

## ECONOMICS OF NON-CONVENTIONAL OILSEED CROPS IN THE CENTRAL PUNJAB

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**ABSTRACT:** The study was conducted to assess the economics of non-conventional oilseed crops in the Punjab. Therefore 60 respondents were taken from Faisalabad, Toba Tek Singh and Chiniot districts of Central Punjab. Percent area allocated to canola crop was comparatively higher at medium farms as compared to small and large farms. The results of the study showed higher yield of canola at large farms as compared to medium and small farms. Average gross revenue by small, medium and large farmers was Rs. 35913.10, Rs. 39635.54 and Rs. 39868.80 acre<sup>-1</sup> respectively. Average of net income by small, medium and large farmers was Rs. 21194.59, Rs. 20608.26 and Rs. 19956.50 respectively. Benefit cost ratio for small, medium and large farmers was 2.44:1.00, 2.08:1.00 and 2.00:1.00 respectively. The study revealed that canola production in Central Punjab is profitable enterprise. However, the profitability of canola at small farms was higher as compared to other farm size categories. There is sharp increase in input prices from year to year basis while output prices remained same over the year. The Government should effectively control the input prices to avoid the exploitation of farmers. Extension efforts are required to disseminate suitable canola technologies including high yield, short duration varieties to maximize the returns of canola growers. Public efforts are urgently required to ensure timely disposal of canola produce and prompt payment.

*Key Words:* Non-conventional Crops; Canola; Economics; Small Growers; Medium Growers; Large Growers; Pakistan.

### INTRODUCTION

Pakistan has made a lot of progress since independence in the field of agriculture in terms of production, yield, and growth in area under cultivation. However, the country remained deficit in production/productivity of oilseed crops (Badar et al., 2002).

The oilseed sector, owing to ever increasing consumption of edible oil, has attained critical importance in the economy of the country. Increasing demand owing to rapid population growth and fluctuating in domestic edible oil production base, the country has attained the status of the third largest importer of the edible oil in the world. Nearly 65-70% of its requirements are met through import of edible oil (Anjum, 1993).

In 2009 the local production of edible

oil was 0.779 million tonnes (mt). To meet the domestic consumption, 1.29 mt of edible oil was imported and 0.216 mt of edible oil was recovered from imported oilseeds with the cost of Rs. 84 billion (GoP, 2009).

Pakistan is spending a huge amount of foreign exchange on the import of edible oils, the import bill, which was Rs. 2.3 billion in 1980 has gone up to Rs. 84 billion in 2009 (GoP, 2009a).

The Government of Pakistan introduced National Oilseed Development Project (NODP) in 1989 and Pakistan Oilseed Development Board (PODB) in 1995 for the promotion of the non-conventional oilseed crops (PODB, 1997).

As a result of this project, the area under non-conventional oilseed crops increased from 25.90 thousand hectares in 1989-90 to 86.21 thousand hectares in 1995-96. The production of non-conven-

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tional oilseed crops increased from 24.58 to 108.51 thousand tonnes during the project period (Khan, 2000). After the termination of NODP, the Government of Pakistan launched PODB, emphasizing on two non-conventional oilseed crops, sunflower and canola, over an area of 150 and 260 thousand hectares producing 755 and 134 thousand tonnes, respectively (GoP, 2009b).

These programmes/projects, under public sector services, tried their best efforts for promoting the acreage and production of non-conventional oilseed crops.

The factors limiting the productivity of non-conventional oilseed crops are marginal lands, environmental stresses, and inadequate arrangements of seed supply, non-adoption of improved production practices, increasing costs of inputs, post harvest losses, defective procurement/marketing system and outdated technology.

The farmers have been complaining about the increasing costs and nominal to negative returns from various crop enterprises. Due to recent increases in the prices of farm inputs, cost of production and the cost structure of various farm enterprises have changed significantly. The present study was aimed to estimate the cost of production of non-conventional oilseed crop of 2009-10 and to calculate net benefits and benefit cost ratio (BCR) of non-conventional oilseed crop.

## MATERIALS AND METHODS

From non-conventional oilseed crops, only canola oilseed crop was targeted. A farm level survey was conducted in April 2010 in Faisalabad Division. From Faisalabad, Toba Tek Singh and Chiniot districts canola growers were selected purposively. From each district, 20 canola growers were selected as respondents. Thus, total 60 respondents were taken for the study. The data were collected through farmers' interviews using a well-structured questionnaire. The data were analyzed by using simple statistics to estimate the various responses and drawing conclusion for pertinent recommendations. The respondents were classified into small, medium

and large farms according to size of their operational land holdings. The farmers operating a farm of less than 12.5 acres were termed as small farmers; those with an operational land holding between 12.5 acres to 25 acres were placed under medium farmers, whereas farmers having more than 25 acres were classified as large farmers.

## Estimation of Costs and Incomes

Net value of the produced and cost involved were estimated. Cost of variables inputs such as labor, ploughing, planking, seed, fertilizer, irrigation, harvesting and threshing were computed. For the estimation of gross income, the value of product (grain) during the year was counted. To compute the net income the following formula was used:

$$\text{Net income (NI)} = \text{GR} - \text{TC}$$

where,

$$\begin{aligned} \text{NI} &= \text{Net income} \\ \text{GR} &= \text{Gross return} \\ \text{TC} &= \text{Total cost} \end{aligned}$$

## Benefit Cost Ratio

It is defined as the amount received in the shape of profit on the costs of one rupee. The BCR was computed by this method.

$$\text{BCR} = \text{GR/TC}$$

where,

$$\begin{aligned} \text{BCR} &= \text{Benefit cost ratio} \\ \text{GR} &= \text{Gross return} \\ \text{TC} &= \text{Total cost} \end{aligned}$$

$$\text{Gross Margin (GM)} = \text{GR} - \text{VC}$$

where,

$$\begin{aligned} \text{GM} &= \text{Gross margin} \\ \text{GR} &= \text{Gross return} \\ \text{VC} &= \text{Variable cost} \end{aligned}$$

## RESULTS AND DISCUSSION

### Canola Acreage in the Study Area

During 2009-10, average area under canola crop was grown on 0.71, 1.93 and 3.02 acres by small, medium and large farmers respectively (Table 1). The average area allocated to canola crop by the respondents of the study area was 1.57 acres. The percent area allocated to canola crop

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**Table 1. Canola acreage in the study area**

Farm size categories	Total canola area 2009-10 (acres)	Percent farm area allocated to canola crop
Small	0.71	10.16
Medium	1.93	10.60
Large	3.02	6.55
Total	1.57	8.29

was more at small farms during 1994 as compared to medium and large farms (Sharif et al., 1994). The results of present study showed more area allocation to canola crop by medium farmers than other farm size categories in the study area. The present trend is more area allocation to canola crop by medium farms may be due to growing of canola as commercial crop rather than traditional crop and change in crop rotation. It has been observed that farmers are planting early Bt-cotton after harvesting of canola.

## Cost of Inputs in the Study Area

Canola is an economical crop in the Central Punjab. Adequate quantity of inputs at proper time is very crucial for canola crop. Accordingly much of the emphasis and its management practices along with its cost at farm levels were investigated in detail. Management of different inputs such as land preparation, seed rate, irrigations, fertilizer applications etc., not only increase the production and hence productivity and net returns could be increased without additional investment of resources. Expenditures on canal irrigations were the same for all farm size categories because canal rates (*Abiana*) are collected on the basis of one acre (Table 2).

Large farmers used more number of cultivators than small and medium canola growers and the mean expenditures by large farmers were Rs. 4072.03 acre<sup>-1</sup>. Similarly large farmers emphasized on planking and the mean expenditures were Rs. 539.50 acre<sup>-1</sup>. The seed rate used by the medium and large farmers was same and higher than small canola growers. Tractor tubewell irrigations were used by all farm size categories and the mean expenditures were Rs. 225.00, Rs. 409.09 and Rs. 600.00

by small, medium and large farmers respectively. Medium and large farmers also used electric tube wells for irrigations in addition to tractor driven tube well. Whereas, peter engine tubewell was found at medium farms in addition to tractor driven and electric tubewell with average amount spent on per acre was Rs. 490.90. Use of DAP; urea and potash fertilizers was comparatively higher at medium and large farms as compared to small farmers. Expenditures on insecticides by small, medium and large farmers were Rs. 156.81, Rs. 397.33 and Rs. 218.75, respectively in the study area.

The manual harvesting charges for small, medium and large farmers were Rs. 1080, Rs. 1163.63 and Rs. 1177.77 acre<sup>-1</sup>, respectively. Low harvesting charges at small farms may be due to more use of family labor. The threshing charges of canola crop for small, medium and large canola growers were Rs. 1760, Rs. 1954.54 and Rs. 1955.55 acre<sup>-1</sup>, respectively.

## Economic Analysis of Canola Production

Canola production had considerable advantage over the production of other competing crops i.e. wheat, gram and safflower (Rehman, 1998). The canola yield on small, medium and large farms was 788, 876 and 880 kg acre<sup>-1</sup> respectively (Table 3). The results show comparatively higher yield of canola at large and medium farms as compared to small farms. The higher yield may be due to better land preparation, more use of balanced fertilizer and insecticides. Average gross revenue earned by small, medium and large farmers was Rs. 35913.10, Rs. 39635.54 and Rs. 39868.80 acre<sup>-1</sup>, respectively. Average net income by small, medium and large farmers was Rs. 21194.59, Rs. 20608.56 and Rs. 19956.50 respectively.

**Table 2. Average quantity of inputs applied and expenditures of canola crop**

Item/unit	Application (#)			Expenditure (Rs.)		
	Small	Medium	Large	Small	Medium	Large
Cultivator	4.60	4.99	5.66	3151	3481.62	4072.03
Planking	1.25	1.90	2.11	309.37	451.23	539.50
Rotavator	-	0.09	0.22	-	127.27	266.66
Disc ploughing	-	0.36	-	-	218.18	-
Laser leveling	-	0.09	-	-	90.90	-
Seed rate (kg)	1.53	1.72	1.72	906.52	1476.03	1530.86
Canal irrigations	1.52	1.63	1.83	2243.99	2320.65	2658.33
Tube well irrigations (No.)	0.15	0.27	0.44	225	409.09	600
(Tractor)						
Tube well irrigations (No.) (Electric)	-	0.18	0.44	-	174.54	800
Tube well irrigations (No.) (peter)	-	0.27	-	-	490.90	-
DAP (bags)	0.30	0.81	0.66	604.99	1627.27	1333.33
Urea (bags)	0.71	0.92	1	576.87	758.50	812.50
Potash (bags)		0.09	0.11		72.72	88.89
Insecticides (No.)	0.74	1.54	0.87	156.81	397.33	218.75
Insecticides labor	-	-	-	100	100	100
Charges						
Manual harvesting charges (Rs.)	1	1	1	1080	1163.63	1177.77
Threshing harvesting charges (Rs.)	1	1	1	1760	1954.54	1955.55
Land rent for one year	-	-	-	13000	13000	13000
Agriculture tax	-	-	-		150	250
Abiana	-	-	-	85	85	85

**Table 3. Economic analysis of canola production**

Parameter	Farm size categories		
	Small	Medium	Large
Yield (kg acre <sup>-1</sup> )	788	876	880
Gross revenue (Rs.)	35913.10	39635.54	39868.80
Variable Cost (Rs.)	11383.51	15692.28	16577.38
Total cost (Rs.)	14718.51	19027.28	19912.38
Gross margin (Rs.)	24529.59	23943.26	23291.50
Net income (Rs.)	21194.59	20608.26	19956.50
Benefit cost ratio	2.44:1.00	2.08:1.00	2.00:1.00

The variable cost of small, medium and large farmers was Rs. 11383.51, Rs. 15692.28 and Rs. 16577.38 respectively. The average total cost by small, medium and large farmers was Rs. 14718.51, Rs. 19027.28 and Rs. 19912.38 acre<sup>-1</sup> respectively. Benefit Cost Ratio for small, medium and large farmers was 2.44:1.00,

2.08:1.00 and 2.00:1.00 respectively. The study results clearly indicate that canola production is profitable enterprise in Faisalabad Division. However, the canola cultivation was more profitable at small farms as compared to other farm size farmers. The main reason for higher profitability at small farms was lower variable cost.

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The canola production was a profitable enterprise in the *barani* area of Punjab (Ahmad et al., 2002 and Ali, 2004).

The farmers have been complaining about the increasing costs and nominal to negative returns from various crop enterprises. Due to recent increase in the prices of farm inputs, cost of production and the cost structure of various farm enterprises have changed significantly. The present study was aimed to estimate the cost of production of canola. Local canola and hybrid (HI-OLA 401) were the main canola varieties grown by the farmers. The large and medium farmers got higher yield as compared to small farmers. It is therefore recommended that latest/improved canola production technology be disseminated in the area for increasing canola yield at small farms.

The canola production is profitable enterprise in the Central Punjab. It is, therefore, recommended that the cultivation of canola should be undertaken on widespread basis in the Central Punjab for increasing canola production and ultimately reduction in foreign exchange spent on import of edible oil.

The farmers reported the sharp increase in input prices while output prices remain same over the year. It is therefore recommended the Government should effectively control the input prices in order to avoid the exploitation of farmers. There is problem in marketing of produce in the area, therefore, it should be resolved. Public efforts are urgently required to ensure timely disposal of canola produce and prompt payment.

#### LITERATURE CITED

- Ali, A. 2004. Profitability and prospectus of canola cultivation under rainfed conditions of Rawalpindi and Chakwal Districts. Pakistan J. Arid. Agric. 7(1): 39-42.
- Anjum, M. S. 1993. Marketing constraints and development strategy for edible oil in Pakistan. A World Bank/MINFAL/ PARC Study. Winrock International Islamabad.
- Badar H. Javed M. S. and Ali. A. 2002. Production and Marketing Constraints Limiting Sunflower Production in Punjab (Pakistan). J. Rural Develop. and Admin. 34(1-4): 119-133.
- Govt. of Pakistan, 2009. Economic Survey of Pakistan, Economic Advisor's Wing, Finance Division, Islamabad.
- Govt. of Pakistan, 2009a. Agricultural Statistics of Pakistan. Ministry of Food, Agriculture and Livestock (Economic Wing), Islamabad, Pakistan.
- Govt. of Pakistan, 2009b. Crops Area and Production (By Districts) Ministry of Food, Agriculture and Livestock (Economic Wing), Islamabad, Pakistan.
- Khan, A.R. 2000. Spring crop of sunflower. Dawn Economics and Business Review, December 27, 1999-January 2, 2000. P. III.
- PODB. 1997. Oilseed Updated Report. 92<sup>nd</sup> Meeting of Highly Powerful Federal Committee on Agriculture, 2010.
- Rehman, A. 1998. Economics of canola production in Pakistan. M.Sc (Hons.) Agri. Economic Thesis, University of Arid Agriculture, Rawalpindi
- Sarfraz, A. Ali, M. I. and Ali, A. 2002. Profitability of oilseed crops in rainfed areas of the Punjab. Pakistan J. Arid. Agric. 5(1): 61-64
- Sharif, M. Farooq, U. Bashir, A. Aslam, C.M. and Ahmad, B. 1994. Cost of Production of Canola Type Rapeseed in the Irrigated Punjab. AERU Faisalabad Staff Paper No.94-4. Agricultural Economics Research Unit (PARC) Ayub Agricultural Research Institute, Faisalabad.