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An economic analysis of production and marketing of maize in Lashkergah district of Helmand province, Afghanistan

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Abstract
The present study was conducted in Lashkergah district of Helmand Province, Afghanistan in 2020. Two hundred eighty (280) maize producing respondents, small, medium and large were selected from the study area. The main objectives of the research were to work out the cost and returns of maize, to find out the different marketing channels involved in the marketing of maize, to examine the marketable surplus and disposal pattern of maize and to find out the constraints in production and marketing of maize and suggest suitable measures to overcome them. To calculate the cost of cultivation, marketable surplus and disposable pattern of maize simple mean and average method was used. The major findings of this study revealed that, on an average cost of cultivation per hectare of maize was found Afs. 62661 and cost of production was maximum in large size farms (63359 Afs/ha.). The yield of maize was observed 4895, 4940 and 5034 metric tons per hectare in small, medium and large size farms respectively. On an average, the net return was obtained Afs. 58769 per hectare that means the producers are profitable. Two marketing channels were observed during study that are, **(I)** producer – wholesaler – retailer – consumer and **(II)** producer – retailer – consumer''. On an average the marketable surplus was found about 4088 Kg/ha. The major constraints of the production were lack of soil testing facility (100 percent), unavailability of good quality of insecticides and pesticides (90 percent) and higher prices of inputs (85.71 percent), the major constraints observed in sampled farm for marketing of maize were lack of processing industries based on maize as well as lack of regulated and co-operative market (100 percent) and lack of storage facility (90 percent).

Keywords: cost of production, returns, profitability, marketing channels and constraints

Introduction
Maize also known as corn (American English), is a cereal grain first domesticated by indigenous peoples in southern Mexico about 10,000 years ago (Benz, B. F., 2001).
Maize has become a staple food in many parts of the world, with the total production of maize surpassing that of wheat or rice. In addition to being consumed directly by humans (often in the form of masa), maize is also used for corn ethanol, animal feed and other maize products, such as corn starch and corn syrup (Jonathon, 2019).
Sugar-rich varieties called sweet corn are usually grown for human consumption as kernels, while field corn varieties are used for animal feed, various corn-based human food uses (including grinding into cornmeal or masa, pressing into corn oil, and fermentation and distillation into alcoholic beverages like bourbon whiskey), and as chemical feedstock's. Maize is also used in making ethanol and other biofuels. Maize is widely cultivated throughout the world, and a greater weight of maize is produced each year than any other grain (International Grains Council, 2013).
Maize is an annual grass in the family Gramineae, which includes such plants as wheat, rye, barley, rice, sorghum, and sugarcane. There are two major species of the genus *Zea* (out of six total): *Zea mays* (maize) and *Zea diploperennis*, which is a perennial type of teosinte. The annual teosinte variety called *Zea mays mexicana* is the closest botanical relative to maize. It still grows in the wild as an annual in Mexico and Guatemala (Kraig, Bruce, 2012).
Maize is widely cultivated throughout the world, and a greater weight of maize is produced each year than any other grain. In 2018, total world production was 1.15 billion tonnes, led by the United States with 34.2% of the total. China produced 22.4% of the global total (International Grains Council, 2013).

Objectives of the Study
1. To work out the cost and returns of maize on different categories of selected farmers.
2. To find out the different marketing channels involved in the marketing of maize.
3. To examine the marketable surplus and disposal pattern of maize.
4. 4 To find out the constraints in production and marketing of maize and suggest suitable measures to overcome them.

Material and Methods
The present study was conducted in Lashkergah District, Helmand Province during 2020. Helmand Province consist 14 districts. Out of these, Lashkergah district was selected purposively for the study, because this district is easily reachable and maize is highly produced in this area. Three villages were selected for the research and collection of required data randomly. The selected names of the villages are, Bolan, Basharan and Babaji. Out of 3500 farmers'

family in sampled villages, 80 percent were maize growers (2800 Farmers) Nearly 10 percent maize growers' respondents (i.e. 280 farmers) were selected subject to condition from each of the three categories of farms i.e. small (up to 1.0 ha), medium (1-2 ha) and large (Above 2 ha). To work out the status of maize in Lashkergah district, trend analysis was done. To work out the cost of cultivation the standard method of cost of cultivation was adopted to calculate marketable surplus and marketed surplus standard method was adopted.

Results and Discussion

Cost of Cultivation for Maize in Sample Farms

The cost of cultivation indicates the investment on the variable inputs used in the cultivation and the services rendered by fixed assets. The cost input used by cultivators in the cultivation of maize was calculated for contribution of each input in total costs in all the three different size farm groups. The cost of cultivation of maize of sample farms is worked out in Afs/ha and presented in Table and Fig 3.1.

It reveals that overall cost of cultivation of maize crop was Afs/ha 62661 and share of materials input cost was found to be Afs. 19727.31, which shared to 31.49 per cent to the total cost. The large contributions have been observed in farmer share with Afs. 20782 and shared of 33.17 per cent to the total cost. The power use in the form of tractor hour was contributed the minimum share to the total cost of cultivation of maize, which shared 33.17 per cent. Among the materials input cost manure and fertilizer shared the maximum (22.34%) followed by seeds (7.12%), irrigation (2.39%) and minimum in plant protection which shared nearly, 2.02 per cent. The input value of family labour use was noticed to be Afs./ha 1300. The cost of cultivation of Maize per hectare in small, medium and large farm groups is Afs. 62731.2, Afs. 61892.07 and Afs. 63359.69 Respectively and the average cost of cultivation per hectare is Afs. 62661. The table clearly indicates that, the cost of cultivation of maize per hectare in large size group is higher than small and medium farm groups followed by small size group. Major cost on labour use involved in maize in small, medium and large groups is found to be Afs. 900.

Table 1: Cost of cultivation of Maize on different sample farms (Afs/ha)

Particulars	Small	Medium	Large	Average
Inputs (Variable and Fixed)				
a. Hired human labour	900 (1.43)	900 (1.45)	900 (1.42)	900.00 (1.44)
b. Family labour	1500 (2.39)	1200 (1.94)	1200 (1.89)	1300.00 (2.07)
c. Tractor power	6250 (9.96)	5250 (8.48)	6250 (9.86)	5916.67 (9.44)
d. Bullock pair	0	0	0	0.00
e. Cost of seed	4375 (6.97)	4500 (7.27)	4500 (7.10)	4458.33 (7.12)
f. Manures and fertilizers	14000 (22.32)	14000 (22.62)	14000 (22.10)	14000.00 (22.34)
g. Irrigation	1267.53 (2.02)	1668.3 (2.70)	1556.65 (2.46)	1497.49 (2.39)
h. Plant protection	1380.34 (2.20)	1302.45 (2.10)	1124.15 (1.77)	1268.98 (2.03)
i. Harvesting	6000 (9.56)	6400 (10.34)	6200 (9.79)	6200.00 (9.89)
j. Depreciation on fixed capital	1991.65 (3.17)	1197.72 (1.94)	734.5 (1.16)	1307.96 (2.09)
Threshing	4650.68 (7.41)	4743.6 (7.66)	5694.39 (8.99)	5029.56 (8.03)
Farmer share (6th)	20416 (32.55)	20730 (33.49)	21200 (33.46)	20782 (33.17)
Total input cost	62731.2 (100)	61892.07 (100)	63359.69 (100)	62661 (100)

Note: Figures in the parenthesis are percentage to total cost of cultivation of maize.

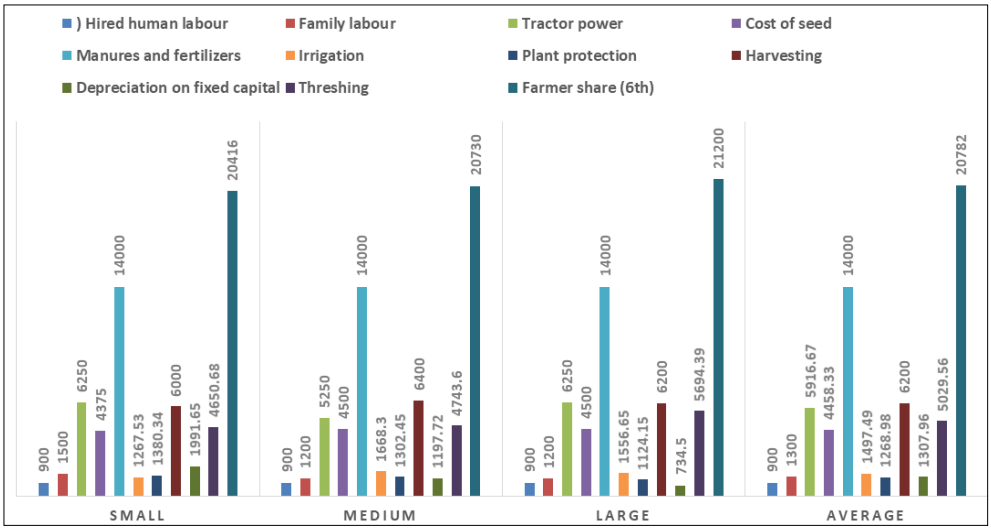

Fig 1: Cost of Cultivation of Maize

Profitability in cultivation of Maize

A brief summary of the costs and return of Maize by farm size is represented on gross return received; net returns obtained after subtracting the total cost of cultivation of maize, yield in Kg of maize production and benefit received on per Afs. investment in maize cultivation (Table & Fig 3.2). Overall, estimated gross return of maize was Afs/ha 121430.17 and obtained net return was Afs/ha 58769.2. The benefit received on per Afghani investment was 0.94. Across the farm size of holdings, the gross return of maize was varied

from Afs/ha 119927.5 to Afs/ha 123333 of small to large farms. The obtained net return was ranging from Afs/ha 57196.3 of small farms to Afs/ha 59973.31 of large farms. The benefit cost ratio of small, medium and large farm size is Afs. 0.91, Afs. 0.96 and Afs. 0.95 respectively. However, the production of maize in small, medium and large farm size is 4895 Kg, 4940 Kg and 5034 Kg respectively with average of 4956.3 Kg per hectare. The average of net return is found to be Rs. 58769.2 per hectare which implies that maize production in the study area is highly profitable. It is conforming from the findings that medium and large farms were more efficient than the small farm because of good management and supervision in cultivation of maize.

Table 2: Gross return and benefit cost ratio of Maize

S. no.	Particular	Farm size			Average
		Small	Medium	Large	
1	Production of maize (Kg/ha)	4895	4940	5034	4956.33
2	Gross return (Afs/ha)	119927.5	121030	123333	121430.17
3	Total cost (Afs/ha)	62731.2	61892	63359.69	62661.00
4	Net return (Afs/ha)	57196.3	59138	59973.31	58769.20
5	B: C ratio	0.91	0.96	0.95	0.94

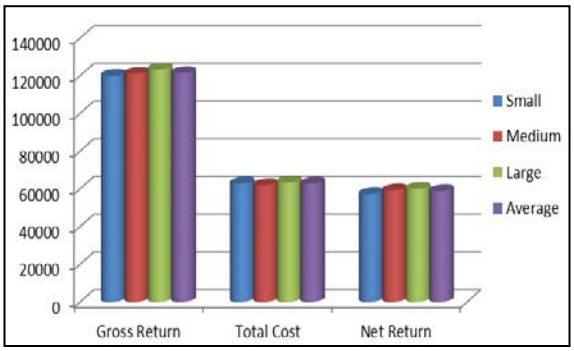

Fig 2: Profitability in Cultivation of maize

Marketing Channels

Mainly there are two marketing channels for the maize marketing in Lashkergah as given below:

Channel I: Producer – wholesaler - retailers – consumer

C**hannel II:** Producer – retailers – consumer

Disposal pattern of maize per hectare in different Size of Farms Group

Maize is mostly used for animal feed. A little quantity of produce is consumed by producer after the harvesting period of mentioned cereal for home need. Remaining quantity of maize is dispose- off by them in the hands of retailers just after harvest the crop. The marketable surplus at sampled households is shown in Table 3.4. The total production of maize is estimated as 4895 Kg at small farms, 4940 at medium farms and 5034 Kg at large farms. These figures show that the production at these farms is increasing as the large size farm, followed by medium size. The total quantity used for religious purpose is estimated as 489 Kg, 494 Kg and 503 Kg per farm respectively at small, medium and large farmers. It is shown that the small farmers are used for consumption very few quantity 740 Kg as compared to medium and large farm size groups. The highest percent of the produce was retained by large size farms (20.03 per cent) followed by medium size farms (17.32 per cent) and small size farms (15.13 per cent) respectively. The per farm marketable surplus of maize is estimated at 4154.5, 4084.5, and 4025.5 Kg constituting 84.87 per cent, 82.68 percent, and 79.97 per cent of the total production at small, medium and large farms respectively. On an average the marketable surplus in maize is found to be 4088.17 Kg constituting 82.48 per cent to total production.

Table 3: Disposal pattern of Maize in different Size of Farms Group (Kg/ha.)

S. No.	Particulars	Size of Farms Groups			Sample Average
		Small	Medium	Large	
1	Area under Maize cultivation per hectare	0.72	1.62	3.74	2.03
2	Total production of maize in Kg per hectare	4895 (100)	4940 (100)	5034 (100)	4,956.33 (100)
3	Retained for maize (in Kg)	233 (4.76)	321 (6.50)	412 (8.18)	322.00 (6.50)
a)	Home Consumption	-	-	-	-
b)	Kind Payment as wages	-	-	-	-
c)	Relatives and Religious person	489.5 (10)	494 (10)	503 (9.99)	495.50 (10)
d)	Retain for Next years	18 (0.37)	40.5 (0.82)	93.5 (1.86)	50.67 (1.02)
4	Total retention for maize	740.5 (15.13)	855.5 (17.32)	1008.5 (20.03)	868.17 (17.52)
5	Marketable Surplus	4154.5 (84.87)	4084.5 (82.68)	4025.5 (79.97)	4,088.17 (82.48)

Note: Figures in parentheses indicate percentage of total quantity produced.

Constraints in production of Maize

The constraints narrated by the respondents selected practices are presented in table 3.5. Major constraints pertaining to cultivation of maize were Lack of soil testing facility (100 percent), Unavailability of good quality of insecticides and pesticides (90 percent), Higher prices of inputs (85.71 percent), Increasing wage rate of human labours (80 percent) and Lack of good quality of hybrid seeds (60 percent). Other constraints are Lack of timely available of seeds (38.57 percent), lack of financing (21.42 percent) and lack of technical knowledge (30.00 percent).

Table 4: Problems Associated with Maize Production

S. NO.	Problems	Number of respondent		Rank
		Yes	No	
1	Lack of resources	60 (21.42)	220 (78.5)	9th
2	Lack of technical knowledge	84 (30)	196 (70)	8th
3	Lack of timely available of seed	108 (38.57)	172 (61.42)	6th
4	Lack of soil testing facility	280 (100)	0	1st

5	Lack of good quality of hybrid seeds	168 (60)	112 (40)	5th
6	Lack of availability of human labours	0	280 (100)	10th
7	Increasing wage rate of human labours	224 (80)	56 (20)	4th
8	Lack of financing	96 (34.28)	184 (65.71)	7th
9	Higher prices of inputs	240 (85.71)	40 (14.28)	3rd
10	Unavailability of good quality of insecticides and pesticides	252 (90)	28 (10)	2nd

Notes: Figure in the parenthesis indicates percentage to the total No. of respondents.

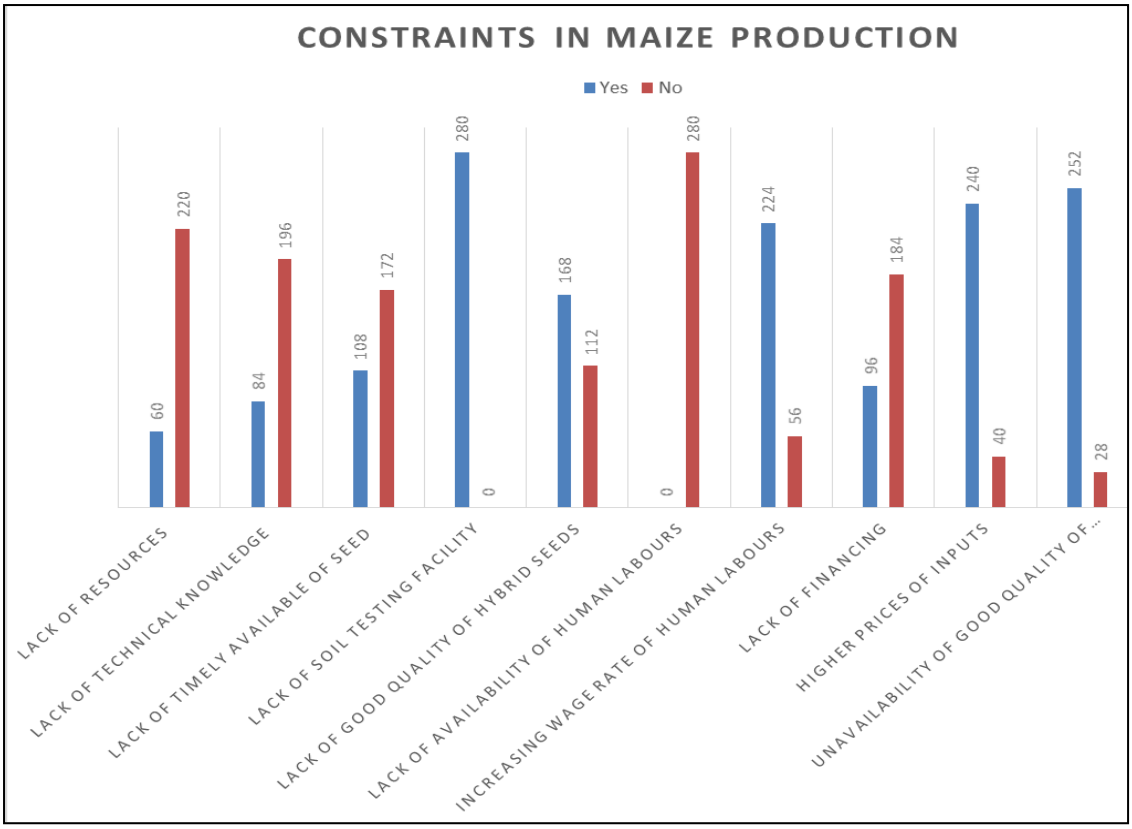

Fig 3: Constraints in Maize Production

Constraints in Maize Marketing

Marketing constraints are presented in Table and Fig 3.6. The major constraint in marketing is lack of processing industries based on Maize as well as lack of regulated and co-operative market, which are (100 percent). Lack of storage facility of Maize comes in 2nd ranking (90 percent). The next constraint in maize marketing is fluctuation of prices which is (77.85 percent). Occasionally Respondents sell their produce in the hands of private intermediaries who exploit them in one way or other. Due to high transportation charges (54.28 percent), respondents are forced to sell their produce in the hands of intermediaries. They pay high charges for transportation of the maize to the market, consequently, the profit reduced. (50 percent) purchasers are available in market because of this problem maize producer cannot earn the appropriate cost of produce at the time of selling. About (45 percent) respondents feel that lack of awareness about the market information is also a problem. Suitable and timely information about the market will positively help them to get higher prices from selling of the product. In the study it is also exposed that for small quantity of maize there is shortage of transportation, so the respondents spent lots of money here because the maize should be transported to the market rapidly for selling as the respondents were compelled to get the maize to the market to get the money hence the profit decreased.

Table 5: Problems Associated with Maize Marketing

S. NO.	Problems	Number of respondent		Rank
		Yes	No	
1	Lack of processing industries based on Maize (Oil purpose)	280 (100.00)	-	1st
2	Lack of regulated and co-operative market	280 (100.00)	-	1st
3	Lack of storage facility of Maize	252 (90)	28 (10)	2nd
4	Fluctuation of prices	218 (77.85)	62 (22.14)	3rd
5	Due to high transportation charges	152 (54.28)	128 (45.71)	4th
6	Less no. of purchasers available in market	140 (50)	140 (50)	5th
7	Lack of awareness about market information	126 (45)	154 (55)	6th
8	Not economical transportation due to small quantity of produce	47 (16.78)	233 (83.21)	7th

Notes: Figure in the parenthesis indicates percentage to the total No. of respondents.

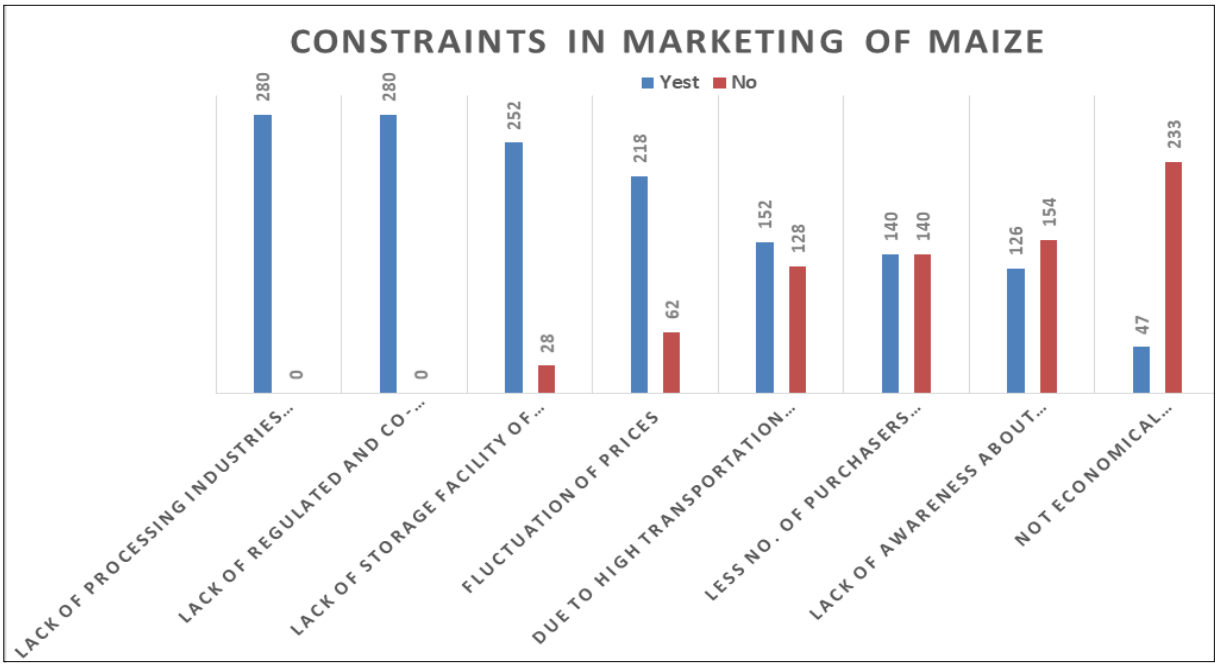

Fig 4: Constraints in Maize Marketing

Conclusion

From the findings of the study following conclusion has been derived.

1. The cost of cultivation is maximum in large size groups, followed by small and medium size groups.
2. The cost and return analysis revealed that maize production in the study area was profitable with the net farm income of Af. 58769.2 per hectare. The benefit received on per Afghani investment was 0.94.
3. It is conformed from the findings that large farms were more efficient than that of small and medium because of good management practices, supervision and maximum profit.
4. The average yield per hectare of maize came to 4956.33 Kg on the sample farms. The cost of production per hectare, on an average, was worked out to Af. 62661
5. The study indicated that there is scope to increase the producer's share in consumer's rupee by making the market more effective so that the number of intermediaries is to be restricted and marketing costs and marketing margins to be reduced.
6. Major constraints in the production of maize were, lack of soil testing facility, lack of good quality of hybrid seeds, increasing wage rate of human labour, higher prices of inputs and unavailability of good quality of insecticides and pesticides.
7. The major problem associated in marketing of maize is lack of processing industries, storage facilities, lack of regulated and cooperative market, fluctuation of prices, high transportation charges and lack of awareness about market information were found.

References

1. Abdula Danilo Carimo. Improving Maize Marketing and Trade Policies to Promote Household Food Security in Southern Mozambique‖. Michigan State University, 2005, 3.
2. Akhtar SA, Mandal SS, Singh LN. A Comprehensive Review of Research and Development of Maize in Bihar''. The Bihar Journal of Agricultural Marketing. Review. 2000; 4(8):351-360.
3. Babatunde, Raphael, Oyatoye, Eniola. Food Security and Marketing Problems in Nigeria: The Case of Maize Marketing in Kwara State‖. Department of Agricultural Economics and Farm Management, University of Ilorin, PMB 1515, Ilorin, Kwara State, Nigeria, 2004.
4. Badal PS, Singh RP. Dynamics of Maize Development‖. The Bihar Journal of Agricultural Marketing Review. 1999; 3(4):227-235.
5. Badal PS, Singh RP. Production, Marketing and Utilization of Maize in Bihar‖. The Bihar Journal of Agricultural Marketing. 2000; 1(8):15.
6. Badal PS, Singh RP. Economics of Maize Marketing: A Case Study of the Western Zone of Bauchi State of Nigeria‖. The Bihar Journal of Agricultural Marketing. 2001; 9(1):20-22.
7. Badal PS, Singh RP. Factors Affecting Adoption of Maize Cultivars in Bihar‖. Agricultural Economics Research Review. 2001; 14(2):23-25.
8. Badal PS. Singh RP. Technological Changes in Maize Production‖ A Case Study of Bihar. Indian Journal of Agricultural Economics. 2001; 2(56):56-58.
9. Chaudhary SK, Jha G. Productivity of Maize Based on Cropping System and their Effects on Soil Health under Rain fed Conditions of North Bihar Plains. Journal of farming Systems Research & Development. 2006; 12(1, 2):51-53.
10. Cruz, Antonio FS. Maize Trade in Southern Africa‖ African Economic Research Consortium (AERC), 2006. http: //www. Sarpn.org.za/documents/d0002266 /index.php
11. Karanja DD, AGO Oketch. The Impact of Maize Research in Kenya. In Proceedings of a Workshop. Review of the National Maize Research Program. KARI/ISNAR. Management Training Linkage Project, 1992. 100pg Kushwaha S. and Abdul.
12. Kadir Adanu. Economics of Maize Marketing: A Case of the Western Zone of Bauchi State of Nigeria. ‖ The Bihar Journal of Agricultural Marketing. 2001; 9(10):51-53.

13. Jaipaul, Sanjeev K Sandal, Suri VK, Dhiman AK. Validation of Fertilizer Adjustment Equation Based on Yield Target Conduct and Complimentary Use of Organic and Bio fertilizers along with Inorganic Fertilizers in Rain fed Maize, Wheat System in Wet Temperate Zone of Himachal Pradesh. ‖ Indian Journal of Agricultural Sciences. 2008; 78(6):490-4.