0
1965/66	1,784	.25	449	0	9	458	0	201	.439	257	0
1966/67	1,676	.36	607	0	3	610	0	299	.490	311	0
1967/68	1,665	.31	519	0	8	527	0	230	.436	297	0
1968/69	1,593	.30	485	0	10	495	0	236	.476	259	0
1969/70	1,577	.22	344	0	4	348	0	135	.389	213	0
1970/71	1,460	.28	404	0	2	406	0	154	.380	252	0
1971/72	1,470	.32	464	0	7	471	0	179	.381	292	0
1972/73	1,460	.28	413	0	7	420	0	201	.479	219	0
1973/74	1,470	.28	407	0	7	414	0	135	.327	279	0
1974/75	1,410	.28	388	0	7	395	0	63	.159	332	0
1975/76	1,403	.24	340	0	11	351	0	83	.236	268	0
1976/77	1,361	.25	337	0	3	340	0	73	.215	267	0
1977/78	1,362	.22	300	0	1	301	0	52	.173	249	0
1978/79	1,339	.19	250	0	1	251	0	28	.113	223	0
1979/80	1,212	.21	254	0	1	255	0	31	.123	224	0
1980/81	1,266	.15	196	0	1	197	0	13	.064	184	0
1981/82	1,057	.16	165	0	0	165	0	13	.076	152	0
1982/83	1,126	.13	150	0	0	150	0	19	.126	131	0
1983/84	1,173	.22	259	0	0	259	0	31	.120	228	0
1984/85	1,159	.21	248	0	0	248	0	25	.155	223	0
1985/86	1,100	.18	201	0	0	201	0	25	.124	176	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 25—Linseed meal

Year[1]	Crush	Crush rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Pro-portion*	*1,000 tons*						
1955/56	129	0.499	64	0	0	64	0	64	0
1956/57	261	.499	130	0	0	130	0	130	0
1957/58	235	.499	117	0	0	117	0	117	0
1958/59	125	.499	62	0	0	62	0	62	0
1959/60	110	.499	55	0	0	55	0	55	0
1960/61	145	.499	72	0	0	72	0	72	0
1961/62	138	.499	69	0	0	69	0	69	0
1962/63	91	.499	46	0	0	46	0	46	0
1963/64	88	.499	44	0	0	44	0	44	0
1964/65	151	.499	75	0	0	75	0	75	0
1965/66	201	.499	100	0	0	100	0	100	0
1966/67	299	.499	149	0	0	149	0	149	0
1967/68	230	.499	115	0	0	115	0	115	0
1968/69	236	.499	118	0	0	118	0	118	0
1969/70	135	.499	67	0	0	67	0	67	0
1970/71	154	.499	77	0	0	77	0	77	0
1971/72	179	.499	89	0	0	89	0	89	0
1972/73	201	.499	100	0	0	100	0	100	0
1973/74	135	.499	67	0	0	67	0	67	0
1974/75	63	.499	31	0	0	31	0	31	0
1975/76	83	.578	48	0	0	48	0	48	0
1976/77	73	.342	25	0	0	25	0	25	0
1977/78	52	.577	30	0	0	30	0	30	0
1978/79	28	.499	14	0	0	14	0	14	0
1979/80	31	.499	16	0	0	16	0	16	0
1980/81	13	.499	6	0	0	6	0	6	0
1981/82	13	.499	6	0	0	6	0	6	0
1982/83	19	.499	9	0	0	9	0	9	0
1983/84	31	.499	15	0	0	15	0	15	0
1984/85	25	.499	13	0	0	13	0	13	0
1985/86	25	.499	12	0	0	12	0	12	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 26—Linseed oil

Year[1]	Crush	Extraction rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Pro-portion*	*1,000 tons*						
1955/56	129	0.318	41	0	52	93	0	93	0
1956/57	261	.337	88	0	24	112	0	112	0
1957/58	235	.332	78	0	39	117	0	117	0
1958/59	125	.464	58	0	38	96	0	96	0
1959/60	110	.318	35	0	26	61	0	61	0
1960/61	145	.318	46	0	29	75	0	75	0
1961/62	138	.318	44	0	8	52	0	52	0
1962/63	91	.318	29	0	20	49	0	49	0
1963/64	88	.318	28	0	21	49	0	49	0
1964/65	151	.318	48	0	45	93	0	93	0
1965/66	201	.318	64	0	21	85	0	85	0
1966/67	299	.318	95	0	10	105	0	105	0
1967/68	230	.318	73	0	0	73	0	73	0
1968/69	236	.318	75	0	0	75	0	75	0
1969/70	135	.318	43	0	30	73	0	75	0
1970/71	154	.318	49	0	30	79	0	79	0
1971/72	179	.318	57	0	30	87	0	87	0
1972/73	201	.318	64	0	36	100	0	100	0
1973/74	135	.318	43	0	10	53	0	53	0
1974/75	63	.318	20	0	34	54	0	54	0
1975/76	83	.313	26	0	30	56	0	56	0
1976/77	73	.315	23	0	42	65	0	65	0
1977/78	52	.327	17	0	59	76	0	76	0
1978/79	28	.318	9	0	76	85	0	85	0
1979/80	31	.318	10	0	89	99	0	99	0
1980/81	13	.318	4	0	94	98	0	98	0
1981/82	13	.318	4	0	80	84	0	84	0
1982/83	19	.318	6	0	91	97	0	97	0
1983/84	31	.318	10	0	80	90	0	90	0
1984/85	25	.318	8	0	60	68	0	68	0
1985/86	25	.318	8	0	65	73	0	73	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data soures.

Appendix table 27—Mustardseed

Year[1]	Area	Yield	Production	Initial stocks	Imports	Supply	Exports	Crush	Crush rate	Other use	End stocks
	1,000 hectares	*Tons/ hectare*	*1,000 tons*						*Pro-portion*	*1,000 tons*	
1955/56	270	0.22	59	0	0	59	0	31	0.525	28	0
1956/57	301	.23	68	0	0	68	0	56	.824	2	10
1957/58	266	.15	40	10	0	50	0	42	.840	8	0
1958/59	240	.35	84	0	0	84	0	38	.452	40	18
1959/60	185	.11	20	18	0	38	0	26	.684	12	0
1960/61	173	.43	75	0	0	75	0	31	.413	15	29
1961/62	214	.27	57	29	0	86	0	60	.698	26	0
1962/63	280	.40	112	0	0	112	0	52	.464	32	28
1963/64	360	.13	47	28	0	75	0	52	.693	23	0
1964/65	262	.58	151	0	0	151	0	47	.311	104	0
1965/66	279	.19	53	0	0	53	0	34	.642	19	0
1966/67	261	.31	80	0	0	80	0	47	.588	33	0
1967/68	234	.41	95	0	0	95	0	55	.579	40	0
1968/69	234	.34	80	0	0	80	0	36	.450	34	10
1969/70	221	.13	28	10	0	38	0	26	.684	12	0
1970/71	225	.37	83	0	0	83	0	44	.530	36	3
1971/72	259	.25	66	3	0	69	0	23	.333	14	32
1972/73	249	.08	20	32	0	52	0	36	.692	16	0
1973/74	246	.54	134	0	0	134	0	75	.560	59	0
1974/75	257	.47	122	0	0	122	0	60	.492	39	23
1975/76	256	.13	33	23	0	56	0	39	.696	17	0
1976/77	219	.48	106	0	0	106	0	57	.538	42	7
1977/78	181	.35	64	7	0	71	0	49	.690	22	0
1978/79	271	.45	121	0	0	121	0	62	.512	59	0
1979/80	268	.24	63	0	0	63	0	42	.667	21	0
1980/81	274	.23	64	0	0	64	0	34	.531	30	0
1981/82	261	.17	45	0	0	45	0	31	.689	14	0
1982/83	262	.36	94	0	0	94	0	57	.608	37	0
1983/84	274	.35	97	0	0	97	0	52	.536	45	0
1984/85	268	.14	37	0	0	37	0	20	.536	17	0
1985/86	265	.35	93	0	0	93	0	50	.536	43	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 28—Mustardseed meal

Year[1]	Crush	Crush rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*	*1,000 tons*						
1955/56	31	0.590	18	0	0	18	0	18	0
1956/57	56	.589	33	0	0	33	0	33	0
1957/58	42	.595	25	0	0	25	0	25	0
1958/59	38	.579	22	0	0	22	0	22	0
1959/60	26	.590	15	0	0	15	0	15	0
1960/61	31	.590	18	0	0	18	0	18	0
1961/62	60	.590	35	0	0	35	0	35	0
1962/63	52	.590	31	0	0	31	0	31	0
1963/64	52	.590	31	0	0	31	0	31	0
1964/65	47	.590	28	0	0	28	0	28	0
1965/66	34	.590	20	0	0	20	0	20	0
1966/67	47	.590	28	0	0	28	0	28	0
1967/68	55	.590	32	0	0	32	0	32	0
1968/69	36	.590	21	0	0	21	0	21	0
1969/70	26	.590	15	0	0	15	0	15	0
1970/71	44	.590	26	0	0	26	0	26	0
1971/72	23	.590	14	0	0	14	0	14	0
1972/73	36	.590	21	0	0	21	0	21	0
1973/74	75	.590	44	0	0	44	0	44	0
1974/75	60	.590	35	0	0	35	0	35	0
1975/76	39	.590	23	0	0	23	0	23	0
1976/77	57	.590	34	0	0	34	0	34	0
1977/78	49	.590	29	0	0	29	0	29	0
1978/79	62	.590	37	0	0	37	0	37	0
1979/80	42	.590	25	0	0	25	0	25	0
1980/81	34	.590	20	0	0	20	0	20	0
1981/82	31	.590	18	0	0	18	0	18	0
1982/83	57	.590	34	0	0	34	0	34	0
1983/84	31	.590	18	0	0	18	0	18	0
1984/85	20	.590	12	0	0	12	0	12	0
1985/86	50	.590	29	0	0	29	0	29	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 29—Mustardseed oil

Year[1]	Crush	Crush rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*	*1,000 tons*						
1955/56	31	0.385	12	0	0	12	0	12	0
1956/57	56	.250	14	0	0	14	0	14	0
1957/58	42	.238	10	0	0	10	0	10	0
1958/59	38	.263	10	0	0	10	0	10	0
1959/60	26	.385	10	0	0	10	0	10	0
1960/61	31	.385	12	0	0	12	0	12	0
1961/62	60	.385	23	0	0	23	0	23	0
1962/63	52	.385	20	0	0	20	0	20	0
1963/64	52	.385	20	0	0	20	0	20	0
1964/65	47	.385	18	0	0	18	0	18	0
1965/66	34	.385	13	0	0	13	0	13	0
1966/67	47	.385	18	0	0	18	0	18	0
1967/68	55	.385	21	0	0	21	0	21	0
1968/69	36	.385	14	0	0	14	0	14	0
1969/70	26	.385	10	0	0	10	0	10	0
1970/71	44	.385	17	0	0	17	0	17	0
1971/72	23	.385	9	0	0	9	0	9	0
1972/73	36	.385	14	0	0	14	0	14	0
1973/74	75	.385	29	0	0	29	0	29	0
1974/75	60	.385	23	0	0	23	0	23	0
1975/76	39	.385	15	0	0	15	0	15	0
1976/77	57	.385	22	0	0	22	0	22	0
1977/78	49	.385	19	0	0	19	0	19	0
1978/79	62	.385	24	0	0	24	0	24	0
1979/80	42	.385	16	0	0	16	0	16	0
1980/81	34	.385	13	0	0	13	0	13	0
1981/82	31	.385	12	0	0	12	0	12	0
1982/83	57	.385	22	0	0	22	0	22	0
1983/84	31	.385	20	0	0	20	0	20	0
1984/85	20	.385	12	0	0	12	0	12	0
1985/86	50	.385	12	0	0	12	0	12	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 30—Olive oil

Year[1]	Crush	Crush rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Pro-portion*	*1,000 tons*						
1955/56	0	0	0	0	0	0	0	0	0
1956/57	0	0	0	0	2	2	0	2	0
1957/58	0	0	0	0	2	2	0	2	0
1958/59	0	0	0	0	1	1	0	1	0
1959/60	0	0	0	0	2	2	0	2	0
1960/61	0	0	0	0	3	3	0	3	0
1961/62	0	0	0	0	3	3	0	3	0
1962/63	0	0	0	0	2	2	0	2	0
1963/64	0	0	0	0	5	5	0	5	0
1964/65	0	0	0	0	8	8	0	8	0
1965/66	0	0	0	0	6	6	0	6	0
1966/67	0	0	0	0	7	7	0	7	0
1967/68	0	0	0	0	7	7	0	7	0
1968/69	0	0	0	0	7	7	0	7	0
1969/70	0	0	0	0	8	8	0	8	0
1970/71	0	0	0	0	9	9	0	9	0
1971/72	0	0	0	0	7	7	0	7	0
1972/73	0	0	0	0	4	4	0	4	0
1973/74	0	0	0	0	10	10	0	10	0
1974/75	0	0	0	0	5	5	0	5	0
1975/76	0	0	0	0	9	9	0	9	0
1976/77	0	0	0	0	6	6	0	6	0
1977/78	0	0	0	0	9	9	0	9	0
1978/79	0	0	0	0	7	7	0	7	0
1979/80	0	0	0	0	12	12	0	12	0
1980/81	0	0	0	0	15	15	0	15	0
1981/82	0	0	0	0	12	12	0	12	0
1982/83	0	0	0	0	15	15	0	15	0
1983/84	0	0	0	0	19	19	0	19	0
1984/85	0	0	0	0	26	26	0	26	0
1985/86	0	0	0	0	15	15	0	15	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 31—Palm oil

Year[1]	Crush	Crush rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*	*1,000 tons*						
1955/56	0	0	0	0	0	0	0	0	0
1956/57	0	0	0	0	0	0	0	0	0
1957/58	0	0	0	0	0	0	0	0	0
1958/59	0	0	0	0	0	0	0	0	0
1959/60	0	0	0	0	1	1	0	1	0
1960/61	0	0	0	0	1	1	0	1	0
1961/62	0	0	0	0	1	1	0	1	0
1962/63	0	0	0	0	2	2	0	2	0
1963/64	0	0	0	0	2	2	0	2	0
1964/65	0	0	0	0	3	3	0	3	0
1965/66	0	0	0	0	3	3	0	3	0
1966/67	0	0	0	0	2	2	0	2	0
1967/68	0	0	0	0	1	1	0	1	0
1968/69	0	0	0	0	2	2	0	2	0
1969/70	0	0	0	0	0	0	0	0	0
1970/71	0	0	0	0	0	0	0	0	0
1971/72	0	0	0	0	0	0	0	0	0
1972/73	0	0	0	0	0	0	0	0	0
1973/74	0	0	0	0	3	3	0	3	0
1974/75	0	0	0	0	2	2	0	2	0
1975/76	0	0	0	0	10	10	0	10	0
1976/77	0	0	0	0	44	44	0	44	0
1977/78	0	0	0	0	41	41	0	41	0
1978/79	0	0	0	0	105	105	0	105	0
1979/80	0	0	0	0	102	102	0	102	0
1980/81	0	0	0	0	130	130	0	130	0
1981/82	0	0	0	0	265	265	0	265	0
1982/83	0	0	0	0	189	189	0	189	0
1983/84	0	0	0	0	164	164	0	164	0
1984/85	0	0	0	0	137	137	0	137	0
1985/86	0	0	0	0	215	215	0	215	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 32—Palm kernel

Year[1]	Area	Yield	Production	Initial stocks	Imports	Supply	Exports	Crush	Crush rate	Other use	End stocks
	1,000 hectares	*Tons/ hectare*	*1,000 tons*						*Pro-portion*	*1,000 tons*	
1955/56	0	0	0	0	0	0	0	0	0.900	0	0
1956/57	0	0	0	0	0	0	0	0	.900	0	0
1957/58	0	0	0	0	0	0	0	0	.900	0	0
1958/59	0	0	0	0	0	0	0	0	.900	0	0
1959/60	0	0	0	0	0	0	0	0	.900	0	0
1960/61	0	0	0	0	5	5	0	5	.900	0	0
1961/62	0	0	0	0	4	4	0	4	.900	0	0
1962/63	0	0	0	0	2	2	0	2	.900	0	0
1963/64	0	0	0	0	4	4	0	4	.900	0	0
1964/65	0	0	0	0	4	4	0	4	.900	0	0
1965/66	0	0	0	0	8	8	0	7	.900	1	0
1966/67	0	0	0	0	4	4	0	4	.900	0	0
1967/68	0	0	0	0	4	4	0	4	.900	0	0
1968/69	0	0	0	0	3	3	0	3	.900	0	0
1969/70	0	0	0	0	2	2	0	2	.900	0	0
1970/71	0	0	0	0	4	4	0	4	.900	0	0
1971/72	0	0	0	0	4	4	0	4	.900	0	0
1972/73	0	0	0	0	2	2	0	2	.900	0	0
1973/74	0	0	0	0	2	2	0	2	.900	0	0
1974/75	0	0	0	0	4	4	0	4	.900	0	0
1975/76	0	0	0	0	3	3	0	3	.900	0	0
1976/77	0	0	0	0	2	2	0	2	.900	0	0
1977/78	0	0	0	0	4	4	0	4	.900	0	0
1978/79	0	0	0	0	2	2	0	2	.900	0	0
1979/80	0	0	0	0	3	3	0	3	.900	0	0
1980/81	0	0	0	0	0	0	0	0	.900	0	0
1981/82	0	0	0	0	0	0	0	0	.900	0	0
1982/83	0	0	0	0	0	0	0	0	.900	0	0
1983/84	0	0	0	0	3	3	0	3	.900	0	0
1984/85	0	0	0	0	3	3	0	3	.900	0	0
1985/86	0	0	0	0	2	2	0	2	.900	0	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 33—Palm kernel meal

Year[1]	Crush	Extraction rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*	*1,000 tons*						
1955/56	0	0.510	0	0	0	0	0	0	0
1956/57	0	.510	0	0	0	0	0	0	0
1957/58	0	.510	0	0	0	0	0	0	0
1958/59	0	.510	0	0	0	0	0	0	0
1959/60	0	.510	0	0	0	0	0	0	0
1960/61	5	.510	2	0	0	2	0	2	0
1961/62	4	.510	2	0	0	2	0	2	0
1962/63	2	.510	1	0	0	1	0	1	0
1963/64	4	.510	2	0	0	2	0	2	0
1964/65	4	.510	2	0	0	2	0	2	0
1965/66	7	.510	4	0	0	4	0	4	0
1966/67	4	.510	2	0	0	2	0	2	0
1967/68	4	.510	2	0	0	2	0	2	0
1968/69	3	.510	1	0	0	1	0	1	0
1969/70	2	.510	1	0	0	1	0	1	0
1970/71	4	.510	2	0	0	2	0	2	0
1971/72	4	.510	2	0	0	2	0	2	0
1972/73	2	.510	1	0	0	1	0	1	0
1973/74	2	.510	1	0	0	1	0	1	0
1974/75	4	.510	2	0	0	2	0	2	0
1975/76	3	.510	1	0	0	1	0	1	0
1976/77	2	.510	1	0	0	1	0	1	0
1977/78	4	.510	2	0	0	2	0	2	0
1978/79	2	.510	1	0	0	1	0	1	0
1979/80	3	.510	1	0	0	1	0	1	0
1980/81	0	.510	0	0	0	0	0	0	0
1981/82	0	.510	0	0	0	0	0	0	0
1982/83	0	.510	0	0	0	0	0	0	0
1983/84	3	.510	1	0	0	1	0	1	0
1984/85	3	.510	1	0	0	1	0	1	0
1985/86	2	.510	1	0	0	1	0	1	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 34—Palm kernel oil

Year[1]	Crush	Extraction rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*	*1,000 tons*						
1955/56	0	0.470	0	0	0	0	0	0	0
1956/57	0	.470	0	0	0	0	0	0	0
1957/58	0	.470	0	0	0	0	0	0	0
1958/59	0	.470	0	0	0	0	0	0	0
1959/60	0	.470	0	0	0	0	0	0	0
1960/61	5	.470	2	0	0	2	0	2	0
1961/62	4	.470	2	0	0	2	0	2	0
1962/63	2	.470	1	0	0	1	0	1	0
1963/64	4	.470	2	0	0	2	0	2	0
1964/65	4	.470	2	0	0	2	0	2	0
1965/66	7	.470	3	0	0	3	0	3	0
1966/67	4	.470	2	0	0	2	0	2	0
1967/68	4	.470	2	0	0	2	0	2	0
1968/69	3	.470	1	0	0	1	0	1	0
1969/70	2	.470	1	0	0	1	0	1	0
1970/71	4	.470	2	0	0	2	0	2	0
1971/72	4	.470	2	0	0	2	0	2	0
1972/73	2	.470	1	0	0	1	0	1	0
1973/74	2	.470	1	0	0	1	0	1	0
1974/75	4	.470	2	0	0	2	0	2	0
1975/76	3	.470	1	0	0	1	0	1	0
1976/77	2	.470	1	0	0	1	0	1	0
1977/78	4	.470	2	0	0	2	0	2	0
1978/79	2	.470	1	0	1	2	0	2	0
1979/80	3	.470	1	0	12	13	0	13	0
1980/81	0	.470	0	0	13	13	0	13	0
1981/82	0	.470	0	0	13	13	0	13	0
1982/83	0	.470	0	0	7	7	0	7	0
1983/84	3	.470	1	0	10	11	0	11	0
1984/85	3	.470	1	0	11	12	0	12	0
1985/86	2	.470	1	0	15	16	0	16	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 35—Peanuts

Year[1]	Area	Yield	Production	Initial stocks	Imports	Supply	Exports	Crush	Crush rate	Other use	End stocks
	1,000 hectares	*Tons/ hectare*	*1,000 tons*						*Pro-portion*	*1,000 tons*	
1955/56	1	1.00	1	0	182	183	0	147	0.803	35	1
1956/57	1	1.00	1	0	99	100	0	93	.930	1	6
1957/58	1	1.00	1	5	39	45	0	42	.932	2	1
1958/59	1	1.00	1	0	35	36	0	24	.678	2	10
1959/60	1	1.00	1	9	21	31	0	25	.806	5	1
1960/61	1	1.00	1	0	24	25	0	6	.250	5	14
1961/62	1	1.00	1	13	27	41	0	38	.915	0	4
1962/63	1	1.00	1	13	26	40	0	31	.781	0	9
1963/64	1	1.00	1	8	29	38	0	34	.905	0	4
1964/65	1	1.00	1	3	21	25	0	13	.500	9	4
1965/66	1	1.00	1	0	27	28	0	22	.781	6	0
1966/67	1	1.00	1	0	27	28	0	19	.670	9	0
1967/68	0	0.00	1	0	30	31	0	25	.806	6	0
1968/69	1	1.00	1	0	30	31	0	19	.605	12	0
1969/70	1	1.00	1	0	27	28	0	16	.558	12	0
1970/71	1	1.00	1	0	28	29	0	3	.108	26	0
1971/72	1	1.00	1	0	29	30	0	3	.104	27	0
1972/73	1	1.00	1	0	21	22	0	3	.142	19	0
1973/74	1	1.00	1	0	27	28	0	6	.223	22	0
1974/75	1	1.00	1	0	27	28	0	6	.223	22	0
1975/76	1	1.00	1	0	28	29	0	3	.108	26	0
1976/77	1	1.00	1	0	40	41	0	3	.076	38	0
1977/78	1	1.00	1	0	37	38	0	6	.164	32	0
1978/79	1	1.00	1	0	30	31	0	3	.101	28	0
1979/80	1	1.00	1	0	40	41	0	3	.076	38	0
1980/81	1	1.00	1	0	48	49	0	3	.064	46	0
1981/82	1	1.00	1	0	53	54	0	3	.058	51	0
1982/83	1	1.00	1	0	41	42	0	3	.074	39	0
1983/84	1	1.00	1	0	60	61	0	3	.051	58	0
1984/85	1	2.00	2	0	61	63	0	3	.050	60	0
1985/86	1	2.00	2	0	59	61	0	3	.051	58	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 36—Peanut meal

Year[1]	Crush	Extraction rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*	*1,000 tons*						
1955/56	147	0.385	57	0	0	57	0	57	0
1956/57	93	.385	36	0	0	36	0	36	0
1957/58	42	.385	16	0	0	16	0	16	0
1958/59	24	.385	9	0	0	9	0	9	0
1959/60	25	.385	10	0	0	10	0	10	0
1960/61	6	.385	2	0	0	2	0	2	0
1961/62	38	.385	14	0	0	14	0	14	0
1962/63	31	.385	12	0	0	12	0	12	0
1963/64	34	.385	13	0	70	83	0	83	0
1964/65	13	.385	5	0	88	93	0	93	0
1965/66	22	.385	8	0	64	72	0	72	0
1966/67	19	.385	7	0	64	71	0	71	0
1967/68	25	.385	10	0	87	97	0	97	0
1968/69	19	.385	7	0	75	82	0	82	0
1969/70	16	.385	6	0	99	105	0	105	0
1970/71	3	.385	1	0	92	93	0	93	0
1971/72	3	.385	1	0	126	127	0	127	0
1972/73	3	.385	1	0	106	107	0	107	0
1973/74	6	.385	2	0	79	81	0	81	0
1974/75	6	.385	2	0	70	72	0	72	0
1975/76	3	.385	1	0	0	1	0	1	0
1976/77	3	.385	1	0	19	20	0	20	0
1977/78	6	.385	2	0	8	10	0	10	0
1978/79	3	.385	1	0	0	1	0	1	0
1979/80	3	.385	1	0	78	79	0	79	0
1980/81	3	.385	1	0	101	102	0	102	0
1981/82	3	.385	1	0	40	41	0	41	0
1982/83	3	.385	1	0	11	12	0	12	0
1983/84	3	.385	1	0	27	28	0	28	0
1984/85	3	.385	1	0	31	32	0	32	0
1985/86	3	.385	1	0	43	44	0	44	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 37—Peanut oil

Year[1]	Crush	Extraction rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*	*1,000 tons*						
1955/56	147	0.320	47	0	0	47	0	47	0
1956/57	93	.387	36	0	0	36	0	36	0
1957/58	42	.429	18	0	0	18	0	18	0
1958/59	24	.410	10	0	0	10	0	10	0
1959/60	25	.320	8	0	0	8	0	8	0
1960/61	6	.320	2	0	0	2	0	2	0
1961/62	38	.320	12	0	0	12	0	12	0
1962/63	31	.320	10	0	0	10	0	10	0
1963/64	34	.320	11	0	0	11	0	11	0
1964/65	13	.320	4	0	0	4	0	4	0
1965/66	22	.320	7	0	0	7	0	7	0
1966/67	19	.320	6	0	0	6	0	6	0
1967/68	25	.320	8	0	0	8	0	8	0
1968/69	19	.320	6	0	0	6	0	6	0
1969/70	16	.320	5	0	0	5	0	5	0
1970/71	3	.320	1	0	0	1	0	1	0
1971/72	3	.320	1	0	0	1	0	1	0
1972/73	3	.320	1	0	0	1	0	1	0
1973/74	6	.320	2	0	0	2	0	2	0
1974/75	6	.320	2	0	0	2	0	2	0
1975/76	3	.320	1	0	0	1	0	1	0
1976/77	3	.320	1	0	0	1	0	1	0
1977/78	6	.320	2	0	0	2	0	2	0
1978/79	3	.320	1	0	0	1	0	1	0
1979/80	3	.320	1	0	0	1	0	1	0
1980/81	3	.320	1	0	0	1	0	1	0
1981/82	3	.320	1	0	0	1	0	1	0
1982/83	3	.320	1	0	0	1	0	1	0
1983/84	3	.320	1	0	0	1	0	1	0
1984/85	3	.320	1	0	0	1	0	1	0
1985/86	3	.320	1	0	0	1	0	1	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 38—Rapeseed

Year[1]	Area	Yield	Production	Initial stocks	Imports	Supply	Exports	Crush	Crush rate	Other use	End stocks
	1,000 hectares	*Tons/ hectare*	*1,000 tons*						*Proportion*	*1,000 tons*	
1955/56	69	0.96	66	10	0	76	0	60	0.789	0	16
1956/57	32	.69	22	17	0	39	0	27	.692	1	11
1957/58	30	.83	25	11	0	36	0	34	.944	2	0
1958/59	30	1.40	42	0	0	42	0	24	.571	18	0
1959/60	15	.73	11	0	0	11	0	10	.909	1	0
1960/61	11	.55	6	0	0	6	0	5	.833	1	0
1961/62	29	.86	25	0	0	25	0	23	.900	2	0
1962/63	29	.66	19	0	0	19	0	18	.921	1	0
1963/64	12	.50	6	0	0	6	0	5	.833	0	1
1964/65	4	.50	2	1	0	3	0	3	1.000	0	0
1965/66	8	1.00	8	0	0	8	0	8	1.000	0	0
1966/67	7	1.14	8	0	0	8	0	8	1.000	0	0
1967/68	9	1.00	9	0	0	9	0	8	.833	0	1
1968/69	7	.57	4	1	0	5	0	5	1.000	0	0
1969/70	3	1.00	3	0	0	3	0	3	1.000	0	0
1970/71	4	1.00	4	0	0	4	0	3	.625	1	0
1971/72	6	1.00	6	0	0	6	0	5	.833	1	0
1972/73	5	1.40	7	0	0	7	0	5	.714	2	0
1973/74	15	.80	12	0	0	12	0	10	.833	2	0
1974/75	11	.73	8	0	0	8	0	8	1.000	0	0
1975/76	13	.69	9	0	0	9	0	8	.833	1	0
1976/77	14	1.14	16	0	0	16	0	15	.938	1	0
1977/78	14	1.07	15	0	0	15	0	10	.667	5	0
1978/79	14	1.07	15	0	0	15	0	15	1.000	0	0
1979/80	11	.73	8	0	0	8	0	8	1.000	0	0
1980/81	20	.70	14	0	0	14	0	14	1.000	0	0
1981/82	59	.49	29	3	0	32	0	29	.906	0	4
1982/83	100	.47	47	4	0	51	0	47	.922	4	0
1983/84	144	.48	69	0	0	69	0	62	.900	7	0
1984/85	109	.50	55	0	0	55	0	50	.900	6	0
1985/86	123	.60	74	0	0	74	0	67	.900	7	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 39—Rapeseed meal

Year[1]	Crush	Extraction rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*	*1,000 tons*						
1955/56	60	0.570	34	0	0	34	0	34	0
1956/57	27	.570	15	0	0	15	0	15	0
1957/58	34	.570	19	0	0	19	0	19	0
1958/59	24	.570	14	0	0	14	0	14	0
1959/60	10	.570	6	0	0	6	0	6	0
1960/61	5	.570	3	0	0	3	0	3	0
1961/62	23	.570	13	0	0	13	0	13	0
1962/63	18	.570	10	0	0	10	0	10	0
1963/64	5	.570	3	0	0	3	0	3	0
1964/65	3	.570	1	0	0	1	0	1	0
1965/66	8	.570	4	0	0	4	0	4	0
1966/67	8	.570	4	0	0	4	0	4	0
1967/68	8	.570	4	0	0	4	0	4	0
1968/69	5	.570	3	0	0	3	0	3	0
1969/70	3	.570	1	0	0	1	0	1	0
1970/71	3	.570	1	0	0	1	0	1	0
1971/72	5	.570	3	0	0	3	0	3	0
1972/73	5	.570	3	0	0	3	0	3	0
1973/74	10	.570	6	0	0	6	0	6	0
1974/75	8	.570	4	0	0	4	0	4	0
1975/76	8	.570	4	0	0	4	0	4	0
1976/77	15	.570	9	0	0	9	0	9	0
1977/78	10	.570	6	0	0	6	0	6	0
1978/79	15	.570	9	0	0	9	0	9	0
1979/80	8	.570	4	0	0	4	0	4	0
1980/81	15	.570	9	0	0	9	0	9	0
1981/82	28	.570	16	0	0	16	0	16	0
1982/83	50	.570	29	0	0	29	0	29	0
1983/84	62	.570	35	0	50	85	0	85	0
1984/85	50	.570	28	0	55	83	0	83	0
1985/86	67	.570	38	0	50	88	0	88	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 40—Rapeseed oil

Year[1]	Crush	Extraction rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*	*1,000 tons*						
1955/56	60	0.400	24	0	0	24	0	24	0
1956/57	27	.407	11	0	0	11	0	11	0
1957/58	34	.412	14	0	0	14	0	14	0
1958/59	24	.417	10	0	0	10	0	10	0
1959/60	10	.400	4	0	0	4	0	4	0
1960/61	5	.400	2	0	0	2	0	2	0
1961/62	23	.400	9	0	0	9	0	9	0
1962/63	18	.400	7	0	0	7	0	7	0
1963/64	5	.400	2	0	0	2	0	2	0
1964/65	3	.400	1	0	0	1	0	1	0
1965/66	8	.400	3	0	0	3	0	3	0
1966/67	8	.400	3	0	0	3	0	3	0
1967/68	8	.400	3	0	0	3	0	3	0
1968/69	5	.400	2	0	0	2	0	2	0
1969/70	3	.400	1	0	0	1	0	1	0
[illegible]/71	3	.400	1	0	0	1	0	1	0
[illegible]/72	5	.400	2	0	0	2	0	2	0
1972/73	5	.400	2	0	0	2	0	2	0
1973/74	10	.400	4	0	0	4	0	4	0
1974/75	8	.400	3	0	0	3	0	3	0
1975/76	8	.400	3	0	8	11	0	11	0
1976/77	15	.400	6	0	0	6	0	6	0
1977/78	10	.400	4	0	4	8	0	8	0
1978/79	15	.400	6	0	0	6	0	6	0
1979/80	8	.400	3	0	0	3	0	3	0
1980/81	15	.400	6	0	8	14	0	14	0
1981/82	28	.400	11	0	10	21	0	21	0
1982/83	50	.400	20	0	13	33	0	33	0
1983/84	62	.400	25	0	13	25	0	25	0
1984/85	50	.400	20	0	12	20	0	20	0
1985/86	67	.400	27	0	10	27	0	27	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 41—Safflowerseed

Year[1]	Area	Yield	Production	Initial stocks	Imports	Supply	Exports	Crush	Crush rate	Other use	End stocks
	1,000 hectares	*Tons/ hectare*	*1,000 tons*						*Proportion*	*1,000 tons*	
1955/56	10	0.30	3	0	0	3	0	3	0.950	0	0
1956/57	10	.30	3	0	0	3	0	3	.950	0	0
1957/58	10	.30	3	0	0	3	0	3	.950	0	0
1958/59	10	.30	3	0	0	3	0	3	.950	0	0
1959/60	10	.30	3	0	0	3	0	3	.950	0	0
1960/61	10	.30	3	0	0	3	0	3	.950	0	0
1961/62	10	.30	3	0	0	3	0	3	.950	0	0
1962/63	11	.27	3	0	0	3	0	3	.950	0	0
1963/64	13	.31	4	0	0	4	0	4	.950	0	0
1964/65	11	.36	4	0	0	4	0	4	.950	0	0
1965/66	14	.21	3	0	0	3	0	3	.950	0	0
1966/67	11	.45	5	0	0	5	0	5	.950	0	0
1967/68	15	.40	6	0	0	6	0	6	.950	0	0
1968/69	17	.35	6	0	0	6	0	6	.950	0	0
1969/70	13	.38	5	0	0	5	0	5	.950	0	0
1970/71	10	.60	6	0	0	6	0	6	.950	0	0
1971/72	10	.60	6	0	0	6	0	6	.950	0	0
1972/73	15	.53	8	0	0	8	0	8	.950	0	0
1973/74	10	.40	4	0	0	4	0	4	.950	0	0
1974/75	7	.43	3	0	0	3	0	3	.950	0	0
1975/76	6	.33	2	0	0	2	0	2	.950	0	0
1976/77	10	.50	5	0	0	5	0	5	.950	0	0
1977/78	8	.50	4	0	0	4	0	4	.950	0	0
1978/79	11	.55	6	0	0	6	0	6	.950	0	0
1979/80	7	.43	3	0	0	3	0	3	.950	0	0
1980/81	6	.50	3	0	0	3	0	3	.950	0	0
1981/82	6	.67	4	0	0	4	0	4	.950	0	0
1982/83	5	.80	4	0	0	4	0	4	.950	0	0
1983/84	5	1.20	6	0	0	6	0	6	.950	0	0
1984/85	13	.38	5	0	0	5	0	5	.950	0	0
1985/86	11	.37	4	0	0	4	0	4	.950	0	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 42—Safflowerseed meal

Year[1]	Crush	Extraction rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*	*1,000 tons*						
1955/56	3	0.650	2	0	0	2	0	0	0
1956/57	3	.650	2	0	0	2	0	0	0
1957/58	3	.650	2	0	0	2	0	0	0
1958/59	3	.650	2	0	0	2	0	0	0
1959/60	3	.650	2	0	0	2	0	0	0
1960/61	3	.650	2	0	0	2	0	0	0
1961/62	3	.650	2	0	0	2	0	0	0
1962/63	3	.650	2	0	0	2	0	0	0
1963/64	4	.650	2	0	0	2	0	0	0
1964/65	4	.650	2	0	0	2	0	0	0
1965/66	3	.650	2	0	0.	2	0	0	0
1966/67	5	.650	3	0	0	3	0	0	0
1967/68	6	.650	4	0	0	4	0	0	0
1968/69	6	.650	4	0	0	4	0	0	0
1969/70	5	.650	3	0	0	3	0	0	0
1970/71	6	.650	4	0	0	4	0	0	0
1971/72	6	.650	4	0	0	4	0	0	0
1972/73	8	.650	5	0	0	5	0	0	0
1973/74	4	.650	2	0	0	2	0	0	0
1974/75	3	.650	2	0	0	2	0	0	0
1975/76	2	.650	1	0	0	1	0	0	0
1976/77	5	.650	3	0	0	3	0	0	0
1977/78	4	.650	2	0	0	2	0	0	0
1978/79	6	.650	4	0	0	4	0	0	0
1979/80	3	.650	2	0	0	2	0	0	0
1980/81	3	.650	2	0	0	2	0	0	0
1981/82	4	.650	2	0	0	2	0	0	0
1982/83	4	.650	2	0	0	2	0	0	0
1983/84	6	.650	4	0	0	4	0	0	0
1984/85	3	.650	2	0	0	2	0	0	0
1985/86	5	.650	3	0	0	3	0	0	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 43—Safflowerseed oil

Year[1]	Crush	Extraction rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*	*1,000 tons*						
1955/56	3	0.320	1	0	0	1	0	1	0
1956/57	3	.320	1	0	0	1	0	1	0
1957/58	3	.320	1	0	0	1	0	1	0
1958/59	3	.320	1	0	0	1	0	1	0
1959/60	3	.320	1	0	0	1	0	1	0
1960/61	3	.320	1	0	0	1	0	1	0
1961/62	3	.320	1	0	0	1	0	1	0
1962/63	3	.320	1	0	0	1	0	1	0
1963/64	4	.320	1	0	0	1	0	1	0
1964/65	4	.320	1	0	0	1	0	1	0
1965/66	3	.320	1	0	0	1	0	1	0
1966/67	5	.320	2	0	0	2	0	2	0
1967/68	6	.320	2	0	0	2	0	2	0
1968/69	6	.320	2	0	0	2	0	2	0
1969/70	5	.320	2	0	0	2	0	2	0
1970/71	6	.320	2	0	0	2	0	2	0
1971/72	6	.320	2	0	0	2	0	2	0
1972/73	8	.320	2	0	0	2	0	2	0
1973/74	4	.320	1	0	0	1	0	1	0
1974/75	3	.320	1	0	0	1	0	1	0
1975/76	2	.320	1	0	0	1	0	1	0
1976/77	5	.320	2	0	0	2	0	2	0
1977/78	4	.320	1	0	0	1	0	1	0
1978/79	6	.320	2	0	0	2	0	2	0
1979/80	3	.320	1	0	0	1	0	1	0
1980/81	3	.320	1	0	0	1	0	1	0
1981/82	4	.320	1	0	0	1	0	1	0
1982/83	4	.320	1	0	0	1	0	1	0
1983/84	6	.320	2	0	0	2	0	2	0
1984/85	3	.320	1	0	0	1	0	1	0
1985/86	5	.320	2	0	0	2	0	2	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 44—Soybeans

Year[1]	Area	Yield	Production	Initial stocks	Imports	Supply	Exports	Crush	Crush rate	Other use	End stocks
	1,000 hectares	*Tons/ hectare*	*1,000 tons*						*Pro-portion*	*1,000 tons*	
1955/56	270	0.56	151	0	549	700	0	465	0.664	235	0
1956/57	319	.36	114	0	579	693	0	541	.781	152	0
1957/58	389	.42	162	0	478	640	0	567	.886	73	0
1958/59	387	.59	229	0	639	868	0	565	.651	103	200
1959/60	455	.49	224	200	351	744	31	575	.773	138	0
1960/61	422	.38	160	0	10	160	10	76	.475	74	0
1961/62	702	.49	344	0	0	344	0	165	.480	179	0
1962/63	825	.58	475	0	0	475	0	312	.657	163	0
1963/64	885	.51	450	0	0	450	0	294	.653	156	0
1964/65	886	.33	293	0	93	386	0	176	.456	210	0
1965/66	853	.49	421	0	0	421	0	229	.544	192	0
1966/67	854	.69	586	0	0	586	0	341	.582	245	0
1967/68	850	.64	543	0	0	543	0	365	.672	178	0
1968/69	854	.62	528	0	0	528	0	318	.602	210	0
1969/70	851	.51	434	0	0	434	0	194	.447	240	0
1970/71	860	.70	603	0	0	603	0	371	.615	232	0
1971/72	868	.62	535	0	297	832	0	232	.279	200	400
1972/73	905	.29	258	400	705	1,363	0	994	.729	369	0
1973/74	838	.51	424	0	0	424	0	153	.361	271	0
1974/75	822	.44	360	0	349	709	0	136	.192	573	0
1975/76	811	.96	780	0	1,769	2,549	0	1,814	.712	135	600
1976/77	762	.63	480	600	1,384	2,464	0	2,068	.839	296	100
1977/78	786	.69	540	100	906	1,546	0	1,304	.843	242	0
1978/79	815	.78	634	0	1,765	2,399	0	1,486	.619	913	0
1979/80	838	.56	467	0	1,085	1,552	0	1,285	.828	267	0
1980/81	854	.61	525	0	1,396	1,921	0	1,304	.679	617	0
1981/82	864	.57	491	0	1,506	1,997	0	1,709	.856	288	0
1982/83	876	.61	536	0	1,366	1,902	0	1,264	.665	188	450
1983/84	842	.67	560	450	615	1,625	0	1,386	.853	239	0
1984/85	772	.61	469	0	839	1,308	0	911	.853	397	0
1985/86	738	.62	458	0	1,900	2,358	0	2,011	.853	347	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 45—Soybean meal

Year[1]	Crush	Extraction rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*				*1,000 tons*			
1955/56	465	0.759	353	0	0	353	0	353	0
1956/57	541	.759	411	0	0	411	0	411	0
1957/58	567	.759	430	0	0	430	0	430	0
1958/59	565	.759	429	0	0	429	0	429	0
1959/60	575	.759	436	0	0	436	0	436	0
1960/61	76	.759	58	0	0	58	0	58	0
1961/62	165	.759	125	0	0	125	0	125	0
1962/63	312	.759	237	0	0	237	0	237	0
1963/64	294	.759	223	0	0	223	0	223	0
1964/65	176	.759	134	0	0	134	0	134	0
1965/66	229	.759	174	0	0	174	0	174	0
1966/67	341	.759	259	0	0	259	0	259	0
1967/68	365	.759	277	0	0	277	0	277	0
1968/69	318	.759	241	0	0	241	0	241	0
1969/70	194	.759	147	0	0	147	0	147	0
1970/71	371	.759	282	0	0	282	0	282	0
1971/72	232	.759	176	0	0	176	0	176	0
1972/73	994	.759	754	0	0	754	0	754	0
1973/74	153	.759	116	0	0	116	0	116	0
1974/75	136	.772	105	0	0	105	0	105	0
1975/76	1,814	.762	1,382	0	0	1,382	0	1,382	0
1976/77	2,068	.756	1,563	0	0	1,563	0	1,563	0
1977/78	1,304	.766	999	0	0	999	0	999	0
1978/79	1,486	.775	1,152	0	52	1,204	0	1,204	0
1979/80	1,285	.731	939	0	438	1,377	0	1,377	0
1980/81	1,304	.762	994	0	583	1,577	0	1,577	0
1981/82	1,709	.761	1,300	0	1,550	2,850	0	2,850	0
1982/83	1,264	.763	964	0	2,331	3,295	0	3,295	0
1983/84	1,386	.765	1,060	0	100	1,160	0	1,160	0
1984/85	911	.768	700	0	550	1,250	0	1,250	0
1985/86	2,011	.765	1,539	0	600	2,139	0	2,139	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 46—Soybean oil

Year[1]	Crush	Extraction rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*	*1,000 tons*						
1955/56	465	0.170	79	0	0	79	0	79	0
1956/57	541	.144	78	0	0	78	0	78	0
1957/58	567	.148	84	0	0	84	0	84	0
1958/59	565	.170	96	0	0	96	0	96	0
1959/60	575	.162	93	0	0	93	0	93	0
1960/61	76	.171	13	0	0	13	0	13	0
1961/62	165	.170	28	0	0	28	0	28	0
1962/63	312	.170	53	0	0	53	0	53	0
1963/64	294	.170	50	0	0	50	0	50	0
1964/65	176	.165	29	0	0	29	0	29	0
1965/66	229	.170	39	0	0	39	0	39	0
1966/67	341	.170	58	0	0	58	0	58	0
1967/68	365	.170	62	0	0	62	0	62	0
1968/69	318	.170	54	0	0	45	9	36	0
1969/70	194	.155	30	0	0	30	0	30	0
1970/71	371	.170	63	0	0	60	3	57	0
1971/72	232	.168	39	0	0	36	3	33	0
1972/73	994	.170	169	0	0	164	5	159	0
1973/74	153	.170	26	0	0	24	2	22	0
1974/75	136	.169	23	0	0	23	0	23	0
1975/76	1,814	.178	323	0	0	323	0	323	0
1976/77	2,068	.177	367	0	0	367	0	367	0
1977/78	1,304	.169	221	0	3	224	0	224	0
1978/79	1,486	.170	253	0	20	273	0	273	0
1979/80	1,285	.170	219	0	52	271	0	271	0
1980/81	1,304	.174	227	0	92	319	0	319	0
1981/82	1,709	.166	284	0	201	485	0	485	0
1982/83	1,264	.170	215	0	181	396	0	396	0
1983/84	1,386	.171	237	0	120	357	0	357	0
1984/85	911	.167	152	0	301	453	0	453	0
1985/86	2,011	.179	360	0	110	470	0	470	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 47—Sunflowerseed

Year[1]	Area	Yield	Production	Initial stocks	Imports	Supply	Exports	Crush	Crush rate	Other use	End stocks
	1,000 hectares	*Tons/ hectare*	*1,000 tons*						*Pro-portion*	*1,000 tons*	
1955/56	4,238	0.90	3,797	0	0	3,745	52	2,836	0.757	909	0
1956/57	4,510	.88	3,947	0	0	3,898	49	3,079	.790	819	0
1957/58	3,455	.81	2,801	0	0	2,755	46	2,575	.935	180	0
1958/59	3,907	1.18	4,626	0	0	4,558	68	3,948	.866	610	0
1959/60	3,896	.77	3,019	0	0	2,945	74	2,430	.825	515	0
1960/61	4,190	.95	3,967	0	0	3,883	84	3,121	.804	762	0
1961/62	4,217	1.13	4,753	0	0	4,644	109	3,709	.799	935	0
1962/63	4,389	1.09	4,795	0	0	4,696	99	3,915	.834	781	0
1963/64	4,393	.98	4,285	0	0	4,176	109	3,684	.882	492	0
1964/65	4,607	1.31	6,058	0	0	5,974	84	5,117	.856	857	0
1965/66	4,807	1.13	5,449	0	0	5,307	142	4,876	.919	431	0
1966/67	5,004	1.23	6,150	0	0	5,846	304	5,405	.925	441	0
1967/68	4,776	1.38	6,608	0	0	6,247	361	5,786	.926	461	0
1968/69	4,863	1.37	6,685	0	0	6,340	345	5,517	.870	823	0
1969/70	4,772	1.33	6,358	0	0	6,215	143	5,110	.822	1,105	0
1970/71	4,777	1.29	6,144	0	0	6,060	84	5,031	.830	1,029	0
1971/72	4,498	1.26	5,663	0	0	5,589	74	4,776	.854	813	0
1972/73	4,394	1.15	5,048	0	0	4,975	73	3,968	.798	1,007	0
1973/74	4,745	1.56	7,385	0	0	7,322	63	5,872	.802	1,450	0
1974/75	4,686	1.45	6,784	0	0	6,723	61	5,616	.835	1,107	0
1975/76	4,045	1.23	4,990	0	0	4,990	0	3,695	.741	1,295	0
1976/77	4,534	1.16	5,277	0	0	5,277	0	4,076	.772	1,201	0
1977/78	4,574	1.29	5,904	0	0	5,904	0	4,313	.730	1,592	0
1978/79	4,558	1.17	5,333	0	0	5,333	0	3,930	.737	1,403	0
1979/80	4,334	1.25	5,414	0	0	5,414	0	3,714	.686	1,700	0
1980/81	4,353	1.06	4,618	0	0	4,618	0	3,505	.759	1,113	0
1981/82	4,235	1.10	4,678	0	0	4,678	0	3,548	.758	1,130	0
1982/83	4,250	1.26	5,341	0	0	5,341	0	4,039	.756	1,302	0
1983/84	4,266	1.19	5,063	0	0	5,063	0	3,866	.764	1,197	0
1984/85	3,907	1.16	4,527	0	0	4,527	0	3,282	.725	1,245	0
1985/86	4,053	1.29	5,234	0	0	5,234	0	3,975	.760	1,259	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 48—Sunflowerseed meal

Year[1]	Crush	Extraction rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*				*1,000 tons*			
1955/56	2,836	0.380	1,078	0	0	966	112	966	0
1956/57	3,079	.380	1,170	0	0	977	193	977	0
1957/58	2,575	.380	978	0	0	613	365	613	0
1958/59	3,948	.380	1,500	0	0	925	575	925	0
1959/60	2,430	.380	923	0	0	427	496	427	0
1960/61	3,121	.380	1,186	0	0	800	386	800	0
1961/62	3,709	.380	1,409	0	0	1,062	347	1,062	0
1962/63	3,915	.380	1,488	0	0	1,295	193	1,295	0
1963/64	3,684	.380	1,400	0	0	1,354	46	1,354	0
1964/65	5,117	.380	1,944	0	0	1,815	129	1,815	0
1965/66	4,876	.380	1,853	0	0	1,463	390	1,463	0
1966/67	5,405	.380	2,054	0	0	1,666	388	1,666	0
1967/68	5,786	.380	2,199	0	0	1,874	325	1,874	0
1968/69	5,517	.380	2,096	0	0	1,775	321	1,775	0
1969/70	5,110	.380	1,942	0	0	1,918	24	1,918	0
1970/71	5,031	.380	1,912	0	0	1,900	12	1,900	0
1971/72	4,776	.380	1,815	0	0	1,809	6	1,809	0
1972/73	3,968	.380	1,508	0	0	1,505	3	1,505	0
1973/74	5,872	.380	2,231	0	0	2,229	2	2,229	0
1974/75	5,616	.380	1,858	0	0	1,857	1	1,857	0
1975/76	3,220	.376	1,212	0	0	1,212	0	1,212	0
1976/77	3,652	.386	1,410	0	0	1,410	0	1,410	0
1977/78	3,868	.379	1,465	0	0	1,465	0	1,465	0
1978/79	3,930	.380	1,385	0	13	1,398	0	1,398	0
1979/80	3,714	.380	1,413	0	16	1,429	0	1,429	0
1980/81	3,505	.342	1,199	0	10	1,209	0	1,209	0
1981/82	3,548	.342	1,214	0	25	1,239	0	1,239	0
1982/83	4,039	.372	1,501	0	15	1,516	0	1,516	0
1983/84	3,866	.390	1,508	0	15	1,523	0	1,523	0
1984/85	3,282	.390	1,280	0	0	1,280	0	1,280	0
1985/86	3,975	.390	1,550	0	0	1,550	0	1,550	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

Appendix table 49— Sunflowerseed oil

Year[1]	Crush	Extraction rate	Production	Initial stocks	Imports	Supply	Exports	Other use	End stocks
	1,000 tons	*Proportion*	*1,000 tons*						
1955/56	2,836	0.330	936	0	5	892	49	892	0
1956/57	3,079	.330	1,106	0	2	973	45	973	0
1957/58	2,575	.334	860	0	2	813	49	813	0
1958/59	3,948	.324	1,279	0	0	1,202	77	1,202	0
1959/60	2,430	.412	1,001	0	2	917	86	917	0
1960/61	3,121	.412	1,286	0	0	1,172	114	1,172	0
1961/62	3,709	.412	1,528	0	0	1,376	152	1,376	0
1962/63	3,915	.412	1,613	0	2	1,378	237	1,378	0
1963/64	3,684	.412	1,518	0	0	1,349	169	1,349	0
1964/65	5,117	.412	2,108	0	0	1,887	221	1,887	0
1965/66	4,876	.412	2,009	0	0	1,581	428	1,581	0
1966/67	5,405	.412	2,227	0	0	1,557	670	1,557	0
1967/68	5,786	.412	2,384	0	0	1,670	714	1,670	0
1968/69	5,517	.416	2,295	0	0	1,639	656	1,639	0
1969/70	5,110	.420	2,146	0	0	1,795	351	1,795	0
1970/71	5,031	.424	2,133	0	0	1,754	379	1,754	0
1971/72	4,776	.428	2,044	0	0	1,650	394	1,650	0
1972/73	3,968	.432	1,714	0	0	1,372	342	1,372	0
1973/74	5,872	.436	2,560	0	0	2,079	481	2,079	0
1974/75	5,616	.440	2,471	0	0	2,083	388	2,083	0
1975/76	3,695	.443	1,637	0	0	1,344	293	1,344	0
1976/77	4,076	.436	1,777	0	0	1,546	231	1,546	0
1977/78	4,313	.448	1,932	0	0	1,784	148	1,784	0
1978/79	3,930	.457	1,796	0	11	1,694	113	1,694	0
1979/80	3,714	.440	1,634	0	52	1,563	123	1,563	0
1980/81	3,505	.440	1,542	0	232	1,662	112	1,662	0
1981/82	3,548	.440	1,561	0	166	1,618	109	1,618	0
1982/83	4,039	.440	1,777	0	214	1,888	103	1,888	0
1983/84	3,866	.440	1,701	0	178	1,779	100	1,779	0
1984/85	3,282	.440	1,444	0	270	1,614	100	1,614	0
1985/86	3,975	.440	1,749	0	235	1,884	100	1,884	0

[1] Split years throughout indicate that domestic crop output for a given year is aligned with crush, imports, and exports for the following year.

Source: See appendixes for detailed discussion of data sources.

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