

The Comparative Analysis of Cost of Cultivation of Wheat Crop in Haryana, Punjab and Madhya Pradesh

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Abstract - This study was carried out by interview and survey method in 3 different states of Haryana, Punjab and Madhya Pradesh. Further this study was conducted in Hansi block from Hisar district, Phagwara block from Kapurthala district and Ghattiya block from Ujjain district during 2020-21. This study was to analysis of cost of cultivation of wheat crop in 3 different state, survey was conducted on 60 farmers (20 farmers each state). The gross return from the wheat cultivation for the states of Punjab, Madhya Pradesh and Haryana were Rs 128975, Rs 131189 and Rs 128975 respectively. Similarly, the net return in Punjab was Rs 64367, in Madhya Pradesh was Rs 73103 and in Haryana was Rs 72865. After doing the Benefit-cost ratio we find that in Haryana it was 1.32 which was highest among the other 2 state, in Madhya Pradesh it was 1.26 and in Punjab it was 1.05. This means in Haryana state, farmers invest fewer amounts and getting high return and it will become most productive state in wheat cultivation.

INTRODUCTION

In India, wheat (*Triticum Aestivum*) is the second most consumed staple food after rice, and it is mainly consumed in the north and north-western parts of the country. States in which wheat is mainly cultivated are Uttar Pradesh, Punjab, Haryana and Madhya Pradesh. In India three type of wheat is cultivated (bread wheat, macaroni wheat & emmer wheat). However, bread wheat contributes approx. 95% to total production while macaroni wheat (*Triticum durum*) contributes 4% and emmer wheat (*Triticum dicoccum*) contribute around 1%. In northern part of the county wheat sowing time is November-December and harvesting time is April-May and in southern part sowing time is September-October and harvesting time is January-February. It requires temperature around 10-15°C in winter and 21-26°C in summer. For the germination of the seed, it requires well pulverized soil, and requires

around 450-650mm of water. Maximum amount of watering is needed during the flowering and ripening stage. When crop cultivated under irrigation condition it required flood irrigation once in every 10 days. Seed rate of 100 kg/ha is sufficient for the varieties like Arjun, Janak, Kalyan Sona, etc. Before sowing of seeds, it should be treated with 5g trichoderma or 5kg carbendazim, solar treatment can also give to seeds to avoid wheat smut disease. Row spacing for timely sown (irrigated) is 15 to 22.5 cm and late sown (irrigated) is 15-18 cm, optimum spacing is 22.5 cm. For dwarf variety the seed sown depth should be around 5-6 cm and for tall variety sown depth around 8-9 cm.

Wheat is consumed in the form of chapatias, parantha, noodles, biscuits etc., for per 100 grams of wheat it's give 13.2g of protein, 72g of carbs, 2.5g of fat, 10.7g of fiber, 0.4g of sugar and 11% water. In the year of 2018-19, China ranks first in the total production of wheat which is 17.2% and followed by India (13.3%), Russia (9.7%), USA (6.8%), France (5.2%) and Canada (4.3%). Total wheat production in India, area is 29.14 million hectares, total production is 102.19 million tonnes and yield is 3507 kg/ha (2018-19). The area and production of wheat in Punjab, Madhya Pradesh and Haryana were 3.52 mha and 18.24 mt, 5.52 mha and 15.47 mt, 2.55 mha and 12.57 mt respectively.

MATERIALS AND METHODS

This study was conducted in states of Haryana, Punjab and Madhya Pradesh, we selected these states because wheat is mainly cultivated there and contribute majorly in the total wheat production in India. Further random sampling design was adopted, and we select Hisar district from Haryana, Kapurthala district from Punjab and Ujjain district from Madhya Pradesh. A list

of blocks of districts Hisar, Kapurthala and Ujjain were prepared, then we randomly select Hansi block from Hisar district, Phagwara block from Kapurthala district and Ghattiya block from Ujjain district. Further we randomly select Bass, Jalwa and Akalgarh villages from Hansi, Ghattiya and Phagwara blocks respectively. A list of 60 framers growing wheat was prepared from selected villages (20 farmers each village). The data was collected by survey method and personal interview; several visits were made to the farms to collect the data.

The tools are used for the analytical parts are depreciation, interest, gross return, net return, B:C ratio, average.

Depreciation- It mean that the value of fixed asset decreases in a systematic manner until it become zero. Depreciation = (Asset cost-residual value)/life of the asset

Interest- It is the extra money which is paid by the borrower to the lender for the loan.

Interest= $(P \cdot R \cdot T / 100)$ (where, P=principal, R=rate, T=time)

Gross return- It is the total return we get after investment before deducting any kind of fees.

Gross return= (Yield*Price)

Net return- It is return we get after deducting all the expenses from the gross return.

Net return= (Gross Return-Cost of cultivation)

Average- It is the mean value which is equal to the ratio of sum of the total number to the total number present in it.

Average= $(x_1 + x_2 + \dots + x_n) / N$ (where, N is total number in the set)

Benefit - Cost ratio (B:C ratio)- It is a ratio used in a cost-benefit analysis to summarize the overall relationship between the relative costs and benefits of a proposed project.

B:C ratio= (Net return/Cost of cultivation) (Where, cost of cultivation is the total cost which is required to cultivation of the wheat crop).

In this we study about the expenses and returns associated with the production of wheat are given in Table 1 and Table 2. Cost of cultivation for the production of wheat (per hectare) among the 3 mentioned states, Punjab hold the highest cost of cultivation about (Rs 64,608) while Madhya Pradesh cost around (Rs 58086) and Haryana hold the lowest around (Rs 56110). Total average fixed cost of Madhya Pradesh is (Rs 12783) which is highest among 2 other states while in Haryana fixed cost is (Rs 11851) and in Punjab it is (Rs 10969). Further we see that the land revenue of the Haryana is lowest (Rs 1153) followed by the Punjab (Rs 1178) and the Madhya Pradesh gain the highest land revenue (Rs 1353). If we combined depreciation on machine and building then Madhya Pradesh gain the highest which is (Rs 9237) and in Haryana and Punjab it is (Rs 8261) and (Rs 7491), hence Punjab is lowest in depreciation value.

The total average working cost of Punjab is (Rs 53625) which is highest, while Madhya Pradesh and Haryana has (Rs 45303) and (Rs 44260) respectively. Under the working cost the total labour charge of Punjab is (Rs 33250) which is highest, and it's included family and hired labour followed by land preparation cost is (Rs 3385), seed cost of Punjab is also lowest which is (Rs 3465). Manure is only used in Punjab which is (Rs 620) but 2 other states Madhya Pradesh and Haryana the cost is zero. Further we see that total fertilizer cost of Madhya Pradesh is (Rs 2828) which is least among the 2 other state, Madhya Pradesh also expense less in seed treatment and irrigation which is (Rs 437) and (Rs 2146) respectively. The intercultural operation cost in Punjab state is (Rs 540) but in other 2 state Madhya Pradesh and Haryana the cost is zero. Thus, the average Punjab invested high amount for the production while the Haryana had the intermediate investment and Madhya Pradesh is expensing the lowest amount in the input and proper cultivation of the wheat.

Returns from the 3 different states:

The average yield per hectare of wheat production was 68 quintals for the Ujjain district of Madhya Pradesh which is highest while Kapurthala district of Punjab and Hisar district of Haryana has the same yield per hectare which is 67 quintals. The price per quintals of wheat for all the three states is same which was (Rs 1925). The average gross return and net return for the state Madhya Pradesh is Rs 131189 and Rs 73103

RESULT AND DISCUSSION

respectively which highest among the other 2 states, while Punjab and Haryana have the same gross return Rs 128975 and the net return of Punjab and Haryana was Rs 64367 and Rs 72865 respectively. The overall benefit cost ratio of Haryana, Madhya Pradesh and Punjab is 1.32, 1.26 and 1.05 respectively. In which we clearly see that Haryana has the highest B:C ratio of 1.32 and Punjab hold lowest ratio of 1.05. Therefore, Haryana is the most beneficial state for the cultivation of wheat.

CONCLUSION

The cultivation for the wheat crop in Haryana has the highest benefit-cost ratio which means that the return is high with less amount of investment which helps the farmer to earn more with compared with other cultivation done in Madhya Pradesh and Punjab. Hence, we can say that the cultivation of wheat crop in Haryana is cost effective and also producing more output and it is definitely become the top state for wheat cultivation in term of productivity as compared to other states.

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Table 1. Fixed cost, working cost and total cost of cultivation.

S.No	Particulars	Cost of cultivation (Rs/ha)		
		Punjab (Kapurthala)	MP (Ujjain)	Haryana (Hisar)
A. Fixed Cost				
1.	Rental value of owned land	0	0	0
2.	Land revenue	1178	1353	1153
3.	Depreciation on machine (@7% per annum)	6956	8752	7726
4.	Depreciation on buildings (@4% per annum)	535	485	535
5.	Insurance	1995	1806	2093
6.	Interest on fixed cost (@6% per annum)	320	448	345
Total Fixed Cost		10969	12783	11851
B. Working Cost				
1. Labour				
a.	Family labour	11650	5911	9100
b.	Hired labour	21600	19773	18700
c.	Animal labour	0	0	0
2. Land Preparation				
3.	Seeds	3465	3924	3500
4.	Manures	620	0	0
5. Fertilizers				
a.	N	1113	1007	1118
b.	P	970	826	812
c.	K	1100	995	1050
6. Plant protection measure				
a.	Seed treatment	640	437	475
b.	Fungicides	1218	1376	1258
c.	Pesticides	1188	1641	1250
7.	Irrigation	2265	2146	2260
8.	Intercultural operations	540	0	0
9.	Interest on working cost (@6% per annum)	1562	1185	1403
Total Working cost		53625	45303	44260
Cost of cultivation		64608	58086	56110

Table 2. Returns in the cultivation.

S.No.	Particulars	Cost of return (Rs/ha)		
		Punjab (Kapurthala)	MP (Ujjain)	Haryana (Hisar)
1.	Yield per hectare	67	68	67
2.	Price/quintal	1925	1925	1925
3.	Gross return	128975	131189	128975
4.	Net return	64367	73103	72865
5.	B:C ratio	1.05	1.26	1.32