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An Economic Analysis of Production and Marketing of Cluster bean in Rajasthan

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A B S T R A C T

Cluster bean (*Cyamopsis tetragonoloba* L. Taub.), commonly known as Guar, has been cultivated in India since ancient times for human consumption and fodder purposes. It was observed that total cost, gross income, net income of cluster bean production per farm household found increased with increasing size of farm holding. However, cost of Production per quintal of cluster bean found to be Rs. 2056.90, Rs. 2085.16, Rs. 1932.30, Rs. 2022.30 in case of marginal farm, small farm, medium farm and large farm categories, respectively. Total cost, gross income, net income of cluster bean production per farm household were found to be higher in case of large farm categories *i.e*. Rs. 16057.09, Rs. 64386.99 and Rs. 48329.90 respectively. The share of producer in consumers' rupee was observed to be lower in channel I (77.01 per cent) than that in Channel III (86.84) and channel II (88.18). It was further observed that total marketing cost was higher in channel I as compared to that in channel II and channel III. In value chain analysis of cluster bean, there were five major players that are identified in the study area. The farmers earn a net income of Rs. 2312.49 per quintal by spending Rs. 2026.01 on the production cost and selling the produce at Rs. 4423.40. The major players *i.e.* farmers, traders, millers, wholesalers, and retailer earn a profit of Rs. 2890.02, Rs. 171.77, Rs. 454.76, Rs. 192.54 and Rs. 225.62, respectively. The highest value addition per quintal was done by the miller which helped him to income Rs. 454.76 which is significantly higher than the other players. Inadequate supply of quality certified seed, non-availability of technical know-how, high cost of inputs, lack of adoption of plant protection measures, labour scarcity, and lack of irrigation facilities were major constraints in production of cluster bean. Major marketing constraints faced by cluster bean growers in the study area were higher rate of transportation, price fluctuations, inadequate availability of market news and intelligence, inadequate transportation facility, inadequate processing unit in local area and lack of storage facility.

Introduction

Cluster bean (*Cyamopsis tetragonoloba* L. Taub.), commonly known as Guar, has been cultivated in India since ancient times for human consumption and fodder purposes.(Singh, 2014) Dry regions of West Africa are considered as center of origin of

cluster bean. It has various industrial uses and its cultivation extended to other countries also. At present the potential countries for its production are Africa, USA, Australia, Brazil and Pakistan. The plant has a strong tap root, which grows erect but becomes procumbent when growth in luxuriant. The leaves are trifoliate with oval leaflets. The plant is hardy and notably drought tolerant. This crop grows well in deep alluvial and sandy loams soils. It is highly susceptible to water logging condition or excessive wetness under north Indian condition, it is possible to raise two crops in a year i.e. spring-summer crop, sown in March and harvested for seed by mid-June and another as a rainy season i.e. in July and harvesting during October-November. The seed rate ranges average 25-30 kg per hectare for seed crop and 35-40 kg per hectare for fodder or green manure. The average per hectare productivity ranges between 1525 quintal per hectare. The fodder yield ranges from 250 quintal to 300 quintal per hectare.

The cluster bean seeds are used for preparation of gum. The industrial potentialities of Cluster bean seed are due to endospermic layer which contains a complex polysaccharide called galactomannan (gum) which is a polymer of d-galactose and d-mannose. About 38% of the total weight of seed is recovered as endosperm, which in turn contains about 68 to 70 percent pure gum. Thus, on the whole seed keeps the gum content germs to about 25 percent. The gum is used in paper industries, textiles, mining and explosives. (Whistler, 1979) It is also used as a stabilizer in various food products like icings, frozen, fruits, etc. Cluster bean can grow with pearl millet in intercropping system and most suitable combination of crop rotation is cluster bean-wheat, Cluster bean chick pea, and Cluster bean-mustard. In India cluster bean mainly growing during kharif season. India accounts for more than three-fourth (about 80 per cents) of the global production of cluster bean. The area under the crop is reported about 5345.9(000 Hectares) with production is about 3286.6 (000‟ tones) and productivity is 615(kg/Hectares) during the year 2014-15.

Rajasthan is the largest cluster been producing state in India followed by Haryana, Gujarat, UP, MP and Punjab. Rajasthan has an area of 46.30 lakh hectare, production of 27.47 M tonnes with a productivity of 593 kg/ha during the agricultural year 2014-15.The state contributes about 85 percent of the total area under crop in the country. The district of Bikaner, Jaislmer, Barmer, Churu and Hunumangarh contributes to higher acreage about 29.1%, 13.9%,13.8%,10.6% and 9.6% respectively. In case of production Bikaner contributes highest 28.5% followed by Hanumangarh 16.1% Churu 9.1and Jaislmer 7.5%.

Cluster bean has shelf life of more than 3 years without losing out on any of its properties or qualities. It requires the minimum maintenance and handling environment. Therefore, traders or stockiest store cluster bean for as long as 6-7 years (Sharma, 2014). However, prices of cluster bean as well as its derivatives very much

The crop which traditionally has been popular among the small holders has been retaining a portion of their produce mainly for seeds (Narayan, 2015).

Hence, keeping the above facts into consideration, an attempt has been made to analyse production and marketing of cluster bean (*Cyamposis tetragonoloba* L. Taub.) in Rajasthan" with following objectives include to estimate the farm size wise costs and returns of cluster bean production. And also to study the Marketing system of cluster bean in the study area.

Materials and Methods

Hanumangarh district which has the potential area under cluster bean cultivation in Rajasthan was selected purposively. Two blocks, Nohar and Bhadra and four villages (two from each block) of district Hanumangarh was selected purposively because it had substantial area under cluster bean cultivation.

Out of 205 marginal farmers in the four sampled villages 40 farmers were selected on the basis of probability proportion randomly. Similarly small farmers in same sampled villages were consisting 155 farmers and out of it 30 farmers were selected randomly. Medium farmers in the sampled villages were consisting 105 farmers out of it 20 farmers were selected. Large farmers in sampled villages were consisting 45 farmers out of it 10 farmers were selected for in depth study. Thus a total of 100 farmers forms the sample size of the present study from four existing categories. The survey was conducted during the agricultural year 2018-19. The simple tabular, percentage etc. were used for the presenting the results.

Results and Discussion

Farm size wise costs and returns of cluster bean production

The various operational costs were worked out and presented under Table 1.

The above table reveals that operational cost in cluster bean production found varied with variation on farm in the sampled areas. It may seen from the table that cost borne by marginal farm on human labour Rs. 2488.16 which is highest across the farm followed by large farm Rs. 1730.31, medium farm Rs. 1699.11 and small farm Rs. 1547.88.In percentage term it has worked out 18.05 per cent, 10.77 per cent, 11.60 per cent and 10.69 per cent respectively of the operational cost incurred. The overall cost of human labour was worked out to Rs. 1866.33 which constituted 12.63 per cent out of the total cost. Out of total cost on human labour family labour cost was found higher in the same farm of marginal categories Rs.1418.76 (10.29 per cent out of the total cost) followed by small categories Rs. 1047.73 (7.24 per cent out of the total cost), medium categories Rs. 873.97 (5.96 per cent out of the total cost) and large categories Rs. 458.79 (2.85 per cent out of the total cost). The overall family labour cost was Rs. 949.81 which constituted 6.43 per cent out of the total cost. The higher operational cost and family labour cost in marginal categories were mainly due to smaller size of land and engage for cultivation himself. The table further indicates that the hired labour cost borne higher by the large categories farm Rs. 1271.52, followed by marginal Rs. 1069.4, medium Rs. 825.14 and small Rs. 500.15. The analysis showed that the small categories farm mere generally used low level of hired labour as compared to other categories of farm.

The total cost borne by animal labour was calculated Rs 834.22 which constituted 5.64 per cent of the overall cost. Out of the total cost on animal labour cost was found higher in marginal categories (8.79 per cent of the total cost) followed by small categories (7.20 per cent of the total cost), medium categories (8.79 per cent of the total cost) and large categories (1.49 per cent of the total cost). In case of machinery cost born by different selected farms categories showed that large categories were using higher Rs. 3083.26 followed by medium Rs. 2671.63, small Rs. 2576.54 and marginal Rs. 2333.97. It has been observed from the table that larger the farm size higher machinery cost and vice-versa. The cost borne on seed was worked out Rs. 2711.98 on an average farm per hectare.

The farm size wise analysis indicates that large categories expenses Rs. 2814.4 followed by medium categories Rs. 2748.4 and small and marginal farm were expending Rs. 2581.50.

The fertilizer cost borne by different categories of farm worked and analysis indicates that on an average Rs. 370 borne by farms. The farm size wise analysis showed that higher cost on fertilizer borne by large categories farm Rs. 486.82 and lower cost borne by marginal farms 287.11. The cost borne on insecticide and pesticide worked out Rs. 56.10 per farm on an average and it found varied across the farm Rs. 59.75 in case of large farm and Rs. 52.9 for marginal categories. The cost on irrigation borne by different categories of farm found varied with variations with farm. It has worked out Rs. 69.93 for large farm which was highest and Rs. 54.42 for marginal farm which was lowest. The average cost was worked out to be Rs. 61.09. The interest on operational cost was worked out to Rs. 285.40 on an average per farm and it found varied from Rs. 314.83 for large farm to Rs. 269.10 for small farm. The operational cost were worked out Rs. 8017.25 on an average per hectare and it found varied Rs. 8559.00 in case of large farm to Rs. 7394.54 for small farm.

The table further indicates that the overhead cost borne Rs. 6752.37 per hectare on an average. The farm size wise analysis showed that again large categories farm were incurred Rs.7498.09 per hectare followed by medium categories Rs.6726.79, small farm Rs.7076.49 and marginal farm Rs.5708.15. It established that the overhead cost increase with increase the size of farm and vice-versa. Out of the total overhead cost rental value of own land cost incurred on an average Rs. 5274.64 per hectare. The large farms were found expending higher Rs. 5572.73 per hectare and marginal farm Rs. 4798.02 across the farm size. The depreciation costs were worked out Rs. 983.23 per hectare on an average and it found varied from Rs. 1353.90 large farm to Rs. 807.96 marginal farms. The Interest on fixed capital was borne Rs. 465.70 per hectare. It was found varied with variation of farm and ranges from Rs 542.60 for large categories farm to Rs. 73.36 marginal farm. The table further showed that the total costs for cultivation of cluster bean per hectare were borne Rs. 14769.62 on an average. The farm size wise analysis showed that Rs. 16057.09 expends by large categories farm on an average per hectare followed by medium categories farm Rs. 14646.86, small categories Rs. 14471.03 and marginal farm Rs. 13781.62.

The overall analysis indicates that the costs of various inputs in cluster bean production in the sampled farm were found increasing with increase in the size of farm. Out of the total costs Rs. 14769.62, the overhead cost borne to 45.71 per cent and operational cost 54.28 per cent on an average per hectare cluster bean production.

The table further showed that on an average per hectare fixed cost worked out to be Rs. 6752.37 per hectare. The highest fixed cost borne by large farm was Rs. 7498.09 and the lowest Rs. 5708.15 per hectare by marginal farm. The taxes on land borne by all sample farm were Rs. 28.81 per hectare.

Cost and Returns in cluster bean production

The costs and returns has been worked out and presented in Table 2.

The above table 2 indicates that the overall cost of cultivators of cluster bean was Rs. 14769.62 per hectare. It was the highest in large farms (16057.09 per hectare) and lowest on marginal sized farm (Rs. 13781.62 per

hectare). The table further showed that the overall production of the crop was 7.29 ton per hectare. It was found highest in large farms (7.94 ton/ha), followed by medium farm (7.58 ton/ha), small farm (6.94 ton/ha) and marginal farms (6.70 ton/ha).The production across the farm size was found varied with variation of the farm larger the farm categories higher the production and vice-versa. The average gross return from the cultivations of cluster bean was worked out Rs. 47414.37 per hectare. The average gross returns across the farm size found varied from large farm Rs. 64386.99 to marginal farm Rs. 38734.19.The average net return worked out to Rs.32644.75 per hectare among the various size groups, it varied from Rs. 48329.9 per hectare on large farm to Rs 24952.57 per hectare on marginal farms. Then cultivation of cluster bean was profitable on all the categories of farm and more profitable on large farms where farmers received Rs 4.0 on one rupee investment. At the overall level Rs. 3.21 was received on one rupee investment. The lowest input-output ratio was observed in case of marginal farms 2.81. The table again showed the cost of production rupee per quintal was found higher in case of large farm (Rs. 2022.30/qt). The overall cost of production was Rs. 2026.01 per quintal on an average of the sampled farms.

Marketing channels of cluster bean

An attempt was made to identify the various marketing channels through which marketing of cluster bean took place in the study area. Three channels were identified through which cluster bean passed from point of production to the point of consumption. The identified channels were-

Channel-I:	Producer →Wholesaler → Miller→ Retailer → Consumer
Channel-II:	Producer→ Wholesaler → Retailer→ Consumer
Channel-III:	Producer → Trader→ Wholesaler→ Retailer → Consumer

Marketing cost in marketing of cluster bean through identified channels

The route of flow cluster bean from producers to the ultimate consumers were workouts. The detailed analysis presented under tables 3, 4 and 5.

The different particulars of table 3 revealed that the price per quintal received by the producer in channel-I was Rs. 4338.50. Producer share worked out to be 77.01 per cent of the price paid by consumer. The remaining 22.29 per cent was observed to be shared various functionaries. In channel-I there were three intermediaries- wholesaler, miller and retailer, charging a margin of 1.79 per cent, 8.07 per cent and 2.75 per cent respectively. Out of the different marketing cost incurred by producer on different items such as loading, unloading, transportation, gunny bags and cleaning cost accounted for a smaller share (i.e. 0.14 per cent, 0.8 per cent, 0.71 per cent, 0.23 per cent and 0.44 per cent) respectively. Marketing costs incurred by wholesaler on different items such as, mandi tax, Weighing accounted for 1.25 per cent and 0.05 per cent respectively. Marketing costs incurred by miller on different items such as, sale tax, loading, unloading, transportation, storage and processing cost accounted for a larger share (i.e. 0.81 per cent, 0.14 per cent, 0.08 per cent, 0.44 per cent, 0.21 per cent and 4.88 per cent) respectively. Marketing costs incurred by retailer on different items such as, loading, unloading, transportation and storage had also a smaller share (i.e.0.14 per cent, 0.08 per cent, 0.35 per cent and 0.26 per cent) respectively.

Table.1 Cost of Inputs in cluster bean production on different sizes of farm holdings

Input factor	Operational holdings				
	Marginal (0-1 ha)	**Small (1-2 ha)**	**Medium (2-4 ha)**	**Large (4 ha and above)**	**All farms**
Operational cost					
Human labour	2488.16 (18.05)	1547.88 (10.69)	1699.11 (11.60)	1730.31 (10.77)	1866.33 (12.63)
a) Family labour	1418.76 (10.29)	1047.73 (7.24)	873.97 (5.96)	458.79 (2.85)	949.81 (6.43)
b) Hired labour	1069.40 (7.75)	500.15 (3.45)	825.14 (5.63)	1271.52 (7.91)	916.52 (6.20)
Animal labour	1211.23 (8.79)	1055.2 (7.20)	831.18 (5.67)	239.28 (1.49)	834.22 (5.64)
Machinery charges	2333.97 (16.93)	2576.54 (17.87)	2671.63 (18.24)	3083.26 (19.20)	2666.35 (18.05)
Seed cost	2581.5 (18.73)	2581.5 (17.83)	2748.4 (18.76)	2814.4 (17.52)	2711.98 (18.36)
Fertilizer cost	287.11 (2.08)	305.08 (2.10)	400.97 (2.73)	486.82 (3.03)	370.00 (2.50)
Insecticides and pesticide cost	52.19 (0.37)	54.3 (0.37)	58.15 (0.37)	59.75 (0.37)	56.10 (0.37)
Irrigation charges	54.42 (0.39)	59.42 (0.41)	60.90 (0.41)	69.63 (0.43)	61.09 (0.41)
Interest on operational cost	276.12 (2.00)	269.10 (1.85)	281.54 (1.92)	314.83 (1.96)	285.40 (1.93)
Total operational cost	**8073.47 (58.58)**	**7394.54 (51.09)**	**7920.7 (54.07)**	**8559 (53.30)**	**8017.25 (54.28)**
Overhead cost					
Rental value of own land	4798.02 (34.81)	5289.20 (36.55)	5438.60 (37.13)	5572.73 (34.70)	5274.64 (35.71)
Depreciation	807.96 (5.86)	843.69 (5.83)	927.36 (6.33)	1353.90 (8.43)	983.23 (6.65)
Interest on fixed capital	73.36 (0.53)	914.79 (6.32)	332.02 (2.26)	542.60 (3.37)	465.70 (3.15)
Land revenue and taxes	28.81 (0.20)	28.81 (0.19)	28.81 (0.19)	28.81 (0.17)	28.81 (0.19)
Total overhead cost	**5708.15 (41.41)**	**7076.49 (48.90)**	**6726.79 (45.92)**	**7498.09 (46.69)**	**6752.37 (45.71)**
Total cost	**13781.62 (100.00)**	**14471.03 (100.00)**	**14646.86 (100.00)**	**16057.09 (100.00)**	**14769.62 (100.00)**

Table.2 Costs incurred and Return realized in cluster bean production

Sl. No.	Particulars	Marginal (0-1 ha)	Small (1-2 ha)	Medium (2-4 ha)	Large (4 ha and above)	Overall
1	Cost of cultivation (Rs./ha)	13781.62	14471.03	14646.86	16057.09	14769.62
2	Total Production (Q./ha)	6.70	6.94	7.58	7.94	7.29
3	Gross Returns (Rs.)	38734.19	41404.6	45009.85	64386.99	47414.37
4	Net Return (Rs.)	24952.57	26933.57	30362.99	48329.90	32644.75
5	Benefit - cost Ratio	2.81	2.86	3.07	4.0	3.21
6	Cost of production (Rs./Qt)	2056.90	2085.16	1932.30	2022.30	2026.01

Table.3 Marketing cost in marketing of cluster bean through channel-I

Sl. No.	Particulars	Rs./qtl.	percentage share in consumer's rupee
1	Price received by producer	4338.50	77.01
2	Costs incurred by producer		
	i. Loading	8.0	0.14
	ii. Unloading	5.0	0.08
	iii. Transportation	40	0.71
	iv. Gunny bags	13	0.23
	v. Cleaning	24.90	0.44
	Total expenses (i+ii+iii+iv+v)	90.90	1.59
3	Sale price of producer/purchase price of wholesaler	4429.40	78.62
	i. Mandi tax @ 1.6%	70.87	1.25
	ii. Weighing @ 3/qtl	3.0	0.05
	Total expenses (i+ii)	73.87	1.31
	Commission of wholesaler	100.90	1.79
4	Sale price of wholesaler/purchase price of miller	4604.17	81.73
	i. Sale tax @ 1%	46.04	0.81
	ii. Loading cost	8.0	0.14
	iii. Unloading cost	5.0	0.08
	iv. Transportation	25	0.44
	v. Storage cost	12	0.21
	vi. Processing cost	275	4.88
	Total expenses (i+ii+iii+iv+v+vi)	371.04	6.58
	Commission of miller	454.75	8.07
5	Sale price of miller/purchase price of retailer and manufacturer of cluster bean product	5429.96	96.38
	i. Loading cost	8.0	0.14
	ii. Unloading cost	5.0	0.08
	iii. Transportation	20	0.35
	iv. Storage cost	15	0.26
	Total expenses (i+ii+iii)	48	0.85
	Retailer commission	155.42	2.75
6	Retailer's selling price/consumer purchase price	5633.38	100

Table.4 Marketing cost in marketing of cluster bean through channel-II

Sl. No.	Particulars	Rs./qtl.	percentage share in consumer's rupee
1	Price received by producer	4335.50	88.18
2	Costs incurred by producer		
	i. Loading	8.0	0.16
	ii. Unloading	5.0	0.10
	iii. Transportation	40	0.81
	iv. Gunny bags	13	0.26
	v. Cleaning	24.90	0.50
	Total expenses (i+ii+iii+iv+v)	90.90	1.84
3	Sale price of producer/purchase price of wholesaler	4426.40	90.03
	i. Mandi tax @ 1.6%	70.82	1.44
	ii. Sale tax @ 1%	44.26	0.90
	iii. Weighing @ 3/qtl	3.0	0.06
	Total expenses (i+ii+iii)	118.08	2.40
	Commission of wholesaler	101.28	2.05
4	Sale price of wholesaler/purchase price of retailer	4645.76	94.49
	i. Loading cost	8.0	0.16
	ii. Unloading cost	5.0	0.10
	iii. Transportation	32	0.65
	iv. Storage cost	20	0.40
	Total expenses (i+ii+iii)	65	1.32
	Retailer commission	140.60	2.85
5	Retailer's selling price/consumer purchase price	4916.55	100

Table.5 Marketing cost in marketing of cluster bean through channel-III

Sl. No.	Particulars	Rs./qtl.	percentage share in consumer's rupee
1	Price received by producer	4319.50	86.84
2	Costs incurred by producer		
	i. Loading	8.0	0.16
	ii. Unloading	5.0	0.10
	iii. Transportation	40	0.80
	iv. Gunny bags	13	0.26
	v. Cleaning	25	0.50
	Total expenses (i+ii+iii+iv+v)	91	1.82
3	Sale price of producer/purchase price of Trader	4410.50	88.67
	i. Mandi tax @ 1.6%	70.56	1.40
	ii. Weighing @ 3/qtl	3.0	0.06
	Total expenses (i+ii)	73.56	1.47
	Commission of Trader	101.93	2.04
4	Sale price of Trader/purchase price of wholesaler	4585.99	92.20
	ii. Loading cost	8.0	0.16
	iii. Unloading cost	5.0	0.10
	iv. Transportation	25	0.50
	v. Sale tax @ 1%	45.84	0.92
	Total expenses (i+ii+iii+iv+v+vi)	83.84	1.68
	Commission of wholesaler	103.41	2.07
5	Sale price of wholesaler/purchase price of retailer	4773.24	95.97
	i. Loading cost	8.0	0.16
	ii. Unloading cost	5.0	0.10
	iii. Transportation	18	0.36
	iv. Storage cost	15	0.30
	Total expenses (i+ii+iii+iv)	46	092
	Retailer commission	154.36	3.10
6	Retailer's selling price/consumer purchase price	4973.60	100

Table.6 Problems faced by producers in the production of cluster bean

Sl. No.	Particulars	Garret mean score	Ranking
1	Inadequate supply of quality certified seed	64.11	I
2	Non availability of technical know how	56.11	II
3	High cost of inputs	52.21	III
4	Lack of adoption of plant protection measures	51.31	IV
5	Labour scarcity	40.65	V
6	Lack of irrigation facilities	38.76	VI

Table.7 Problems faced by producers in the marketing of cluster bean

Sl. No.	Particulars	Garret mean score	Ranking
1	Higher cost of transportation	47.48	I
2	Price fluctuations	46.77	II
3	Lack of availability about market news and intelligence	43.12	III
4	Inadequate transportation facility	41.98	IV
5	Inadequate processing unit in local area	38.31	V
6	Lack of storage facility	35.75	VI

Marketing cost incurred by producer, wholesaler, miller and retailer was Rs. 90.90, Rs. 73.87, Rs. 371.04 and Rs. 48 respectively, contributing 1.59 per cent, 1.31 per cent, 6.58 per cent and 0.85 per cent respectively. Out of the different marketing intermediaries, marketing margins of miller was larger, which contribute 8.07 per cent.

Considering all the costs and profit into account, the retailer sold produce to the consumers @ Rs 5633.38 per quintal. As per analysis of the net difference in the final selling price at which the consumers bought and at which the producer sold per quintal of their product was Rs 1294.88 which was primarily due to all intermediaries and the costs involved at different stages.

The various marketing cost presented in table 4 revealed that the price per quintal received by the producer in channel-II was Rs.4335.50. Producers share was worked out to be 88.18 per cent of the price paid by consumer. The remaining 11.82 per cent was observed to be shared various functionaries. In channel-II there were only two intermediaries-wholesaler and retailer, charging a margin of per cent 2.05 and 2.85 per cent respectively. Out of the different marketing costs incurred

by wholesaler on different items such as mandi tax, sale tax and weighing account for larger share (i.e. 1.44 per cent, 0.90 per cent and 0.06 per cent) respectively. Marketing costs incurred by retailer on different items such as, loading, unloading, transportation and storage account for smaller share (i.e.0.14 per cent, 0.08 per cent, 0.35 per cent and 0.26 per cent) respectively. Loading and unloading charges paid by wholesaler and retailer had a smaller share.

Marketing cost incurred by wholesaler and retailer was Rs. 118.08 and Rs. 65.00 respectively, constituting 2.40 per cent and 1.32 per cent of the consumer's price respectively. Out of the different marketing intermediaries, marketing margins of retailer was larger (2.85 per cent) followed by wholesaler (2.05 per cent).

Consumers price was calculated Rs.4916.55 for one quintal of cluster bean. The net difference in the final selling price at which the consumers bought and that at which the producer sold per quintal of their product was Rs 581.05.

The different particulars of table 5 revealed that the price per quintal received by the producer in channel-III was Rs.4319.50. Producers share was worked out to be 86.84 per cent of the price paid by consumer. The remaining 13.16 per cent was observed by various functions and functionaries. It may be observed from the table that share of producer's in consumer's price was 86.84 per cent. Commission charge wise various intermediaries in the channel, i.e. Trader, wholesaler and retailer was Rs.101.93, Rs. 103.41 and Rs. 154.36 respectively, which accounted 2.04 per cent, 2.07 per cent and 3.10 per cent of consumer's price. Producer had to bear transportation charges of Rs.40 per quintal, which constituted 0.80 per cent of the price paid by the consumer. Among various items of marketing cost incurred by the wholesaler, transportation and sale tax was found to be the most important one, the share of which was 0.50 per cent and 0.92 per cent, respectively.

Out of the various items of marketing cost incurred by the retailer transportation emerged as the most important item, with 0.36 per cent share in consumer's rupee closely followed by storage cost accounting for 0.30 per cent of consumer's price.

The data related to marketing cost showed that the share of consumer's rupee was lower in channel-I (77.01 per cent) than that in channel-III (86.44 per cent). It was further observed that share of consumer's rupee was higher in channel-II (88.18 per cent).

Constraints faced by respondents in production and marketing of cluster bean in the study area

The above table is self-explanatory and different type of constraints to production and marketing encountered by the farmers. Inadequate supply of quality certified seed, Non-availability of technical know-how, high cost of inputs, Lack of adoption of plant protection measures, labour scarcity, and lack of irrigation facilities were major constraints in production of cluster bean. Major marketing problems faced by cluster bean growers were high cost of transportation, price fluctuations, lack of availability of market news and intelligence, inadequate transportation facility, inadequate processing unit in local area and lack of storage facility (Table 6 and 7).

Suggestions and Policy

Most of the cluster bean producers are still using traditional cultivation practices in cluster bean production. There is a strong need to intensify the better extension services

in order to provide the better information about the new and improved cultivation practices to the farmers.

Marketing infrastructure such as better access to market yards, better roads, good transport facilities, timely payment, provision of storage facilities, credit provision etc. will improve the socio-economic conditions of the producer.

With the help of an appropriate mechanism, the number of intermediaries can be reduced and the commission paid to the mediators can be avoided.

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