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FACTORS AFFECTING LENTIL ACREAGE IN THE POTHWAR REGION OF PAKISTAN'S PUNJAB

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ABSTRACT

This paper is organized to investigate the specific factors responsible for decrease in the lentil area and production, and to evaluate the dis-adoption trend of farming community for lentil sowing in arid zone of Pakistan's Punjab. The data is collected in April 2013 and 60 farmers were interviewed from Chakwal and Rawalpindi District. The findings of the paper shows wheat as major rabi crop in study area with overall 44.6% operational holding its cultivation, followed by mustard (20percent) and lentil (8.8 percent). The cost estimates showed highest per acre average and total variable cost for wheat (Rs. 29638 and Rs. 32032 respectively) followed by Lentil (20979.88 and Rs. 23378.75 respectively. Average and total variable cost was lowest for mustard Rs. 17234.23/ac and Rs. 19776.88/ac respectively. Average yield attained by respondents was highest for wheat (34.85 maunds/ac) followed by Mustard (15.7 maunds/ac) and lentil (9.82 maunds/ac). The revenue generated was also highest for wheat (Rs. 39580) followed by mustard (Rs. 30367.65) and lentil (Rs. 25436.36). The estimated percent profit margins are also highest for mustard and accounts about 61.32 percent of the investment followed by wheat (40.62 %) and lentil (36 %). The cost benefit ratio was also highest in case of mustard. The paper however concluded that mustard and wheat being the replacing crops for lentil are more profitable and are responsible for the reduction of lentil acreage in pothwar region.

JEL CLASSIFICATION & KEYWORDS

■ Q10 ■ Q16 ■ O1 ■ LENTIL DIS-ADOPTION ■ YIELD ■ PROFIT MARGINS ■ COST-BENEFIT RATIO

INTRODUCTION

Lentil is the second most important Rabi pulse crop grown after gram and an excellent source of protein as well as important vitamins, soluble and insoluble dietary fiber (Haq et al., 2011). Major pulses grown in Pakistan are gram, lentil, mung and mash, cultivated on around 6% of total cropped area. Pulses are considered as the best substitute to attain the protein requirements for poor masses which are unable to afford the livestock based protein rich products (milk and meat) (Reddy, 2009). Pulses are known for their nutritional value and are important item of consumption basket of both rich and the poor. Because of the population growth, demand for pulses is increasing rapidly (Spate Irrigation Network Pakistan, 2009).

The area under lentil in 2010-11 was 0.03 million hc with the overall production of 0.01 million tones. Mostly the area under lentil legume lie in Punjab and it contributes to 63% of total area under lentil and 58% of its total production. (Agricultural Statistics of Pakistan, 2010-11). As a result of green revolution in 1960's per acre yield of cereal crops has increased remarkably and pulses cultivation has been shifted to the marginal lands of arid zone all over Pakistan (Sundaram, 2012; Ali and Abedullah, 1998). This shift has strong implications on the profitable production of food legumes because arid zones lacks in irrigation facilities and pulses production totally depends on the intensity of precipitation. Both high as well as a low rainfall affect the pulse crop adversely. On the other hand farmers have little hope of getting remunerative prices, even when consumer prices are high (Western Australia Trade Office India, 2012). According to Pritchard et al. (2005) among all the pulses lentil has the highest variable cost due to the requirement of fungicide sprays during growing season and also have the highest returns due to its highest price among pulse crops.

In Pakistan pulses production is facing challenges of increasing prices with decreasing area due to reduction in their comparative profitability with other replacing crops like wheat. Among all the pulses lentil has shown the highest fluctuation in its prices, area and production. The lentil area has shown highest acreage reduction during the last three decades as compared to other pulse crops. (Rani et al., 2012).The area of lentil in Punjab is continuously decreasing from 28.2 thousand hectares in 2001 to 16.5 thousand hectares in 2011, whereas production is declined from 17.9 thousand tonnes in 2001 to 7.7 thousand tonnes in 2011 (GOP, 2011).

The production of pulses is usually constrained by many social and economic factors including non-availability of certified and quality seed of improved varieties, lack of irrigation facilities, poor marketing infrastructure, high transportation charges and low procurement prices to farmers. With no significant innovation in pulses, their yields remained stagnant for decades, supplies lagged behind demand, and prices shot up. Thus these cheap sources of protein and iron also became out of the reach of the poor (Srivastava et al., 2010; Rani and Raza, 2012; Kumar and Bourai, 2012). Keeping in view this grave situation, the present study is designed to investigate the specific factors responsible for decrease in the lentil area and production, and dis-adoption trend of farming community for lentil sowing in arid zone Punjab. The objectives of the study are as follows:

- To find out the factors responsible for decrease in lentil acreage and yield in pothwar Punjab;
- to find out the specific reasons for dis-adoption of lentil sowing by farming community in Punjab;
- to estimate the profitability of lentil production; and
- to suggest recommendations for policy makers and researchers for improvement in the crop acreage and production.

Materials and Methods

The present study is based on the primary data collected with the help of a well structured questionnaire by employing

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multi-stage sampling technique. The data is collected from district Chakwal and Rawalpindi in April 2013 and 60 farmers were interviewed from rain-fed area. The questionnaire include questions about socio-economic characteristics of farmers, cropping pattern of the study area, quantities of variable and fixed inputs, prices of variable and fixed inputs, reasons of low lentil productivity and dis-adoption and costs involved in lentil production.

For the statistical analysis of the data obtained from the survey, different techniques of measurement were applied. The data analysis has been done by using Statistical Package for Social Sciences (SPSS version.17). The demographic and socio-economic variables which happen to be in categorical form are analyzed in this part through descriptive analysis by incorporating the frequency of the different variables. Numerical operations were applied on all the other variables that are unconditional.

Results and Discussion

Socio Economic Profile

Figures given in Table 1 provide the insight of the socio-economic characteristics of the farmers by farm size. The combined average age of the lentil growers in the study area was almost 53 years. The farmers have on average 10 years of schooling with 28 years of farming experience. The growers were having almost 16 years of lentil growing experience. Average family size in the study area was consists of almost 7 members including 5 adults and 3 children. The family size is statistically different among the groups, the large farmers have large family size (11 members) as against to small and medium farmers (6 members each).

Table 1: Socio Economic Characteristics by Farm Size

Characteristics	Small	Medium	Large	Total	F stat
Age (yrs)	51.19 (11.14)	53.88 (12.41)	55.22 (9.00)	52.92 (11.35)	0.57
Education (yrs)	9.27 (3.22)	9.92 (3.17)	10.33 (3.12)	9.70 (3.16)	0.47
Farming experience (yrs)	26.23 (15.89)	29.40 (14.68)	29.89 (14.56)	28.10 (15.04)	0.35
Lentil growing experience (yrs)	15.35 (12.55)	15.76 (11.81)	16.11 (10.12)	15.63 (11.72)	0.02
Adult family members	4.23 (3.49)	4.32 (3.05)	7.67 (7.21)	4.78 (4.18)	2.66*
Children (Number)	1.92 (1.55)	1.88 (2.01)	2.67 (3.43)	2.2 (2.08)	0.51
Family size (Number)	6.23 (3.77)	6.28 (4.14)	11.00 (6.96)	6.97 (4.74)	4.26**
Respondents Involvement in agriculture	1.15 (.37)	1.24 (.44)	1.22 (.44)	1.20 (.40)	0.30
Family labour (Number)	1.58 (.99)	1.88 (1.20)	3.00 (1.58)	1.92 (1.25)	4.91**

Values in parenthesis are standard deviations
*,** Shows 10 and 5 percent level of significance respectively

Source: Authors

Farm Characteristics

In the study area out of the total 60 respondents65% are owners whereas 35% are owner cum tenants. Large farmers were mostly owner cum tenants (55.6%) whereas small farmers mostly done farming on their own land (80.8%). The farm characteristics of respondents by farm size are mentioned in Table 2. The area owned by the lentil growers, their rented in land and operational holding seems to be statistically different among small, medium and large farmers. The small farmers on average own 7.25 acres, medium farmers own 18.49 acres and large farmers had own area of 31.11 acres. The large farmers on average took 12.56 acres land on rent for cultivation whereas land on rent taken by medium farmers account about 1.56 acres and 1.04 acres land was rented in by small farmers. On average large farmers have highest operational land 42.44 acres. Mean operational holding of medium and small farmers account about 17.59 acres and 8.4 acres respectively. The rented in land cost was higher for small farmers Rs. 5400 followed by Rs. 5344 and Rs. 4324 for large and medium farmers respectively.

Table 2: Farm Characteristics of Respondents by Farm Size (Acres)

Characteristics	Small	Medium	Large	Total	F stat
Own area	7.25 (3.36)	18.49 (9.28)	31.11 (17.99)	15.51 (12.44)	24.15***
Rented in	1.4 (2.41)	1.56 (2.58)	12.56 (23.90)	2.98 (9.96)	5.69***
Rented out	.00	.40 (2.00)	.00	.17 (1.29)	0.69
Shared in	.12 (.59)	.36 (1.80)	1.11 (3.33)	.37 (1.76)	1.8
Shared out	.00	2.42 (6.16)	2.33 (4.80)	1.36 (4.47)	2.20
Operation holding	8.40 (2.85)	17.59 (4.30)	42.44 (16.65)	17.34 (13.41)	77.11***
Rent rupees (per acre)	5400.00 (2092.08)	4324.00 (2214.59)	5344.44 (1450.96)	4943.33 (2100.96)	1.92

Values in parenthesis are standard deviations
*** Shows 1percent level of significance

Source: Authors

Cropping Pattern

Wheat was the major Rabi crop grown by the farmers in study area followed by mustard, lentil, gram, rabi vegetables and rabi fodder. Similar winter season cropping pattern has been reported by Kumar, 2012 in Assan Valley, India. In the study area overall 44.6% operational holding was under wheat cultivation and it was sown on 51.9%, 39.3% and 38.2% of total land cultivated by small, medium and large farmers respectively. Mustard was the second major crop sown on 11.8 %, 25.9% and 27.3% of the total operational area by small, medium and large farmers respectively. Lentil was the third main crop sown by the farmers on 13.6%, 5.5 % and 3.9% of the operational land by small, medium and large farmers respectively. It indicates that lentil is usually grown by small farmers in the study area and this difference is statistically significant. The overall fallow area during rabi season was 16.5 percent of the total cultivable land. The crops sown in Kharif season include groundnut, mung, maize, Kharif vegetables and Kharif fodder. Groundnut was the major Kharif crop sown on 11.4 percent of total cropped area by the respondents. The percentage of fallow land was much higher during Kharif season and was about 73.2 percent of the total cultivable land (see Table 3).

Change in Area under Lentil

Table 4 provides the estimation of the absolute and percentage change in the area under lentil during 2008-2013. Overall 1.22 acres of land has been dominated by the farmers for lentil crop in year 2013. The mostly grown variety was Masoor 2009 cultivated on the area 0.53 acres, 0.50 acres and 0.83 acres by small, medium and large farmers respectively. Desi lentil variety was sown by small, medium and large farmers on average area of 0.67 acres, 0.25 acres and 0.44 acres respectively. Overall average area under lentil in year 2008 was 4.14 acres. Lentil was sown on average area of 1.86 acres in 2013 by large farmers as

Table 3: Cropping Pattern by Farm Size (Percent Area)

Crops	Small	Medium	Large	Total	F stat
Wheat	51.9 (20.8)	39.3 (17.9)	38.2 (21.8)	44.6 (20.5)	3.144*
Mustard	11.8 (14.2)	25.9 (23.5)	27.3 (24.8)	20.0 (21.1)	3.789**
Lentil	13.6 (14.5)	5.5 (5.4)	3.9 (2.9)	8.8 (11.0)	5.103***
Gram	2.8 (5.9)	2.5 (4.0)	2.5 (2.1)	2.6 (4.7)	.024**
Rabi vegetables	2.8 (12.6)	1.0 (3.0)	.2 (.5)	1.7 (8.5)	.446
Rabi fodder	4.5 (6.2)	2.2 (4.7)	1.5 (1.8)	3.1 (5.2)	1.734
Other rabi crops	1.0 (3.3)	3.9 (17.4)	4.7 (9.9)	2.7 (12.0)	.502
Fallow area rabi	11.6 (23.9)	19.6 (29.5)	21.8 (14.1)	16.5 (25.3)	.875
Groundnut	10.9 (13.1)	12.9 (13.4)	8.4 (7.7)	11.4 (12.5)	.445
Mung	.3 (1.4)	.1 (.3)	.3 (.7)	.2 (1.0)	.430
Maize	1.4 (5.1)	.6 (1.6)	1.1 (2.4)	1.0 (3.6)	.263
Kharif vegetables	2.8 (12.6)	1.6 (3.4)	1.0 (2.4)	2.1 (8.6)	.205
Kharif fodder	13.8 (18.3)	7.7 (10.7)	3.9 (2.5)	9.8 (14.3)	2.104
Other kharif crops	.9 (3.8)	1.4 (3.5)	9.1 (11.0)	2.4 (6.0)	8.321***
Fallow area kharif	69.9 (28.1)	75.6 (20.1)	76.2 (16.1)	73.2 (23.3)	.467

Values in parenthesis are standard deviations
*,**,*** Shows 10, 5 and 1 percent level of significance respectively

Source: Authors

Table 4: Change in Lentil Area Sowing Over Last 5 Years (2008-2013)

Lentil Area (acres)	Small	Medium	Large	Total	F stat
Present Area (2013)	1.22 (1.33)	.99 (1.08)	1.86 (1.31)	1.22 (1.24)	1.681
Masoor 2009	.53 (1.16)	.50 (.69)	.83 (1.17)	.56 (.98)	0.401
Desi area	.67 (1.07)	.25 (.55)	.44 (1.01)	.46 (.89)	1.506
Other area	0.02 (.10)	.24 (1.01)	.58 (1.35)	.20 (.84)	1.603
Lentil area in 2008	2.64 (2.46)	4.20 (3.01)	8.28 (7.63)	4.14 (4.21)	7.254 ***
Masoor 2009	.31 (.72)	.82 (1.69)	1.28 (2.36)	.67 (1.50)	1.651
Desi area	2.25 (2.66)	2.86 (3.41)	2.22 (2.95)	2.50 (3.00)	.301
Other area	.09 (.32)	.52 (1.85)	4.78 (9.22)	2.50 (3.00)	5.811 ***
Lentil area decreased (ac)	1.42 (2.46)	3.21 (2.87)	6.42 (6.96)	2.92 (3.92)	6.593 ***
Lentil area decreased (%)	50.05 (42.80)	65.10 (39.38)	66.73 (30.03)	58.83 (39.87)	1.120

Values in parenthesis are standard deviations
*** Shows 1 percent level of significance respectively

Source: Authors

against to 8.28 acres in 2008. This shows a decrease of 6.42 acres (66.73 percent) area under lentil by large farmers. In case of medium farmers the area under lentil in 2013 was 0.99 acres as against to mean area 4.20 in year 2008 and area reduction by medium farmers during 2008-13 estimated about 3.21 acres (65.10 percent). Small farmers sown lentil on 1.22 acres land in 2013 as against to 2.64 acres in 2008, hence reduce 1.42 acres (50.05 percent) area under lentil. The difference of area under lentil by small, medium and large farmers in 2008 and decrease in lentil area over last 5 years is statistically significant by 1 percent level respectively.

Lentil Cost of Production

Lentil cost of production has been calculated by incorporating several variable costs such as land preparation cost, input cost, labor cost, harvesting cost, threshing cost and land rent. The major variable cost was land preparation cost which on average accounts about Rs.9522.Large farmers invest Rs. 11885.71 on land preparation followed by Rs. 8661 and Rs. 9468.42 by medium and small farmers respectively. The input cost was higher for medium farmers Rs. 5080 followed by large farmers Rs. 4023 and small farmers Rs. 3608.53. Labor cost was higher for large farmers Rs. 2657.14 and lower for small farmers Rs. 1847.37, whereas average labor cost incurred by medium farmers was Rs. 1983.33. Overall mean harvesting cost, threshing cost, interest cost and land rent accounts about Rs. 2404.55 and Rs. 1556.82, Rs. 1187.54 and Rs. 2398.86 respectively.

Table 5: Lentil Cost of Production (Rs/Ac)

Costs (Rs/ac)	Small	Medium	Large	Total
Land preparation cost	9468.42 (4778.55)	8661.11 (4159.77)	11885.71 (4036.68)	9522.73 (4460.31)
Input cost	3608.53 (2122.29)	5080.00 (4015.03)	4023.00 (2723.79)	4276.43 (3125.98)
Harvesting cost	2647.37 (1281.65)	2133.33 (1417.54)	2442.86 (1416.40)	2404.55 (1348.72)
Threshing cost	1642.11 (740.36)	1583.33 (931.95)	1257.14 (884.79)	1556.82 (836.77)
Labor cost	1847.37 (998.82)	1983.33 (997.05)	2657.14 (1422.27)	2031.82 (1082.85)
Interest cost	1152.83 (329.70)	1166.47 (460.94)	1335.95 (434.98)	1187.54 (400.26)
Variable costs	20366.62 (5824.78)	20607.58 (8143.30)	23601.81 (7684.71)	20979.88 (7071.27)
Land rent for lentil	2707.89 (1086.82)	2002.78 (910.15)	2578.57 (809.76)	2398.86 (1013.20)
Total costs	23074.51 (5701.31)	22610.36 (7925.97)	26180.38 (7554.94)	23378.75 (6926.25)
Lentil yield (mound s/ac)	10.21 (4.93)	8.11 (3.60)	13.14 (3.98)	9.82 (4.54)
Total revenue	25710.53 (11672.52)	22383.33 (10990.49)	32542.86 (13234.66)	25436.36 (11890.55)
Gross margins	5343.91 (13554.77)	1775.76 (11389.71)	8941.05 (13620.13)	4456.48 (12677.25)
Net margins	2636.01 (13205.70)	-227.02 (11614.52)	6362.48 (13940.82)	2057.62 (12601.58)
Percent profit margins (%)	36.71 (60.93)	30.81 (91.33)	47.39 (60.61)	36.00 (73.46)
Benefit Cost ratio	1.18 (.50)	1.10 (.57)	1.30 (.53)	1.16 (.53)

Values in parenthesis are standard deviations

Source: Authors

Average lentil cost of production was estimated about Rs. 23378.75 in the study area. Lentil cost of production was higher for large farmers Rs. 26180.83 followed by small

farmers Rs. 23074.51 and medium farmers Rs. 20607.58. The yield attains by small, medium and large farmers were estimated about 10.21 mounds/ac, 8.11 mounds/ac and 13.14 mounds/ac respectively. Net margins received were higher in case of large farmers Rs. 6362.48 followed by small farmers Rs. 2636.01whereas in case of medium farmers the net margins were negative. The percent profit margins of total variable cost were higher for large farmers 47.39% followed by 36.71 % for small farmers and 30.81 percent for medium farmers. The benefit cost ratio was also highest for large farmers followed by small and medium farmers (for detail see Table. 5).

Comparative Production Cost and Returns of Lentil and Other Major Rabi Crops

Table 6 evaluates the comparative cost of production for lentil, wheat and mustard in order to make the statistical comparison of different cost and return estimate. The variable cost for all three crops include land preparation cost, input cost, labor cost, harvesting cost, threshing cost and interest cost. Average variable cost seem to be the highest in case of wheat as estimated about Rs. 29638.02, followed by lentil (Rs. 20979.88) and lowest for mustard (Rs. 17234.23). Total cost of production was also highest for wheat (Rs. 32032.02) followed by Lentil (Rs. 23378.75) and mustard (Rs. 19776.88).

Table 6: Comparative Cost of production and Returns of lentil and competing crops

Costs (Rs/ac)	Lentil	Wheat	Mustard
Land preparation cost	9522.73 (4460.31)	12267.20 (5527.55)	8817.65 (3460.29)
Input cost	4276.43 (3125.98)	3920.00 (4087.86)	3886.65 (2065.26)
Labor cost	2404.55 (1348.72)	2012.00 (573.19)	925.00 (1203.42)
Harvesting cost	1556.82 (836.77)	2316.00 (847.88)	1673.53 (1443.76)
Threshing cost	2031.82 (1082.85)	1808.00 (548.42)	955.88 (1185.31)
Interest cost	1187.54 (400.26)	1677.62 (389.30)	975.52 (389.35)
Variable costs	20979.88 (7071.27)	29638.02 (6877.71)	17234.23 (6878.56)
Land rent	2398.86 (1013.20)	2394.00 (843.27)	2542.65 (1199.69)
Total costs	23378.75 (6926.25)	32032.02 (6768.46)	19776.88 (6613.60)
Yield (maunds/ac)	9.82 (4.54)	34.85 (11.33)	15.72 (2.77)
Total revenue	25436.36 (11890.55)	39580.00 (12931.33)	30367.65 (15728.70)
Gross margins	4456.48 (12677.25)	9941.98 (13312.45)	13133.42 (11942.78)
Net margins	2057.62 (12601.58)	7547.98 (13595.52)	10590.77 (11931.43)
Percent profit margins (%)	36.00 (73.46)	40.62 (65.61)	61.32 (89.61)
Benefit Cost ratio	1.16 (.53)	1.29 (.59)	1.41 (.75)

Source: Authors

Average yield per acre was highest for wheat estimated about 34.85 maunds/ac, whereas lowest for lentil 9.82maunds/ac. The revenue generated was also highest for wheat (Rs. 39580) followed by mustard (Rs. 30367.65) and lentil (Rs. 25436.36). The results show higher gross and net margins for mustard as compare to wheat and lentil. The estimated percent profit margins for mustard account about 61.32 percent of the investment followed by wheat (40.62 %) and lentil (36 %). The cost benefit ratio was also highest in case of mustard. The analysis however predicts that per rupee return on investment was higher in case of mustard as compare to lentil and wheat with lower cost of production. Mustard and wheat being the replacing crops for lentil outweighs in term of revenues generated and margins attain by the farmers. Srivastava et al. (2010) also comes us with the same result and stated that pulse crop is usually substituted with the cereals (wheat) and oilseed crops due to biased revenue terms of trade.

Factors Contributing to Lentil Dis-adoption and Acreage Reduction

Reduced profitability of lentil than other replacing crop is one of the major reason for the lentil dis-adoption in the study area. Other reasons identified by the farmers include price fluctuations, marketing problems, reduced yield potential of lentil varieties, high labor cost and lack of improved high yielding varieties (see Table 7). Same socio economic constraints of pulses (Gram and Lentil) production was reported by Kumar and Bourai, 2012.

The reported production and marketing problems of lentil sowing and percentage response of the farmers are listed in Table 7 Majority of the large farmers (75 percent), medium farmers (52 percent) and small farmers (62.5 percent) identify weeds as the most hindering factor of lentil production. The other factors identified were weather problems, high cost of input and lack of quality seed availability. Price fluctuation and no government check are the main marketing problems. All of the large and medium farmers and 94.7 percent of the small farmers consider price fluctuation as the major marketing problem.

Table 7: Factors Contributed to Lentil Dis-adoption and Acreage Reduction (% Response)

Factors	Small	Medium	Large	All
Reasons of Lentil Dis-adoption				
Reduced yield potential of lentil varieties	16	36	22.2	25.4
Lack of improved high yielding varieties	0	4	11.1	3.4
Disease problem reduced the yield	4	0	0	1.7
Price fluctuation	68	56	55.6	61.0
Reduced profitability of lentil crop	60	76	88.9	79.7
Marketing problem	56	52	55.6	54.2
Weeds problem	12	12	22.2	13.6
High labor cost	20	20	22.2	20.3
Factor responsible for decline in lentil acreage/production				
Yield potential reduced	70.8	52.0	37.5	57.9
Disease problems	0	4.0	12.5	3.5
Price fluctuation	8.3	48.0	37.5	29.8
Reduced profitability	66.7	72.0	62.5	70.9
High labor cost	0	12.0	12.5	7.0

Source: Authors

The factors responsible for the reduction in lentil area and production and percentage response of the farmers by farm size are also listed in table below. The major factor identified by almost 70.9 percent and 57.9 percent of all farmers in study area was price fluctuation and reduction in the yield potential of lentil varieties respectively. Majority of medium farmers (72 percent), small farmers (66.7 percent) and large

farmers (62.5 percent) reported price fluctuation as the main hindering factor of area and production of lentil in the study area. The reduced yield potential was the second main factor reported by majority of the small farmers (70.8 percent), almost half of medium farmers (52 percent) and large farmers (37.5 percent) contributing in the reduction of area and production of lentil. The other factors identified were disease problem, reduced profitability and high labor cost.

Conclusion

Pulses occupy a significant share in the consumption basket and are the cheap source of proteins for poor segment of society. The area and production of pulses like lintel has been fluctuating from the past decades. The area and production of lintel in Punjab showed the declining trend during 2001-2013. The area under lentil in Punjab province mainly comprised of marginal rainfed land. The present study has investigated the factors responsible for the dis adoption of lentil in Pothwar region. It can be concluded in the light of the findings of the study that lintel area and production has been declined in the pothwar plateau during the last 5 years.The main factorsidentified for lintel dis-adoption include price fluctuation, reduced profitability of the lentil than other replacing crops, marketing constraints, reduced yield potential of lentil varieties and lack of improved high yielding varieties.The overall reduction in the area and production of lentil and other major pulses will have a strong economic impact as it will widen demand-supply gap in domestic market thus need for imports.

Therefore it is recommended that the emphasis must be placed on the introduction of high yielding lentil varieties and their maximum dissemination in order to make the lentil legume profitable to the farmers. The government must regulate the efficient procurement price system to control the fluctuations in the prices of pulses and to ensure farmer the stable prices for their produce.

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