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AN ECONOMICS ANALYSIS OF WHEAT CULTIVATION IN ETAWAH DISTRICTS OF UTTAR PRADESH, INDIA

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Abstract

The present study was conducted in Etawah district of U.P. due to higher concentration of area and production under wheat cultivation from the selected district. The study was based on the primary data collected from 100 respondents who selected five villages of Basrehar block in Agricultural Year 2010-11. The Uttar Pradesh rank first in terms of both area and production of wheat contributing about 34.42 per cent of national production (37.85 million tonnes) having the area 9.25 million hectare is much lower as compared to Punjab and Haryana. In Etawah district of U.P., wheat occupies an area of 94,709 hectares, with total production of 339,172 M. tones. Besides this, economics of wheat production and marketing constraints confronted by the growers were also thoroughly investigated. The result of the study revealed that human labour, expenses on machine labour were the major costs contributing 17, 16, and 24 per cent towards the total variable cost. The total variable cost came out to be Rs. 21,588 per hectare while gross returns on an average situation were estimated as Rs. 35,246 per hectare on the sample farms. Hence, returns over variable cost came out to be Rs. 13,658 per hectare. The benefit - cost ratio of 1: 1.63 indicated that rupee one invested would yield one rupee sixty three paise (1: 1.63). And tow marketing channels i.e. (i) Producer - Wholesaler/(Aratiya) - Consumer, (ii) Producer - Govt. Agencies were prevalent for disposal of the wheat. Among two channels Ist was found most effective through which 64.49 per cent of total product was marketed but highest producer's share in consumer's rupee i.e. 96.87 per cent was recorded from the II channel and Ist was found 92.92 per cent producer's share in consumer's rupee. Financial, technical and input supply support as well as fixation of remunerative prices prior to sowing of the crop and prompt payment of producer was suggested to improve the production and marketing of wheat. In case of wheat marketing problem were ranked IInd respectively. In order to overcome the marketing constraints of wheat, the following suggestion were made viz., to establish permanent market for sale commodity and liquidity of crop lone through Kisan Credit Card be available without delay.

Key words : Production, marketing, producer, remunerative price, marketing channel.

Introduction

Wheat is the world's most widely cultivated food crop has been grown since per historic time and being consumed in various form by more than one thousands million people in the world .Wheat is a staple food of our country and is grown in 122 countries over an area of 215 million hectare and producing nearly 680 million tones during 2010-11.

Wheat played an important role in shaping agriculture and food security policy. India has been second largest producer of wheat after china .it cover an area of 27 .8 million hectare having a production of 86.87 million tones with a productivity of 31.25 quintal per hectare it contributes about 34 per cent of the total food grain production of the country (Pratiyogita Darpan, 2011).

Wheat is proceeds in different forms like flour, suzi, maida and being eaten by number of consumers in different ways as porridge (Halwa), chapatti bread and biscuits etc. Besides wheat straw and wheat bran are good source of feed for animals.

In India, Uttar Pradesh was the highest wheat producing stage followed by Punjab and Haryana. It contributes which 34.42 per cent of national production having the area 9.25 million hectare is much lowers as compared to Punjab and Haryana (anonymous -2011).

In district Etawah wheat was grown in 94709 hectares and per hectare production of 35.08 quintal

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however total production was 332016 metric tones in 2010-11.

In Etawah district block Basrehar rank II in wheat cultivation. The area covered by wheat is 15174 hectare and production is 542662 quintal with productivity of 35.08 quintal per hectare (statistical bulletin directorate of statistics U.P. 2011).

During the post Green Revolution period, the large scale adoption of new technology particularly in wheat raised the 500 per cent production of food grain remarkably. To ensure the farmers adequate returns on their surplus produce. Marketing become import with the establishment of regulated markets .form where provided with various marketing infrastructural facilities .the development of rural roads also helped in linking the production centers in rural areas with consumption centre in urban areas. These developments led to the commercialization of agriculture in Uttar Pradesh and farmers become market oriented. However, farmer suffered from several inherent weaknesses, particularly the continual pressure for urgent cash requirement both for production and consumption. They might resort to distress sale in the post harvest period to the village money lenders, because they have limited storage capacity or low expectation about market prices during the lean period. However, it is traditionally assumed that increased wheat production in turns its surplus and made as feedback of agro based industries in addition to this a number of determinants liquidate the magnitude and flow of surpluses have been almost ignored.

Keeping in view, an empirical evaluation of these factors are necessary if the desired extent of development is to be continued. Thus a study entitled economics of wheat in Etawah district was undertaken to access the cropping intensity, Cost of cultivation, Marketing channels and price spread.

Materials and Methods

Data were collected by survey method. The primary data were collected for a period of one year 2010-11 through the interviews from the selected Wheat growers on well structured and pre-tested schedule. Data regarding the marketing costs and margins were collected from Etawah Naveen Mandi during course of investigation. Several visits were made from time to time in order to collect the information.

The collected data were got verified from experienced persons and village leaders of the sample villages. Every possible care was taken to ensure the accuracy and reliability of the information. The information furnished by respondents was properly edited through personal check and cross check. The help of Block Development officer, Assistant Development officer, Village level officer, Lekhpal, Gram Pradhan and village leaders were sought for obtaining correct and reliable information's. The study was based mainly on primary data, but secondary data were also used. Secondary data were obtained from records of the following authorities and organizations.

Results and Discussion

Average size of sample farms

The study covers a sample of 100 farmers, which are divided in four size group namely marginal (below l ha), small (I-2ha), medium (2-4ha) and large (4 ha and above) with respect to cropped area. The average size of holding on various group of sample farms are presented in Table 1. It was evident from the table that the average sizes of holdings in study area were 0.70, 1.73, 3.07 and 5.20 hectares in marginal, small, medium and large farm groups respectively. It may be concluded that rice and wheat were considered as main food crops having Ist and II" place in cropping pattern. The various pulses and mustard were preferred by the sample farmers because they fulfill their home consumption and are produced with low input cost.

Cropping intensity

Cropping intensity was an index of intensity of land use determined by the number of crops grown in a particular field, during a year. It has been worked out by using the following formula.

$$\text{Cropping intensity} = \frac{Total\ croped\ area}{Net\ sown\ \ area} \times 100$$

It has been computed for all size groups of farms. The maximum cropping intensity was observed to be 235.71 per cent in case of marginal farms, followed by small, medium large farms corresponding to 215.02, 213.02, 212.69 per cent respectively with an overall average of 214.67 per cent.

Structure of costs and income

The different costs concepts like as cost A_1 / A_2, B_3 / B_2 and C_1 / C_2 and C_3 were considered for the analysis of the data. Similarly the various income measure such as gross income, net income, farm business income, family labour income and farm investment income are also calculated for the sample farms. The costs of production of wheat Rs / quintal and input: output relationship has also been worked out on the basis of different costs.

Cost of cultivation of wheat

The per hectare cost on various input factor in wheat production was worked out and its details are presented in the table 2. This Table indicates that on an average per hectare cost of cultivation of wheat was Rs. 21588.54. The cost of cultivation was observed higher on marginal farms (Rs. 25312.11) followed by small farms (Rs. 21921 jp, medium farms (Rs. 21518.33) and large farms (Rs.21080.60) respectively.

The total cost on marginal farm was maximum due to heavy expenditure of human labour and use of manure and fertilizers. The study further revealed that in case of marginal farm cost incurred on human labour was (16.43) per cent followed by manure and fertilizer (8.19) per cent, tractor charges (15.07) per cent, seed (9.03) per cent, respectively.

The further distribution of the costs on over all farm average shows the maximum expenditure on land rent *i.e.* (18.52) per cent followed by the expenditure on total human labour, interest on fixed capital, manure and fertilizer and irrigation charges corresponding to 16.11, 14.31, 9.68 and 1.70 per cent, respectively.

Measures of costs and returns of wheat crop in study area

Per hectare costs and income from the cultivation of wheat crop on different categories of farms were worked out and presented in table 3. It is depicted from the table that, on an average the total cost of cultivation (C_3) came to Rs. 2161*0.70 per hectare which was maximum to Rs. 25312.00 on marginal farms followed by small, medium and large farms corresponding to Rs.21921.43, Rs. 21518.33 and Rs. 21125.59 respectively. The cost of cultivation per hectare was maximum on marginal sample farms due to more expenditure occurred on human labour and manure and fertilizer as compared to other categories of farms. It was also observed from the table that cost of cultivation has the negative relationship with the farm size, as it decreases with the increase in the size of farm.

As for as the income measure are concerned it is observed from the table that the gross income per hectare was maximum to Rs. 36325.16 on small farms followed by large, medium and marginal farms corresponding to Rs. 35431.73, Rs. 35045.83 and Rs. 34180.87 respectively. Whereas the average gross income on over all farms came to Rs. 35245.98 other income measures like net income, farm income, family labour income and farm investment income were also worked out and presented in the table showing same trend as gross income, as size of farm increases the various measures of income decreases. It is revealed from the study that small farmers were much aware regarding use of improved technologies in order to harvest more yield from their scarce holding.

Per quintal costs of production of wheat was also calculated on the basis of cost C_1, C_1 and C_3. It is displayed in the table that cost of production per quintal on the basis of cost C_1 was highest to Rs. 543.17 on marginal farms followed by small, medium and large farms corresponding to Rs. 477.90, Rs. 466.91 and Rs. 454.97 respectively, where as it was Rs. 466.47 per quintal on over all farm. The overall average of per quintal cost of production on the basis of cost C_2 came to Rs. 588.83 which was maximum at marginal farms Rs. 657.45 followed by small medium and large farms corresponding to Rs. 597.91 Rs. 586.92 and Rs. 574.98 respectively. The per quintal costs of production of wheat including managerial cost (C_3) was Rs. 648.38 on over all farm which was maximum at marginal farms i.e. Rs. 723.20 per quintal. It was Rs. 657.70, Rs. 645.61 and Rs. 633.83 at small, medium and large size group of farms, respectively.

The input output analysis was also done on the basis of cost A_1 to C_3. It varies from 1: 3.55 to 1: 1.35 in case of marginal farm size group 1: 3.43 to 1: 1.65 on small farms, 1: 2.96 to 1: 1.62 on medium farms and 1: 2.95 to 1: 1.67 on large farm size group. The overall average of the input: output ratio on the basis of various costs varies from 1: 3.04 to 1: 1.63.

It was concluded that marginal farmers of the study area spent comparatively more on wheat cultivation with considerable expenditure on manure fertilizer and human labour, where as large farmers could reduce their costs of cultivation substituting the human labour with machine but at the last the yield and income analysis shows not much difference in economics of wheat production at varying size of farm.

Marketing channels and price spread

Marketing channels may be defined as the alternative routes through which products flow from producer to consumer. The price spread is difference between the price paid by consumer and price received by producer for an equivalent quantity and quality of farm product. This price spread is made of marketing cost and marketing margins. The marketing margins refers to the difference between price paid and price received by an specific marketing agency, where as marketing costs refers to the actual expenses incurred by the marketing agencies engaged in the distribution process. During the marketing process the producer is interested to get the highest share in consumer's rupees where as the consumer is interested in paying the lowest possible price. The study of price

Table 1 : Cropping intensity of sample farms.

S. no.	Size of farm (ha)	Net cultivated area (ha)	Gross cropped area (ha)	Cropping intensity %
1	Marginal (Below lha)	0.70	1.65	235.71
2	Small (1-2 ha)	1.73	3.72	215.02
3	Medium (2-4 ha)	3.07	6.54	213.02
4	Large (4 and above)	5.20	11.06	212.69
	All farms	10.7	22.97	214.67

spread is of great importance to develop appropriate price policy for the farm products to fix marketing charges for some of the market functionaries and to judge the efficiency of the marketing system. Thus, if the goods can move from the producers to the consumer with lowest costs and minimum economic wastes consistent with the provision of service of consumer's desire, the marketing system can be said to be efficient. In order to increase operational efficiency and rationalize margin of middleman, along with marketing costs which are responsible to increase the efficiency of marketing system. The marketing margins and costs incurred in the marketing of wheat have been worked out under different marketing

Table 2 : Per hectare cost of different inputs useed in wheat. (Rs./ha)

S. no.	Particulars	Size group of farms				
		Marginal	Small	Medium	Large	Over all average
1.	Family labour	3597.43 (14.22)	2071.42 (9.45)	793.28 (3.68)	354.29 (1.68)	942.57 (4.36)
2.	Hired labour	563.29 (2.22)	1357.13 (6.20)	2673.14 (12.42)	3066.51 (14.54)	2536.11 (11.74)
3.	Total human labour	4160.73 (16.43)	3428.55 (15.64)	3466.42 (16.10)	3420.81 (16.22)	3478.69 (16.11)
4.	Tractor power	3814.57 (15.07)	3813.60 (17.39)	3603.25 (16.74)	3513.85 (16.67)	3265.19 <J5.12)
5.	Seed cost	2286.47 (9.03)	2278.75 (10.39)	2466.19 (11.46)	22.81.95 (10.82)	2335.35 (10.81)
6.	Manures and fertilizers	2074.43 (8.19)	2106.67 (9.61)	2105.21 (9.78)	2077.97 (9.85)	2090.20 (9.68)
7.	Irrigation charges	479.84 (1.89)	367.99 (1.67)	303.02 (1.40)	393.94 (1.87)	368.41 (1.70)
8.	Weed control	108.36 (0.42)	364.14 (1.66)	376.91 (1.75)	375.78 (L78)	358.59 (1.66)
9.	Total working capital	12924.40 (51.06)	12359.70 (56.38)	12321.00 (57.25)	12064.30 (57.22)	12235.97 (56.67)
10.	Interest on working capital	290.79 (1.14)	278.09 (1.26)	277.22 (1.28)	271.44 (128)	274.10 (1.27)
11.	Rental value on owned land	4000 (15.80)	4000 (18.24)	4000 (18.58)	4000 (18.97)	4000 (18.52)
12.	Interest on fixed capital	5795.82 (22.89)	3290.79 (15.01)	2963.90 (13.77)	2828.45 (13.41)	3090.82 (14.31)
13.	Sub total	23011.01 (90.91)	19928.58 (90.91)	19562.12 (90.91)	19164.19 (90.91)	19625.95 (90.91)
14.	10% Managerial of sub total	2301.10 (9.09)	1992.85 (9.09)	1956.21 (9.09)	1916.41 (9.09)	1962.59 (9.09)
	Grand total	25312.11 (100)	21921.43 (100)	21518.33 (100)	21080.60 (100)	21588.54 (100)

Note: (Figures in parenthesis indicate percentage to total cost).

Table 3 : Measures of per hectare costs and returns of wheat (Rs./ha).

S.no.	Particulars	Size of sample farms				
		Marginal	Small	Medium	Large	Overallaverage
1.	Cost Ai/A_2	9617.75	10566.37	11804.94	11981.44	11529.11
2.	Cost B,	15413.57	13857.16	14768.84	14809.89	14683.37
3.	Cost B_2	19413.57	17857.16	18768.84	18809.89	18603.47
4.	Cost Q	19011.00	15928.58	15562.12	15164.18	15547.71
5.	Cost C_2	23011.00	19928.58	19562.12	19164.18	19625.94
6.	Cost C_3	25312.00	21921.43	21518.33	21125.59	21610.70
7.	Gross income	34180.87	36325.16	35045.83	35431.73	35245.98
8.	Net income	8868.87	14403.73	13527.50	14306.14	13775.94
9.	Family labour income	14767.30	18468.00	16276.99	16621.84	16642.50
10.	Farminvestment income	20965.69	23687.37	22447.61	23096.00	22789.10
11.	FarmBusinessincome	24563.12	25758.79	23240.89	23450.29	23716.87
12.	**Cost of Product /q**					
a.	CostC_1	543.17	477.90	466.91	454.97	466.47
b.	Cost C_2	657.45	597.91	586.92	574.98	588.83
c.	Cost C_3	723.20	657.70	645.61	633.83	648.38
13.	**Input-output relationship**					
(a)	On cost 'A_1' basis	1:3.55	1:3.43	1:2.96	1:2.95	1:3.04
b)	On cost 'B_1' basis	1:2.21	1:2.62	1:2.37	1:2.39	1:2.34
(c)	On cost 'B_2' basis	1:1.76	1:2.03	1:1.86	1:1.88	1:1.88
(d)	On cost C_1 basis	1:1.79	1:2.28	1:2.25	1:2.33	1:2.26
(e)	On cost C_2 basis	1:1.48	1:1.82	1:1.79	1:1.84	1:1.79
(i)	On cost C_3 basis	1:1.35	1:1.65	1:1.62	1:1.67	1:1.63

Table 4 : Disposal pattern of wheat through different marketing channel in the study area (in quintal).

Size of farm	No. of farms	Total quantity	Quantity and sold in quintals			
			Channel I		Channel II	
			No. of farms	Quantity quintals	No. of farms	Quantity quintals
Marginal	37 (100)	249.00 (100)	37 (100)	249.00 (100.00)	- -	- -
Small	28 (100)	1084.00 (100)	26 (92.85)	984.00 (90.77)	2 (7.14)	100.00 (9.23)
Medium	18 (100)	1379.00 (100)	10 (55.55)	673.00 (48.80)	8 (44.45)	706.00 (51.19)
Large	17 (100)	2369.00 (100)	11 (64.71)	1371.00 (57.87)	6 (37.50)	998.00 (42.12)
Total overall farms	100	5081.00 (100)	84	3277.00 (64.49)	16	1804.00 (35.51)

channels through which the produce reaches to the hand of consumer.

The following marketing channels were found in-the study area through which the marketing of wheat was done.

Channel I : Producer – Wholesaler/ (Aratiya) – Consumer

Channel II : Producer – Govt. Agencies

Marketed and marketable surplus of wheat

Marketed surplus is affected by a number of exogenous and endogenous factors, which exist on the farms as well as in the market. The marketed and marketable surplus is presented in table 4. It is depicted form table that the overall average of marketable surplus was 65.34 with a minimum of 6.72 and maximum of 139.35 quintals at marginal and large farms. Marketable surplus at small and medium farms were 38.71 and 76.61 quintal, respectively.

Disposal pattern of wheat

The disposal pattern of wheat is presented in table 4. It is depicted from the table that the total marketed surplus on overall farms was 5081.00 quintals, comprising of a maximum 2369.00 quintals from large category followed by 1379.00 quintals from medium 1084.00 quintals from small and 249.00 quintals of marginal category of farms. For the disposal of this marketed surplus the marginal fanners use only channel I and' 100 per cent produce sale in this channel.

The table shows that the channel I was more effective, as a maximum of 3277.00 quintals i.e. 64.49 per cent of wheat was disposed through it. The disposal of marketed surplus through channel II was 1804.00 quintals corresponding 35.51 per cent respectively.

In case of small size group of farms, 90.77 per cent of them preferred channel I and 9.23 per cent of small farmers adopted channel II.

As for as medium size group of farms is concerned, 51.19 per cent of farmers sold their 44.45 wheat through channel II and 55.55 per cent of the farmers disposed their 48.80 per cent wheat through channel I.

Similarly in case of large category of farms, 37.50 per cent of the farmers dispose their 42.12 per cent of wheat through channel II and 64.71 per cent of them sold their 57.87 per cent of marketed surplus through channel I.

Price spread of wheat in channel - I (Producer - Wholesaler/(Arariya) - consumer)

The value of price spread in channel -I was worked out and presented in table 5. The total price spread found to Rs. 80.00 per quintal which was 7.08 per cent of the consumer's purchase price. It is clear from the table that the producer obtained a maximum share of 92.92 per cent consumer's rupee.

Table 5 : Price spreads of wheat in the market for channel-I (Rs./q).

S. no.	Particulars	Rs./Q	% share in consumer rupee
1.	Net price received by the producers	1050	92.92
2.	Marketing cost incurred by the producer	35	3.09
3.	Wholesaler's purchase price	1085	96.01
4.	Marketing cost incurred by wholesaler	30	2.65
5.	Wholesaler's net margin	15	1.32
6.	Total price spread	80	7.08
7.	Consumer's purchase price	1130	100

Figure in parentheses show the percent producer's share in consumer's price.

Table 6 : Price spreads of wheat in the market for channel-II (Rs./q).

S. no.	Particulars	Rs./Q	% share in consumer rupee
1.	Net price received by the producers	1085	96.87
2.	Transportation loading unloading	15	1.34
3.	Commission	20	1.78
4.	Total price spread	35	3.12
5.	Consumer purchase price	1120	100

(Figures in parentheses show the percent producer's share in consumer's price)

Price spread of wheat in channel - II (Producer-Govt, agencies)

Price spread of wheat in channel- II is worked out and presented in table 6. The price spread found to Rs. 35.00 per quintal which was 3.12 per cent of the government's purchase price and was Rs. 15.00 and Rs 20.00 as marketing costs and commission for purchase center. It is clear from the table that the producer obtained a maximum share of 96.87 per cent in consumer's rupees.

Marketing efficiency

The marketing efficiency of different channels has been calculated and its values shows that the channel II was most efficient as its value came to 32.00 per cent where as channel I was less profitable to the farmers as its efficiency value was lowest to 14.12 per cent. It may be concluded that the more number of intermediaries decreases the efficiency of marketing channel.

Summary and Conclusion

The per hectare cost of cultivation of wheat increase with decreases in the size of farms. The maximum total cost was recorded on marginal farms (Rs. 25312.00) due to heavy expenditure of human labour and manure & fertilizer. Cost A_1/A_2 all size groups of farms were equal but costs Bi & B2 were higher in marginal farm as compared to other categories of farms. Costs C_1, C_2 and C_3 were found of increasing order with decreasing the size of farms. Gross income, net income, farm business income, family labour income and farm investment income shows the negative relationship with the size of farms. The per quintal cost of production of wheat calculated on the cost Ci, C2 and C3 basis. Whereas on overall farm it was highest Rs.466.47 on the basis of Ci and Rs. 648.38 on the basis of cost C3. Input - output ratio analysis was done on the basis of cost Ai to cost C3. It varies from 1:3.55 to 1:1.35 in case of marginal farm, 1:3.43 to 1:1.65 on small farms, 1:2.96 to 1:1.62 on medium farms and 1:2.95 to 1:1.67 on large size of farms. The overall average of the input- output ratio on the basis of various costs varies from 1:3.04 to 1:1.63.

The following marketing channels were found in study area.

Channel I - Producer - Wholesaler/(Aratiya) - Consumer.

Channel II - Producer - Govt, agencies.

The marketed surplus was affected by a number of factors. It was found positively related with size of farms. The price spread was 7.07 and 3.13 per cent in channel I & II. Likewise the producer's shares in consumer rupee were 92.93 and 96.37 per cent in channels I & II respectively. It shows that channel II was more profitable and most efficient with the marketing efficiency of 16.14.

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