

**RESEARCH ARTICLE :**

Economic analysis of onion seed production in Washim district of Vidarbha region

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ARTICLE CHRONICLE :**Received :**

21.05.2020;

Revised:

19.06.2020;

Accepted :

21.07.2020

KEY WORDS:Economic analysis,
Onion seed
production

SUMMARY : The present study is undertaken to study the economics analysis of onion seed production in washim district of Vidarbha. The study was based on primary data. Primary data of 90 farmers pertaining to the year 2018-2019 were collected from three villages and functionaries involved in onion seed procurement chain producer, seed company, retailer were selected for collecting information. The onion seed production is taken on small scale but it contributes sizable share in total earning of the cultivator. However, yield and profit from onion seed cultivation is uncertain because it is very sensitive, it require special attention. To study the economics of onion seed production, the standard cost concepts were used. In estimation of cost of cultivation, seed, rental value of land, human labour and interest on fixed capital were the major cost items. The gross cropped area was highest in large group *i.e.* 8.28 hectare followed by medium 5.27 ha and small group 2.93. The cropping pattern of onion seed was dominated by soybean, cotton and tur in *Kharif* season whereas gram and wheat was *Rabi* season. In *Rabi* season the contribution of area under onion seed was 12.62, 12.52 and 12.31 per cent by small, medium and large farmers. Per hectare total cost of cultivation of onion seed was highest in the medium group *i.e.* Rs. 167967.3 per hectare followed by large group Rs. 166102.74 and small group Rs. 165161.53. The benefit cost ratio of onion seed at cost 'C₃' was 1.70 in small group, 1.76 in medium group and 1.78 in large group.

How to cite this article : Muley, P.D., Khobarkar, V.K. and Vaidkar, R.D. (2020). Economic analysis of onion seed production in Washim district of Vidarbha region. *Agric. Update*, 15(3): 237-248; DOI : 10.15740/HAS/AU/15.3/237-248. Copyright@ 2020: Hind Agri-Horticultural Society.

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BACKGROUND AND OBJECTIVES

India is the second largest producer of onion in the world next to china and accounts for 16 per cent of worlds total production of onion. For India, onion is the consistent earner of foreign exchange (FAO, 2013). However, the horticulture sector has witnessed tremendous growth as a result of investment through National Horticulture Mission (NHM, 2006-07) and a number of other programmes.

It has really brought the Golden Revolution by raising the vegetables production from 84.8 million tons in 2002-03 to 99.4 million tons in the year 2005-06 (Indian Horticulture Database, 2005 and national Horticulture Board). Onion can grow under wide range of climatic conditions but it succeeds best in mild season without extremes of heat or cold or excessive rainfall. Maharashtra is reckoned as the leading onion producing state.

Maharashtra ranks first in area and production of onion among all the states in India. In Maharashtra, onion is produced in three seasons *i.e.* *Kharif*, *Late Kharif* and *Rabi* or winter. Onion harvested in summer (*Rabi* season) is suitable for export. About 50 to 60 per cent onion produced in the state is of export quality. The Maharashtra state occupies 26 per cent of total area and 27.72 per cent of production of onion in India. The average productivity of Maharashtra was 12.54 tons per hectare. Nasik, Ahmednagar, Pune, Solapur and Satara are the major onion producing districts of Maharashtra state. Among all major onion growing districts of Maharashtra, Nasik stands first in area (28149 ha) and production (339348.25 MT) and Pune district secure second position, but major area under seed production of onion is observed particularly in Marathwada and Vidarbha region of the state (NHRDF Nashik, 2014). In Washim district, cultivated area of onion seed is less as compared to other crops because most of the area of district is unirrigated. Onion being extensively cultivated crop. There is a heavy demand for fresh seeds every year. Seed is most important input component for productive agriculture. Good quality seed acts as a catalyst for realizing the potential of other inputs in agriculture. Without good seed investment on fertilizers, water, pesticides and other input will not pay the desired dividends. Therefore, seed is considered to be one of the most crucial input in agriculture. In case of onion, viability of seed is less, therefore, every year it is highly essential to produce seed as per requirement.

Objectives:

- To study the socio-economic characteristics of selected onion seed growers.
- To study the cost and returns of onion seed production.
- To identify the constraints in production of onion seed.

RESOURCES AND METHODS

The present study was under taken in the Washim district. The district was selected purposively based on maximum area under the onion seed production in Amravati division. Out of 6 tehsils in the district three tehsils *viz.*, Washim, Risod and Malegaon were having maximum acreage under production of onion seed. The lists of villages having maximum acreage under production of onion seed were collected from the respective revenue office. Three villages from each tehsil were selected randomly from the list of onion seed growers. From each village 90 farmers were selected randomly. The list of onion seed growers were obtained from respective revenue record of each village and grouped under different categories such as small (less than 2 ha.), medium (2.01 to 4 ha.) and large (above 4.01 ha.) based on size of holding.

A schedule was designed for data collection by keeping in view the objectives proposed for the study. The selected growers were personally contacted and data was collected from them for the year 2018- 2019. The data pertaining to distribution of land holding assets position such as livestock, machinery, etc. and cropping pattern, input utilization, cost of cultivation and cropping pattern, input utilization, cost of cultivation and returns were collected from the selected onion seed growers was collected through a survey method with the help of presented structured schedule. Simple statistical tools and tabular analysis were emphasized to accomplish the objective of the study. The collected data were analyzed by using the level of input utilization and cost of production of onion seed by standard costs concept.

OBSERVATIONS AND ANALYSIS

The Table 1 revealed that, the average family size was 6 members in small group, 6 members in medium group and 5 members in large size group. The share of male in family size was highest in medium and small size

Table 1 : Average family size of selected onion seed growers (No.)

Sr. No.	Particulars	Size group			Overall
		Small	Medium	Large	
1.	Male	3 (50)	3 (50)	2 (40)	3 (50)
2.	Female	2 (33.33)	2 (33.33)	2 (40)	2 (33.33)
3.	Children	1 (16.67)	1 (16.67)	1 (20)	1 (16.67)
	Total	6 (100.00)	6 (100.00)	5 (100.00)	6 (100.00)

(Figures in parentheses indicates percentage to the total family members)

group *i.e.* 50 per cent followed by large size group *i.e.* 40.00 per cent. Whereas share of female was highest in large size group *i.e.* 40.00 per cent and it is followed by medium and small size group *i.e.* 33.33 per cent.

The share of children in family size was observed highest in small large group *i.e.* 20.00 per cent and followed by medium and small size group *i.e.* 16.67 per cent. The overall size of family was 6 members including 50.00 per cent male, 33.33 per cent female and 16.67 per cent children per family. From the table it is also noticed that in all size grouped only one child was observed in family indicating that the rural are also moving towards nuclear family.

It is observed from the Table 2 that, the overall illiteracy percentage was 10 per cent. Among the different groups percentage of illiteracy was observed in small size group *i.e.* 12.5 per cent and medium size group *i.e.* 10.34 per cent and large size group *i.e.* 4.76 per cent. The percentage of primary education was observed highest in small size group *i.e.* 25 per cent followed by medium size group 24.13 per cent and large size group 19.05 per cent. The percentage of High School education was observed highest in medium size group *i.e.* 51.75 per cent followed by small size group *i.e.* 50 per cent and large size group *i.e.* 33.33 per cent. The number of farmers having graduate and above level education was highest in large size group *i.e.* 42.86 per cent followed

by small and medium size group *i.e.* 12.5, 13.78 per cent, respectively.

It is observed from the table that the educational pattern in the era of the information technology, at over all level the highest percentage of educational level of the onion seed growers was highest in high school level 46.66 per cent. It is followed by Primary (23.34 %) and Graduation (20 %). The illiterate growers was 10 per cent. It indicates that the illiteracy percentage was decrease from small to large farmers.

It can be revealed from the Table 3 that, the total land holding of onion seed growers was held by small, medium and large farmer were 1.9 hectares, 3.09 hectares and 4.36 hectares, respectively and at the overall level was 3.12 hectares.

The average fallow land was 0.04 hectares (2.11%) in small, 0.02 hectares (0.65%) in medium, 0.06 hectares (1.37%) in large farmers of land holding and overall level was 0.04 hectares (1.28 %). The net cultivated area for small farmer was 1.86 hectares (97.89 %) of the total land holding area, in medium farmer was 3.07 hectares (99.35 %) and that of in large farmer it was 4.3 hectares (98.62 %) and the overall level was 3.09 hectares *i.e.* 99.04 per cent of the total land holding area. In case of small, medium and large farmers, area sown more than once was 1.07 hectares (56.32%), 2.20 hectares (71.20%) and 3.98 hectares (91.08%), respectively and

Table 2: Educational status of onion seed growers

Sr. No.	Educational status	Small	Medium	Large	Overall
1.	Illiterate	5 (12.5)	3 (10.34)	1 (4.76)	3 (10)
2.	Primary	10 (25)	7 (24.13)	4 (19.05)	7 (23.34)
3.	High School	20 (50)	15 (51.75)	7 (33.33)	14 (46.66)
4.	Graduation	5 (12.5)	4 (13.78)	9 (42.86)	6 (20)
	Total	40 (100)	29 (100)	21 (100)	30 (100)

(Figures in parentheses are the percentage to the total family members)

Table 3 : Land use pattern of onion seed growers (ha)

Sr. No.	Particulars	Small	Medium	Large	Overall
1.	Total land holding	1.9 (100)	3.09 (100)	4.36 (100)	3.12 (100)
2.	Fallow land	0.04 (2.11)	0.02 (0.65)	0.06 (1.37)	0.04 (1.28)
3.	Net cultivated area	1.86 (97.89)	3.07 (99.35)	4.3 (98.62)	3.09 (99.04)
4.	Area sown more than once	1.07 (56.32)	2.20 (71.20)	3.98 (91.08)	2.42 (77.56)
5.	Irrigated area	0.81 (42.63)	1.65 (53.40)	3.79 (86.73)	2.08 (66.67)
6.	Gross cropped area	2.93	5.27	8.28	5.51
	Cropping Intensity (%)	157.52	171.66	192.55	178.31

(Figures in parentheses are the percentage to the total land holding area)

overall level was worked out to 2.42 hectares (77.56%).

The gross cropped area of small, medium and large farmer was 2.93 hectares, 5.27 hectares and 8.28 hectares, respectively and overall level, it was 5.51 hectares. The cropping intensity in small, medium and large farmers were 157.52, 171.66 and 192.55 per cent, respectively. At overall level cropping intensity was 178.31 per cent.

The Table 4 revealed that, the per cent share of area under *Kharif* crop was higher in small farmer 63.48 per cent followed by medium farmer 58.25 per cent and large farmer 51.93 per cent, the percent share of area under *Rabi* crop was highest in large farmer *i.e.* 48.06 per cent followed by medium farmer 41.74 and small farmer *i.e.* 36.51 per cent. It is revealed from the Table that at overall level soybean, cotton and tur is the major crop of *Kharif* season indicating the relatively higher area 21.41, 18.33 and 9.43 per cent of the gross cropped area, respectively. The overall area under onion 0.38 hectare *i.e.* 6.89 per cent. In *Rabi* season gram, wheat, onion and *Rabi* sorghum is dominating crops. The per cent share of gram was highest in large farmer *i.e.* 24.75 per cent followed by medium farmer 14.04 per cent and small farmer 6.82 per cent, respectively. The overall area under gram, wheat, onion and *Rabi* sorghum was 18.14, 7.25, 12.34 per cent and 5.98 per cent, respectively. The overall area under *Kharif* crop was 3.09 hectares *i.e.*

56.07 per cent, area under *Rabi* crop 2.41 hectares *i.e.* 43.73 per cent. The gross cropped area of the small, medium and large farmers were 2.93, 5.27 and 8.28 ha in which the area under onion seed cultivation in small, medium and large size group was 12.62 per cent, 12.52 per cent and 12.31 per cent, respectively. This table indicated that the selected farmer adapted diversified cropping pattern.

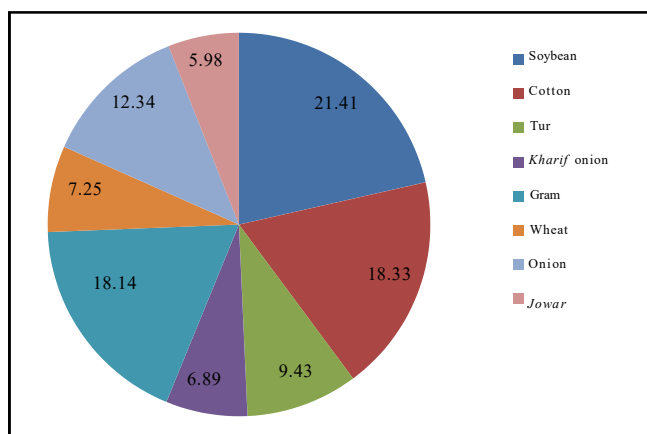


Fig. 1: Overall cropping pattern of selected onion seed growers in Washim district

From the Table 5 it is revealed that, number of the selected farmer was 90 out of which 40 farmers belongs to small holding, 29 farmers belongs to medium and 21

Table 4 : Cropping pattern of onion seed growers

Sr. No.	Particulars	Small	Medium	Large	Overall
<i>Kharif</i>					
1.	Soybean	0.60 (20.47)	1.02 (19.35)	1.69 (20.41)	1.18 (21.41)
2.	Cotton	0.40 (13.65)	1.01 (19.16)	1.33 (16.06)	1.01 (18.33)
3.	Tur	0.30 (10.23)	0.50 (9.48)	0.88 (10.62)	0.52 (9.43)
4.	<i>Kharif</i> Onion	0.34 (11.60)	0.54 (10.24)	0.40 (4.83)	0.38 (6.89)
5.	Other	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
	Total	1.86 (63.48)	3.07 (58.25)	4.3 (51.93)	3.09 (56.07)
<i>Rabi</i>					
1.	Gram	0.20 (6.82)	0.74 (14.04)	2.05 (24.75)	1.00 (18.14)
2.	Wheat	0.30 (10.23)	0.59 (11.19)	0.31 (3.74)	0.40 (7.25)
3.	Cotton	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
4.	Tur	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
5.	Onion	0.37 (12.62)	0.66 (12.52)	1.02 (12.31)	0.68 (12.34)
6.	<i>Jowar</i>	0.20 (6.82)	0.21 (3.98)	0.60 (7.24)	0.33 (5.98)
	Total	1.07 (36.51)	2.20 (41.74)	3.98 (48.06)	2.41 (43.73)
	Gross cropped area	2.93 (100.00)	5.27 (100.00)	8.28 (100.00)	5.51 (100.00)

(Figures in parenthesis indicate the percentage to the gross cropped area)

Sr. No.	Size of holding	No. of farmer selected	Average size of holdings
1.	Small (less than to 2 ha.)	40.00 (33.34)	1.9
2.	Medium (2.01 to 4.00 ha.)	29.00 (33.34)	3
3.	Large (4.01 and above)	21.00 (33.34)	4.3
	Total	90.00 (100)	3.10

(Figures in parentheses are the percentage to the total land holding area)

farmers to large size holding with average size of holding 1.9, 3.0 and 4.3 hectare, respectively. The average size of holding of onion seed cultivator was 3.10 ha.

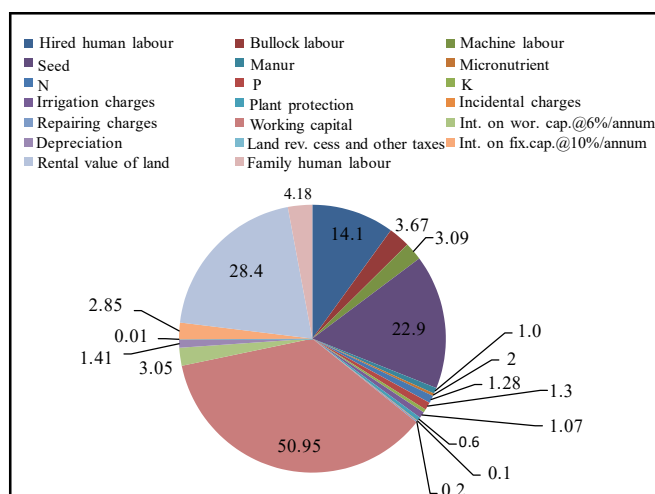


Fig. 2: Per hectare percentage expenditure on important items to cost "C₃" at small size group

Table 6 revealed that per hectare cost of cultivation of onion seed for small farmer was Rs. 165161.53/-. The major item was rental value of land 28.46 per cent followed by seed 22.95 per cent, hired human labour 14.54 per cent and family human labour 4.18 per cent, bullock labour 3.67 per cent share to cost C₃, respectively. The per cent share of cost A₂ and cost B₂ were 55.42 per cent and 86.73 per cent, respectively in total cost. The per ha yield was 721.51 quintal.

It is observed from the Table 7 that the per hectare cost of cultivation *i.e.* cost C₃ was Rs. 167967.30/-. Among the different items of expenditure rental value of land accounted highest 26.94 per cent share in total cost C₃ followed by seed 23.90 per cent, Hired human labour 13.80 per cent, bullock labour 2.14 per cent, machine labour 3.33 per cent. The per hectare yield obtained by the farmer was 729.40 quintal.

It is seen from the Table 8 that per hectare

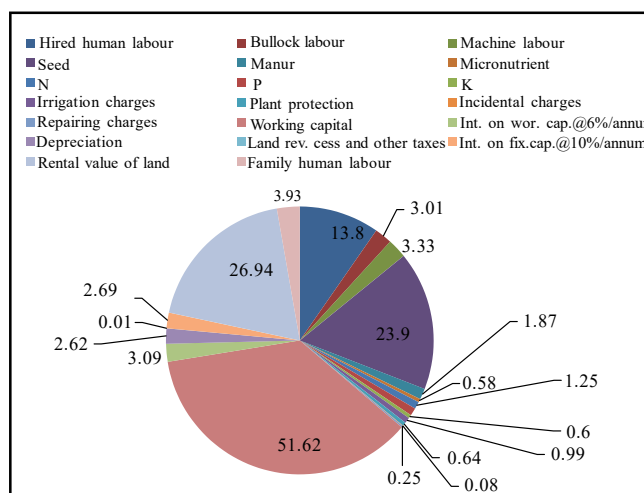


Fig. 3: Per hectare percentage expenditure on important items to cost "C₃" at medium size group

expenditure of Rs. 166102.74/- was incurred in the cultivation of onion seed as cost C₃ by the cultivators. The major item of cost were rental value of land, seed, hired human labour and fertilizers which accounted 28.76 per cent, 22.68 per cent, 13.17 per cent, and 3.17 per cent, respectively. The per hectare yield was 732.41 quintal.

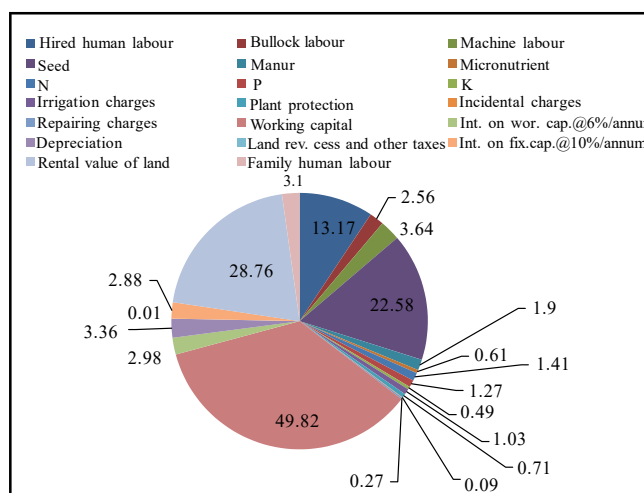


Fig. 4: Per hectare percentage expenditure on important items to cost "C₃" at large size group

Table 6 : Per hectare cost of cultivation of onion seed for small farmer							(Rs./ha)
Sr. No.	Item	Unit	Input/h a.	Cost / Unit of input	Total cost per ha	% to cost "C ₃ "	
1	2	3	4	5	6	7	
1.	Hired human labour	Male	Days	33.23	200.00	6645.16	4.02
		Female	Days	115.81	150.00	17370.97	10.52
		Total	Days	149.04	161.14	24016.13	14.54
2.	Bullock labour	Hired	Days	12.90	500.00	6451.61	3.91
		Owned	Days	2.63	500.00	1317.20	0.80
		Total	Days	15.54	390.31	6064.52	3.67
3.	Machine	Hired	Hrs	10.22	500.00	5107.53	3.09
		Owned	Hrs	0.00	0.00	0.00	0.00
		Total	Days	10.22	500.00	5107.53	3.09
4.	Seed		kg	24.41	1552.86	37903.23	22.95
5.	Micronutrients					747.31	0.45
6.	Manure		Qtls	12.26	136.82	1677.42	1.02
7.	Fertilizer	N	kg	140.32	15.07	2113.98	1.28
		P	kg	59.25	36.23	2146.77	1.30
		K	kg	39.78	24.49	974.19	0.59
	Total					5234.94	3.17
8.	Irrigation	Cost	Rs.			1763.44	1.07
9.	Insecticide	Cost	Rs.			1086.02	0.66
10.	Incidental	Cost	Rs.			157.53	0.10
11.	Repairs	Cost	Rs.			387.10	0.23
12.	Working capital	Cost	Rs.			84145.16	50.95
13.	Depreciation	Cost	Rs.			2328.31	1.41
14.	Land revenue	Cost	Rs.			20.77	0.01
15.	Int. on working capital	Cost	Rs.			5039.26	3.05
16.	Cost "A ₁ "		Rs.			91533.50	55.42
17.	Rental value leased in land		Rs.			0.00	0.00
18.	Cost "A ₂ "					91533.50	55.42
19.	Int. on fixed capital		Rs.			4700.43	2.85
20.	Cost "B ₁ "		Rs.			96233.93	58.27
21.	Rental value of land					47004.32	28.46
22.	Cost "B ₂ "					143238.25	86.73
23.	Family human labour	Male	Days	17.20	200.00	3440.86	2.08
		Female	Days	23.12	150.00	3467.74	2.10
		Total	Days	40.32	171.33	6908.60	4.18
24.	Cost "C ₁ "		Rs.			103142.53	62.45
25.	Cost "C ₂ "					150146.85	90.91
26.	Additional value of human labour					0.00	0.00
27.	Cost "C ₂ *"					150146.85	90.91
28.	10% cost C ₂ *					15014.69	9.09
29.	Cost "C ₃ "					165161.53	100.00
30.	Yield	Main	Qtls	721.51	389.53	281050.54	
		By	Qtls	0.00		0.00	
31.	Value of total produce		Rs.			281050.54	
32.	Per qtl. cost of production					228.91	

(Figures in parentheses are the percentage to the total cost C₃)

Economic analysis of onion seed production

Table 7: Per hectare cost of cultivation of onion seed for medium farmers							(Rs./ha)
Sr. No.	Item	Unit		Input /ha.	Cost / Unit of input	Total cost per ha	% to cost "C ₃ "
1	2	3		4	5	6	7
1.	Hired human labour	Male	Days	30.09	200.01	6018.37	3.58
		Female	Days	115.61	148.48	17166.40	10.22
		Total	Days	145.70	159.12	23184.77	13.80
2.	Bullock labour	Hired	Days	10.14	644.68	6537.01	3.89
		Owned	Days	2.50	551.05	1377.63	0.82
		Total	DAYS	12.64	400.06	5056.73	3.01
3.	Machine	Hired	Hrs	10.59	300.00	3176.66	1.89
		Owned	Hrs	0.38	300.00	113.45	0.07
		Total	Days	10.97	509.85	5591.57	3.33
4.	Seed		kg	25.55	1571.04	40145.87	23.90
5.	Micronutrient					982.17	0.58
6.	Manure		Qtls.	19.56	160.77	3144.25	1.87
7.	Fertilizer	N	kg	119.00	17.67	2103.00	1.25
		P	kg	56.02	39.17	2194.22	1.31
		K	kg	44.03	23.06	1015.40	0.60
	Total					5312.62	3.16
8.	Irrigation	Cost	Rs.			1661.25	0.99
9.	Insecticide	Cost	Rs.			1069.69	0.64
10.	Incidental	Cost	Rs.			140.19	0.08
11.	Repairs	Cost	Rs.			418.15	0.25
12.	Working capital	Cost	Rs.			86707.26	51.62
13.	Depreciation	Cost	Rs.			4401.65	2.62
14.	Land revenue	Cost	Rs.			19.44	0.01
15.	Int. on working capital	Cost	Rs.			5194.04	3.09
16.	Cost "A ₁ "		Rs.			96322.39	57.35
17.	Rental value leased in land		Rs.			0.00	0.00
18.	Cost "A ₂ "		Rs.			96322.39	57.35
19.	Int. on fixed capital		Rs.			4525.34	2.69
20.	Cost "B ₁ "		Rs.			100847.73	60.04
21.	Rental value of land		Rs.			45253.38	26.94
22.	Cost "B ₂ "		Rs.			146101.11	86.98
23.	Family human labour	Male	Days	13.78	200.00	2755.27	1.64
		Female	Days	25.61	150.00	3841.17	2.29
		Total	Days	39.38	167.49	6596.43	3.93
24.	Cost "C ₁ "		Rs.			107444.17	63.97
25.	Cost "C ₂ "		Rs.			152697.55	90.91
26.	Additional value of human labour		Rs.			0.00	0.00
27.	Cost "C ₂ *"		Rs.			152697.55	90.91
28.	10% cost C ₂ *		Rs.			15269.76	9.09
29.	Cost "C ₃ "		Rs.		167967.30	100.00	
30.	Yield	Main	Qtls.	729.40	405.86	296036.95	
		By	Qtls.	0.00		0.00	
31.	Value of total produce		Rs.			296036.95	
32.	Per qtl. cost of production		Rs.			230.28	

(Figures in parentheses are the percentage to the total cost C₃)

Table 8: Per hectare cost of cultivation of onion seed for large farmers							(Rs./ha)
Sr. No.	Item	Unit	Input/ha.	Cost/Unit of input	Total cost per ha	% to cost "C ₃ "	
1	2	3	4	5	6	7	
1.	Hired human labour	Male	Days	33.42	180.85	6043.83	3.64
		Female	Days	116.49	135.93	15834.78	9.53
		Total	Days	149.91	145.94	21878.61	13.17
2.	Bullock labour	Hired	Days	13.41	500.00	6704.15	4.04
		Owned	Days	1.70	500.00	850.63	0.51
		Total	Days	15.11	281.68	4256.06	2.56
3.	Machine	Hired	Hrs	12.08	300.00	3624.57	2.18
		Owned	Hrs	2.68	300.00	804.50	0.48
		Total	Days	14.76	409.18	6040.95	3.64
4.	Seed		kg	23.44	1607.21	37673.01	22.68
5.	Micronutrient					1008.65	0.61
6.	Manure		Qtls.	21.63	145.60	3148.79	1.90
7.	Fertilizer	N	kg	126.18	18.59	2345.70	1.41
		P	kg	48.10	43.88	2110.64	1.27
		K	kg	25.23	32.09	809.57	0.49
	Total					5265.91	3.17
8.	Irrigation	Cost	Rs.			1715.69	1.03
9.	Insecticide	Cost	Rs.			1172.15	0.71
10.	Incidental	Cost	Rs.			146.77	0.09
11.	Repairs	Cost	Rs.			441.75	0.27
12.	Working capital	Cost	Rs.			82748.34	49.82
13.	Depreciation	Cost	Rs.			5575.43	3.36
14.	Land revenue	Cost	Rs.			21.93	0.01
15.	Int. on working capital	Cost	Rs.			4956.01	2.98
16.	Cost "A ₁ "		Rs.			93301.71	56.17
17.	Rental value leased in land		Rs.			0.00	0.00
18.	Cost "A ₂ "		Rs.			93301.71	56.17
19.	Int. on fixed capital		Rs.			4777.22	2.88
20.	Cost "B ₁ "		Rs.			98078.93	59.05
21.	Rental value of land		Rs.			47772.18	28.76
22.	Cost "B ₂ "		Rs.			145851.11	87.81
23.	Family human labour	Male	Days	11.51	200.00	2301.04	1.39
		Female	Days	19.00	150.00	2850.35	1.72
		Total	Days	30.51	168.86	5151.38	3.10
24.	Cost "C ₁ "		Rs.			103230.31	62.15
25.	Cost "C ₂ "		Rs.			151002.49	90.91
26.	Additional Value of human labour		Rs.			0.00	0.00
27.	Cost "C ₂ *"		Rs.			151002.49	90.91
28.	10% Cost C ₂ *		Rs.			15100.25	9.09
29.	Cost "C ₃ "		Rs.			166102.74	100.00
30.	Yield	Main	Qtls	734.41	404.09	296764.71	
		By	Qtls	0.00		0.00	
31.	Value of total produce		Rs.			296764.71	
32.	Per qtl. cost of production		Rs.			226.17	

(Figures in parentheses are the percentage to the total cost C₃)

Economic analysis of onion seed production

Table 9 : Per hectare cost of cultivation of onion seed for overall farmers							(Rs.)
Sr. No.	Item	Unit	Input/ha.	Cost/ Unit of input	Total cost per ha.	% to cost "C ₃ "	
1	2	3	4	5	6	7	
1.	Hired human labour	Male	Days	33.13	184.93	6125.78	3.73
		Female	Days	116.13	141.72	16457.83	10.02
		Total	Days	149.26	151.31	22583.61	13.76
2.	Bullock labour	Hired	Days	13.23	500.00	6617.06	4.03
		Owned	Days	2.15	500.00	1076.17	0.66
		Total	Days	15.39	309.52	4762.36	2.90
3.	Machine	Hired	Hrs	11.36	300.00	3408.55	2.08
		Owned	Hrs	1.60	300.00	480.08	0.29
		Total	Days	12.96	445.06	5768.92	3.51
4.	Seed		kg	24.21	1587.76	38439.75	23.41
5.	Micronutrient					961.91	0.59
6.	Manure		Qtls.	19.62	149.27	2928.47	1.78
7.	Fertilizer	N	kg	128.87	0.94	120.73	0.07
		P	kg	52.10	41.09	2140.77	1.30
		K	kg	32.97	27.15	895.04	0.55
	Total					3156.54	1.92
8.	Irrigation	Cost	Rs.			1706.67	1.04
9.	Insecticide	Cost	Rs.			1128.98	0.69
10.	Incidental	Cost	Rs.			146.42	0.09
11.	Repairs	Cost	Rs.			426.63	0.26
12.	Working capital	Cost	Rs.			82010.26	49.95
13.	Depreciation	Cost	Rs.			4744.50	2.89
14.	Land revenue	Cost	Rs.			21.02	0.01
15.	Int. on working capital	Cost	Rs.			5038.95	3.07
16.	Cost "A ₁ "		Rs.			91814.73	55.92
17.	Rental value leased in land		Rs.			0.00	0.00
18.	Cost "A ₂ "		Rs.			91814.73	55.92
19.	Int. on fixed capital		Rs.			4691.18	2.86
20.	Cost "B ₁ "		Rs.			96505.91	58.78
21.	Rental value of land		Rs.			46911.82	28.57
22.	Cost "B ₂ "		Rs.			143417.73	87.35
23.	Family human labour	Male	Days	13.03	200.00	2605.22	1.59
		Female	Days	21.57	150.00	3235.72	1.97
		Total	Days	34.60	168.83	5840.93	3.56
24.	Cost "C ₁ "		Rs.			102346.85	62.34
25.	Cost "C ₂ "		Rs.			149258.67	90.91
26.	Additional value of human labour		Rs.			0.00	0.00
27.	Cost "C ₂ *"		Rs.			149258.67	90.91
28.	10% cost C ₂ *		Rs.			14925.87	9.09
29.	COST "C ₃ "		Rs.			164184.53	100.00
30.	Yield	Main	Qtls.	725.20	402.09	291597.06	
		By	Qtls.	0.00		0.00	
31.	Value of total produce		Rs.			291597.06	
32.	Per qtl. cost of production		Rs.			226.40	

(Figures in parentheses are the percentage to the total cost C₃)

Sr. No.	Particulars	Small	Medium	Large	Overall
1.	Main produce (q/ha)	721.51	729.40	734.41	725.20
2.	Value of main produce	281050.54	296036.95	296764.71	291597.06
3.	Value of by produce	0	0	0	0
4.	Gross return	281050.54	296036.95	296764.71	291597.06
5.	Cost of cultivation at				
	Cost "A ₁ "	91533.5	96322.39	93301.71	91814.73
	Cost "A ₂ "	91533.5	96322.39	93301.71	91814.73
	Cost "B ₁ "	96233.93	100847.73	98078.93	96505.91
	Cost "B ₂ "	143238.25	146101.11	145851.11	143417.73
	Cost "C ₁ "	103142.53	107444.17	103230.31	102346.85
	Cost "C ₂ "	150146.85	152697.55	151002.49	149258.67
	Cost "C ₂ *"	150146.85	152697.55	151002.49	149258.67
	Cost "C ₃ *"	165161.53	167967.3	166102.74	164184.53
6.	Return at				
	Cost "A ₁ "	189,517.04	199,714.56	203,463.00	199,782.33
	Cost "A ₂ "	189,517.04	199,714.56	203,463.00	199,782.33
	Cost "B ₁ "	184,816.61	195,189.22	198,685.78	195,091.15
	Cost "B ₂ "	137,812.29	149,935.84	150,913.60	148,179.33
	Cost "C ₁ "	177,908.01	188,592.78	193,534.40	189,250.21
	Cost "C ₂ "	130,903.69	143,339.40	145,762.22	142,338.39
	Cost "C ₂ *"	130,903.69	143,339.40	145,762.22	142,338.39
	Cost "C ₃ *"	115,889.01	128,069.65	130,661.97	127,412.53
7.	Output input ratio at				
	Cost "A ₁ "	3.07	3.07	3.18	3.17
	Cost "A ₂ "	3.07	3.07	3.18	3.17
	Cost "B ₁ "	2.92	2.93	3.02	3.02
	Cost "B ₂ "	1.96	2.02	2.03	2.03
	Cost "C ₁ "	2.72	2.75	2.87	2.84
	Cost "C ₂ "	1.87	1.93	1.96	1.95
	Cost "C ₂ *"	1.87	1.93	1.96	1.95
	Cost "C ₃ *"	1.70	1.76	1.78	1.77

Sr. No.	Particulars	Size groups			Overall (n=90)
		Small (n=40)	Medium (n=29)	Large (n=21)	
1.	Quality bulb not available in time	5 (12.5)	4 (13.79)	3 (14.28)	12 (13.34)
2.	High cost and unavailability of fertilizer in time	9 (22.5)	8 (27.58)	9 (42.85)	26 (28.89)
3.	Lack of technical knowledge on pest and diseases and its control	8 (20.00)	7 (24.13)	5 (23.80)	20 (22.23)
4.	Sufficient Water for irrigation not available in time	18 (45.00)	16 (55.17)	15 (71.42)	49 (54.45)
5.	Shortage of labour	17 (42.5)	18 (62.06)	19 (90.47)	54 (60.00)
6.	Uncertainty of climate	5 (12.5)	6 (20.68)	8 (38.09)	19 (21.12)
7.	Load shading	18 (45.00)	17 (58.62)	17 (80.95)	52 (57.78)

(Figures in parentheses indicates percentage to the total)

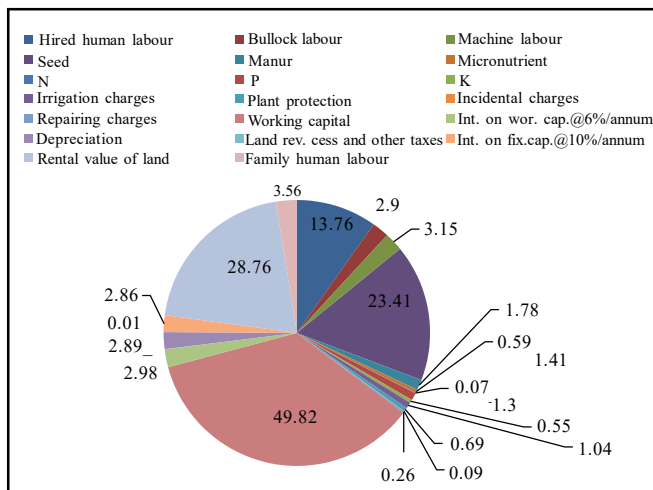


Fig. 5: Per hectare percentage expenditure on important items to cost “C₃” at overall size group

It is seen from the Table 9 that the overall level the cost of cultivation was Rs.164184.53/-. The major item contributed to total cost C₃ was rental value of land 28.57 per cent, followed by seed 23.41 per cent, hired human labour 13.76 per cent and family human labour 3.56 per cent. The per hectare yield was 725.20 quintal.

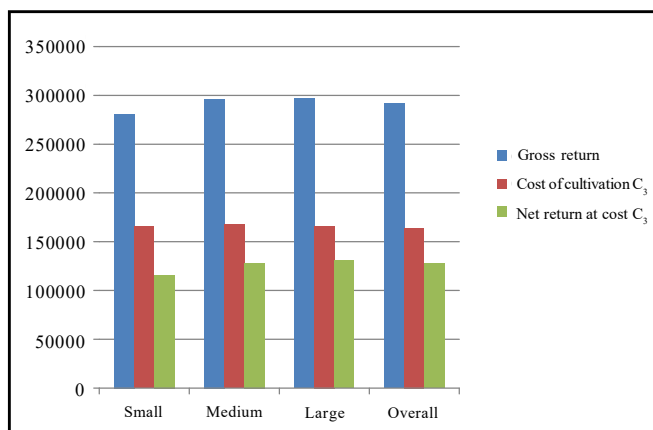


Fig. 6: Per hectare cost and return from onion seed

The Table 10 indicates that the per hectare production of onion seed for small, medium and large farmer was 721.51, 729.40 and 734.41 quintal, respectively. At overall level it was 725.20 q/ha. The average per hectare net return received by the the small, medium and large cultivator was Rs. 115889.01/- Rs. 128069.65/- and Rs. 130661.97/-. At an overall the net returns was Rs. 127412.53/-. The input-output ratio at cost C₃ was 1.70, 1.76 and 1.78 for small, medium and

large farmer, respectively. The overall input-output ratio was 1.77. It indicates that the onion seed cultivation was profitable.

It was observed from the Table 11 that, important problems faced by onion seed growers in production. In overall problem 13.34 per cent growers reported that the onion bulbs were not available in time, 28.89 per cent of the growers reported that the high cost and non-availability of fertilizer in time. Almost 22.23 per cent of the growers reported the problem of lack of technical knowledge about pest and diseases and its control and they did not get insecticide in time. Due to sufficient water for irrigation not available in time reported by 54.45 per cent. Shortage of labour was another contribution reported by 60.00 per cent of the growers. Due to load shading irrigation is hampered and it has been reported by 57.78 per cent of the growers. Similar work related to the present investigation was also carried out by Aitawade *et al.* (2006); Barakade *et al.* (2011); Bhole and Ambarkar (1996); Ghulghule *et al.* (2003); Maghade *et al.* (2008) and Shah (1999).

Summary and conclusion:

The gross cropped area was highest in large size group *i.e.* 8.28 hectare followed by medium size group 5.27 and small size group 2.93, respectively. The share of area under onion seed in small, medium and large size of land holding group and at overall level in gross cropped area was 12.62, 12.52, 12.31, 12.34 per cent, respectively. Among all soybean dominated the cropping pattern in *Kharif* and gram in *Rabi*. Per hectare cost ‘A₁’ was highest in medium size group *i.e.* 96322.39 followed by large size group (93301.71) and small size group 915333.5, respectively. The per hectare total cost of cultivation of onion seed *i.e.* cost ‘C₃’ was highest in the medium size group *i.e.* 167967.3 per hectare followed by large size group 166102.74 and small size group 165161.53, respectively. The benefit cost ratio of onion seed cultivation at cost ‘C₃’ was higher in large size group *i.e.* 1.78, followed by medium size group 1.76 and small size group 1.70. Non-availability of bulb in time, high cost and non-availability of fertilizer in time, uncertainty of climate, labour scarcity was the major production constraints in onion seed production.

In selected onion seed cultivators total overall family size was 6 members which include 3 male, 2 female, and 1 children. The per hectare total cost of cultivation of onion seed *i.e.* cost ‘C₃’ was highest in the medium size

group *i.e.* 167967.3 per hectare followed by large size group 166102.74 and small size group 165161.53. The average yield and gross returns per hectare increased with the increase in size of farms. The benefit cost ratio of onion seed cultivation at cost 'C₃' was higher in large size group *i.e.* 1.78, medium size group 1.76 and small size group 1.70. This indicates that, cultivation of onion seed crop was economically profitable. Cultivation of onion seed crop was economically variable. The major constraints faced by onion seed growers was shortage of labour (60.00%), load shading (57.78%), followed by sufficient water for irrigation not available in time (54.45%) and high cost and unavailability of fertilizers in time (28.89%).

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