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cular, to gram. But in States of the relatively dry region, the acreage under *rabi* and *kharif* pulses has increased. The former responds mainly to higher cropping intensity along with improved yield and higher price of *rabi* pulses while *kharif* pulse acreage has positively responded mainly to irrigated area, and to a relatively favoured price ratio. Rainfall turns out significantly in both the seasons in this region.

A NEW STRATEGY FOR INCREASING OILSEEDS PRODUCTION: LESSONS FROM SAURASHTRA EXPERIENCE WITH GROUNDNUTS

Katar Singh and Ranjana*

Oilseeds occupy an important place in India's economy. They contribute about 6 per cent of India's gross national product and about 9 per cent of the value of all agricultural commodities produced in the country. They account for about 15 per cent of the gross cropped area in the country. But the area, productivity and production of oilseeds in India have all been fluctuating around very low levels for the last three decades. As a matter of fact, the index numbers of area, production, and yield of groundnut and of oilseeds in India in the year 1978-79 were only slightly higher than the corresponding indices in 1970-71. The oilseeds sub-sector has been totally bypassed by the recent Green Revolution in Indian agriculture. This is evidenced by the tardy increase in the yield of oilseeds in India relative to other crops (Table I).

There are numerous physical, technological, economic and institutional constraints on increasing area and per hectare yield rates of oilseeds. Lack of high-yielding varieties suitable for dryland conditions in which oilseeds are usually grown, risk of crop failure due to vagaries of monsoon rains, lack of institutional credit facilities, unremunerative prices and lack of an institutional mechanism for integrating production, processing and marketing of oilseeds are some of the major factors responsible for the stagnation of the oilseeds economy. This paper is aimed at outlining a strategy for increasing production of oilseeds in the country. The strategy is mainly based on the experience of the National Dairy Development Board (NDDB) with groundnuts in the Saurashtra Region of Gujarat. We begin with a brief review of the current state of affairs in India's oilseeds and edible oil economy.

PRESENT STATUS OF OILSEEDS AND EDIBLE OIL ECONOMY

Since oilseeds are the major source of edible oil in India, their production affects the domestic availability of edible oil in a big way. The continued stagnation in oilseeds production, on the one hand, and the continuously

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TABLE I—INDEX NUMBERS OF AREA, PRODUCTION AND YIELD OF SELECTED CROPS IN INDIA, 1950-51-1978-79

(Base: Triennium ending 1969-70=100)

Crop	1950-51	1955-56	1960-61	1965-66	1970-71	1975-76	1976-77	1977-78	1978-79
Rice									
Area ..	83.6	85.4	92.4	95.8	101.5	106.7	104.1	108.9	108.7
Production	56.3	73.2	88.3	78.1	107.4	124.7	107.2	134.7	137.7
Yield ..	67.4	85.7	95.6	81.5	105.9	116.9	103.0	123.7	126.7
Jowar									
Area ..	84.0	93.6	99.1	95.1	93.5	86.5	84.8	87.7	86.7
Production	63.4	68.3	100.4	76.9	82.3	96.3	106.6	122.2	117.1
Yield ..	75.5	73.0	101.3	80.8	88.0	111.3	125.7	139.3	135.1
Bajra									
Area ..	72.8	91.4	92.2	96.0	103.6	93.0	86.4	89.2	91.1
Production	56.2	72.6	68.9	78.6	168.2	120.2	122.6	99.1	115.6
Yield ..	75.3	79.6	74.9	82.1	162.6	129.2	141.9	111.1	126.9
Wheat									
Area ..	61.4	77.9	81.4	79.3	114.9	128.8	131.7	133.1	139.9
Production	37.8	49.2	60.9	57.6	132.1	159.9	160.8	176.0	193.9
Yield ..	61.7	63.2	74.9	72.8	115.1	124.1	122.1	130.3	138.6
Groundnut									
Area ..	62.0	70.8	89.2	106.1	101.0	95.5	97.0	96.8	104.0
Production	64.3	71.3	91.0	82.6	118.4	130.9	102.0	118.0	123.8
Yield ..	103.8	100.8	102.1	78.0	117.4	131.6	105.2	121.9	119.0
Oilseeds									
Area ..	72.3	81.0	93.3	101.2	101.6	100.6	97.0	103.5	107.0
Production	66.1	72.9	69.9	85.6	116.1	123.8	103.9	117.5	124.2
Yield ..	98.0	94.7	100.7	85.4	113.0	120.8	104.3	113.1	115.6

Source: Indian Agriculture in Brief, 18th Edition, Directorate of Economics and Statistics Ministry of Agriculture, Government of India, New Delhi, 1980, pp. 106-111.

increasing demand for edible oil, on the other hand, have led to an ever widening gap between their supply and demand. The overall deficit of edible oil in the country fluctuates from 3 lakh tonnes in good years to 8 lakh tonnes per year in bad years.¹ This gap is filled up either by imports or by soaring prices.

The per capita per day availability of edible oil in India was 8.8 grams in 1960-61 which increased to about 11 grams in 1978-79. Two-thirds of the total per capita consumption of 17 grams of fats and oils in India come from vegetable oils and the remaining one-third from milk fat. The present per capita consumption of fats and oils is not even half the prescribed minimum nutritional requirement.²

Among the edible oilseeds, groundnut is the most important one accounting for about 46 per cent of the total area under oilseeds, about 67 per cent of the total oilseeds production and about 59 per cent of the total edible oil production in India. It is grown on some 7 million hectares of land yielding about 6 million tonnes of pods. It sustains an internal trade of Rs. 9 million and exports of Rs. 375 million annually.³

Among the groundnut growing States, Gujarat supplies about 30 per cent of the India's total production of groundnut. In the Gujarat State, groundnut production is concentrated in the Saurashtra region which is known as the Peanut Bowl of India. It contributes about 85 per cent of the total groundnut production in Gujarat.⁴

Groundnut is mainly a rainfed *kharif* crop. In India, only 6-7 per cent of the area under groundnut is irrigated, in Gujarat this percentage is only 2-3. The yield differences between the irrigated and the rainfed crops are significant; an irrigated crop yields 1.5-2 times as much as a rainfed one. Besides, the average yield of groundnut in India is very low, being only 861 kg. per hectare compared with 2,958 kg. in U.S.A., 1,350 kg. in Indonesia and 1,182 kg. in Bangladesh.⁵

At present, a large volume of groundnut produce is sold by producers to commission agents and other middlemen who in turn sell it to oil millers. The groundnut and groundnut oil market is dominated by a few capitalist families. They exploit both the producer and the consumer by paying unreasonably low prices to the former and by charging exorbitantly high prices to the latter. This situation calls for intervention by the producer-controlled organizations in the form of integration of production, processing and marketing. The National Dairy Development Board (NDDB) has brought about the needed intervention in a big way in the Saurashtra region.

1. National Dairy Development Board: Restructuring Edible Oil and Oilseeds Production and Marketing, Anand, October 1977, p. (iii).

2. *ibid.*, p. 1.

3. Industrial Finance Corporation of India: A Study of Oilseeds Processing Industry in India, Bombay, 1978, p. 29.

4. Ranjana, "Oilseeds Revolution through Co-operatives", *The Economic Times*, October 14, 1981, p. 11.

5. M. I. Manrai *et al.*, "Planning for Edible Oils," *The Economic Times*, December 10, 1980, Commodities Survey, p. III, Table C.

NDDB'S SCHEME FOR MODERNIZING OILSEEDS ECONOMY

After having successfully implemented Operation Flood-I, the NDDB undertook to modernize the oilseeds and vegetable oil economy by organizing the oilseeds producers in the Anand Pattern dairy co-operatives⁶ and by integrating production, processing and marketing of oilseeds and vegetable oil. For this purpose, the NDDB formulated a Rs. 1,500 million scheme which provides for organizing oilseeds growers' co-operatives (OSCS) at the village level, providing technical know-how and inputs and services to the producers and setting up oil mills. The scheme was first launched in the Bhavnagar district in the Saurashtra region in May 1978 and was subsequently started in selected areas in Andhra Pradesh, Madhya Pradesh, and Tamil Nadu also. In Gujarat, it is now in operation in 4 of the 6 districts in the Saurashtra region.

The NDDB would receive Rs. 1,500 million worth of gifts of 1.6 lakh tonnes of refined soyabean oil from the Co-operative League of U.S.A. (CLUSA) and 90 thousand tonnes of crude rapeseed oil from the Co-operative Union of Canada over the period 1979-86. The money to be generated from the sale of the donated oil is to be utilized for restructuring the oilseeds and edible oil production, processing and marketing on co-operative basis.

The scheme has progressed very well in Gujarat. By the end of January 1982, some 861 oilseeds growers' co-operative societies had been registered in the State. These co-operatives covered 1,059 villages and had 56,308 producer-members all together having 2.15 lakh hectares of land of which about 60 per cent was under oilseeds. Thirty-one demonstration farms and one district farm had been set up and 1,227 tonnes of seeds, 307 tonnes of fertilizers, 3,401 kg. of seed treatment chemicals, and 9,464 packets of Rhizobium culture distributed to the producer-members. The average price received by the producers in 1981-82 was Rs. 4,200 per tonne which was substantially higher than the market price and about 10 per cent higher than the last year's price.

PROPOSED NEW STRATEGY

Based on the experience of the NDDB's scheme, we now outline a strategy for modernizing the oilseeds and vegetable oil sub-sector of India's economy. An integrated system of production, processing and marketing controlled by the producers forms the core of the strategy.

1. Organization Structure

A three-tier organization structure with oilseeds growers' co-operative societies at the village level, Unions at the district level and a Federation at the State level is proposed for restructuring the oilseeds and vegetable oil sub-

6. The salient features of the Anand Pattern dairy co-operatives include (1) a single commodity approach; (2) a three-tier organizational structure; (3) producer-elected leadership and decentralised decision-making; (4) professional managers and technicians employed by producers; (5) provision of all necessary inputs and services; (6) integration of production, processing and marketing; (7) continuous and concurrent audit; (8) cash payment for milk on the basis of fat contents; and (9) contribution to village amenities.

sector. The societies are affiliated to the Unions and the Unions to the Federation. A co-operative society may consist of one or more than one village depending upon the acreage under oilseeds which is necessary to make the society an economically viable unit. The society would deal in oilseeds only. The membership would be open to only those oilseeds producers who undertake to sell a specified minimum amount of their produce to the society. In Saurashtra, this minimum quantity is 800 kg. of groundnut pods and the break-even level of acreage for a society is 1,000 acres. The societies are organized by a team of specialists in agriculture, extension, social sciences, etc., which is called the spearhead team. The team members survey the potential area, do door-to-door canvassing, hold village meetings, enrol members, help elect the members of the management committee and register the society. The whole effort is guided and supervised by the Federation.

2. Provision of Inputs and Services for Increasing Production

Quality seeds, fertilizers, plant protection chemicals and farm equipment are provided by the Unions to all the member-producers through their village co-operatives to help increase production of oilseeds. Besides, the Unions also provide technical know-how and arrange for the training of producers in the improved methods of oilseeds production. This represents considerable improvement over the existing situation where there are almost as many different supply agencies as the kinds of inputs and services required for production and there is no co-ordinating mechanism. The producer-members get the benefits of economies of scale in procuring, transporting and handling various farm supplies which would not be available to them if they were to procure them individually.

3. Collection and Processing of Produce

The Union arranges for the collection of the produce from the door steps of the producer-members and then transports the same to the processing plant owned by it. In the Saurashtra region, at present there are no Unions at the district level but there are Area Offices handling procurement, quality assessment, payment and despatch of the produce to the designated places.

4. Pricing of Oilseeds and Mode of Payment

The price of the produce is determined by the society on the basis of the prices prevalent in the nearest market yard with appropriate adjustments made for the quality of the produce. Usually, the maximum of the market prices is paid to the producer-members for their produce. The Saurashtra farmers have evolved an ingenious system of sale which is locally called *jangad*. In this system, the seller has an option to sell his produce at any future day's price within 90 days after the delivery of his produce to the society. He is also eligible to claim an advance payment upto 70 per cent of the value of his produce based on a pre-determined price. The advance is adjusted at the time of final payment. Besides, the seller also shares in the increased profits that may accrue to the society as a result of increase in prices during the season.

5. *Marketing of Vegetable Oil and Other By-products*

The Federation is responsible for the marketing of vegetable oil and other by-products within and outside the State. It is also responsible for overall co-ordination, guidance and supervision of the functions of the Unions in the State and for liaison with various Government departments and other public and private agencies at the State and the national level.

6. *Applied Research, Training and Development*

The Federation is responsible for undertaking all these three activities either in collaboration with some other institutes/agencies or by itself. Agromonic research is done to develop high-yielding varieties of oilseeds and to produce foundation seeds which are multiplied at the district farms to produce certified seeds for distribution to the producer-members. For distribution of certified seeds, high priority is given to those farmers who undertake to grow the crop according to the recommended methods and to let their crop plots be used as demonstrations. The purpose of the demonstrations is to educate the producers in the scientific and modern methods of growing the crops.

The Federation also arranges for conducting training programmes for various categories of personnel as well as for oilseeds growers. The organization and registration of societies and Unions are also done under the guidance and supervision of the Federation.

7. *Financing, Monitoring and Evaluation*

At present, the NDDB through its Oilseeds and Vegetable Oil Wing (OVOW) is serving as a 'finance and promotion house' for implementing a programme which is based on the strategy outlined in this paper. But there is need for a separate and autonomous organization like the NDDB at the national level for overall co-ordination, supervision, guidance, monitoring and evaluation of the programme. Such an organization may be called the National Oilseeds and Vegetable Oil Development Board.

CONCLUSIONS AND IMPLICATIONS

The strategy outlined in this paper has a great promise for increasing the production of oilseeds and vegetable oils in the country and for stabilising their prices. Integration of production, processing and marketing which is the core of the strategy would provide the needed incentive to the producer in the form of stable and remunerative prices to adopt the modern production methods and thereby increase the production of oilseeds. The effectiveness of the strategy has already been demonstrated in the Saurashtra region of Gujarat. What is needed is a national programme for replicating the Saurashtra Model in other comparable areas in the country and an apex organization like NDDB to make it happen. Once a decision is taken at the national level to replicate this strategy, necessary managerial, technical, financial and material can be found out and mobilized to implement it.