STATUS OF RAPESEED AND MUSTARD CROPS IN PAKISTAN

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Introduction:

Pakistan is chronically deficient in edible oils. The major source of edible oil in the country is cottonseed which accounts for about 70 percent of the total domestic production. Rapeseed and mustard are second in importance and account for approximately 25 percent, while the remaining oils account for about 5 percent. Cotton is primarily a fibre crop and its oil is a by-product. Rapeseed and mustard are therefore the only well established edible oil crops in the country.

Status of Rapeseed and Mustard Crops in Pakistan

The area, production, and yield of rapeseed and mustard in Pakistan for the last 18 years are given in Table 1 (Anonymous, 1981-85). It is evident that the area devoted to these crops is declining in contrast to international trends of increasing area and production (Anonymous, 1984). The cultivated area devoted to these crops reached its peak of 562,000 ha in 1971-72, gradually decreased to 313,000 ha in 1983-84 and slightly increaed to 351,000 ha in 1985-86. The average yield however has increased from 535 to 713 kg/ha, but this increase is considered to be small as the average yield still remains one of the lowest in the world.

Approximatley 25 to 30 percent of the rapeseed and mustard acreage is grown under barani (rainfed) conditions and the rest on irrigated land. The total area devoted to these crops by provinces is as follows: about 58 percent in Punjab, 26 percent in Sind, 10 percent in NWFP and 6 percent in Baluchistan.

Rapeseed and Mustard Crops in Pakistan

The term "rapeseed" refers to all the forms of *B. campestris* (turnip rape) and *B. napus* (oilseed rape) species (Downey et al. 1980). *B. campestris* is represented by three crops, viz., toria, yellow (Peeli) sarson and brown (Bhuri)

sarson whereas B. napus is referred to as gobhi sarson. The species included under the term, "mustard" are B. juncea (raya), Eruca sativa (taramira) and B. carinata (Abesina raya). The nomenclature used for the various rapeseed and mustard crops is given in Table 2 (Munir and Khan, 1984).

The cultivation of B. napus is rather recent in Pakistan, and it is grown mainly in NWFP and central Punjab. B. carinata has been introduced very recently. The first Pakistani cultivar in this species, "Peela Raya", was released in 1986. It is a high yielding cultivar and possesses disease, aphid and drought tolerant characteristics.

Rapeseed and mustard crops in Pakistan are grown generally on marginal lands where soils are either infertile, saline, or where water is in short supply. All these crops except toria and Poorbi Raya are grown in rabi season. Raya and taramira are relatively hardy crops and are grown throughout the country. Sarson and toria are more sensitive to cold and frost damage and are planted in southern areas where warm temperatures prevail all year. Rabi crops mature

Table 1. Area, Production and Yield of Rapeseed and Mustard in Pakistan (1968-69 to 1985-86)

Year	Area (000 ha)	Production (000 tonne)	Yield (kg/ha)
1968-69	442	225	509
1969-70	479	251	524
1970-71	510	269	526
1971-72	562	301	535
1972-73	534	287	535
1973-74	536	292	544
1974-75	452	248	553
1975-76	470	267	572
1976-77	519	296	572
1977-78	412	236	573
1978-79	433	248	573
1979-80	409	247	604
1980-81	417	253	606
1981-82	391	239	611
1982-83	386	246	638
1983-84	313	217	693
1984-85	347	235	677
1985-86	351	250	713

Table 2. Rapeseed and Mustard Crops in Pakistan

Local Name	Sowing Season	Botanical Name	Cultivars
Rapeseed			
Toria or Torio	zaid kharif	B.campestris ssp. oleifera var. Toria	Toria Selection 'A'
Peeli sarson or sarhein	rabi	B.campestris ssp. oleifera var. Yellow sarson	YSL-I
Bhuri sarson or sarhein	rabi	B.campestris ssp. oleifera var. Brown sarson	B.S.A.
Gobhi or Japan sarson	rabi	B.napus spp. oleifera var. annua	PR-7
Mustard			
Raya	rabi	B.juncea	RL-18
	zaid kharif	B.juncea	Poorbi Raya
Jambo, taramira or Ussoo	rabi	Eruca sativa	Local Taramira
Abesina raya (Abyssinian mustard)	rabi	B.carinata	Peela Raya

in early summer and zaid kharif crops in early winter. Because the latter crops are planted when the temperatures are still high and in relatively dry months, these are mostly grown in irrigated areas. Sarson and raya are planted in both irrigated and barani regions. Taramira is normally grown in rainfed areas or where irrigation water is not available all season.

Cultivars

From the list of the cultivars released for general cultivation in the country (Table 3), it is clear that the cultivar development of rapeseed and mustard crops has not been given sufficient emphasis, since most of the varieties grown are the ones which were developed several decades ago.

Production Constraints and Their Solutions

In view of the trends in the area devoted to rapeseed and mustard crops, one would conclude that rapeseed and mustard are not popular among the country's farmers. A number of biological and socio-economic constraints which limit the production of these crops are given below:

Biological Constraints:

- use of marginal lands for cultivation.
- inadequate seedbed preparation
- non-availability of certified seed of improved varieties
- low plant density
- lack of judicious and optimum doses of fertilizers
- damage by insect pests particularly aphids
- damage by cold weather
- critical forage shortage in winter encourages harvesting for fodder
- lack of seeding, harvesting and threshing equipment.

Socio-Economic Constraints:

- lack of floor price
- lack of potential buyers of the farmers' produce
- non-use of oil in hydrogenated products, because of sulphur products in the oil
- consumer bias against use of the oil and meal
- lack of adequate storage facilities.

Table 3. Rapeseed and Mustard Cultivars in Pakistan

Cultivar/Species	Year of Release	Released From
Rabi Crops		
LGL (B.napus)	1934	AARI, Faisalabad
PR-7 (B.napus)	1967	ARI, Tarnab
ORO (B.napus, an introduction)	1977	ARI, Tarnab
Brown Sarson	1930s	AARI, Faisalabad
Selection 'A' (BSA, B.campestris)	1934	AARI, Faisalabad
Yellow sarson line 1 (YSL-1, B. campestris)	1939	AARI, Faisalabad
Raya Line - 18 (RL-18, B.juncea)	1974	ARI, Tandojam
S-9 (B.juncea)	1930s	AARI, Faisalabad
Local taramira (Eruca sativa)	1986	AARI, Faisalabad
Peela Raya (B.carinata)		
Zaid Kharif Crops		
Toria selection 'A' (B.campestris)	1936	AARI, Faisalabad
Poorbi raya (B.juncea)	1972	AARI, Faisalabad

AARI = Ayub Agricultural Research Institute
ARI = Agricultural Research Institute

Poor management practices and low inputs are the major production constraints. Rapeseed and mustard are the crops of low resource farmers who practise low-risk, low-input farming. In fact, a common belief among the farmers is that these crops do not require high inputs. However, fertilizer use and plant protection measures are among the most important inputs which can enhance yields to a considerable level. Extensive maximization programmes are needed to promote improved production technology of these crops.

Lack of supply of quality seed is another important constraint. No regular system exists for multiplication and distribution of certified seed of rapeseed and mustard cultivars. A strong consistant programme for supply of certified seed of the improved cultivars is urgently needed. The provincial seed corporations/agencies could assume this responsibility, but until now little progress has been made.

The main socio-economic factors responsible for decline in area and low production are the absence of a government procurement agency, lack of support price policy, and wide variation in post harvest prices. These factors result in a price decline at harvest and an increase after the produce enters the hands of merchants (arhties). Since the farmer is forced to sell his produce shortly after harvest, he receives a low price and therefore is losing interest in cultivation of these crops. Also, there is no organized demand for rapeseed and mustard oil in the country for edible purposes either in the private or public sectors except at the village level. Here it is used for limited cooking purposes, for pickles and also as hair oil and body rub. Hence, the demand for rapeseed and mustard oil is erratic and uncertain. Oil and ghee manufacturing industries do not use this oil because of the high sulphur levels produced by the glucosinolates in the seed. At present, local crushers do not have the equipment to pre-treat the seed to circumvent this problem, and as yet, low glucosinolate cultivars are not widely grown. This demand could come about by wide acceptance by farmers of the low glucosinolate cultivars. Floor price determination will inculcate a sense of stability in marketing the rapeseed and mustard produce. But in the absence of government procurement agency, it will be difficult to keep the price at a reasonable level if production increases. Therefore, an organization similar to that which is presently acting to promote non-conventional oilseed crops is essentially required for rapeseed and mustard crops in order to promote their production and streamline the disposal of produce. Such an organization could undertake seed production and supply, transfer of technology, and procurement of these crops.

Strategy to Increase Rapeseed and Mustard Production

Rapeseed and mustard are the largest contributors to the local vegetable oils among the true oilseed crops. These crops are already grown over a vast area of about 0.4 million hectares in the country. Growers are familiar with the cultural practices of the crops which fit well into the existing cropping pattern, whereas, the new oilseed crops such as sunflower and soybean face several problems and are in the process of introduction. With these factors in mind, it is clear that a high priority should be accorded to rapeseed and mustard crops to enhance the production of oilseeds in the country. The following policy measures/strategies should help increase production of these crops:

1. An assessment of manpower needs to maintain a desirable level of research on these crops. Research thrusts should be to develop locally adapted machinery equipment and proper production technology and low glucosinolate cultivars.
2. Research work on rapeseed and mustard should effectively be coordinated throughout the country as in other crops.
3. An attractive floor price should be fixed and marketing ensured so that the declining production trend can be reversed.
4. There is an urgent need to organize production, procurement and distribution of quality seed.
5. Improved production technology including application of fertilizer and pest management should be promoted and information disseminated through on-farm research and maximization programmes.
6. It should be made mandatory for the cooking oil mills to include some percentage of locally produced double-low rapeseed oil.
7. A pilot scheme of village level extraction and processing should be undertaken.

References

Anonymous. 1981-85. Agricultural Statistics of Pakistan. Planning Unit, Ministry of Food, Agriculture and Cooperatives, Government of Pakistan, Islamabad.

Anonymous. 1984. FAO Production Yearbook. FAO, Rome.

Downey, R.K., A.J. Klassen and G.R. Stringam. 1980. Rapeseed and Mustard. In: Hybridization of Crop Plants. Fehr, W.R. and H.H. Hadley (editors). American Society of Agronomy and Crop Science Society of America, Madison, Wisconson.

Munir, M. and A.R. Khan. 1984. Production technology for rapeseed and mustard. Progressive Farming (PARC), 4(6): 20-25.