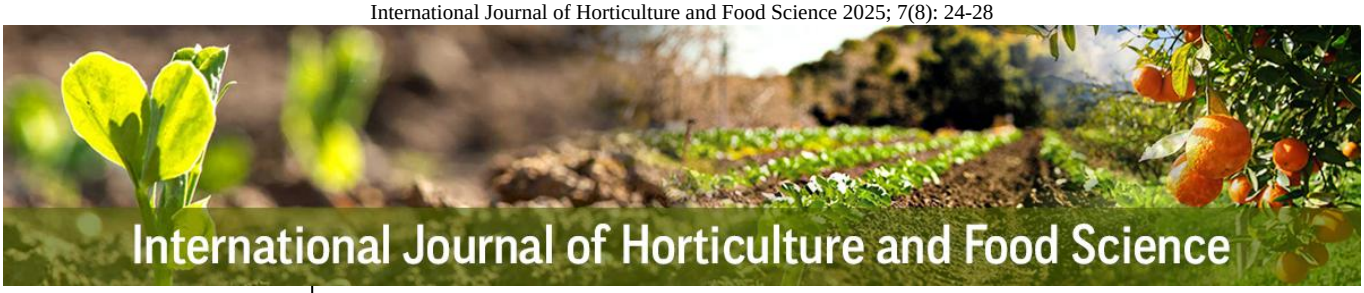

E-ISSN: 2663-1067
P-ISSN: 2663-1075
NAAS Rating (2025): 4.74
www.hortijournal.com
IJHFS 2025; 7(8): 24-28
Received: 29-05-2025
Accepted: 03-07-2025

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Comparative economics of Akola safed and local variety of onion

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DOI: https://www.doi.org/10.33545/26631067.2025.v7.i8a.362

Abstract
Onion (*Allium cepa L.*) is a vegetable crop that belongs to the Alliaceae family and the allium genus, which also includes garlic, leeks and shallots. Onions are an incredibly versatile and widely used ingredient in kitchens all over the world. Known for their pungent taste and distinctive aroma, they add flavour to a variety of dishes in cuisines worldwide. Onions can be grilled, roasted, fried, pickled, or even consumed raw in salads or as garnishes. They work well for adding texture to dishes and can balance and enhance other flavours in a dish, which is why they are often referred to as the "**Queen of Kitchen**". The present study was undertaken in Amravati district of Vidarbha region. The district was selected purposively. The data pertained for the year 2024-25. From each village 20 farmers were selected randomly i.e. total 120 rabi onion growers were selected for the present study. Selected farmers then categorized into Akola safed and Local onion cultivators according to their type of production. The comparative economics of Akola safed and Local variety of onion was work out by using standard cost concept. The per hectare cost A_1, cost B_1 and cost C_2 for Local variety were more when compared to that in Akola safed variety. i.e, Cost C_2 was more by about Rs.177776.29/- for Local variety when compared to that of Akola safed onion variety (175265.63). The per hectare yield obtained by Akola safed variety of onion cultivator was 246.61 quintal and in case of local variety of onion it was 228.94 quintal. Per hectare cost of cultivation of Akola safed variety of onion is at Cost A_1, Cost A_2, Cost B_1, Cost B_2, Cost C_1, Cost C_2 and Cost C_3 were Rs.109109.99, Rs.109109.99, Rs.117797.29, Rs.167055.39, Rs.126007.53, Rs.175265.63 and Rs.192792.19 respectively. The per quintal cost of production of Akola safed variety of onion was Rs.781.76. Per hectare cost of cultivation of Local variety of onion at cost A_1, cost A_2, cost B_1, cost B_2, cost C_1, cost C_2 and cost C_3 were Rs.120127.87, Rs.120127.87, Rs.128815.17, Rs.170401.84, Rs.136189.62, Rs.177776.29 and 195553.92 respectively. The per quintal cost of production was Rs.854.17. The input output ratio which is an indicator of economic efficiency in crop production for the crop and other discussion indicated that Akola safed onion cultivation registered a good input output ratio 1:1.54 means this is profitable variety for cultivation.

Keywords: Onion (*Allium cepa*), Akola safed, local variety, comparative economics

Introduction
Onion (*Allium cepa* L.) is a vegetable crop that belongs to the Alliaceae family and the allium genus, which also includes garlic, leeks and shallots. These crops evolved from wild relatives that have grown in the mountainous regions of central Asia. The Mediterranean region can be considered a secondary centre of origin. Onion cultivation is a significant agricultural activity worldwide that caters to both domestic consumption and international trade. China, India, United States, Turkey, Pakistan, and Egypt are among the top producers of onions globally. China, India, Pakistan, and Turkey are major onion cultivating countries in Asia. The varied climatic conditions in the region allow for year-round cultivation in different areas.

Onions are an incredibly versatile and widely used ingredient in kitchens all over the world. Known for their pungent taste and distinctive aroma, they add flavour to a variety of dishes in cuisines worldwide. Onions come in different varieties such as red, white, and yellow onions. They can be sliced, diced, minced, or pureed, and can be used in both raw and cooked preparations. Onions can be grilled, roasted, fried, pickled, or even consumed raw in salads or as garnishes. They work well for adding texture to dishes and can balance and enhance other flavours in a dish, which is why they are often referred to as the "Queen of

Kitchen".

The Major Onion producing states are Maharashtra, Karnataka, Madhya Pradesh, Gujarat, Bihar, Andhra Pradesh, Rajasthan, Haryana and Telangana. Maharashtra ranks first in Onion production with a share of 35% followed by Madhya Pradesh with a share of 17% in 2023-24. (Source: https://apeda.gov.in/). Production of Onion in 2023-24 is expected to be around 254.73 Lakh Tonne compared to around 302.08 Lakh Tonne last year due to decrease of 34.31Lakh Tonne in Maharashtra, 9.95 Lakh Tonne in Karnataka, 3.54 Lakh Tonne in Andhra Pradesh and 3.12 Lakh Tonne in Rajasthan (pib.gov.in). Maharashtra has the largest onion market in the country onion production takes place in this state (8904.96 thousand MT) followed by Madhya Pradesh (5001.13 thousand MT). In Maharashtra, onions are largely cultivated in Nashik, Ahmednagar, and Pune districts. In Maharashtra, for the year 2023-24 the area, production and productivity of onions in Amravati district were 3803 hectares, 42177 MT, 11.09 tones/ha. According to the first advanced estimate for the year 2022-23 the area, production and productivity of onions in Maharashtra were 660.87 thousand hectares, 8904.96 thousand MT and 13.47 MT per hectare, respectively. (source: https://www.indiastatagri.com).

Objective

To work out comparative economics of Akola Safed and Local Variety of onion.

Methodology

The present study was undertaken in Amravati district of Maharashtra state. The district was selected purposively. The data pertained for the year 2024-25. The data were collected through pre-tested scheduled by survey method from each village 20 farmers (10 for Akola safed and 10 for Local variety of onion)were selected randomly i.e. total 120 rabi onion growers were selected for the present study. Selected farmers then categorized into Akola safed and Local onion cultivators according to their type of production.

The standard cost concept i.e. Cost A1, Cost A2, Cost B1, Cost B2, Cost C1, Cost C2 and C3 was used to work out the comparative economics of Akola safed and local variety of onion.

Cost A_1

All actual expenses in cash and kind incurred in production by the producer. The following items are included in cost A_1

1. Wages of hired human labour.
2. Wages of permanent labour.
3. Wages of contract labour.
4. Wages of hired bullock labour.
5. Imputed value of owned bullock labour.
6. Charges of hired Machinery.
7. Imputed value of owned machinery.
8. Actual rate of manures and fertilizer.
9. Actual rate of seed.
10. Imputed value of owned seed.
11. Imputed value of manure.
12. Actual value of pesticides, herbicides, hormones, etc.
13. Irrigation charges.
14. Land revenue, cesses and other tax.
15. Depreciation on farm machinery, implements, equipment Farm buildings, Irrigation structures, etc.
16. Interest on working capital.
17. Miscellaneous expenses.

Cost A_2 = Cost A_1 + Rent paid for leased in land

Cost B_1 = Cost A_1 + Interest on value of owned capital assets (excluding land)

Cost B_2 = Cost B_1 + Rental value of owned land (net land revenue) less land revenue + Rent paid for leased in land.

Cost C_1 = Cost B_1 + Imputed value of family labour.

Cost C_2 = Cost B_2 + Imputed value of family labour.

Cost C_3 = Cost C_2 + 10 per cent of Cost C_2 on account of managerial functions performed by farmers.

In the present study, the rent paid for leased inland was zero, as none of sample farmers took land on lease basis. Hence Cost A_1 and Cost A_2 are similar and simply called C. As Cost A and only Cost C_2 was estimated and presented as cost of cultivation in the result.

$$\text{Gross return per rupee of investment} = \frac{\text{Gross return}}{\text{Total investment}}$$

$$\text{Cost of production (quintal)} = \frac{\text{Total cost} - \text{value of by produce}}{\text{Yield (Qt/Ha)}}$$

$$\text{Gross return per quintal} = \frac{\text{Gross return (Rs.Ha)}}{\text{Yield (Qt/Ha)}}$$

Results and Discussion

Cost of cultivation of Akola safed variety of onion

The per hectare cost of cultivation of Akola Safed variety of onion is presented in table 1

Table 1: Cost of cultivation of Akola safed variety of onion (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
1	Hired Human Labour	Male	Days	67.58	267.09	18050.22	9.36
		Female	Days	116.18	166.69	19365.60	10.04
		Total	Days	183.77		37415.82	19.41
2	Bullock Labour		Days	0.00	0.00	0.00	0.00
3	Machine charges	Hired	Hrs	6.64	1074.21	7132.77	3.70
4	Seed		Kgs	9.89	2599.02	25704.30	13.33
5	Manure		Qtls.	27.89	249.99	6972.34	3.62
6	Fertilizer	N kg/h	Kg.	115.05	28.61	3291.58	1.71
		P kg/h	Kg.	57.64	37.91	2185.13	1.13
		K kg/h	Kg.	54.41	42.36	2304.80	1.20
		S kg/h	Kg.	00	00	00	00
		Total	Kg.	227.1		7781.52	4.04

7	Irrigation charges.	Rs.				6250.00	3.24
8	Incidental charges	Rs.				777.00	0.40
9	Plant Protection	Rs.				8132.06	4.22
10	Repairing Charges	Rs.				896.78	0.47
11	Working Cap.	Rs.				101062.59	52.42
12	Interest on working Cap.	Rs.				2021.25	1.05
13	Depreciation	Rs.				5951.14	3.09
14	Land Revenue	Rs.				75.00	0.04
15	COST " A_1"	Rs.				109109.99	56.59
16	Rent paid for Leased in land	Rs.				0.00	0.00
17	COST " A_2"	Rs.				109109.99	56.59
18	Int. on Fix. Cap. @ 10%	Rs.				8687.30	4.51
19	COST " B_1"	Rs.				117797.29	61.10
20	Rental Value of Land	Rs.				49258.10	25.55
21	COST " B_2"	Rs.				167055.39	86.65
22	Family Human Labour	Male	Days	20.76	274.71	5703.13	2.96
		Female	Days	14.45	173.50	2507.11	1.30
		Total	Days	35.21		8210.24	4.26
23	Cost " C_1 "	Rs.				126007.53	65.36
24	Cost " C_2 "	Rs.				175265.63	90.91
25	10% Cost " C_2 "	Rs.				17526.56	9.09
26	Cost " C_3 "	Rs.				192792.19	100.00
27	Yield per hectare	Qtl.		246.61		295998.58	
28	Value of By-produce/ha.	Qtl.		-	-	-	
29	Value of total produce	Rs.				295998.58	
30	Per quintal cost of Prod.	Rs.				781.76	

It is revealed from Table 1 that, the per hectare cost of production at cost A_1, cost A_2, cost B_1, cost B_2, cost C_1, cost C_2 and cost C_3 were Rs.109109.99, Rs.109109.99, Rs.117797.29, Rs.167055.39, Rs.126007.53, Rs.175265.63 and Rs.192792.19 respectively. The major share of cost of cultivation goes towards in cost A_1 (56.59 per cent). In cost A_1, share of hired human labour was 19.41 per cent followed by seed 13.33 per cent, plant protection 4.22 per cent, fertilizer 4.04 per cent, machine charges 3.70 per cent indicating that all the above inputs are cash inputs for which farmers required to pay immediately from his pocket. The per hectare yield obtained by Akola safed variety of onion cultivator was 246.61 quintal with gross return of Rs. 295998.58. The per quintal cost of production of Akola safed variety of onion was Rs.781.76.

Cost of cultivation of Local variety onion

The per hectare cost of cultivation of Local variety of onion is presented in Table 2

It is revealed from Table 2 that, the per hectare cost of production at cost A_1, cost A_2, cost B_1, cost B_2, cost C_1, cost C_2 and cost C_3 were Rs.120127.87, Rs.120127.87, Rs.128815.17, Rs.170401.84, Rs.136189.62, Rs.177776.29 and 195553.92 respectively. The major share of cost of cultivation goes towards in cost A1 (61.43 per cent). In cost A1, share of hired human labour was 19.76 per cent followed by seed 13.42 per cent, plant protection 4.46 per cent, fertilizer 4.11 per cent, manure 3.66 per cent and machine charges 3.53 per cent indicating that all the above inputs are cash inputs for which farmers required to pay immediately from his pocket. The per hectare yield obtained by local variety of onion was 228.94 quintal with gross returns of Rs.249594.96. The per quintal cost of production was Rs.854.17

Table 2: Cost of cultivation of Local variety of onion (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**
1	Hired Human Labour	Male	Days	70.81	263.92	18688.22	9.56
		Female	Days	116.62	171.18	19962.67	10.21
		Total	Days	187.44		38650.89	19.76
2	Bullock Labour		Days	0.00	0.00	0.00	0.00
3	Machine charges	Hired	Hrs	6.43	1074.54	6909.28	3.53
4	Seed		Kg	10.07	2606.50	26247.5	13.42
5	Manure		Qtls.	29.39	243.21	7147.8	3.66
6	Fertilizer	N kg/h	Kg.	122.63	27.53	3376.00	1.73
		P kg/h	Kg.	56.78	39.81	2260.41	1.16
		K kg/h	Kg.	55.68	43.12	2400.92	1.23
		S Kg/h	Kg.	00	00	00	00
		Total	Kg.	235.09		8037.33	4.11
7	Irrigation charges.	Rs.				5950.00	3.04
8	Incidental charges	Rs.				789.62	0.40
9	Plant Protection	Rs.				8714.23	4.46
10	Repairing Charges	Rs.				1176.34	0.60
11	Working Cap.	Rs.				103622.99	52.99
12	Intrest on working Cap.	Rs.				2072.45	1.06

13	Depreciation	Rs.				14357.42	7.34
14	Land Revenue	Rs.				75.00	0.04
15	COST "A_1"	Rs.				120127.87	61.43
16	Rent paid for Leased in land	Rs.				0.00	0.00
17	COST "A_2"	Rs.				120127.87	61.43
18	Int. on Fix. Cap. @ 10%	Rs.				8687.3	4.44
19	COST "B_1"	Rs.				128815.17	65.87
20	Rental Value of Land	Rs.				41586.66	21.27
21	COST "B_2"	Rs.				170401.84	87.14
22	Family Human Labour	Male	Days	19.16	266.70	5109.98	2.61
		Female	Days	13.17	171.94	2264.47	1.16
		Total	Days	32.33		7374.45	3.77
23	Cost " C_1 "	Rs.				136189.62	69.64
24	Cost " C_2 "	Rs.				177776.29	90.91
25	10% Cost "C_2*	Rs.				17777.63	9.09
26	Cost " C_3 "	Rs.				195553.92	100.00
27	Yield per hectare	Qtl		228.94	1090.22	249594.96	
28	Value of By-produce/ha.	Qtl					
29	Value of total produce	Rs.		228.94	1090.22	249594.96	
30	Per quintal cost of Prod.	Rs.				854.17	

Comparative economic analysis of Akola safed variety and Local variety of onion cultivation is presented in table 3

Table 3: Comparative economic analysis of Akola safed and Local variety of onion (Rs/ha)

Sr. No.	Item		Akola safed	Local Variety	Difference
1	2		3	4	5
1	Hired Human Labour	Male	18050.22	18688.22	-638
		Female	19365.6	19962.67	-597.07
		Total	37415.82	38650.89	1235.07
2	Bullock Labour		0.00	0.00	00
3	Machine charges	Hired	7132.77	6909.28	+233.49
4	Seed		25704.30	26247.50	-543.20
5	Manure		6972.34	7147.80	-175.46
6	Fertilizer	N Kg/h	3291.58	3376.00	-84.42
		P Kg/h	2185.13	2260.41	-75.28
		K Kg/h	2304.80	2400.92	-96.12
		S Kg/h	00	00	00
		Total	7781.52	8037.33	-255.81
7	Irrigation charges.	Rs.	6250.00	5950.00	+300.00
8	Incidental charges	Rs.	777.00	789.62	-12.62
9	Plant Protection	Rs.	8132.06	8714.23	-582.17
10	Repairing Charges	Rs.	896.78	1176.34	-279.56
11	Working Cap.	Rs.	101062.59	103622.99	-2560.40
12	Intrest on working Cap.	Rs.	2021.25	2072.45	-51.20
13	Depreciation	Rs.	5951.14	14357.42	-8406.28
14	Land Revenue	Rs.	75.00	75.00	00
15	COST "A_1"	Rs.	109109.99	120127.87	-11017.88
16	Rent paid for Leased in land	Rs.	0.00	0.00	00
17	COST "A_2"	Rs.	109109.99	120127.87	-11017.88
18	Fixed capital	Rs.	00	00	00
19	Int. on Fix.Cap. @ 10%	Rs.	8687.30	8687.3	00
20	COST "B_1"	Rs.	117797.29	128815.17	-11017.88
21	Rental Value of Land	Rs.	49258.10	41586.66	+7671.44
22	COST "B_2"	Rs.	167055.39	170401.84	-3346.45
23	Family Human Labour	Male	5703.13	5109.98	+593.15
		Female	2507.11	2264.47	+242.64
		Total	8210.24	7374.45	+835.79
24	Cost " C_1 "	Rs.	126007.53	136189.62	-10182.09
25	Cost " C_2 "	Rs.	175265.63	177776.29	-2510.66
26	10% Cost "C_2"	Rs.	17526.56	17777.63	-251.07
27	Cost " C_3 "	Rs.	192792.19	195553.92	-2761.73
28	Gross returns	Rs.	295998.58	249594.96	+46403.62
29	Value of By-produce/ha.	(Qt)	-	-	-
30	Value of total produce	Rs.	295998.58	249594.96	+46403.62
31	Per quintal cost of Prod.	Rs.	781.76	854.17	-72.41

It could be seen from Table 3 that, the working capital required for cultivating Local variety onion is higher (Rs.103622.99) than Akola safed onion cultivation (Rs.101062.59). The cost A_1, B_1, B_2, C_1 and C_2 were highest in Local variety cultivation than Akola safed onion cultivation. The value of total produce was higher in Akola safed variety onion cultivation (Rs.295998.58) than Local variety onion cultivation (Rs.249594.96).

The cost and returns from Akola safed and local variety of onion was calculated and presented in Table 4

Table 4: Cost and returns from Akola safed and Local variety of onion.

(Rs/qt.)

Sr. No.	Particulars	Type of cultivation	
		Akola safed	Local variety
1	Yield (Qt.)	246.61	228.94
2	Value Main Produce	295998.58	249594.96
	By Produce	-	-
3	Total Produce	295998.58	249594.96
4	Total Cost		
	Cost A_1	109109.99	120127.87
	Cost A_2	109109.99	120127.87
	Cost B_1	117797.29	`128815.17
	Cost B_2	167055.39	170401.84
	Cost C_1	126007.53	136189.62
	Cost C_2	175265.63	177776.29
	Cost C_3	192792.19	195553.92
5	Net Return Over		
	Cost A_1	186888.59	129467.08
	Cost A_2	186888.59	129467.08
	Cost B_1	178201.29	120779.78
	Cost B_2	128943.19	79193.12
	Cost C_1	169991.05	113405.33
	Cost C_2	120732.95	71818.67
	Cost C_3	103206.39	54041.04
6	Input Output ratio at		
	Cost A_1	2.71	2.08
	Cost A_2	2.71	2.08
	Cost B_1	2.51	1.94
	Cost B_2	1.77	1.46
	Cost C_1	2.35	1.83
	Cost C_2	1.69	1.40
	Cost C_3	1.54	1.28

It is revealed from the Table 4 that, the yield per hectare realized in Akola safed variety was 246.61 quintals. The yield realized by Local variety was 228.94 quintals per hectare. The per hectare cost A_1, cost B_1 and cost C_2 for Local variety were more when compared to that in Akola safed variety. For example, Cost C_2 was more by about Rs.17776.29/- for Local variety when compared to that of Akola safed onion variety. The per hectare gross returns realized for Akola safed onion growers and Local variety onion growers were Rs. 295998.58 and Rs. 249594.96 respectively. The net returns (returns over Cost C_2) were Rs. 120732.95 for Akola safed variety and Rs.71818.67/- for Local variety. The highest input output ratio at cost 'C_3' was recorded for Akola safed growers i.e. 1:1.54 and for Local variety it was recorded as 1:1.28.

The input output ratio which is an indicator of economic efficiency in crop production for the crop and other discussion indicated that Akola safed onion cultivation registered a good input output ratio 1:1.54 means this is profitable variety for cultivation. The results were the closed approximation with Jadhav *et al.* (2024) [1]. They revealed that the per hectare cost of cultivation of Onion was Rs. 195416.01 and per quintal cost of production was Rs. 808.91.

Conclusion

1. The per hectare cost A_1, cost B_1 and cost C_2 for Local variety were more when compared to that in Akola safed variety. i.e, Cost C_2 was more by about Rs.177776.29/- for Local variety when compared to that of Akola safed onion variety (175265.63)
2. The per hectare yield obtained by Akola safed variety of onion cultivator was 246.61 quintal and in case of local variety of onion it was 228.94 quintal.
3. Per hectare cost of cultivation of Akola safed variety of onion is at Cost A_1, Cost A_2, Cost B_1, Cost B_2, Cost C_1, Cost C_2 and Cost C_3 were Rs.109109.99, Rs.109109.99, Rs.117797.29, Rs.167055.39, Rs.126007.53, Rs.175265.63 and Rs.192792.19 respectively. The per quintal cost of production of Akola safed variety of onion was Rs.781.76.
4. Per hectare cost of cultivation of Local variety of onion at cost A_1, cost A_2, cost B_1, cost B_2, cost C_1, cost C_2 and cost C_3 were Rs.120127.87, Rs.120127.87, Rs.128815.17, Rs.170401.84, Rs.136189.62, Rs.177776.29 and 195553.92 respectively. The per quintal cost of production was Rs.854.17
5. The input output ratio which is an indicator of economic efficiency in crop production for the crop and other discussion indicated that Akola safed onion cultivation registered a good input output ratio 1:1.54 means this is profitable variety for cultivation.

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