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Research Article

STUDIES ON STORAGE PERFORMANCE OF WHITE ONION ADVANCE LINES UNDER ORDINARY CONDITION

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Abstract: Onion is commercially cultivated and widely consumed as vegetable and as spices in India. A wide range of variability in bulb yield attributes as well as in storability is noticed. A very little area under white onion cultivation is noticed in India, because of non-availability of good quality seeds for different areas. In storage, a heavy loss noted due to sprouting and decay and these losses varies from 5-85% depending upon the variety and weather conditions. The effect of various cultural practices though is not very clear but some of the operations like soil, irrigation, nitrogen, potash application, chemical application, time of harvesting and stage of maturity while harvesting do affect post-harvest losses. Post-harvest factors like curing, sorting, grading, packing, storage and transportation are, however, the main factors affecting the quality. It is concluded from the study at Nashik the lowest PLW (20.53%) and total loss (30.5%) were recorded in the line L-784, however at Karnal, the lowest total loss (27.86 %) was recorded in line L-898 and found at par with the lines L-629, L-791, L-798, L-810, L-837 and check Agrifound White. These above advance lines can be recommended to the farmers for good keeping quality varieties.

Keywords: *Vegetable, Spices, White Onion*

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Introduction

Onion (*Allium cepa* L.) is an important spices vegetable consumed by all masses throughout the year. It also has high export potential and comes under cash crop apart from vegetables [1]. About 73.23 million tons of onions are produced in the world from 3.65 million ha area. India, being major onion-producing country, produces 20.13 million tons from 1.19 million ha, with a very low productivity of 16.24 t/ha in comparison to Republic of Korea (64.58 t/ha), USA (54.47 t/ha), Spain (53.69 t/ha), Netherland (45.80 t/ha), Japan (42.46 t/ha), Germany (41.86 t/ha) and United Kingdom (41.15 t/ha).

India is the second largest producer of onion in the world after China. It is used as a salad or cooked in various ways in all curries, fried or baked. The nutritive value of onion varies from varieties to varieties. India is one of the major onions growing country in the world and exporting good quantities of fresh as well as processed onion to many of the countries. Processed onion, highly competitive commodity in the international market should possess certain desirable traits such as high yield retentive attractive colour, high pungency and good drying ratio [2]. The main white onion growing states in India are Maharashtra, Gujarat, Karnataka and Madhya Pradesh. Mainly its use in processed form *e.g.* flakes powder, paste, crush and pickle, *etc.* [3] and has many medicinal properties. The production of white onion is now becoming popular among farmers, producers and exporter. The exporters export the white onion from Maharashtra and Gujarat and they are demanding a good white onion variety which has greater potential for dehydration.

The work conducted on white onion variety development is very scanty [4,5]. So, it is very necessary to developed high yield potential, processing and good storage quality varieties. In storage a heavy loss noted due to sprouting and decay and these losses varies from 5-85% depending upon the variety and weather conditions [6]. Onion is semi-perishable in nature and subjected to deterioration during storage, transportation and marketing.

Materials and Methods

The present investigation was carried out at National Horticultural Research and Development Foundation Nashik (20° N latitude and 73° E longitudes and altitude of 492.0 meter from mean sea level), Maharashtra and Karnal Haryana during *Rabi*, 2016-17. Soil of the experimental block was clay loam, medium in organic carbon (0.58%), available nitrogen (385.2 kg/ha), phosphorus (45.13kg/ha) and high in available potash (291.2kg/ha). Climate of Nashik is sub-tropical with minimum and maximum temperature and humidity ranging between 10°C to 45°C and 48 % to 80 %, respectively with an annual rainfall around 881 mm. A total of 15 advance lines along with one check Agrifound white were kept in storage under ambient conditions at Nashik and 10 lines along with one check at Karnal. The well cured representative bulbs of each advance lines were kept for storage on 29/04/2017 at Nashik and on 08/06/2017 at Karnal. The data obtained during storage period are presented in [Table-1] and [Table-2] for Nashik and Karnal, respectively. Harvesting was done at one week after 50-60% neck fall stage and after proper field curing and neck cutting, the well cured and representative bulbs of each advance lines were kept for storage under ambient conditions in perforated plastic crates in randomized block design with three replications to identify good keeping quality lines. The observations on storage losses due to sprouting, physiological loss of weight (PLW), rotting and total loss were made at monthly.

Results and Discussion

The data of Nashik presented in [Table-1] revealed that highest gross (337.22 q/ha) and marketable (312.78 q/ha) yield were recorded in the advance line L-857 and found at par with the check Agrifound white. No sprouting, decay and significant variation for physiological loss in weight as well as total loss were recorded in any line after one month of storage, however lowest physiological loss

Table-1 *Storage performance of white onion advance lines at Nashik during Rabi, 2016-17*

Lines	Gross Yield q/ha	Marketable Yield q/ha	At One Month							
			Sprouting %		Decay Loss %		PLW %		Total Loss %	
L-501	220.56	203.33	0.00	(1.40)	0.00	(1.40)	5.08	(13.01)	5.08	(13.01)
L-562	210.56	195.56	0.00	(1.52)	0.00	(1.52)	5.97	(14.08)	5.97	(14.08)
L-629	264.00	244.00	0.00	(1.72)	0.00	(1.72)	5.31	(13.23)	5.31	(13.23)
L-784	311.67	292.78	0.00	(1.52)	0.00	(1.52)	5.62	(13.70)	5.62	(13.70)
L-791	274.56	257.22	0.00	(2.22)	0.00	(2.22)	5.69	(13.77)	5.69	(13.77)
L-798	222.78	206.11	0.00	(2.07)	0.00	(2.07)	5.09	(13.01)	5.09	(13.01)
L-799	196.00	182.13	0.00	(2.29)	0.00	(2.29)	5.63	(13.71)	5.63	(13.71)
L-810	182.67	168.00	0.00	(1.99)	0.00	(1.99)	5.61	(13.65)	5.61	(13.65)
L-836	202.78	181.11	0.00	(2.07)	0.00	(2.07)	5.00	(12.91)	5.00	(12.91)
L-837	282.22	274.56	0.00	(1.90)	0.00	(1.90)	5.36	(13.35)	5.36	(13.35)
L-857	337.22	312.78	0.00	(1.81)	0.00	(1.81)	4.53	(12.28)	4.53	(12.28)
L-876	187.22	172.89	0.00	(2.29)	0.00	(2.29)	5.21	(13.16)	5.21	(13.16)
L-877	206.67	191.67	0.00	(2.22)	0.00	(2.22)	6.27	(14.49)	6.27	(14.49)
L-885	208.33	191.11	0.00	(2.22)	0.00	(2.22)	5.88	(14.03)	5.88	(14.03)
L-886	209.44	195.00	0.00	(2.36)	0.00	(2.36)	6.00	(14.16)	6.00	(14.16)
A. White (C)	327.22	311.11	0.00	(1.62)	0.00	(1.62)	5.00	(12.80)	5.00	(12.80)
SEm±	6.16	5.37	-	-	-	-	-	0.96	-	0.96
CD at 5%	12.58	10.97	-	-	-	-	-	NS	-	NS
CV %	3.14	2.94	-	-	-	-	-	8.73	-	8.73

Lines	At Two Month							
	Sprouting %		Decay Loss %		PLW %		Total Loss %	
L-501	0.00	(1.40)	0.00	(1.40)	9.75	(18.19)	9.75	(18.19)
L-562	0.00	(1.52)	0.00	(1.52)	10.81	(19.19)	10.81	(19.19)
L-629	0.00	(1.72)	0.00	(1.72)	12.47	(20.65)	12.47	(20.65)
L-784	0.00	(1.52)	0.00	(1.52)	10.19	(18.60)	10.19	(18.60)
L-791	0.00	(2.22)	0.00	(2.22)	11.47	(19.79)	11.47	(19.79)
L-798	0.79	(5.10)	0.88	(5.36)	9.82	(18.22)	11.49	(19.78)
L-799	0.73	(4.76)	0.94	(5.56)	10.94	(19.29)	12.60	(20.78)
L-810	0.00	(1.99)	0.00	(1.99)	11.06	(19.38)	11.06	(19.38)
L-836	0.00	(2.07)	0.00	(2.07)	8.50	(16.95)	8.50	(16.95)
L-837	0.00	(1.90)	0.00	(1.90)	12.61	(20.80)	12.61	(20.80)
L-857	0.00	(1.81)	0.00	(1.81)	10.53	(18.93)	10.53	(18.93)
L-876	0.00	(2.29)	0.00	(2.29)	11.25	(19.56)	11.25	(19.56)
L-877	0.00	(2.22)	0.00	(2.22)	13.14	(21.23)	13.14	(21.23)
L-885	0.00	(2.22)	0.00	(2.22)	11.67	(19.97)	11.67	(19.97)
L-886	0.00	(2.36)	0.00	(2.36)	11.56	(19.85)	11.56	(19.85)
A. White (C)	0.00	(1.62)	0.00	(1.62)	9.67	(18.11)	9.67	(18.11)
SEm±	-	0.30	-	0.09	-	0.87	-	0.85
CD at 5%	-	0.61	-	0.18	-	1.78	-	1.74
CV %	-	15.77	-	4.84	-	5.50	-	5.35

Lines	At Three Month							
	Sprouting %		Decay Loss %		PLW %		Total Loss %	
L-501	1.03	(5.81)	2.63	(9.32)	13.77	(21.77)	17.42	(24.66)
L-562	0.00	(1.52)	0.00	(1.52)	14.75	(22.58)	14.75	(22.58)
L-629	1.52	(7.08)	1.09	(5.98)	16.28	(23.79)	18.89	(25.76)
L-784	0.00	(1.52)	0.27	(2.96)	14.02	(21.98)	14.29	(22.20)
L-791	0.00	(2.22)	0.00	(2.22)	15.88	(23.48)	15.88	(23.48)
L-798	0.79	(5.10)	1.75	(7.61)	15.18	(22.91)	17.72	(24.89)
L-799	3.50	(10.78)	0.94	(5.56)	14.94	(22.73)	19.38	(26.11)
L-810	0.00	(1.99)	0.00	(1.99)	15.15	(22.87)	15.15	(22.87)
L-836	0.00	(2.07)	0.00	(2.07)	14.33	(22.24)	14.33	(22.24)
L-837	1.77	(7.64)	1.00	(5.72)	17.38	(24.63)	20.14	(26.67)
L-857	0.00	(1.81)	0.00	(1.81)	15.60	(23.24)	15.60	(23.24)
L-876	0.00	(2.29)	1.81	(7.62)	16.94	(24.27)	18.75	(25.64)
L-877	3.65	(11.01)	0.47	(3.93)	17.06	(24.39)	21.18	(27.39)
L-885	0.00	(2.22)	1.41	(6.81)	15.84	(23.45)	17.25	(24.54)
L-886	0.98	(5.66)	1.07	(5.79)	16.40	(23.89)	18.44	(25.43)
A. White (C)	0.88	(5.37)	1.09	(5.99)	14.14	(22.08)	16.11	(23.66)
SEm±	-	0.12	-	0.51	-	0.81	-	0.75
CD at 5%	-	0.25	-	1.04	-	1.65	-	1.53
CV %	-	3.11	-	12.89	-	4.27	-	3.74

Lines	At Fourth Month							
	Sprouting %		Decay Loss %		PLW %		Total Loss %	
L-501	3.08	(10.11)	5.50	(13.56)	18.33	(25.35)	26.92	(31.25)
L-562	0.87	(5.33)	3.08	(10.11)	19.69	(26.34)	23.64	(29.09)
L-629	4.23	(11.87)	3.27	(10.38)	20.64	(27.02)	28.15	(32.04)
L-784	2.59	(9.25)	2.44	(8.96)	17.26	(24.53)	22.29	(28.17)
L-791	3.80	(11.23)	2.63	(9.32)	19.65	(26.30)	26.08	(30.70)
L-798	2.07	(8.27)	2.89	(9.78)	20.82	(27.15)	25.79	(30.52)
L-799	5.79	(13.92)	2.35	(8.81)	19.98	(26.54)	28.13	(32.03)
L-810	3.12	(10.17)	1.53	(7.11)	21.56	(27.66)	26.21	(30.79)
L-836	2.20	(8.51)	1.83	(7.78)	18.88	(25.76)	22.92	(28.60)
L-837	3.54	(10.84)	3.23	(10.35)	21.35	(27.48)	28.12	(32.00)
L-857	2.51	(9.10)	3.20	(10.30)	18.83	(25.71)	24.53	(29.69)
L-876	0.00	(2.29)	3.31	(10.46)	23.15	(28.71)	26.46	(30.93)
L-877	5.71	(13.82)	0.47	(3.93)	22.25	(28.09)	28.43	(32.19)
L-885	3.12	(10.17)	4.51	(12.25)	20.80	(27.13)	28.43	(32.22)
L-886	3.56	(10.85)	4.60	(12.38)	21.84	(27.86)	30.00	(33.21)
A. White (C)	2.81	(9.65)	2.56	(9.20)	19.08	(25.87)	24.44	(29.62)
SEm±	-	0.33	-	0.46	-	1.14	-	0.98
CD at 5%	-	0.67	-	0.94	-	NS	-	2.00
CV %	-	4.16	-	5.83	-	5.21	-	3.89

Lines	At Fifth Month							
	Sprouting %		Decay Loss %		PLW %		Total Loss %	
L-501	4.96	(12.86)	7.53	(15.93)	21.84	(27.83)	34.33	(35.86)
L-562	2.89	(9.77)	5.54	(13.61)	23.60	(29.02)	32.02	(34.45)
L-629	5.90	(14.05)	5.81	(13.94)	24.09	(29.38)	35.80	(36.75)
L-784	5.32	(13.34)	4.71	(12.53)	20.53	(26.94)	30.57	(33.57)
L-791	6.29	(14.53)	6.47	(14.74)	22.73	(28.46)	35.49	(36.56)
L-798	3.51	(10.79)	5.88	(14.03)	23.95	(29.29)	33.33	(35.26)
L-799	6.60	(14.89)	3.94	(11.44)	24.25	(29.44)	34.79	(36.12)
L-810	4.97	(12.88)	2.68	(9.41)	26.14	(30.73)	33.79	(35.53)
L-836	3.53	(10.78)	4.32	(11.98)	24.82	(29.85)	32.67	(34.84)
L-837	5.83	(13.94)	6.20	(14.41)	26.38	(30.87)	38.41	(38.28)
L-857	4.04	(11.58)	6.15	(14.35)	23.55	(29.03)	33.73	(35.50)
L-876	0.83	(5.16)	4.19	(11.80)	30.19	(33.31)	35.21	(36.38)
L-877	7.25	(15.58)	1.33	(6.46)	28.08	(31.96)	36.67	(37.25)
L-885	4.86	(12.34)	8.35	(16.67)	25.41	(30.24)	38.63	(38.42)
L-886	4.56	(12.23)	6.49	(14.55)	24.51	(29.66)	35.56	(36.59)
A. White (C)	4.93	(12.53)	3.80	(10.85)	22.71	(28.43)	31.44	(34.10)
SEm±	-	1.31	-	1.29	-	1.50	-	1.34
CD at 5%	-	2.68	-	2.63	-	3.06	-	2.74
CV %	-	13.03	-	12.27	-	6.21	-	4.55

in weight (4.53 %) and total loss (4.53 %) were recorded in the line L-857 after one month of storage. After two months of storage no sprouting loss were observed in any line except the lines L-798 (0.79 %) and L-799 (0.73 %). Decay loss were found nil in all the lines except the lines L-798 and L-799. The lowest physiological loss in weight (8.50 %) and total loss (8.50 %) were recorded in the line L-836 and found at par with the advance lines L-501, L-784, L-798 and check Agrifound White. After three months of storage no sprouting losses were recorded in the lines L-562, L-784, L-791, L-810, L-836, L-857, L-876 and L-885. Decay loss was recorded nil in the lines L-562, L-791, L-810, L-836 and L-857. The lowest physiological loss in weight (13.77 %) was recorded in the line L-501 and found at par with the lines L-562, L-784, L-798, L-799, L-810, L-836, L-857 and check Agrifound White.

Table-2 *Storage performance of white onion advance lines at Karnal during Rabi, 2016-17*

Lines	Gross Yield q/ha	Marketable Yield q/ha	At One Month							
			Sprouting %		Decay Loss %		PLW %		Total Loss %	
L-629	367.04	322.07	0.00	(1.28)	0.00	(1.28)	1.87	(7.85)	1.87	(7.85)
L-784	334.19	279.85	0.67	(4.68)	0.35	(3.39)	1.88	(7.87)	2.90	(9.79)
L-791	356.89	270.04	0.00	(1.40)	0.00	(1.40)	1.97	(8.05)	1.97	(8.05)
L-798	394.93	268.30	0.00	(1.40)	0.00	(1.40)	1.70	(7.49)	1.70	(7.49)
L-810	386.54	313.67	0.00	(1.28)	0.00	(1.28)	1.77	(7.65)	1.77	(7.65)
L-837	314.07	256.11	0.00	(2.07)	0.00	(2.07)	1.75	(7.59)	1.75	(7.59)
L-857	327.69	270.07	0.00	(1.40)	0.95	(5.59)	2.23	(8.55)	3.18	(10.26)
L-878	390.00	276.41	0.00	(1.40)	0.30	(3.13)	1.88	(7.80)	2.18	(8.42)
L-885	353.26	294.00	0.43	(3.76)	0.52	(4.12)	2.52	(9.04)	3.47	(10.68)
L-886	355.44	300.22	0.00	(1.40)	0.00	(1.40)	1.93	(7.98)	1.93	(7.98)
A. White (C)	344.74	308.26	0.00	(1.28)	0.00	(1.28)	1.97	(8.06)	1.97	(8.06)
SEm±	19.23	14.56	-	0.09	-	0.09	-	0.62	-	0.55
CD at 5%	40.11	30.37	-	0.19	-	0.19	-	NS	-	1.15
CV %	8.09	7.60	-	5.84	-	4.75	-	9.51	-	7.89

Lines	At Two Month							
	Sprouting %		Decay Loss %		PLW %		Total Loss %	
L-629	0.00	(1.28)	0.73	(4.87)	5.17	(13.13)	5.91	(14.06)
L-784	0.67	(4.65)	1.02	(5.79)	5.03	(12.95)	6.72	(15.01)
L-791	0.00	(1.40)	0.00	(1.40)	4.94	(12.84)	4.94	(12.84)
L-798	0.00	(1.40)	0.38	(3.55)	5.58	(13.62)	5.97	(14.09)
L-810	0.00	(1.28)	0.00	(1.28)	4.51	(12.26)	4.51	(12.26)
L-837	0.00	(2.07)	2.07	(8.16)	4.90	(12.79)	6.97	(15.29)
L-857	0.78	(5.08)	0.99	(5.70)	6.40	(14.61)	8.18	(16.57)
L-878	0.00	(1.40)	0.30	(3.13)	4.82	(12.66)	5.12	(13.06)
L-885	0.43	(3.76)	0.52	(4.12)	5.87	(13.99)	6.82	(15.11)
L-886	0.83	(5.23)	0.00	(1.40)	6.90	(15.22)	7.73	(16.13)
A. White (C)	0.00	(1.28)	1.33	(6.58)	6.63	(14.81)	7.96	(16.30)
SEm±	-	0.23	-	0.54	-	0.79	-	0.76
CD at 5%	-	0.48	-	1.13	-	1.65	-	1.59
CV %	-	10.89	-	15.83	-	7.18	-	6.35

Lines	At Three Month							
	Sprouting %		Decay Loss %		PLW %		Total Loss %	
L-629	0.00	(1.28)	0.73	(4.87)	8.51	(16.95)	9.24	(17.69)
L-784	1.17	(6.19)	1.73	(7.54)	10.54	(18.94)	13.43	(21.49)
L-791	0.00	(1.40)	0.00	(1.40)	8.70	(17.14)	8.70	(17.14)
L-798	0.00	(1.40)	1.39	(6.77)	9.93	(18.30)	11.32	(19.61)
L-810	0.42	(3.48)	0.80	(5.10)	8.00	(16.43)	9.22	(17.67)
L-837	0.00	(2.07)	2.07	(8.26)	9.60	(18.01)	11.67	(19.94)
L-857	2.32	(8.75)	1.41	(6.81)	11.77	(20.04)	15.49	(23.16)
L-878	0.00	(1.40)	0.88	(5.39)	8.58	(17.03)	9.47	(17.92)
L-885	1.82	(7.72)	0.85	(5.24)	10.78	(19.16)	13.45	(21.49)
L-886	6.13	(14.32)	0.92	(5.45)	14.95	(22.74)	22.00	(27.97)
A. White(C)	0.00	(1.28)	2.95	(9.87)	12.28	(20.45)	15.23	(22.93)
SEm±	-	0.51	-	0.47	-	0.95	-	0.91
CD at 5%	-	1.06	-	0.98	-	1.98	-	1.90
CV %	-	14.05	-	9.56	-	6.27	-	5.38

Lines	At Fourth Month							
	Sprouting %		Decay Loss %		PLW %		Total Loss %	
L-629	0.53	(4.18)	1.19	(6.26)	12.74	(20.87)	14.47	(22.33)
L-784	3.83	(11.28)	2.39	(8.87)	16.49	(23.96)	22.72	(28.46)
L-791	0.00	(1.40)	0.42	(3.69)	12.92	(21.06)	13.33	(21.41)
L-798	0.28	(3.05)	1.86	(7.80)	14.89	(22.66)	17.03	(24.33)
L-810	0.65	(4.60)	0.80	(5.10)	12.41	(20.63)	13.87	(21.86)
L-837	0.00	(2.07)	2.80	(9.38)	15.13	(22.88)	17.93	(25.05)
L-857	7.28	(15.65)	4.03	(11.58)	20.28	(26.74)	31.60	(34.19)
L-878	0.00	(1.40)	1.35	(6.61)	12.70	(20.88)	14.05	(22.01)
L-885	6.85	(15.16)	2.27	(8.55)	18.38	(25.38)	27.50	(31.63)
L-886	10.75	(19.11)	3.62	(10.96)	22.75	(28.46)	37.12	(37.52)
A. White (C)	0.24	(2.80)	3.64	(11.00)	16.05	(23.59)	19.93	(26.49)
SEm±	-	0.48	-	0.97	-	1.09	-	1.14
CD at 5%	-	1.00	-	2.02	-	2.27	-	2.38
CV %	-	8.01	-	14.56	-	5.71	-	5.18

Lines	At Fifth Month							
	Sprouting %		Decay Loss %		PLW %		Total Loss %	
L-629	5.63	(13.69)	4.53	(12.27)	19.13	(25.90)	29.28	(32.76)
L-784	21.93	(27.91)	14.38	(22.28)	30.83	(33.72)	67.13	(55.03)
L-791	7.23	(15.60)	2.08	(8.30)	18.60	(25.54)	27.92	(31.89)
L-798	4.88	(12.73)	3.94	(11.44)	20.79	(27.11)	29.62	(32.95)
L-810	8.57	(16.98)	4.57	(12.33)	19.33	(26.07)	32.48	(34.72)
L-837	7.63	(15.43)	4.03	(11.36)	21.83	(27.85)	33.50	(35.31)
L-857	25.40	(30.24)	15.03	(22.71)	32.87	(34.96)	73.30	(59.04)
L-878	6.47	(14.52)	2.50	(9.06)	18.83	(25.72)	27.80	(31.80)
L-885	25.43	(30.22)	14.58	(22.42)	32.13	(34.52)	72.15	(58.20)
L-886	31.67	(34.22)	13.22	(21.28)	32.90	(34.99)	77.78	(61.89)
A. White (C)	2.24	(8.56)	5.16	(12.86)	22.16	(28.07)	29.56	(32.91)
SEm±	-	2.15	-	1.56	-	1.01	-	2.08
CD at 5%	-	4.48	-	3.25	-	2.11	-	4.34
CV %	-	13.17	-	12.66	-	4.19	-	6.00

Note- Data in the parenthesis shows arc sin transformed values

The lowest total loss (14.29 %) was recorded in the advance line L-784 and found at par with the lines L-562, L-791, L-810, L-836, L-857 and check Agrifound White. After four month of storage sprouting was nil in the line L-876 while lowest decay (0.47 %) was recorded in the line L- 877.

The lowest physiological loss in weight (17.26 %) and total loss (22.29 %) were recorded in the line L-784 and found at par with the lines L-562, L-857 and check Agrifound White. The lowest sprouting (0.83 %) was noted in the line L-876 and lowest decay loss (1.33 %) in the line L-877 after five months of storage. The lowest physiological loss in weight (20.53 %) and total loss (30.57 %) were recorded in the line L-784 and found at par with the lines L-501, L-562, L-629, L-791, L-798, L-799, L-836 and check Agrifound white in respect of physiological loss in weight whereas the lines L-501, L-562, L-798, L-799, L-836, L-857 and check Agrifound white in respect of total loss.

The data of Karnal presented in [Table-2] revealed that the highest gross yield (394.93 q/ha) was recorded in the line L-798 and was found at par with the lines L-629, L-791, L-810, L-878 and L-886 whereas the highest marketable yield (322.07 q/ha) was recorded in the line L-629 and was found at par with the lines L-810, L-885, L-886 and check Agrifound White. No sprouting was recorded in any line except L-784 (0.67 %) and L-885 (0.43 %) after one month of storage. Decay loss was recorded nil in the lines L-629, L-791, L-798, L-810, L-837L-886 and check Agrifound white. No significant difference was observed in respect of physiological loss in weight however it was lowest in the line L-798 (1.70 %). The lowest total loss was recorded in the line L-798 (1.70 %) and found at par with the lines L-629, L-791, L-810, L-837, L-878, L-886 and check Agrifound White.

After two month of storage sprouting was recorded nil in the lines L-629, L-791, L-798, L-810, L-837, L-878 and check Agrifound White. No decay loss was recorded in the lines L-791, L-810 and L-886. The lowest physiological loss in weight (4.51%) and total loss (4.51 %) were recorded in the line L-810 and were found at par with the lines L-629, L-784, L791, L-798, L-837 and L-878 in respect of physiological loss in weight whereas the lines L-791 and L-878 in respect of total loss. After three month of storage no sprouting was recorded in the lines L-629, L-791, L-798, L-837 and L-878 while decay loss was nil in the line L-791. The lowest physiological loss in weight (8.00%) was recorded in the line L-810 and found at par with the lines L-629, L 791, L-798 and L- 837. The lowest total loss (8.70 %) was recorded in the line L-791 and found at par with the lines L-629 and L-878 after three months of storage.

After four months of storage, no sprouting was recorded in the lines L-791, L-837 and L-878. The lowest decay loss (0.42 %) was recorded in the line L-791 and was found at par with the line L-810. The lowest physiological loss in weight (12.41) was recorded in the line L-810 and was found at par with the lines L-629, L-791, L-798, L-837 and L-878. The lowest total loss (13.33 %) was recorded in the line L-791 and was found at par with the lines L-629, L-810 and L-878. After five months of storage lowest sprouting (2.24 %) was recorded in the check Agrifound White and was found at par with the line L-798. The lowest decay loss (2.08 %) and physiological loss in weight (18.60 %) were recorded in the line L-791 and found at par with the lines L-798 and L-837in respect of decay loss and with the lines L-629, L-798, L-810 and L-878 in respect of physiological loss in weight. The lowest total loss (27.80 %) was recorded in the line L-878 and found at par with the lines L-629, L-791, L-798, L-810, L-837 and check Agrifound white. It is noted that comparatively lower losses than Madgum (1981) [7], Saimbhi and Randhawa (1982) [8], Singh *et. al*. (2010) [9], and Singh *et. al*. (2011) [10], they reported 50% storage loss due to physiological loss of weight. The major total loss occurred during after four months of storage. The result is in consonance with Patil and Kale (1989) [11, 12].

Application of research: For increase in self life of bulb without deteriorations of their quality, the efforts were made to develop white onion cultivar especially for good horticultural traits, yield, processing and good keeping quality.

Research Category: Vegetable Science

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Study area / Sample Collection: Nashik, Karnal India

Cultivar / Variety / Breed name: Onion (*Allium cepa* L.)

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