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AN ECONOMIC ANALYSIS OF PRODUCTION AND MARKETING OF CLUSTER BEAN IN RAJASTHAN

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Abstract

The present study aims at analyzing economic aspects related to production and marketing of cluster bean in Hanumangarh district of Rajasthan. The study is based on primary data collected from 100 cluster bean growers spread over four randomly selected villages of two random blocks of Hanumangarh district of Rajasthan by interviewing individual respondent who were classified into marginal, small, medium and large cluster bean growers on the basis of farm holdings. The Area, Production and Productivity of Cluster bean registered positive growth rate of 2.68%, 5.44% and 2.70 %per annum in India and at 3.23%, 7.44 % and 4.09 %per annum in Rajasthan during the study periods2000-01 to 2014-15 respectively. It was observed that total cost, gross income, net income and cluster bean production per farm increased with size of farm holdings. However, cost of production per quintal of cluster bean was found to be Rs 1435.59, Rs 1392.67, Rs 1432.32 and Rs 1523.54 in case of marginal, small, medium and large farms respectively. Cost of production was higher (Rs 1523.54) in large farms. The analysis revealed that large farm category was efficient than marginal, small and medium and hence its benefit-cost ratio is more (4.0).The share of producer in consumer's rupee was observed to be lower in channel I (77.012%) than that in channel II (88.18%) and Channel III (86.84%) .It was further observed that total marketing cost was higher in channel I as compared to channel II and channel III.Major constraints faced by cluster bean growers with respect to production and marketing were; Inadequate supply of quality certified seeds , non-availability of technical knowledge, high cost of inputs , lack of adoption of plant protection measures, labour scarcity and lack of irrigation facilities ,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.
Keywords: Economic aspects, cluster bean growers, marketing cost, constraints, production

Introduction

Cluster bean (Cyamopsistetragonoloba L. Taub.), commonly known as Guar, has been cultivated in India since ancient times for human consumption and fodder purposes. 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. It is a drought hardy leguminous crop because of its deep tap rooting system and has high capacity to recover from water stress. The seeds of cluster bean containabout 18% protein, 32% fiber and 30-33% gum in the endosperm. The leaves are trifoliate with oval leaflets. 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 harvested during October-November. The average seed rate ranges 25-30 kg perhafor seed crop and 35-40 kg per ha for fodder or green manure. The average perha productivity ranges between 15-25 quintal. The fodder yield ranges from 250 quintal to 300 quintal per ha (DoA, GOI)

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% pure gum. Thus, on the whole seed keeps the gum content germs to about 25%. 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 grown during kharif season. India accounts for more than three-fourth (about 80 %) of the global production of cluster bean. The area under the crop is reported about 5345.9(000 ha) with production is about 3286.6 (000tones) and productivity is 615(kg per ha) during the year 2014-15. (Department of Agriculture, Government of Rajasthan, 2015)

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 ha,production of 27.47 M tonnes and with a productivity of 593 kgper ha during the agricultural year 2014-15.The state contributes about 85 per cent of the total area under crop in the country.(Department of Agriculture, Government of Rajasthan, 2015) Hanumangarh district of Rajasthan recorded total area (518148 ha), production (462631 ton) and productivity (892.85 Kg/ha) during 2013-14 (www.krishi.rajasthan.gov.in)

The district of Bikaner, Jaislmer, Barmer, Churu and Hanumangarh 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 9.1% and Jaislmer 7.5%. (Jyani et al. 2018)

Dausa district of Rajasthan recorded growth rates in area(2.011%),production (5.146%)and productivity (3.037 %)per annumfor the period 1999-2000 to 2009-2010.It is observed that the productivity of Cluster bean ranged between 245 kg to 315 kg per ha during the study period (Devraj, 2010)

Jaipur district of Rajasthan recorded highest productivity (3.82 q/ha) attained on large sized farms and lowest (2.55 q/ha) on small farms during 2003-04 in a study (Bosale et al. 1997)

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 stores cluster bean for as long as 6-7 years (Sharma, 2014). However, there is much variation seen in prices of cluster bean as well as its derivatives.

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 (*Cyamposistetragonoloba* L. Taub.) in Rajasthanwith followingobjectives**:**

> ➤ To estimate the farm size-wise costs and returns of cluster bean production
> ➤ To study the Marketing system of cluster bean in the study area

Materials and Methods

Source of data:
This study is purely based on primary data for which Hanumangarh district of Rajasthan was selected purposively because it has the potential area under cluster bean cultivation. Two blocks, Nohar &Bhadra and four villages (two from each block) of district Hanumangarh were 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 randomly on the basis of probability proportion. Similarly from the same sampled villages, 30 farmers were selected randomlyout of 155 smallfarmers. Out of 105 medium farmers from the sampled villages 20 farmers were selected randomly and out of 45large farmers from sampled villages 10 farmers were selected randomly for in depth study. Thus a total of 100 farmers comprised the sample size of the present study from four existing farms. The survey was conducted during the agricultural year 2018-19.

Methodology:

The detailed calculation of collected data were made to analyze the result regarding total operational cost, total marketing cost, total cost of cultivation, total return and marketing efficiency which were presented in table and percentage form. The Inferences were finally drawn on the basis of the result whether it is profitable or not profitable to grow cluster bean in the sample area and on the basis of this analysis, several policies were suggested to strengthen the marketing efficiency and marketing system of cluster bean.

Results and Discussion

Costs and returns of cluster bean production on the basis of farm size: various operational costs worked out and presented under Table: 1

Table: 1 Cost of Inputs in cluster bean production for different sizes of farm holdings (Rs. /ha.)

Input factor	Operational holdings				
	Marginal (0-1 ha)	Small (1-2 ha)	Medium (2-4 ha)	Large (4 ha & 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)	2748.40 (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 & 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 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 & 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**	**14471.03**	**14646.86**	**16057.09**	**14769.62**

The above table reveals that operational cost under cluster bean production varies with different farm sizes in the sampled areas. It may be seen from the table that cost incurredby marginal farmers on human labour was Rs. 2488.16(18.05%) which is highest across all the farm sizes followed by large farmers with Rs. 1730.31(10.77 %), medium farmers with Rs. 1699.11(11.60 %) and small farmers with Rs. 1547.88(10.69 %)respectively of the total operational cost. The overall cost of human labour was worked out to Rs. 1866.33 (12.63 %)out of the total cost and the family labour cost was found to be higher which is Rs.1418.76 (10.29 %) for the marginal farms size farms followed by small farm sizefarms with Rs. 1047.73 (7.24%), medium farms size farms with Rs. 873.97 (5.96 %) and large farmswith Rs. 458.79 (2.85 %). The overall family labour cost was Rs.

949.81 which (6.43 %) out of the total cost. The higher operational cost and family labour cost in marginal farms were mainly due to smaller size of land holding and engagement in cultivation without hired labour. The table further point out that the hired labour cost incurredby the large farms farm was higher (Rs. 1271.52), followed by marginal (Rs. 1069.4), medium (Rs. 825.14) and small (Rs. 500.15). The analysis showed that the small farms farm generally used low level of hired labour as compared to other farms of farm.

The total cost incurred on animal labour was calculated to be Rs 834.22(5.64 % of the overall cost). Out of the total cost on animal labour,marginal farms shared 8.79% of the totalcost which was found higher followed by small farms (7.20 %), medium farms (8.79 %) and large farms(1.49 %). In case of machinery cost it was found that large

farms 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 Total seed cost was worked out and an average (farm per ha) cost was Rs. 2711.98. The analysis on different farm holding farms indicates that large farms expenses was Rs. 2814.4 followed by medium farms(Rs. 2748.4) and small and marginal farm expense (Rs. 2581.50)

The Total cost of fertilizerincurred by different farm holding worked out and it was found that an average cost (Rs. 370)was incurred by different farm holdings. The analysis also showed that higher cost inducedon fertilizer by large farms(Rs. 486.82) and lower cost incurred by marginal farms (Rs. 287.11). The insecticide and pesticide contributedon an average (Rs. 56.10 per farm holding) and it varied across the different farm size holdings which were Rs. 59.75 in case of largefarms and Rs. 52.9 for marginal farms. The cost incurred on irrigation found to bevarying with different farms. For large farms, the cost of irrigation was found to be highest(Rs. 69.93) andlowest for the marginal farms (Rs. 54.42). On an average, thecost was worked out to be Rs. 61.09. The interest amount of Rs 285.40 on operational cost on an average 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 ha and it found varied Rs. 8559.00 in case of large farm to Rs. 7394.54 for small farm.

The table further showed that the average overhead cost was Rs. 6752.37 ha^{-1}.Analysis showed that again highest overhead cost (Rs.7498.09 ha^{-1}) was calculated for large farms, followed by medium farms (Rs.6726.79ha^{-1}), small farm (Rs.7076.49ha^{-1}) and marginal farm (Rs.5708.15ha^{-1}). This was established that the overhead cost increases with increase in the size of farms and vice-versa. Out of the total overhead cost, average rental value of own land was Rs. 5274.64ha^{-1}. The expenses of large farms were found highest Rs. 5572.73 ha^{-1}followed by marginal farms Rs. 4798.02 ha^{-1} across the farm size. The average depreciation cost was Rs. 983.23 ha^{-1}and for different farms found varied from Rs. 1353.90 large farm to Rs. 807.96 marginal farms. The Interest on fixed capital was incurred Rs. 465.70 ha^{-1}. It was found varied with variation of farm and ranges from Rs 542.60 for large farms to Rs. 73.36 marginal farm. The table further showed that the total costs for cultivation of cluster bean per ha.Was incurred Rs. 14769.62 on an average. The farm size wise analysis showed that Rs. 16057.09 expends by large farms farm on an average per ha.followed by medium farms farm Rs. 14646.86, small farms 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 incurred to 45.71 % and operational cost 54.28 % on an average per hectare of cluster bean production.

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

Cost and Returns in cluster bean production.
The costs and returns has been worked out and presented in Table: 2

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 & above)	Overall
1	Cost of cultivation (Rs./ ha)	13781.62	14471.03	14646.86	16057.09	14769.62
2	Total Production (Q.per 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./Q)	2056.90	2085.16	1932.30	2022.30	2026.01

Table 2 indicates that the overall cost of cultivation of cluster bean was Rs. 14769.62 per ha. It was the highest in large farms (Rs.16057.09 per ha.) and lowest on marginal sized farm (Rs. 13781.62 per ha.). The table further showed that the overall production of the crop was 7.29 ton per ha. It was found highest in large farms (7.94 tonper ha), followed by medium farm (7.58 tonper ha), small farm (6.94 tonper ha) and marginal farms (6.70 tonper ha).The production across the farm size was found varied with variation of the farm larger the farm farms higher the production and vice-versa. The average gross return from the cultivations of cluster bean was worked out Rs. 47414.37 per ha.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 ha. Among the various size groups, it varied from Rs. 48329.9 per ha.on large farm to Rs 24952.57 per ha on marginal farms. The cultivation of cluster bean was profitable on all the farms 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 detailed analysis of cluster bean from producers to the ultimate consumers was worked out and is presented under Tables 3, 4 and 5.

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

Sl. No.	Particulars	Rs./qtl.	% share in consumers' rupee
1	Price received by producer	4338.50	77.01
2	Costs incurred by producer		
	i. Loading	8.00	0.14
	ii. Unloading	5.00	0.08
	iii. Transportation	40.00	0.71
	iv. Gunny bags	13.00	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	3.00	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	8.00	0.14
	iii. Unloading cost	5.00	0.08
	iv. Transportation	25.00	0.44
	v. Storage cost	12.00	0.21
	vi. Processing cost	275.00	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	8.00	0.14
	ii. Unloading cost	5.00	0.08
	iii. Transportation	20.00	0.35
	iv. Storage cost	15.00	0.26
	Total expenses (i+ii+iii)	48.00	0.85
	Retailer commission	155.42	2.75
6	Retailers' selling price/consumer purchase price	5633.38	100.00

The different particulars of table 3 revealed that the price per quintalreceived by the producer in channel-I was Rs. 4338.50. Producer share worked out to be 77.01 % of the price paid by consumer. The remaining 22.29 % was observed to be shared by various functionaries. In channel-I there were three intermediaries-wholesaler, miller and retailer, charging a margin of 1.79 %, 8.07 % and 2.75 % 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 %, 0.8 %, 0.71 %, 0.23 % and 0.44 %) respectively. Marketing costs incurred by wholesaler on different items such asmandi tax, Weighing accounted for 1.25 % and 0.05 % 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 %, 0.14 %, 0.08 %, 0.44 %, 0.21 % and 4.88 %) 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 %, 0.08 %, 0.35 % and 0.26 %) respectively.

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 %, 1.31 %, 6.58 % and 0.85 % respectively. Out of the different marketing intermediaries, marketing margins of miller was larger, which contribute 8.07 %.

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.

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

Sl. No.	Particulars	Rs. /qtl.	% 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

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 % of the price paid by consumer. The remaining 11.82 % was observed to be shared various functionaries. In channel-II there were only two intermediaries-wholesaler and retailer, charging a margin of 2.05% and 2.85 % 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 %, 0.90 % and 0.06 %) respectively. Marketing costs incurred by retailer on different items such as, loading, unloading, transportation and storage account for smaller share (i.e.0.14 %, 0.08 %, 0.35 % and 0.26 %) 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 % and 1.32 % of the consumer's price respectively. Out of the different marketing intermediaries, marketing margins of retailer was larger (2.85 %) followed by wholesaler (2.05 %).

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 / quintal of their product was Rs 581.05.

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

Sl. No.	Particulars	Rs./qtl.	% 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

The different particulars of table 5 revealed that the price per quintalreceived by the producer in channel-III was Rs.4319.50. Producers share was worked out to be 86.84 % of the price paid by consumer. The remaining 13.16 % 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 %. 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 %, 2.07 % and 3.10 % of consumer's price. Producer had to bear transportation charges of Rs.40 / quintal, which constituted 0.80 % 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 % and 0.92 %, respectively.

Out of the various items of marketing cost incurred by the retailer transportation emerged as the most important item, with 0.36 % share in consumer's rupee closely followed by storage cost accounting for 0.30 % 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 %) than that in channel-III (86.44 %). It was further observed that share of consumer's rupee was higher in channel-II (88.18 %).This is because higher number of intermediaries involved in channel-II than channel-I and channel-III and also in channel-I,producer had to paid only for transportation,weighing ,loading and unloading while in channel-II,III, and IV,charges born by village traders, wholesalers and retailers are also included.

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

Table: 6Problems 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: 7Problems 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

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.

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