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Economic analysis of onion, chilli, coriander production and marketing in Mungeli District of Chhattisgarh

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Abstract

Economic analysis of onion, chilli, and coriander production and marketing with the objective to work out the cost and return and marketing pattern of onion, chilli, and coriander in the study area. The study was conducted in 15 villages of 2 blocks of Mungeli district of Chhattisgarh state. The major finding of this study revealed that, on an average, the cost of cultivation of onion was calculated as Rs 26,996.61, chilli was calculated as Rs.27147.83 and the cost of cultivation of coriander was calculated as Rs.24397.49 per hectare and which showed an increasing trend from marginal to large farms and average input-output ratio was observed to be 1:1.39, 1:3.91, and 1:2.65 whereas, input-output ratio was showing increasing trend from marginal to large farms in the production of onion, chilli and coriander. Two marketing channels were prevailing in marketing of hilli, in the study area cviz channel-I: producer - village merchant- consumer, channel-II: producer - consumer (village market). And an average marketable surplus of onion was 98.49 per cent to total production, chilli was 89.42 per cent to total production and coriander was 85.21 per cent to total production.

Keywords: Production and yield of onion, chilli and coriander, cost of cultivation, cost and return, marketable surplus and marketing channel

Introduction

India is regarded as the legendary “Land of spices” It is one of the largest producer and exporter of spices. The total area under spices in India is 3,166 hectare and the, annual production of spices in our country is around 5,908 MT, India contribution 86 percent of global spices production followed by China (4 percent), Bangladesh (3 percent), Pakistan (2 percent), Turkey (2 percent) and Nepal (1 percent). (spices India 2013-14). India has monopoly in spices production and export for a long period. But is situation is fast changing and we are facing extreme competition from many. Spices producing country Vietnam, Brazil, Indonesia, Malaysia, and Thailand, are the major opponent of India in the world pepper market. Generally India grown in major spices are cardamom. Chhattisgarh is an agricultural major land and due to large production of rice, Chhattisgarh is known as the rice bowl. Highest area under growing chilli (41,359 ha.) spices crop and coriander (13,374 ha.), ginger (11,395 ha.). Out of total production of spices i.e. 63,2031 metric tonnes. Chilli gives the highest production, 28,0312 metric tonnes followed by others 12,2233 metric tonnes and turmeric 10,3402 metric tonnes. The major spices grown in Mungeli district of Chhattisgarh are chilli, ginger, garlic, turmeric, coriander, methi. Spices crop in Chhattisgarh 92,769 ha, and Mungeli district under spices growing in 2,295 ha.

Materials and methods

Sampling Design

The selection of district, blocks, villages, and spices grower is presented under the following sub sections:

Selection of District

The Chhattisgarh state has 27 districts in which 92,769 ha. Area under spices having 63,3031 metric tonnes of production. Out of this, 2,295 hectare area in Mungeli district, the total production of this crop is 13,441.9 metric tonnes. The production of spices crop first in Raigarh district (71,388 metric tonnes.), second ranks which Sarguja district (53,142 metric tonnes.) and the third ranks of Bilaspur district (42,979 metric tonnes.).

Therefore, Mungeli district is selected purposively for the present study. Mungeli district has 3 blocks namely Mungeli, Lormi and Patharia. Out of these, two blocks namely Mungeli, and Lormi block were purposively selected for the study because of its major area under spices in the district and it represent more or less singular agro-socio-economic condition of the district on the basis of area of cultivation of spices in Mungeli district coriander, chilli and onion were included as major spices for the purpose of study.

Mungeli block has 248 villages and Lormi block has 70 villages according to Janpad Panchayat, Mungeli in which this crop is being grown by the farmers. Out of this list of 248 villages of Mungeli and 70 villages of Lormi block, a sample of 5 percent villages is taken to be considered for the present study. Accordingly, 12 numbers of villages in Mungeli block and 3 numbers of villages in Lormi block are selected from these two blocks. Therefore Devri, Surighat, Ramgarh, Rehuta, Surda, Silli, Jujharbhatha, Fandwani, Chatan, Jhitkaniha, Majgao, Newaspur villages from Mungeli and Koylari, Khirwar, Chilphi villages in Lormi block, considered for the purpose of present study. In all, eleven villages from both blocks are selected for this study in.

Method of enquiry and data collection

Primary data collection

Primary data from farmers is collected through well prepared schedule and questionnaire. Data include information regarding the total cultivated area, area under spices and cereals, source of irrigation, irrigated area, cropping pattern, yield per unit of area and cost of cultivation. Cost of cultivation includes variable and fixed cost. The variable cost consists nursery preparation, field preparation, transplanting, manure and fertilizer application, irrigation, intercultural operation, plant protection material and its application, picking, operation wise labour utilization, interest on working capital while the land revenue and rents are considered as fixed cost. Various questions on the constraints faced by farmers in production, marketing and financing of spices are also been included in the questionnaire. The grower's perceptions about the future prospects of spices and suggestions to develop the crop are also asked. The primary data belongs to the crop year 2015-16.

Secondary data collection

Secondary information is taken from the office of director of horticulture, Mungeli. The district-wise data on area, production and productivity of this crop is collected from the office of director of horticulture.

Cost of cultivation

(a) Variable Cost

This include family human labour wages, hired human labour wages, bullock labour wages, power labour wages, seed cost, plant protection material cost, manure and fertilizer cost, interest on working capital. It is calculated in Rs./ha.

(b) Fixed cost

This includes rental value of owned land, depreciation, land revenue and interest on fixed capital.

Farm business analysis

These include detailed analysis of cost and returns of the major spices such as net income, family labour income, farm business income and input-output ratio.

(a) Net income

It is the difference between total receipts and total expenses. It includes the farm manager and interest on capital invested in the business. It was calculated as:

$$\text{Net income} = \text{Gross income} - \text{Total expenses}$$

(b) Family labour income

It is measured on earning of a farmer and his family for his labour and managerial work. It is equal to gross income minus total expenses excluding wage of unpaid family labour.

$$\text{Family labour income} = \text{Gross Income} - \text{Cost B}$$

(c) Farm business income

It is measure of earning of farmer and his family for his capital investment, labour and managerial work.

$$\text{Farm business income} = \text{Gross income} - \text{Cost A1}$$

(d) Farm investment income

This is the sum of net income, rental value of owned land and interest on fixed capital.

$$\text{Farm investment income} = \text{Farm business income} - \text{Imputed value of family labour.}$$

(e) Input-output ratio

It can be expressed as the ratio of output to input. The ratio was calculated as:-

$$\text{Input-output ratio} = O / I$$

Where, I = Total input

O = Total output

Marketable surplus

It is the quantity of produce left meet out the requirements of the producer for family consumption, cattle feed, paid as wages, use for seed purpose etc. In mathematically equation, the marketable surplus of produce may be expressed as:-

$$MS = P - (C + Cf + W + S)$$

Where,

MS = Marketable Surplus

P = Production

C = Family consumption

Cf = Quantity used for Cattle feed

W = Quantity used for Wages

S = Quantity kept for Seed purpose

Source of Irrigation

The different sources of irrigation in the Mungeli district are shown in Table 1. The Table clearly point out that the maximum area is irrigated by canal (51,432 ha.) which is 75.72 percent of the total irrigation in the Mungeli district followed by tube well (16,491 ha.) which contributes 24.27 percent to the total irrigation in the district. well and tanks are other source of irrigation which is contributing 0.431 percent and 0.040 percent of total irrigated land respectively in Mungeli district. The total irrigated area is only 27, 5036 ha, of total cropped area (20, 8007 ha.). The number of tube wells is 6,490 which are 73.80 percent of total irrigation sources in the Mungeli district. The second important source of irrigation is tanks. The number of tanks is 1384 which is 15.73 percent of the total sources of irrigation followed by 886 wells (10.07 percent). The other source of irrigation is canal in the district. This irrigated 0.37 percent of total area under irrigation in Table 1.

Table 1: source-wise irrigated area in Mungeli district (2012-13)

S. No.	Source of Irrigation	Number	Area (ha.)
1.	Tube well	6490 (73.80)	16491 (24.27)
2.	Canal	33 (0.37)	51432 (75.72)
3.	Well	886 (10.07)	0.431 (6.34)
4.	Tank	1384 (15.73)	0.040 (5.88)
	Total	8793 (100)	67923 (100)

Source: www.mungeli.gov.in

Note: Figures in parentheses indicate the percentages to total area under irrigation.

Results and Discussion

Productions and yield of onion, chilli and coriander

The average yield per hectare of onion was 104.47 quintal, chilli was 24.70 quintal and coriander was 12.9 quintal on the sample farms. The cost of production per quintal of onion on an average was worked out to Rs.258.41. It came to Rs.246.18, Rs.257.63, Rs. 263.89 and Rs. 264.56, chilli on an average was worked out to Rs.1099.10. It came to Rs.1089.08, Rs.1130.39, Rs.1066.56 and Rs.1094.20 and coriander on an average was worked out to Rs.2017.98. It came to Rs. 1971.59, Rs. 2071.62, Rs. 2032.30 and Rs. 1940.39 for marginal, small, medium and large farm size respectively. It decreased with the increased in the size of farm due to higher yields in return to the cost of cultivation on the large farm. The onion average value of production per hectare came to Rs. 91562.83. It was Rs.76000.31, Rs.87500.16, Rs.98100.23 and Rs.116000.13, chilli was Rs.106310.32. It was Rs.90200.07, Rs.100800.11, Rs.116100.09 and Rs.127600.05 and coriander was Rs. 64830.77. It was Rs. 52000.16, Rs. 58300.11, Rs. 70200.31 and Rs.82500.19 on marginal, small, medium and large farm respectively. The higher value of output on large farms was associated with the higher yield.

Cost of Cultivation

The onion crop is presented in Table 2. It clearly shows that the cost of cultivation per hectare of onion was higher on large farms as compared to marginal farms. Over all, on an average the cost of cultivation per hectare of onion was found to be Rs.26996.61 per hectare. The cost of cultivation in case of large farm was higher (Rs. 30688.99 /ha.) as compared to marginal farms (Rs. 23387.92 /ha.), small (Rs. 26535.98 /ha.) and medium farms (Rs. 28764.91 /ha.). The chilli crop is presented in Table 3. It clearly shows that the cost of cultivation per hectare of chilli was higher on large farms as compared to marginal farms. And the coriander crop is presented in Table 4. It clearly shows that the cost of cultivation per hectare of coriander was higher on large farms as compared to marginal farms. Over all, on an average the cost of cultivation per hectare of chilli was found to be Rs. 27147.83 per hectare. The cost of cultivation in case of large farm was higher (Rs. 31731.96 /ha.) as compared to marginal farms (Rs.23959.97 /ha.) small (Rs. 25998.98 /ha.) and medium farms (Rs. 28797.15 /ha.). and Over all, on an average the cost of cultivation per hectare of coriander was found to be Rs. 24397.49 per hectare. The cost of cultivation in case of large farm was higher (Rs. 29105.94 /ha.) as compared to marginal farms (Rs.19715.96 /ha.), small (Rs. 22787.92 /ha.) and medium farms (Rs. 26419.91 /ha.). The cost of cultivation per hectare showed a rising trend with the increase in size of farm. It was due to the fact that the large farmers incurred more expenditure on modern farm input like quality seed, fertilizer, plant protection material, hired labour etc. As their capabilities of investment on major inputs which result better economic status compared to marginal, small and medium farmers.

Table 2: Economics of Onion on different size groups of farms (Rs./ha.)

S. No.	Cost	Farm size				
		Marginal	Small	Medium	Large	Overall
(A)	Variable cost					
1.	Human labour					
(a)	Family labour	7350.13 (31.43)	6300.07 (23.74)	5150.13 (17.90)	3950.17 (12.87)	5958.28 (22.07)
(b)	Hired labour	4250.08 (18.17)	6650.21 (25.06)	8200.16 (28.51)	9950.1 (32.42)	6938.99 (25.70)
	Total human labour	11600.21 (49.60)	12950.28 (48.80)	13350.29 (46.41)	13900.2 (45.29)	12897.27 (47.77)
2.	Bullock labour	750.11 (3.21)	620.07 (2.34)	410.06 (1.43)	00.00 (0.00)	517.82 (1.92)
3.	Machine labour	850.06 (3.63)	1150.13 (4.33)	1820.14 (6.33)	2050.12 (6.68)	1381.30 (5.12)
4.	Seed cost	1550.00 (6.63)	1920.00 (7.24)	2320.07 (8.07)	2920.11 (9.52)	2082.46 (7.71)
5.	Manure & fertilizers	1820.09 (7.78)	275.11 (1.04)	3120.11 (10.85)	3650.13 (11.89)	2748.11 (10.18)
6.	Plant protection	550.13 (2.35)	620.16 (2.34)	890.00 (3.09)	1050.16 (3.42)	735.79 (2.73)
7.	Irrigation	320.24 (1.37)	500.19 (1.88)	720.06 (2.50)	850.00 (2.77)	563.18 (2.09)
8.	Interest on working capital	348.08 (1.49)	410.02 (1.55)	452.18 (1.57)	488.04 (1.59)	418.51 (1.55)
	Total variable cost	17788.92 (76.06)	20920.96 (78.84)	23082.91 (80.25)	24908.09 (81.17)	21344.37 (79.06)
(B)	Fixed cost					
1.	Depreciation	85.00 (0.36)	100.00 (0.38)	160.00 (0.56)	250.00 (0.49)	133.40 (0.49)
2.	Land revenue	5.00 (0.02)	5.00 (0.02)	5.00 (0.02)	5.00 (0.02)	5.00 (0.02)
3.	Rental value of owned land	5000 (21.38)	5000 (18.84)	5000 (17.38)	5000 (18.52)	5000 (18.52)
4.	Interest fixed capital	509.00 (2.18)	510.41 (1.92)	516.05 (1.79)	525.05 (1.90)	513.84 (1.90)
5.	Total fixed cost	5599.00 (23.94)	5615.02 (21.16)	5681.00 (19.75)	5780.07 (20.94)	5652.24 (20.94)
	Total cost = (A+B)	23387.92 (100.00)	26535.98 (100.00)	28764.91 (100.00)	30688.99 (100.00)	26996.61 (100.00)

Table 3: Economics of Chilli on different size groups of farms (Rs./ha.)

S. No.	Cost	Farm size				
		Marginal	Small	Medium	Large	Overall
(A)	Variable cost					
1.	Human labour					
(a)	Family labour	8650.13 (36.09)	7520.22 (28.93)	5450.13 (18.93)	3560.21 (11.22)	6672.43 (24.58)
(b)	Hired labour	2500.11 (10.43)	4100.21 (15.77)	6450.02 (22.40)	8950.07 (28.21)	5067.22 (18.67)

	Total human labour	11150.24 (46.52)	11620.41 (44.70)	11900.15 (41.32)	12510.28 (39.42)	11739.65 (43.24)
2.	Bullock labour	750.11 (3.13)	320.11 (1.23)	250 (0.87)	00 (0.00)	358.26 (1.32)
3.	Machine labour	950.13 (3.96)	1120.08 (4.31)	1250.09 (4.34)	1350.03 (4.25)	1147.20 (4.23)
4.	Seed cost	1520.16 (6.34)	1950.14 (7.50)	2250.14 (7.81)	2640.14 (8.32)	2038.23 (7.51)
5.	Manure & fertilizers	2550.13 (10.64)	3550.06 (13.65)	4750.07 (16.49)	6200.19 (19.54)	4028.82 (14.84)
6.	Plant protection	650.05 (2.71)	840.13 (3.23)	1550.14 (5.38)	1950.23 (6.15)	1149.70 (4.23)
7.	Irrigation	420.07 (1.75)	530.11 (2.04)	680 (2.36)	760.06 (2.40)	577.20 (2.13)
8.	Interest on working capital	359.08 (1.50)	398.10 (1.53)	452.06 (1.57)	508.02 (1.60)	419.95 (1.55)
	Total variable cost	18349.09 (76.55)	20328.93 (78.19)	23082.65 (80.16)	25918.95 (81.68)	21459.01 (79.05)
(B)		Fixed cost				
1.	Depreciation	95.00 (0.40)	150.00 (0.58)	190.00 (0.66)	280.00 (0.88)	166.66 (0.61)
2.	Land revenue	5.00 (0.02)	5.00 (0.02)	5.00 (0.02)	5.00 (0.02)	5.00 (0.02)
3.	Rental value of owned land	5000 (20.86)	5000 (19.23)	5000 (17.36)	5000 (15.76)	5000 (18.42)
4.	Interest fixed capital	510.02 (2.13)	515.05 (1.98)	519.05 (1.80)	528.02 (1.66)	517.16 (1.90)
5.	Total fixed cost	5610 (23.40)	5670 (21.81)	5714.05 (19.84)	5813.01 (18.32)	5688.82 (20.95)
	Total cost = (A+B)	23959.97 (100.00)	25998.98 (100.00)	28797.15 (100.00)	31731.96 (100.00)	27147.83 (100.00)

Table 4: Economics of Coriander on different size groups of farms (Rs./ha.)

S. No.	Cost	Farm size				
		Marginal	Small	Medium	Large	Overall
(A)	Variable cost					
1.	Human labour					
(a)	Family labour	7400.11 (37.53)	6400.09 (28.09)	4000.15 (15.14)	2500.21 (8.59)	5196.74 (21.30)
(b)	Hired labour	1100.08 (5.58)	2400.12 (10.53)	6300.04 (23.85)	8200.08 (28.17)	4364.21 (17.89)
	Total human labour	8500.19 (43.11)	8800.21 (38.62)	10300.19 (38.99)	10700.29 (36.76)	9560.95 (39.19)
2.	Bullock labour	450.16 (2.28)	210.00 (0.92)	150.19 (0.57)	00.00 (0.00)	206.59 (0.85)
3.	Machine labour	1150.12 (5.83)	1440.11 (6.32)	2150.13 (8.14)	2600.04 (8.93)	1803.62 (7.39)
4.	Seed cost	1850.05 (9.38)	2150.31 (9.44)	2500.00 (9.46)	3500.16 (12.03)	2418.02 (9.91)
5.	Manure & fertilizers	1075.11 (5.45)	2650.00 (11.63)	3240.11 (12.26)	3580.21 (12.30)	2669.66 (10.94)
6.	Plant protection	350.17 (1.78)	950.13 (4.17)	1250.13 (4.73)	1620.00 (5.57)	1037.40 (4.25)
7.	Irrigation	402.00 (2.04)	520.02 (2.28)	650.12 (2.46)	720.11 (2.47)	571.75 (2.34)
8.	Interest on working capital	367.16 (1.86)	445.14 (1.95)	538.04 (2.04)	605.13 (2.08)	487.14 (2.00)
	Total variable cost	14144.96 (71.74)	17165.92 (75.33)	20778.91 (78.65)	23325.94 (80.14)	18755.13 (76.87)
(B)	Fixed cost					
1.	Depreciation	59.94 (0.30)	105.25 (0.46)	122.48 (0.46)	250.00 (0.86)	124.42 (0.51)
2.	Land revenue	5.00 (0.03)	5.00 (0.02)	5.00 (0.02)	5.00 (0.02)	5.00 (0.02)
3.	Rental value of owned land	5000 (25.36)	5000 (21.94)	5000 (18.93)	5000 (20.49)	5000 (20.49)
4.	Interest fixed capital	506.49 (2.57)	511.02 (2.24)	512.74 (1.94)	525.05 (2.10)	512.94 (2.10)
5.	Total fixed cost	5571.00 (28.26)	5621.06 (24.67)	5640.02 (21.35)	5780.05 (23.13)	5642.36 (23.13)
	Total cost = (A+B)	19715.96 (100.00)	22787.92 (100.00)	26419.91 (100.00)	29105.94 (100.00)	24397.49 (100.00)

Cost and returns on the basis of cost concept

The cost and returns on the basis of cost concept in the production of onion have been presented in the Table 5, the cost and returns on the basis of cost concept in the production of chilli have been presented in the Table 6. And the cost and returns on the basis of cost concept in the production of coriander have been presented in the Table 7. It is evident from Table 8 that, the per hectare cost-A1, A2, cost-B1, B2 and cost-C1, C2, C3 at the overall level were Rs. 21482.37, 21482.37, Rs. 21996.21, 26996.21 and Rs. 27954.49, 32954.49, 36249.93, per hectare, respectively on the sample farms. The average income per hectare over cost-A1, A2, cost-B1, B2 and cost-C1, C2, C3 were worked out to Rs. 70079.95, 70079.95, Rs. 69566.11, 64566.11, and Rs. 63607.83, 58607.83, 55312.39 respectively. The income over different costs also increased with the increase in the farms size because of higher output in relation to total input cost. It is evident from Table 9 that, the per hectare cost-A1, A2, cost-B1, B2, and cost-C1, C2, C3 at the overall level were Rs.

32277.58, 32277.58, Rs. 22147.17, 27147.17, and Rs. 28819.06, 33819.06, 37200.96 per hectare, respectively on the sample farms. The average income per hectare over cost-A1, A2, cost-B1, B2 and cost-C1, C2, C3 were worked out to Rs. 84680.02, 84680.02, Rs. 84162.86, 79162.86 and Rs. 77490.97, 72490.97, 69109.07, respectively. The income over different costs also increased with the increase in the farms size because of higher output in relation to total input cost. It is evident from Table 10 portrays that, on an average cost-A1, A2, cost-B1, B2 and cost-C1, C2, C3 were worked out to Rs. 18884.13, 18884.13, Rs. 19397.07, 24397.07 and Rs. 24593.81, 29593.81, 32553.19. Per hectare respectively on the sample farms. It was noted that rupees 5000.00 were considered as imputed rental value of owned land for each crop season. The incomes over different costs were also worked out. The average income over cost-A1, A2 cost-B1, B2 and cost-C1, C2, C3 were calculated as Rs. 45946.64, 45946.64, Rs. 45433.07, 40433.07, and Rs. 4236.96, 35236.96, 32277.58 per hectare, respectively.

Table 5: Cost and return of Onion on the sample farm for different groups of farms (Rs./ha.)

S. No.	Particulars	Farm size				Over all
		Marginal	Small	Medium	Large	
1.	Input cost	23387.92	26535.98	28764.91	30688.99	26996.61
2.	Output cost	76000.31	87500.16	98100.23	116000.13	91562.83

3.	Net income	52612.39	60964.18	69335.32	85311.14	64566.22
4.	Family labour income	52612.08	60963.63	69336.04	85311.86	64566.11
5.	Farm business income	58121.08	66474.04	74852.09	90836.91	70079.95
6.	Farm investment income	58121.39	66474.59	74851.37	90836.19	70080.06

Table 6: Cost and return of Chilli on the sample farm for different groups of farms (Rs./ha.)

S. No.	Particulars	Farm size			Over all	
		Marginal	Small	Medium		
1.	Input cost	23959.97	25998.98	28797.15	31731.96	27147.83
2.	Total return	90200.07	100800.11	116100.09	127600.05	106310.32
3.	Net return	66240.01	74801.13	87302.94	95868.09	79162.49
4.	Family labour income	66240.89	74756.02	87303.94	95868.03	79162.86
5.	Farm business income	71750.91	80271.07	92822.35	101396.05	84680.82
6.	Farm investment income	71750.03	80316.18	92821.99	101396.11	84679.65

Table 7: Cost and return of Coriander on the sample farm for different groups of farms (Rs./ha.)

S. No.	Particulars	Farm size			Over all	
		Marginal	Small	Medium		
1.	Input cost	19715.96	22787.92	26419.91	29105.94	24397.49
2.	Output cost	52000.16	58300.11	70200.31	82500.19	64830.77
3.	Net income	32284.02	35512.19	43780.04	53394.25	40433.28
4.	Family labour income	32284.42	35512.18	43781.91	53394.01	40433.07
5.	Farm business income	37790.91	41023.83	49293.84	58919.06	4594.64
6.	Farm investment income	37790.53	41023.01	49292.83	58919.11	45946.22

Table 8: Break-up of total cost, cost concept wise income over different cost in Onion, (Rs./ha.)

S. No.	Cost/category	Marginal	Small	Medium	Large	Over all
A.	Break-up cost					
1.	Cost A1 (all actual expenses)	17878.92	21025.96	23247.91	25163.09	21482.37
2.	Cost A2=Cost A1 +Rent paid for leased in land	17878.92	21025.96	23247.91	25163.09	21482.37
3.	Cost B1=Cost A1+Interest on value of owned fixed capital	18387.92	21536.37	23763.96	25688.14	21996.21
4.	Cost B2=Cost B1+Rental value of owned land and rent paid for leased inland	23387.92	26536.37	28763.96	30688.14	26996.21
5.	Cost C1=Cost B1+Imputed value of family labour	25738.05	27836.44	28914.09	29638.31	27954.49
6.	Cost C2=Cost B2+Imputed value of family labour	30738.05	32836.44	33914.09	34638.31	32954.49
7.	Cost C3=Cost B2+10% of Cost C2on account of managerial function performed by farmer	33811.85	36120.08	37305.49	38102.14	36249.93
B.	Income over different cost					
	I.O.D.C. A1	58121.08	66474.04	74852.09	90836.91	70079.95
	I.O.D.C. A2	58121.08	66474.04	74852.09	90836.91	70079.95
	I.O.D.C. B1	57612.08	65963.63	74336.04	90311.86	69566.11
	I.O.D.C. B2	52612.08	60963.63	69336.04	85311.86	64566.11
	I.O.D.C. C1	50261.95	59663.56	69185.91	86361.69	63607.83
	I.O.D.C. C2	45261.95	54663.56	64185.91	81361.69	58607.83
	I.O.D.C. C3	42188.15	51379.92	60794.51	77897.86	55312.39
C.	Gross income	76000.31	87500.16	98100.23	116000.13	91562.83
D.	Input output ratio	1:3.24	1:3.29	1:3.41	1:3.77	1:3.39

Table 9: Break-up of total cost, cost concept wise income over different cost in Chilli, (Rs /ha.)

S. No.	Cost/category	Marginal	Small	Medium	Large	Over all
A.	Break-up cost					
1.	Cost A1 (all actual expenses)	18449.09	20528.93	23277.65	26203.95	32277.58
2.	Cost A2=Cost A1 +Rent paid for leased in land	18449.09	20528.93	23277.65	26203.95	21630.01
3.	Cost B1=Cost A1+Interest on value of owned fixed capital	18959.11	21043.98	23796.07	26731.97	22147.17
4.	Cost B2=Cost B1+Rental value of owned land and rent paid for leased inland	23959.11	26043.98	28796.07	31731.97	27147.17
5.	Cost C1=Cost B1+Imputed value of family labour	27609.24	28564.02	29246.02	30292.18	28819.06
6.	Cost C2=Cost B2+Imputed value of family labour	32609.24	33564.02	34246.02	35292.18	33819.06
7.	Cost C3=Cost B2+10% of Cost C2on account of managerial function performed by farmer	35870.16	36920.42	37670.62	38821.39	37200.96
B.	Income over different cost					
	I.O.D.C. A1	71750.91	80271.07	92822.35	101396.05	84680.02
	I.O.D.C. A2	71750.91	80271.07	92822.35	101396.05	84680.02
	I.O.D.C. B1	71240.89	79756.02	92303.93	100868.03	84162.86
	I.O.D.C. B2	66240.89	74756.02	87303.93	95868.03	79162.86
	I.O.D.C. C1	62590.76	72235.98	86853.98	97307.82	77490.97
	I.O.D.C. C2	57590.76	67235.98	81853.98	92307.82	72490.97
	I.O.D.C. C3	54329.84	63879.58	78429.38	88778.61	69109.07
C.	Gross income	90200.07	100800.11	116100.09	127600.05	106310.32
D.	Input output ratio	1:3.76	1:3.87	1:4.03	1:4.02	1:3.91

Table 10: Break-up of total cost, cost concept wise income over different cost in Coriander. (Rs./ha.)

S. No.	Cost/category	Marginal	Small	Medium	Large	Over all
A.	Break-up cost					
1.	Cost A1 (all actual expenses)	14209.09	17276.17	20906.16	23580.94	18884.13
2.	Cost A2=Cost A1 + Rent paid for leased in land	14209.09	17276.17	20906.16	23580.94	18884.13
3.	Cost B1=Cost A1+Interest on value of owned fixed capital	14715.58	17787.19	21418.09	24105.99	19397.07
4.	Cost B2=Cost B1+Rental value of owned land and rent paid for leased inland	19715.58	22787.19	26418.09	29105.99	24397.07
5.	Cost C1=Cost B1+Imputed value of family labour	22115.69	24187.28	25418.24	26606.02	24593.81
6.	Cost C2=Cost B2+Imputed value of family labour	27115.69	29187.28	30418.24	31606.02	29593.81
7.	Cost C3=Cost B2+10% of cost C2 on account of managerial function performed by farmer	29827.25	32106.00	33460.06	34766.62	32553.19
B.	Income over different cost					
	I.O.D.C. A1	37790.91	41023.83	49293.84	58919.06	45946.64
	I.O.D.C A2	37790.91	41023.83	49293.84	58919.06	45946.64
	I.O.D.C. B1	37284.42	40512.81	48781.91	58394.01	45433.07
	I.O.D.C. B2	32284.42	35512.81	43781.91	53394.00	40433.07
	I.O.D.C. C1	29984.312	34112.72	44781.76	55893.98	4236.96
	I.O.D.C. C2	24884.31	29112.72	39781.76	50893.98	35236.96
	I.O.D.C. C3	22172.75	26194.60	36739.94	47733.38	32277.58
C.	Gross income	52000.16	58300.11	70200.31	82500.19	64830.77
D.	Input output ratio	1:2.63	1:2.55	1:2.65	1:2.83	1:2.65

Marketable Surplus

Onion, chilli and coriander are not easily damaged commodities as compare to other spices commodities. They can be stored at household level for a longer period with good storage capacity the farmer can be sale in later period when the price is higher in the markets. Table 11, 12, 13 clearly

reveals that the estimated marketable surplus with marginal, small, medium, large farmers was 77.09, 80.07, 85.24, 86.63 percent for onion, 88.98, 87.57, 89.38, 91.35 percent for chillies, and 90.00, 85.00, 82.54, 87.62 percent for coriander, respectively.

Table 11: Marketable surplus of Onion of sampled households (Quintal / farm)

S. No.	Particulars	Size groups				Overall
		Marginal	Small	Medium	Large	
1.	Total quantity produced	14.32 (100.00)	31.32 (100.00)	46.75 (100.00)	65.54 (100.00)	36.12 (100.00)
2.	Quantity retained for the wages	1.46 (10.19)	2.31 (7.37)	2.88 (6.16)	3.35 (5.11)	2.40 (6.64)
3.	Quantity used for home	1.82 (12.70)	3.93 (12.54)	4.02 (8.59)	5.41 (8.25)	3.65 (10.10)
4.	Total quantity utilized	3.28 (22.90)	6.24 (19.92)	6.9 (14.75)	8.76 (13.36)	6.05 (16.74)
5.	Marketable surplus	11.04 (77.09)	25.08 (80.07)	39.85 (85.24)	56.78 (86.63)	30.07 (83.25)

Note: Figures in parentheses indicate percentage to total quantity product.

Table 12: Marketable surplus of Chilli of sampled households, (Quintal/ farm)

S. No.	Particulars	Size groups				Overall
		Marginal	Small	Medium	Large	
1.	Total quantity produced	3.63 (100.00)	6.84 (100.00)	10.55 (100.00)	16.43 (100.00)	8.51 (100.00)
2.	Quantity retained for the wages	0.19 (5.65)	0.40 (5.84)	0.51 (4.83)	0.60 (3.65)	0.41 (4.81)
3.	Quantity used for home	0.21 (5.78)	0.45 (6.57)	0.61 (5.78)	0.82 (4.99)	0.49 (5.75)
4.	Total quantity utilized	0.4 (11.01)	0.85 (12.42)	1.12 (10.61)	1.42 (8.64)	0.9 (10.57)
5.	Marketable surplus	3.23 (88.98)	5.99 (87.57)	9.43 (89.38)	15.01 (91.35)	7.61 (89.42)

Note: Figures in parentheses indicate percentage to total quantity product.

Table 13: Marketable surplus of Coriander of sampled households, (Quintal /farm)

S. No.	Particulars	Size groups				Overall
		Marginal	Small	Medium	Large	
1.	Total quantity produced	1.80 (100.00)	3.20 (100.00)	4.01 (100.00)	8.32 (100.00)	3.99 (100.00)
2.	Quantity retained for the wages	0.10 (5.55)	0.30 (9.37)	0.44 (10.97)	0.61 (7.33)	0.36 (9.02)
3.	Quantity used for home	0.08 (4.44)	0.18 (5.62)	0.26 (6.48)	0.42 (5.04)	0.23 (5.76)
4.	Total quantity utilized	0.18 (10.00)	0.48 (15.00)	0.7 (17.45)	1.03 (12.37)	0.59 (14.78)
5.	Marketable surplus	1.62 (90.00)	2.72 (85.00)	3.31 (82.54)	7.29 (87.62)	3.4 (85.21)

Note: Figures in parentheses indicate percentage to total quantity product.

Marketing channel

Keeping in view the importance of different marketing channels in the disposal of major spices, the following marketing channels were identified for the study-

Channel-III: Producer - Commission agent - Retailer - Consumer.

However, the sampled spices grower sold the spices almost entirely through Channel III.

Channel-I: Producer – Consumer

Channel-II: Producer – Itinerants (kochia) - Consumer.

Conclusions

The area under Onion, chilli and coriander crops increase in the size of holding. It was concluded that large farms in the

marginal, small and medium farms which shows that as the area under onion, chilli and coriander is increasing the per hectare cost of cultivation is decreasing. The average yield and gross returns per hectare increased with the increase in size of farms. The cultivation of onion, chilli and coriander was labour intensive therefore it is needed to bring mechanization in the production and post harvest management of onion, chilli and coriander. There is a need to organize the training programmes to increase the awareness among the farmers to use balanced doses of fertilizers and pesticides.

References

1. Aitwade MS, Bhor SE, Pokharkar VG, Kasar DV. Marketing of Rabi Onion in Pune District of Maharashtra state. Agricultural Marketing. 2006; 42(2):32-35.
2. Gadre AV, Talathi JM, Wadkar SS. Price Spread of Marketing of White Onion in Raigad District of Maharashtra State. Agricultural Marketing. 2002; 1(3):22-26.
3. Kumar PJ, Singh P, Yadav JN, Mishra JP. Study of storage-Losses & Marketing of Onion in District Junapur of Eastern Utter Pradesh. Agricultural Marketing. 2005; 47(4):25-28.
4. Babu GS, Naidu KH, Prasad YE. Price Spread and Marketing of green chillis-A case Study in Andhra Pradesh. Agricultural Marketing. 2003; 46(1):21-23.
5. Bullar AS. Estimating, exports competitiveness of chillies from Punjab State Agricultural Marketing, 2005; 36:43.
6. Mishra JP, Vishwakaram RS, Shri K. Production and marketing of chillies. The bihar journal of Agricultural Marketing. 1999; 7(1):36-43.
7. Dass D. Economics of Production and marketing of chillies in India with special reference to Haryana, M.Sc. (Agril.) Thesis submitted to Choudhary Charan Singh Haryana Agricultural University, 2005.
8. Hiremath AP. Production and Marketing of dry chilli in karnatak An Economic analysis. M.Sc. (Agri.), 1994.
9. Iqbal BA. Chillies Ginger and Turmeric Trends in Production and Export. Agricultural Situation in India. 1982; 36(10):745-749.
10. Sethi KL. Note on the scope for producing high yielding synthesis in coriander. Indian J. Agric. Sci. 1981; 51:52-53
11. Srivastava US. Effect of intrection of factors on wilt of coriander caused by *fusarium oxysporum schlecht*. Indian J of Agric. Sci. 1972; 42:618-620.