RESEARCH PAPER

Production and marketing management of groundnut in Vijayapura district

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ABSTRACT

Groundnut (*Arachis hypogaea* L) belongs to the family Fabaceae. Groundnut contains about 26-28 per cent protein and 48-50 per cent oil. It is grown during all the season, the major cultivated in *Kharif* season almost in entire India. Multi-stage random sampling technique was employed to select the 120 sample farmers from Vijayapura district. Among the different categories of farmers, the total variable cost incurred by large farmers was highest (Rs. 27868.01/ha) as compared to small (Rs. 25933.15/ha) and medium farmers (Rs. 25259.77/ha). Among the three categories of farmers, the total cost incurred by the large farmers was highest (Rs. 28804.78/ha) as compared to small and medium farmers (Rs. 26616.99/ha and Rs.26076.92/ha), respectively. The highest yield was obtained by large farmers (8.26q/ha) followed by medium farmers (8.14q/ha) and small farmers (7.83q/ha). The benefit cost ratio (BCR) was highest in medium farmers (1.82) than small and large farmers (1.77 and 1.73), respectively. The marketing analysis revealed that in respect of groundnut channel-II has more was producer's share in consumers rupee was 82.08 per cent than channel-I was consumer rupee 78.11per cent.

KEY WORDS : Production, Cost and returns, Price spread, Channels, Marketing of groundnut crop

Groundnut is considered to be one of the most important oilseed crops in the world. The seeds are a good source of edible oil and proteins. The percentage of oil approximately 49 per cent and protein extracted from the seeds are 25 per cent. The oil cake meal left after the extraction of the oil is used as animal feed and manure. The groundnut oil is primarily needed as a cooking agent but it also has some industrial uses like production of paint, lubricating oil, soap, furniture polish etc. The groundnut seeds are also consumed directly in roasted form, as butter and in candies etc. Groundnut production of the world has reached the mark of around 34 million tons. China, followed by India is the largest producer of this oilseed crop in the world. The groundnut oil production has around 8 million tons annually. These two countries are also responsible for the highest consumption of groundnut. The major groundnut consuming countries are China, India, Nigeria, United States and Myanmar.

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India is one of the largest producers of oilseeds in the world. The nine oilseeds namely groundnut, rapeseed-mustard, soybean, sunflower, safflower, sesamum, niger, castor and linseed and accounted for groundnut area of 27.46 million hectares with a production of 28.16 million tons during the year 2015-16. Groundnut is called as the "King' of oilseeds". It is one of the most important food and cash crop of the country. Being a valuable source of all the nutrients, it is a low priced commodity. Developing countries account for (96%) of the global groundnut area and (92%) of the global production. Asia accounts for (58%) of the global groundnut area and (67%) of the groundnut production with an annual growth rate of (1.28%) in area, (2%) in production.India is the world's second largest producer of groundnut (18.2%) after China (41.5%). USA is one of the world's leading groundnut exporters, with average annual exports of 200 to 250 thousand metric tons per year worldwide, groundnut export was approximately 2.75 million metric tons during 2015-16. Demand for groundnuts in North America and Europe has been steady, although competition within a dynamic snack market continues to put pressure on groundnuts to compete with a growing range of products. In 2014-15 crop, China had an unfortunate (70%) overall groundnut harvest due to bad spell of weather and untimely rainfalls.

Karnataka is one of the important groundnut growing states in India. Groundnut is one of the main cash crops in eight districts of the state. Karnataka stood fourth by way of contributing to 9.72 per cent of oilseeds area and 12.64 per cent of the country's production during the year 2015-16. The major groundnut growing districts in Karnataka are Chitradurga, Tumkur, Dharwad, Belgavi, Vijayapura, Gadag, Raichur, Bellary and Koppal. About 70 per cent of the crop is grown in black soil and the remaining in red soils. In Vijayapura district of Karnataka, occupying about 42,912 hectare of area and 28,658 tonnes of production during 2015-16.

METHODOLOGY

The study was based on primary data. Primary data were collected through personal interview method from farmers, village merchants, commission agent/traders, wholesalers and retailers with the help of well-structured and pre-tested questionnaire exclusively designed for the study. The sampling technique was followed were random sampling. Among the five taluks of Vijayapura

district, top two taluks Indi and Sindagi were selected based on highest area under groundnut crop. These two taluks put together cover nearly 80-85 per cent of groundnut production in Vijayapura district.

In the next stage eight villages were selected randomly from each one of the selected taluks, from among the major groundnut growing villages. In the next stage five farmers from each village were selected randomly to make the total sample size is 80 farmers. Similarly, to elicit marketing information about groundnut crop, 10 traders and 10 retailers from each taluk were selected randomly. Thus, the total sample size is 120.

The primary data collected from the farmer respondents and traders related to details of the objectives. The data pertained to the agricultural year 2016-17. The total sample of 80 farmers were post enumeration classified as small, medium and large farmers based on the approved criteria of land holding classifications. As per the criteria farmers of land holding upto 2 hectare were considered as small farmers, 2 to 4 hectare medium farmers and above 4 hectare were considered as large farmers.

ANALYSIS AND DISCUSSION

Input management assumes critical importance in groundnut production under rainfed condition and makes use of seven critical inputs which are essential for the successful. Inputs utilized per hectare of groundnut production were presented in Table 1. It indicated that, the overall per hectare utilization of groundnut seeds was 65.82 kg. Among the different category of farmers, it was the highest in the case of large farmers (70.63 kg) followed by medium farmers (66.57 kg) and small farmers (60.27 kg).It has been observed that the seeds usage was maximum in case of large farmers followed by small and medium farmer. The overall farmers per hectare utilization of human labour was 47.63 man days, large category farmers (51.22 man days) followed by small farmers (46.41 man days) and medium farmers (45.25 man days) with respect to labour, it was observed that human labour utilization was maximum in case of large farmer. This can be explained by the large farmer's financial strength compared to medium and small farmers. With respect to bullock labour, the highest utilization was seen on large farmers (3.23 pair days) followed by small farmers (3.18 pair days) and medium farmers (2.96 pair days) and it was 3.12 pair days for

the overall category farmers. It was observed that small farmers and medium farmers were using bullock labour more than large farmer and small farmers. However, when it came to machine labour, small farmers are using more than medium and large farmers. The highest machine labour was utilized by small farmers (7.27 hours) followed by medium farmers (6.56 hours), large farmers (6.50 hours) and on overall category farmers it was 6.78 hours. The average quantity of Farm Yard Manure (FYM) applied per hectare in the study area was 2.22 tons and different category of farmers, the highest FYM application was observed in case of large farmers (3.25 tons) followed by small category farmers (2.00 tons) and medium category farmers (1.42 tons) and FYM usage was highest in case of large farmers. The average quantity of fertilizers applied per hectare in the study area was 230.03 kg and it was the highest on medium farmers (247.5 kg) followed by small category farmers (236.36 kg) and large category farmers (206.25 kg). The expenditure pattern on PPC (plant protection chemicals) application indicated that the highest in the case of large farmers (0.46) followed by medium category farmers (0.30) and the small category farmers (0.25). In case of plant protection chemicals; it was found that large farmers used more pesticides compared to small and medium farmers. It can be said that medium and large farmers are on par when it comes to input utilization. Comparatively, small farmers use less input. Similar observation expressed by Ahiwar *et al.* (2014) and Kurrey (2014).

The operation-wise labour management in groundnut production under different category farmers size of land holders has presented in Table 2. It was evident from the table that the per hectare of human labour were used 47.61 man days, bullock labour was 3.12 pair days and machine labour was 6.78 hours. Among overall farmers operations of land holding like weeding consumed the highest of 14.66 man days of labour followed by harvesting (14.15 man days), spreading of FYM (5.7 man days), sowing (3.36 man days), transportation of FYM (3.97 man days), inter-cultivation (2.26 man days), spraying/dusting (1.53 man days), seeds treatment (1.00 man days) and fertilizer application (1.00 man days). In groundnut cultivation, machine labour was most commonly used than bullock labour in the study area. Among different category of farmers, small farmers utilized more machine labour. Farm operations such as ploughing consumed 2.00 hours, harvesting and threshing consumed 2.00 hours, harrowing 1.64 hours, transportation of FYM 1.45 hours and cold crushing 0.18 hours in cultivation of per hectare of groundnut in small farmers. Apart from machine, the operation like ploughing (0.12), cold crushing (0.04), harrowing (0.07), transportation of FYM (0.04), sowing (1.80), inter-cultivation (1.00) and harvesting and threshing (0.04) were done through to for bullock pairs, among various operations of groundnut cultivation harvesting operations consumed highest man days of labour because farmers usually go for hand picking instead machine harvesting. However, among different farm size categories not much difference observed with regard to human labour utilization but slightly difference observed in case of bullock labour and machine labour.

The cost incurred and returns realized from groundnut production were calculated and presented in Table 3. The share of total variable cost was 97.01 per cent in the total cost. Among the different category of farmers, the total variable cost incurred by large farmers

Table 1: Input utilization pattern in groundnut production						(Per ha)
Sr. No.	Particulars	Units/ha	Small farmers (n = 22)	Medium farmers (n = 42)	Large farmers (n = 16)	Over all farmers (n = 80)
1.	Seeds	kg	60.27	66.57	70.63	65.82
2.	Human labour	man days	46.41	45.25	51.22	47.63
3.	Bullock labour	pair days	3.18	2.96	3.23	3.12
4.	Machine labour	hours	7.27	6.56	6.50	6.78
5.	FYM	tones	2.00	1.42	3.25	2.22
6.	Fertilizers	kg	236.36	247.5	206.25	230.03
	Urea	kg	68.18	74	56.25	66.14
	DAP	kg	113.64	121.5	100	111.71
	SSP	kg	54.5	52.5	50	52.33
7.	PPC	litre	0.25	0.30	0.46	0.33

was highest (Rs. 27,868.01/ha) as compared to small farmers (Rs. 25,933.15/ha) and medium category farmers (Rs. 25,259.77/ha).This might be attributable to the fact that human and bullock labour and applied much fertilizer than their counterparts. The distribution pattern of operational cost under various inputs indicated that cost of seeds accounted for highest share in the case of in large farmers (Rs. 4,701.25/ha) and followed by medium farmers (Rs. 4,548.81/ha) and small famers (Rs. 4,109.54/ha) whereas, Human labour cost was highest in case large farmers *i.e.,* Rs. 9,976/ha, compared to small farmers (Rs. 9,085.5/ha) and medium farmers (Rs. 8,818.5/ha). Bullock labour cost was highest in case of large farmers (Rs. 2,906.25/ha) followed by small (Rs. 2,386.36/ha) and medium farmers (Rs. 2,214.29/ha). The cost of machine labour was highest in small farmers (3,581.18/ha) and followed by large farmers (Rs. 3,375/ha) and medium farmers (Rs. 3,252.38/ha). The cost of FYM was the lowest on medium farmers (Rs. 676.19) compared to small farmers (Rs. 1,000) and large farmers (Rs. 1,625). It could be also observed from the table that the expenditure on PPC was the highest large farmers (Rs. 233.5/ha) followed by medium (Rs. 157.14/ha) and small farmers (Rs. 129.10/ha). The highest expenditure on fertilizers Rs. 3,944.91/ha was observed on small farmers followed by medium (Rs. 3,939.95/ha) and large farmers (Rs. 3,227.62/ha).

The share of fixed cost in the total cost of production was 2.99 per cent in the overall cost. The farm category-wise analysis indicated that fixed cost incurred by large farmers was higher (3.25 %) as compared to medium and small farmers (3.13 %) and (2.57 %), respectively. Among the different items of fixed costs, land revenue, depreciation charges and interest on fixed capital were almost same. Among the three categories of farmers, the total cost incurred by the large farmers was the highest (Rs. 28804.78/ha) as compared to small and medium farmers (Rs. 26616.99/ha) and (Rs. 26076.92/ha), respectively as presented in Table 3.

The farmers category wise analysis of gross returns indicated that the gross returns obtained by large farmers were higher (Rs. 49,786.45/ha) as compared to medium (Rs. 48,431.05/ha) and small farmers (Rs. 45,670.27/ha). With respect to net returns obtained by the medium farmers were higher (Rs. 22,354.13/ha) as compared to large farmers (Rs. 20,981.67/ha) and small farmers (Rs. 20,588.28/ha). The production of groundnut in the study area found to be profitable as also supported by a high magnitude of B: C Ratio of 1.78 for overall farmers. The average quantity of yield obtained on the overall category farmers in the study area was 8.08 q/ha. The highest yield was obtained by large farmers (8.26 q/ha) followed by medium farmers (8.14 q/ha) and small farmers (7.83 q/ha).

The cost of human labour, fertilizers, bullock labour and machine labour were the major items of variable costs (97.43 %), because most of the operations like harvesting, spraying and weeding of human labour were

Table 2 : Labour utilization pattern in groundnut																(Per ha)
Sr. No.	Particulars	Small farmers (n = 22)				Medium farmers (n = 42)				Large farmers (n = 16)				Over all farmers (n = 80)			
		Men	Women	BL	ML	Men	Women	BL	ML	Men	Women	BL	ML	Men	Women	BL	ML
1.	Ploughing	--		--	2.00	--		--	1.52			0.37	1.25			0.12	1.59
2.	Clod crushing	--		--	0.18	--		--	--			0.12	0.25			0.04	0.14
3.	Harrowing	--		0.18	1.64	--		0.05	1.90			--	0.75			0.07	1.43
4.	Transportation of FYM	3.97		--	1.45	3.82		--	1.05	4.12		0.12	1.75	3.97		0.04	1.42
5.	Spreading of FYM	1.97	3.78	--	--	2.13	3.49	--	--	2.00	3.75	--	--	2.03	3.67	--	--
6.	Fertilizer application	1.00		--	--	1.00		--	--	1		--	--	1		--	--
7.	Seeds treatment	1.00		--	--	1.00		--	--	1		--	--	1		--	--
8.	Sowing	2.55	0.82	2.00	--	2.36	0.73	1.91	0.09	2.75	0.87	1.50	0.75	2.55	0.81	1.80	0.28
9.	Inter cultivation	2.11		1.00	--	2.05		1.00	--	2.63		1.00	--	2.26		1.00	--
10.	Spraying/ dusting	1.57		--	--	1.14		--	--	1.87		--	--	1.53		--	--
11.	Weeding	3.59	10.21	--	--	3.45	10.97	--	--	3.81	11.93	--	--	3.62	11.04	--	--
12.	Harvesting and threshing	3.48	10.36	--	2.00	3.36	9.75	--	2.00	3.75	11.74	0.12	1.75	3.53	10.62	0.04	1.92
	Total	21.24	25.17	3.18	7.27	20.31	24.94	2.96	6.56	22.93	28.29	3.23	6.50	21.48	26.13	3.12	6.78

Note: BL- Bullock Labour (pair days) ML- Machine Labour (hr)

intensively operations. The other operations like harrowing, sowing, inter-cultivation machine labour and bullock labour intensively activities. The distribution pattern of operational cost under various inputs revealed that cost of human labour was highest in the large farmers *i.e.,* Rs. 9,976/ha, as compared to small (Rs. 9,085.5/ha) and medium farmers (Rs. 8,818.5/ha).

The profitable aspects of groundnut cultivation in Indi and Sindagi taluk during 2016-17 have been analysed

by computing per hectare cost and returns. The analysis was carried out for different farm sizes *i.e.,* small medium and large farmers. Per hectare cost of cultivation was more in large farmers. This was due to the fact that, the large farmers utilized more of fertilizers, human labour and the plant protection chemicals. The small farmers also used slightly more quantity of inputs than compared to medium farmers. The share of variable cost in total cost was highest in case of all farmers. Among the

Table 3 : Cost and returns of groundnut production in the study area				(Rs./ha)
Sr. No. Particulars	Small farmers (n = 22)	Medium farmers (n = 42)	Large farmers (n = 16)	Overall farmers (n = 80)
Variable cost				
1. Seeds	4,109.54 (15.44)	4,548.81 (17.44)	4,701.25 (16.32)	4,453.2 (16.39)
2. Human labour	9,085.5 (34.13)	8,818.5 (33.82)	9,976 (34.63)	9,293.33 (34.21)
3. Bullock labour	2,386.36 (8.96)	2,214.29 (8.49)	2,906.25 (10.08)	2,502.3 (9.21)
4. Machine labour	3,581.18 (13.45)	3,252.38 (12.47)	3,375 (11.72)	3,402.85 (12.53)
5. FYM Manure	1,000 (3.75)	676.19 (2.59)	1,625 (5.64)	1,100.40 (4.05)
6. Chemical fertilizers	3,944.91 (14.82)	3,939.95 (15.11)	3,227.62 (11.20)	3,704.16 (12.30)
Urea	709.09	465.48	365.62	513.40
DAP	2,840.90	3,095.29	2500	2,812.06
SSP	394.90	379.24	362	378.71
7. PPC	129.10 (0.48)	157.14 (0.60)	233.75 (0.81)	173.33 (0.64)
8. Interest on working capital @ 7 %	1,696.56 (6.37)	1,652.51 (6.23)	1,823.14 (6.32)	1715.07 (6.31)
Subtotal (I)	25,933.15 (97.43)	25,259.77 (96.87)	27,868.01 (96.75)	26,349.51 (97.01)
Fixed cost				
9. Land revenue	40 (0.15)	40 (0.15)	40 (0.14)	40 (0.15)
10. Depreciation	570.56 (2.14)	689.60 (2.64)	796.40 (2.76)	685.52 (2.52)
11. Interest on fixed capital @ 12 %	73.28 (0.27)	87.55 (0.33)	100.37 (0.35)	87.06 (0.32)
Subtotal (II)	683.84 (2.57)	817.15 (3.13)	936.77 (3.25)	812.58 (2.99)
Total cost of production (I + II)	26,616.99 (100)	26,076.92 (100)	28,804.78 (100)	27,162.09 (100)

Contd..... Table 3

Sr. No. Particulars	Small farmers (n = 22)	Medium farmers (n = 42)	Large farmers (n = 16)	Over all farmers (n = 80)
1. Yield				
Main product (q)	7.83	8.14	8.26	8.08
By products (ton)	3.07	3.13	3.22	3.14
2. Sale price				
Price (Rs./q)	5,832.73	5,751.50	5,832.50	5,805.58
By products (Rs. 500 /ton)	500	500	500	500
3. Gross return				
Total price	45,670.27	46,866.05	48,176.45	46,909.09
By products price	1535	1565	1610	1570
Total gross return	47,205.27	48,431.05	49,786.45	48,479.09
4. Total cost of production	26,616.99	26,076.92	28,804.78	27,162.09
5. Net return	20,588.28	22,354.13	20,981.67	21,317
6. B:C ratio	1.77	1.86	1.73	1.78

Note: Figures in the parentheses indicate percentage to total

variable costs share of human labour was highest followed by cost of fertilizers. The average yields of groundnut in different farm sizes are presented. In large farmers yields was maximum. The gross returns were higher in large farmers than compared to small and medium farmers. It is because of higher yields in large farmer than medium and small farmers. Similar observation expressed by Chandraskehar (1993).

A systematic analysis of costs and margins of various intermediaries involved in marketing of groundnut would help to know the various services rendered by these intermediaries and their economic performance in the marketing of groundnut. The price spread was one of the measures of market efficiency, as it indicated the increase in the price of a commodity and also changed hands from one intermediary to another in the marketing process. The price spread included marketing costs incurred and margins retained by various market functionaries in addition to the costs incurred on marketing of the by producer. The marketing costs and margins of different market functionaries were worked out as percentage to consumer's price for the effective

comparison further the price received by producer and paid by the consumer provide the extent of price spread.

The results on marketing costs and margins of intermediaries involved in the marketing of groundnut in Channel-I was presented in the Table 4. The marketing Channel-I adopted in the marketing of groundnut indicated distribution from farmers - village merchants – commission agent - wholesalers - retailers and finally to the processor.

The marketing costs and margins in Channel-I adopted in the distribution of groundnut showed the producers price of Rs. 5,781.75/qtl and the ultimate price paid by the consumer Rs. 7,319.49/qtl it was found that farmer as a producer played a limited role as marketer to the extent of preparing the produce for the market and transporting a cost of Rs. 64.08/qtl. Marketing cost incurred by producer actually received a net price of Rs. 5,717.66/qtl of groundnut which accounted only 4.00 per cent of the price spread. Price spread by village merchant comprising the cost incurred (10.26 %) and profit margin (9.69 %). Similarly, the share in price spread by commission agent/traders comprising the cost incurred

Sr. No.	Particulars	Channel-I	Channel-II
	Table 4: Marketing costs, margins and price spread of groundnut		**(Rs./qtl)**
1.	Producer price	5,781.75	5,836.59
2.	Marketing cost incurred by producer	64.08 (4.00)	174.17
3.	Producers net price	5,717.66	5,662.42
4.	Purchase price of village merchant	5,781.75	---
5.	Profit margin of village merchant	155.16 (9.69)	---
6.	Cost incurred by village merchant	164.33 (10.26)	---
7.	Sale price of village merchant	6,101.24	---
8.	Purchase price of commission agent/traders	6,101.24	5,662.42
9.	Profit margin of commission agent/traders	210.59 (13.15)	215.59 (17.48)
10.	Cost incurred by commission agent/traders	224.74 (14.03)	226.89 (18.40)
11.	Sale price of commission agent/traders	6,536.57	6,104.9
12.	Purchase price of wholesaler	6,536.57	6,104.9
13.	Profit margin by wholesaler	220.00 (13.73)	218.45 (17.71)
14.	Cost incurred by wholesaler	260.4 (16.26)	271.1 (17.59)
15.	Sale price of wholesaler	7,016.97	6,594.45
16.	Purchase price of retailers	7,016.97	6,597.45
17.	Profit margin by retailers	236.48 (14.76)	240.49 (19.50)
18.	Cost incurred by retailers	66.04 (4.12)	63.57 (5.15)
19.	Sale price of retailers (consumer price)	7,319.49	6,898.51
20.	Producers share in consumers rupee	78.11	82.08
21.	Price spread	1,601.83	1,233.09
22.	Marketing efficiency	3.71	4.58

Note: Figures in the parentheses indicate percentage to total

(14.03 %) and profit margin (13.15 %). The share in price spread by wholesaler comprising the cost incurred (16.26 %) and profit margin (13.73 %). The share in price spread by retailers comprising the cost incurred (4.12 %) and profit margin (14.76 %)

It was observed that retailer in groundnut added more to the price spread when compared to wholesaler and village merchant in the marketing of groundnut in Channel-I. Channel II: This was the second important channel found for marketing of groundnut. Farmers supplied their produce to commission agent/traders. The commission agent/traders their produce from farmer's price was found to be more (Rs. 5,836.59/qtl) than in Channel- II. The producer's share was worked out to be 82.08 per cent, in channel-II all the intermediaries got less margin compared to channel- I. The margin retained by commission agent/trades, wholesaler and retailer was recorded as Rs. 215.59 (17.48 %), Rs. 218.45 (17.71 %) and Rs. 240.49 (19.50 %), respectively. By comparing the channel-I and channel- II with respect to marketing of groundnut, channel-II have more producer's share in consumer's rupee (82.08 %) than channel-I (78.11 %) and price spread was lowest in channel-II than channel-I, it show channel-II market is more efficient than channel-I.

Production of any farm commodity completed only when it reached to the ultimate consumer. Therefore, it's had been regarded as a part and parcel of the production activity. It was said that the Indian farmer was a good producer but a bad marketer. The ultimate success in marketing of any commodity largely depended upon the ease and significance in the marketing of groundnut.

From the Table 4 with respect to groundnut which revealed that channel-II was seen more efficient than channel I, where producer share in consumer rupee was 82.08 per cent. As, in this channel there was only three intermediate persons *i.e.*, commission agent/traders,

wholesaler and retailer. The farmers themselves supplied the produce to wholesaler in market by incurring transportation cost which gave them good returns compared to channel- I. The price spread was Rs. 1,233.09. In Channel I there were more intermediaries and through this channel bulk amount of the produce had transacted in the study area. The village merchants, commission agent/traders, wholesalers and retailers were permanent market players so farmers supplied their produce through this channel- I. the producer share in consumer rupee in Channel- I was 78.11 per cent. The price spread was Rs. 1601.83. Similar observation expressed by Balaji *et al.* (2001); Naik *et al.* (2006) and Shelke *et al.* (2015).

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