

The Present and Future Role of Peanuts in Meeting the World's Need for Food¹

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ABSTRACT

Peanuts have a potential for supplying a significant portion of the world's needs for edible vegetable oils and the protein portion of human diets. Africa, India and Mainland China account for ca. 75% of the world's production. In these countries yields are low, markets are not well developed, and most of the crop is crushed for oil with the cake being used as animal feed or fertilizer. Government programs to encourage production by price supports, research and education have been sporadic. Peanuts are likely to fall further behind soybeans and sunflower seed as sources of edible vegetable oils and dietary protein.

INTRODUCTION

Peanuts provide about one-sixth of the world's production of edible vegetable oils and are out-ranked only by soybeans and sunflowerseeds. However, on a world-wide basis, peanuts do not directly contribute significantly to the protein requirements in human diets. The U.S. is the only major producer of peanuts in which most of the production is consumed as peanuts or as peanut butter. In Africa, India and Mainland China, which account for ca. 75% of the world's production, most of the peanuts are crushed for oil and the cake is fed to livestock or used as fertilizer.

DISCUSSION

In a publication entitled "Provisional Indicative World Plan for Agricultural Development," the FAO has projected total food needs to 1985 and estimated the annual increases in food production necessary to meet these needs. In the developing nations the estimated annual increase is 3.9%. To attain this level of production will require almost one-third greater increase per year than has been experienced during the last decade.

In most of the developing nations the need for more and better quality protein is as great or even greater than the need for more calories.

Peanuts could provide a substantial amount of the needed additional protein. They are produced in many countries of the world, and production could be increased in most countries where they are now grown. Average annual production during the period 1965-70 is shown in Table I.

If peanuts are to provide significant amounts of the additional protein needed by the world, acreage and yields will have to be increased, and the year to year fluctuations in production will have to be minimized.

Annual production fluctuates to a considerable degree in most of the major peanut producing countries. For example, during the 6 year period 1965-70, production in Africa varied from a low of 4,364,000 metric tons to a high of 5,446,000 tons. India's production varied from a low of 4,231,000 tons to a high of 6,000,000 tons. South America's production varied from a low of 1,016,000 tons

to a high of 1,354,000 tons. The U.S. is the only major producing country that has been able to avoid sharp fluctuations from year to year in total production.

There are several reasons for these year to year fluctuations. Weather plays a major role in most countries. In the developing countries where little or no mechanization has occurred, weather may delay planting to a much greater extent than would be true in the U.S. Government pricing policies also play a major role in influencing farmers in developing countries to produce peanuts. If the price to farmers is set at a low level that will permit the government to sell peanuts or peanut oil on the world market at a profit, farmers are likely to reduce peanut plantings and increase plantings of other crops. In most of the developing countries the government is responsible for procurement and distribution of seed, fertilizers and pesticides. Orderly and stable systems for the distribution of these inputs have not been developed. Credit, at reasonable interest rates, is not available. Under such conditions as these it should not be surprising that there are wide fluctuations in annual production.

More than 25 African nations produce peanuts, but ca. 50% of the total production comes from Nigeria and Senegal. These two countries are the world's largest exporters of peanuts and peanut oil. Each country would like to increase peanut production and exports. Before this can be done there are some difficult problems that must be solved. Transportation facilities are inadequate. In Nigeria both railroads and highways were neglected during the war and are not yet fully repaired. Railroad cars are in short supply as are trucks and repair parts. Prices paid by the government are low, and smuggling for higher prices is common. Acreage could be increased, but this is not likely unless prices received by growers are made more attractive. Yields are not likely to increase significantly within the next decade.

In Senegal peanuts and peanut oil represent 65-70% of all exports. Therefore it is natural that the government would be interested in increasing production. In spite of this interest, production is declining. Farmers are discouraged with peanuts for a number of reasons. Yields have declined in recent years largely as a result of unfavorable weather. Legal marketing is through cooperatives who do not pay the farmer until the peanuts are sold and payment

TABLE I

Average Annual Peanut Production, 1965-70

Production area	Average annual production, metric tons	Per cent of total
Africa	5,108,500	31.07
India	5,024,500	30.56
Mainland China	2,351,700	14.31
Other countries of Asia	1,449,200	8.82
U.S.	1,157,800	7.04
South America	1,152,000	7.01
Central America	144,900	.88
Oceania	29,200	.18
Europe	21,500	.13
Total	16,439,300	100.00

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received. When payment is made, back debts are deducted. Investments in fertilizer for peanuts have not been profitable. Consequently farmers are planting millet and sorghum instead of peanuts. The major factor affecting future peanut production in Senegal is the government's pricing policy.

India plants ca. 18 million acres of peanuts each year, which is ca. 40% of the world's total acreage. However yields are low, averaging only 500-700 lb. of farmer's stock peanuts per acre. Only ca. 4% of the acreage is irrigated. The remainder is dependent upon the monsoon which can be capricious. About 80% of total production is crushed for oil. Most of the oil is consumed in India, and most of the cake is used for fertilizer or exported. India's critical need for increased food production has caused the government to sanction the use of a limited amount of foreign exchange for improved inputs such as seed, fertilizer and pesticides. According to FAO estimates, India will need almost four times as many peanuts and pulses in 1985 as were produced in 1962. Planted acreage is not likely to increase. Theoretically peanut yields could be increased four-fold or even more. Yields in the U.S. and on good soils along the shores of the Mediterranean often approach 5000 lb./acre. Major breakthroughs have occurred in production of cereals within the past few years as a result of increasing the quantity and quality of inputs. However it will be far more difficult to achieve a breakthrough in peanut yields in the developing countries than it was for rice, wheat and corn.

The effort being devoted to the breeding of improved varieties of peanuts is negligible, compared to that for cereal crops. Varietal collections of peanuts have been assembled by the USDA and by the Agricultural Experiment Stations of North Carolina and Florida. Collections have also been built up in Senegal and the Sudan. These collections constitute a valuable reservoir of germplasm, but research to develop locally adapted varieties from these collections is insignificant compared to the effort to develop improved varieties of rice, wheat and corn. Research on production practices, including pest control and fertilizers, is also of limited scope in the developing countries. Experience suggests that peanut production technology cannot be transported from the developed countries to the developing countries as easily as for some other crops. Production systems that work well in one of the three peanut producing areas in the U.S. do not work well in either of the other two. It appears that each region in each country will have to develop, through research, the practices necessary to increase yields and improve quality. If this is true, yields in India are not likely to double before 1985.

Brazil and Argentina produce ca. 95% of all the peanuts produced in South America. Within recent years yields have averaged ca. 1000 lb. of peanuts in the shell per acre but may fluctuate as much as 25% from year to year, largely as a result of variations in weather. Both countries provide price supports in an effort to stimulate production. In addition to price supports Brazil allows tax credits on profits from export sales as an incentive to increase export sales of peanut oil. Acreage can be increased in both countries. Prospects for increased yields are better than prospects in India, because the weather is somewhat more favorable. As personal incomes increase in the developing countries, the demand for vegetable oils will increase. Brazil and Argentina probably will supply an increasing portion of the increased demand.

For more than 10 years acreage in the U.S. has been controlled at the minimum level of 1,600,000 acres. Per capita consumption of peanut butter, peanut candy and

salted peanuts is increasing in the U.S. but not as fast as yields are increasing. Thus surplus stocks accumulate which are disposed of through welfare food programs, school lunch programs and emergency gifts of food to people in disaster areas. Exports have been declining in recent years.

The potential for increasing peanut production is greater in the U.S. than in any other part of the world. The acreage could be increased without displacing other food crops, and the opportunities for increasing yields are better than those in other countries. Even though the potential is great, the prospects are slim. Price supports in the U.S. are above world prices. Without price supports, U.S. farmers would shift to other crops.

The suggestion has been made more than once that the U.S. Government assume greater responsibility for alleviating hunger in the world. One way to meet this responsibility would be to remove all acreage controls on food crops, support prices at a level that would assure the grower of a reasonable income and export the surplus products at world market prices or at whatever price the needy countries could pay. Tax money would be used to make up the difference between production costs and income from domestic and export sales. This is not likely to occur for several reasons. Taxpayers probably would not support the idea. Even if they would, this approach would create problems in the recipient countries and in other countries having food crops for export. Even if an acceptable way could be found to use the production potential of the U.S. to alleviate hunger in the developing countries, it is not likely peanut production would increase substantially. Wheat and corn are more economical sources of energy, and production of these crops could be increased faster than peanut production could be increased.

The extent to which peanuts will contribute to the protein requirements in human diets in the developing countries is questionable. Food habits of people will have to change in order for peanuts and peanut butter consumption to increase faster than population increases. Strict quality controls will have to be established in order to prevent the development of aflatoxin in peanuts or peanut products. Experience in the U.S. has shown that the aflatoxin problem can be handled, but the procedures that are required are expensive.

Economics will also play a major role in determining the extent to which peanuts are used as a source of protein in human diets. Conventional crops such as soybeans, sunflowerseed and pulses are more economical sources at present.

It appears more likely that most of the peanuts in the developing countries will be processed into oil and peanut cake, and that human consumption of peanut oil will increase. More peanut cake will probably be used in animal feed, and less will be used as fertilizer. If the aflatoxin problem can be solved, there is reason to believe that more peanut cake will be processed into peanut flour which can be used in a variety of ways to supplement native diets.

Peanut proteins are deficient in methionine, lysine, tryptophan and, to some extent, threonine. This presents no particular problem in human diets containing significant amounts of animal products. Diets based on wheat, corn, rice, millet, roots, tubers or plantain would require other supplementation with other sources of protein or enrichment with purified amino acids. The same is true for animal feeds. The need is probably more critical for animal feed since animals grow faster and have less opportunity to choose their diet.

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