World outlook for soybean production, marketing

Excerpts from a talk by Alan E. Holz, agricultural economist, USDA Foreign Agricultural Service

In 1977 world meal production[1] is forecast at 67.7 million metric tons soybean meal equivalent (SME)—down 3.5 million from the 1976 record. The large build-up of U.S. stocks of soybeans is boosting total meal availabilities to 73.3 million tons—about 3.4 million tons above the 1976 world meal consumption estimate. As a point of comparison, in 1975 world meal production plus U.S. stocks was only 1.9 million tons above the previous year's world meal consumption estimate.

Although world meal supplies as currently estimated at 73.3 million tons are down 2.2 million tons from a year ago, U.S. stocks of soybeans and meal last fall, at 5.6 million metric tons meal basis, are 1.4 million tons above two years ago. Thus some increase in consumption, perhaps 1.0 million tons SME, would be possible if U.S. soybean stocks are depleted by 3.2 million tons as expected.

What does this mean? Given the fact that: (a) animal numbers are now above a year ago—both in the U.S. and abroad; (b) economic conditions have improved from a year ago; (c) there is uncertainty in the strength of foreign and domestic demand; (d) there is considerable uncertainty in the 1977 Southern Hemisphere crop forecasts depending on growing conditions through March; we conclude that although meal supplies should be adequate, prices must continue to be substantially above those of a year ago in order to bring supply and demand into alignment.

Our 1977 meal production forecast includes these assumptions:

- U.S. 1976 soybean crop of 1.25 billion bushels or 25.4 million tons SME is down 18 percent or 5.5 million tons SME below the large 1975 volume. However, exports are forecast to decline by only 0.5 million tons SME reflecting expectations of a significant drop in domestic usage and a substantial draw down in stocks to near minimum levels.
- 1977 Brazilian soybean crop, yet to be harvested in April, is at 13.25 million tons—up 17 percent or 1.4 million tons SME from this year's estimated harvest. The export gain is projected at nearly 1.3 million tons SME. However, recent reports from Brazil indicate that 1977 crop output could fall short of this projection.
- Continued soybean production expansion in minor producer-exporter countries is expected to add another 0.4 million tons SME to world output. The projected gain in exports from these countries—Argentina and Paraguay—is 360,000 tons SME.
- 1977 Peruvian fish meal output is projected at 850,000 tons—1.2 million tons SME or only 70,000 tons above this year's estimate. This represents a cut of nearly 150,000 tons SME from our earlier estimate. All of the projected gain is expected to be exported.
- U.S. 1976 cottonseed production is estimated at 3.5 million tons or nearly 1.3 million tons SME. This represents a gain of nearly 200,000 tons SME which will free more soybean meal for export.
- Soviet 1976 sunflowerseed harvest is now pegged at no more than 5.5 million tons. This amounts to 1.7 million tons SME or 150,000 tons more than last year's sharply reduced crop but is significantly less than our previous 6.0 million ton crop estimate.
- Canadian 1976 rapeseed production is at 0.9 million tons—340,000 tons SME and 300,000 tons less than a year earlier. However, exports are expected to be maintained near this year's 0.3 million SME estimate reflecting an anticipated sharp draw down in stocks.
- The 1976 Indian peanut crop is estimated at 7.0 million tons, in shell basis, about unchanged from the record large 1975 volume. In terms of SME, the crop would amount to 2.3 million tons of which 1.2 million is expected to be exported. It should be noted that the sharp decline in India's rainfall during the 1976 growing season from the above normal 1975 level raises serious doubts concerning the size of the 1976 crop since 1976 plantings were only slightly above the 1975 level.

In discussing the world market potential for soybean it is important to examine past production trends and the relative importance of soybeans in world meal output.

In 1976 soybeans were grown commercially in 39 countries compared with 29 countries in 1965. On a meal equivalent basis, soybeans during that period grew as a percentage of world production and exports as indicated in Table I.

Since 1965, world production and exports of soybeans have grown to where they dominate total protein availabilities and trade. This trend appears likely to continue although the country breakdown comprising that total could show some marked shifts. In recent years soybean plantings in Brazil have gained sharply. Substantial potential yet exists in Brazil and, to a lesser extent, in other countries if soybean prices continue to be attractive, relative to competing crops.

In Brazil the gain reflected increased plantings from newly cultivated land, double cropping with wheat, substitution of soybeans for other crops, as well as improved yields. Brazilian soybean expansion was spurred by export incentives, guaranteed minimum producer prices and currency devaluations which gave Brazil a competitive edge in world markets.

World production of soybean meal during the 1965-75 period trended upward by the equivalent of 100 million bushels of soybeans per year. This expansion on a protein basis accounted for nearly 90 percent of the growth in all meals. U.S. meal production growth, largely soybean, accounted for over 60 percent of the annual trendline gain in world soybean meal output. Continued expansion at this rate would mean expanding output by more than 60 million bushels per year or the equivalent of just over 2 million acres per year, at current average yields. In recent years, the U.S. has fallen short of that trend since foreign acreage expansion has been sharply above trend. Future expansion will likely come from countries that can produce them most cheaply unless more profitable production opportunities exist. Soybean production expansion in Brazil could be restricted in the next decade if they improve their technology for producing corn or if U.S. soybean yields significantly improve relative to corn.

[1]Includes soybean, fish, peanut, sunflower, cotton, linseed, rapeseed, copra and palm kernel meals expressed in terms of 44 percent soybean meal equivalent. Meal production estimates are calculated on the basis of assumed meal extraction rates applied to that portion of each crop available for crushing and/or export and not actual crushings. Northern Hemisphere crops harvested in the second half of 1976 are combined with estimates of Southern Hemisphere crops yet to be harvested in the first half of 1977.

TABLE I

Soybean Production

Year		Soybean U.S.	Soybean Foreign	Other meals	Total	U.S. soybeans Percent of total	World soybeans Percent of total
		(In million tons)				(In percent)	
1965	Production	14.3	3.4	22.8	40.5	35	44
	Exports	6.9	0.6	8.9	16.4	42	46
1970	Production	23.0	4.3	26.1	53.4	43	51
	Exports	13.2	1.1	9.9	24.2	55	59
1975	Production	24.7	12.6	25.9	63.2	39	59
	Exports	13.7	6.3	7.1	27.1	51	74
1976	Production	30.9	14.6	25.7	71.2	43	64
	Exports	16.7	7.9	7.8	32.4	52	76
1977	Production	25.4	15.6	26.7	67.7	38	61
	Exports	16.3	9.4	8.1	33.8	51	76

There are a number of countries where soybean production is expanding. Production for some of these countries is indicated in Table II in 1,000 metric tons.

Where do exports of soybeans and products move? Because of the sharp gain in Brazilian exports in recent years, we have added Brazil's exports to U.S. exports for major trade areas in 1970 and 1975. The data is presented in Table III.

The sharpest gain in combined U.S. and Brazilian exports was in soybean meal—up 65 percent during the 1970-75 period while exports of soybeans gained by only 29 percent. Meal and beans moved largely to the developed countries of Europe and Asia with the EC-9 and Japan taking the lion's share. Although the EC countries expanded purchases of both soybeans and meal, they have increased their share of bean purchases to 50 percent of combined exports from the U.S. and Brazil. However, in 1975 EC soybean meal purchases at 4.3 million tons accounted for a somewhat smaller share of combined exports from the U.S. and Brazil. Meal purchases by the East European countries are up over 150 percent during the 1970-75 period.

Although aggregate fats and oils consumption in the foreign sector continues to increase about 3 percent a year, combined soybean oil exports from the U.S. and Brazil dropped by 9 percent during the 1970-75 period. This reflects the fact that soybean imports into the major developed countries increased at an above average rate—based on the growing demand for protein feeds. Excess oil from the imported beans was re-exported to other fat deficit countries which lack crushings facilities. Substantial growth in export availabilities of palm oil at competitive prices also curbed U.S. exports of soybean oil.

TABLE II

Soybean Production Growth

Country	Production 1970	Production 1976
Exporters		
United States	30,675	34,012
Brazil	1,509	11,344
Argentina	27	695
Paraguay	52	253
Colombia	95	136
Indonesia	498	575
Romania	91	250
Thailand	70	155
Australia	5	31
Importers		
Spain	3	35
Republic of Korea	232	311
Iran	6	70

The world production and trade statistics for key items

TABLE III

Export Markets

	1970 U.S. exports	1970 Brazilian exports	1970 Total	1970 Percent	1975 U.S. exports	1975 Brazilian exports	1975 Total	1975 Percent
	(In million metric tons)				(In million metric tons)			
Soybeans								
EC-9	4.70	.19	4.89	40	5.75	2.12	7.87	50
Other	2.04	---	2.04	17	.99	.02	1.01	6
Other Europe	1.38	.10	1.48	12	1.61	1.10	2.71	17
Asia	3.83	---	3.83	31	4.15	.09	4.24	27
Total	11.95	.29	12.24	100	12.50	3.33	15.83	100
Soybean meal								
EC-9	2.49	.41	2.90	69	2.57	1.75	4.32	63
Other Europe	.68	.08	.76	18	.77	1.23	2.00	29
Asia	.16	.02	.18	4	.02	.10	.12	2
Other	.33	.02	.35	9	.42	.04	.46	6
Total	3.66	.53	4.19	100	3.78	3.12	6.90	100
Soybean oil								
Western Hemisphere	.14	0	.14	21	.13	.04	.17	27
Asia	.39	0	.39	57	.14	.15	.29	47
Africa	.09	0	.09	13	.02	.06	.08	13
Other	.06	+0	.06	9	.07	.01	.08	13
Total	.68	+0	.68	100	.36	.26	.62	100

TABLE IV

Fats and Oils Trade

Year		United States		Foreign soy	Palm oils	All other oils and fats
		Soy	Other			
1965	Production	3.2	5.2	0.7	3.9	22.3
	Exports	1.7	1.6	0.1	2.2	4.3
1970	Production	5.1	5.2	1.0	4.4	24.2
	Exports	2.8	1.5	0.1	2.2	5.5
1975	Production	5.5	4.6	2.8	6.4	27.0
	Exports	2.6	1.6	0.9	3.7	4.9
1976	Production	6.9	4.7	3.2	6.9	27.0
	Exports	3.2	1.7	1.3	4.1	5.0
1977	Production	5.7	4.8	3.5	7.1	27.1
	Exports	3.2	1.8	1.5	4.3	5.2

in million metric tons are in Table IV.

A closer look at the historical pattern of fats and oils production and trade reveal the following:

(a) Growth in world availabilities of fats and oils during the past decade at about 3 percent per year significantly exceeded the estimated 2 percent annual gain in world population.

(b) Soybean oil production and trade since 1965 has accounted for an increasing proportion of world production and trade—about 21 percent and 29 percent respectively in 1976. However, this trend will be interrupted in 1977.

(c) U.S. soybean oil production and exports accounted for the bulk of growth in world exports of these commodities until 1974. Since 1974 accelerated foreign output and exports have taken the lead.

(d) Combined production of U.S. fats and oils except soybeans since 1965 has been on a declining trend. Despite this decline combined exports of these commodities have increased slightly.

(e) World output of palm oils (coconut, palm, palm kernel, and babassu oils) has registered sharp gains in output since 1970. Most of the increase is moving into exports. Production changes for these tree crop oils tend to be sensitive to acreage changes and fluctuations in rainfall with no responsiveness to price.

(f) Combined foreign fats and oils output other than soy and palm has trended upward at slightly less than 2 percent a year. This would indicate some decline on a per capita basis. Foreign exports of these commodities trended upward at an even lower rate.

What are the implications for the future?

Sharp gains in plantings of tree crop oils, particularly oil palm have already taken place. This is expected to result in an extended uptrend in output over the next decade. Because the major producing countries have relatively small domestic consumption needs and growing needs for foreign exchange, virtually all of the increase in output is expected to be exported. The projected annual increase in world palm oil exports is expected to be in the magnitude of 250,000 to 300,000 tons compared with an annual trendline increase of only 116,000 tons during the 1965-75 period. However, combined world imports of all oils and fats have trended upward by only 415,000 tons per year—including the oil fraction of oilseeds imported for their protein fraction.

Over the long term oil export availabilities will gain at an accelerated rate, and new markets will be needed. Historically, accelerated increases in availabilities have been met with lower prices.

If oil prices decline, soybean prices will fall, unless meal is in a position to bear a heavier share of the load.

Recent news reports indicate that the new EC Commission members who were scheduled to take over the EC political machine in January could push for some key reforms in the European farm policy during the next few years. Any policy change in the EC that would materially affect the level of agricultural self-sufficiency could have a significant affect in world markets for oilseeds and grain.

Meal demand, which has been spurred by increased feeding rates at relatively low prices, could be diminished unless new markets are found. However, new markets are being found.

We cannot accurately assess what demand potential exists in the centrally planned countries such as the Soviet Union but such countries could become regular customers for substantially larger volumes than they are currently purchasing.

The demand for soy protein is also brightened by potential food uses. For example the Brazilian government has decreed that beginning in March 1977 up to 5 percent soy flour must be mixed with wheat flour. Although it will take some time before such a program could be fully implemented, our Agricultural Attache in Brazil has indicated that it could ultimately provide an additional market for roughly 200,000 tons of soy flour or 360,000 tons of soybeans per year.

Given the fact that many developing countries have food protein deficits and that these countries have only limited foreign exchange, new soy food protein markets could blossom in a number of countries over the next few years.

Staley enters hydrogenated oil business

A.E. Staley Mfg. Co. has announced plans to expand its vegetable oil refinery in Decatur, IL, including a new facility for hydrogenating vegetable oils.

The hydrogenation unit, expected to be operable in early 1978, will have an annual capacity of more than 100 million pounds, the firm said. Staley now markets a full line of partially and fully refined soybean and corn oils to food processors. The new facility will mark the company's entry into hydrogenated oils. Hydrogenated vegetable oils are used extensively in frying fats and oils, and in processed foods, especially margarine.

Crude vegetable oil for the enlarged refinery will be supplied by Staley's Decatur soybean and corn milling operations and by a new corn processing plant being constructed in Lafayette, IN.

The entry in hydrogenation was prompted in part, the firm said, by growing consumer preference for vegetable oils in processed food as well as for home use. ●