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SUNFLOWER (*Helianthus annuus* L.) IN WEST PAKISTAN

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Demand for vegetable oil for edible purposes in West Pakistan has been rising rapidly and the consumption for other purposes has also equally increased. It will continue rising with increase in population and rise in living standard.

PRODUCTION & IMPORTS*

(Tons in '000)

Year	Cottonseed oil, rapeseed mustard & others	Imports	Total
1968-69	182.8	72.7	255.5
1969-70	203.8	57.0	260.8
1970-71	200	81.0	281.0
1971-72 Proj.	220	85.0 Proj.	305.0

* Source : US AID Economic Adviser Pak.

Annual import of oil in West Pakistan during the four years has been estimated to be 74 000 metric tons on the average, costing nearly \$ 15 millions per year C & F of foreign exchange.

The industry responsible for the manufacture and supply of Vanaspati - a popular cooking medium (hydrogenated semi solid granulated fat) - in the country would be unable to procure adequate supply of basic raw material namely vegetable oils were it not for imports from abroad.

Vanaspati is made from vegetable oil which can be obtained from a variety of nuts and seeds such as Peanuts, Sesamum, Rapeseed, Cottonseed, Safflower and Sunflower.

The predominant oil seed crops of West Pakistan are Rapeseed and Mustard "*Oleiferous brassica*". The oil from this source is mainly used in rural areas in raw form as a cooking medium. The industry manu-

facturing Vanaspati use cottonseed oil produced in the country and imported Soybean and sunflower oil.

SUNFLOWER

Due to the efforts of Lever Brothers Pakistan Limited who are among the pioneers in the production of Vanaspati in Pakistan a good deal of interest has been aroused in this crop in the country. Government and the farmers are interested and all the Agricultural Research Institutes are now paying full attention to sunflower research. The Company following Unilever's world-wide policy of helping in developing the indigenous resources of a country had been exploring means of increasing edible oil production in Pakistan many years earlier and conducting research on all oil bearing seed crops. After careful preliminary research a decision in favour of sunflower was taken because of following advantages :

- 1 - It has high yield potential.
- 2 - It is short period crop. It matures in 90 to 100 days and could be grown twice a year without interfering with the existing cropping pattern while other crops take at least 6 months to mature and clash with the major crops like wheat and cotton.
- 3 - It is rich in edible oil and protein. Oil content in varieties tested in Pakistan range between 40 - 48 % on dry seed basis.
- 4 - It is comparatively hardy crop and no major insect, pest and disease problems have so far been noticed in West Pakistan. Parrots, however, like sunflower seed very much and cause much damage if not protected against.
- 5 - As a catch crop it provides additional farm income besides helping to bridge the edible oil deficit.
- 6 - Sunflower oil is extremely high in nutritional value. As somebody said, the name sunflower itself implies energy.
- 7 - Oil from sunflower can be expelled or extracted with the equipment already existing in the country.
- 8 - Extracted meal or cake is rich in digestible protein and free from toxic elements which makes it extremely useful for poultry and animal feed.

Sunflower as a field crop is entirely new to the farmers of West Pakistan like those of several other countries who are now taking up its cultivation - little or no knowledge is available to them regarding its cultural requirements and management. They are being guided through the Press, Radio and demonstration plots laid out by the extension staff.

Large scale field experiments have been conducted by the Company and the Government Department of Agriculture in all Provinces of the country.

Area under sunflower cultivation during the past five years of field research has been as under :

<u>YEAR</u>	<u>AREA</u>
1967	50 Acres
1968	500 "
1969	900 "
1970	3 000 "
1971	5 000 "

A program for cultivation of sunflower on 14 thousand acres had been prepared for 1972 which could not be implemented due to disturbed conditions in the sub-continent at the time of planting. Still we managed to plant about 3 000 acres. Arrangements are being made for launching country-wide action program for large scale cultivation as soon as possible.

Lever Brothers Pakistan Limited guaranteed the floor price and provided free seed and technical assistance.

Yields reported by the Research Centres in different ecological regions are, as under :

	<u>LOCATION</u>	<u>YIELDS</u>
Tando Jam (Sind)	Lat. 25°25' N Long. 68°30' E	1 152 lbs/acre.
Lever Brothers Pakistan Ltd. Research, Rahim Yar Khan	Lat. 28° N Long. 70-71° E	2 172 lbs/acre.
Lyalpur (Punjab)	Lat. 31°25' N Long. 73°10' E	1 845 lbs/acre.
Tarnab & Swat (N.W.F.P.)	Lat. 34° N Long. 71°30' E	1 175 lbs/acre Tarnab
	Lat. 35° N Long. 72-73° E	3 066 lbs/acre Swat

Highest yields from plots are reported from Swat Valley in the North which could be due to more congenial climatic and environmental factors. There is large population of pollinating insects in this valley, where bee farming is also popular which helps in pollination. Arrangements have been made to lay out large scale field trials in this valley.

During the past five years the Company has given out 70 tons seed free of cost to the Departments of Agriculture, Research Institutes and the farmers for conducting large scale field experiments. The Punjab Government also imported 10 tons seed of H01 variety from U.S.A. last year for free distribution to the farmers. This was financed by the Company.

Besides research at the above main Centres which represent various climatic and environmental conditions in West Pakistan, study is being carried out at several other Research Stations all over the country. The research is of applied nature and aims at selection of suitable varieties, study of irrigation and fertilizer requirements and optimum plant population for obtaining maximum yields. Study of the diseases and pest problems and their solution is also in hand. The Institutes are fully equipped and the work there is guided and supervised by the Experts who have also received training at the All Union Research Institute of Oil Crops in U.S.S.R.

The varieties so far tested on large scale are :

1. Peredovic)
2. Vniimk (From U.S.S.R.
3. Armaverec)
4. H01) From U.S.A.

The Russian varieties have given 6 - 8 % more oil per acre. We are much interested in testing the new hybrids evolved in U.S.A. and France.

The problems faced so far are :

- 1 - In some areas natural pollinators are insufficient in number. The local bee "Apis florea" found in those areas is smaller than other Apis Sp. and is also not very active. Bee keeping in such areas is rather difficult due to extremely hot climate during summer. This is where we face the problem of unfilled seed when we extend the acreage. We are trying to overcome the problem by resorting to hand pollination. Farm labour is plentiful and cheap in Pakistan. Pollination by hand costs 20 to 25 rupees per acre (about \$ 2.0 to 2.5). The workers find

pollination work easy, interesting and fascinating.

- 2 - Damage by parrots - there is considerable population of this green talking bird in West Pakistan. It likes the sunflower seed very much and causes much damage to the crop. Once the disc of the sunflower is damaged by the parrot, other birds also take their toll.
- 3 - Our scientists are watching the diseases and we are carefully handling this new crop. We have adopted a five-year rotation to safeguard against any disease hazard.

Sunflower, a crop of great economic importance, is highly adaptable and the opinion of our experts is that it has excellent scope of introduction in the crop husbandry of West Pakistan, "the land of bright sunshine". It has smilingly withstood the highest temperature of 47°C at the time of pollination. Only a few days ago we harvested a 14 acre plot at Rahim Yar Khan which gave an average yield of 1068 lbs/acre. The variety was H01. It had been planted late and during the period of anthesis, the mercury twice touched 47°C.