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Effect of methods of harvesting and time of curing on yield of Rabi onion

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Abstract

An experiment was conducted at Horticulture Instructional Farm, C. P. College of Agriculture, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar (Gujarat), during *Rabi* season of 2012-13 to investigate the effect of methods of harvesting and time of curing on yield of *Rabi* onion after field and shade curing, where the onion bulbs were kept three months upto September under ambient conditions to assess the post-harvest losses. The results indicated that maximum yield per plot (24.434 kg), yield per hectare (363.61 q), marketable yield per plot (22.844 kg), marketable yield per hectare (339.95 q) were recorded with treatment (m₁), whereas the minimum unmarketable yield per plot (0.792 kg), unmarketable yield per hectare (11.78 q) were recorded with m₃ (Harvesting without irrigation). Maximum yield per plot (24.798 kg), yield per hectare (368.88 q), marketable yield per plot (22.922 kg and marketable yield per hectare (341.10 q) were recorded with c₅ (No Curing). The minimum unmarketable yield per plot (0.707 kg), unmarketable yield per hectare (10.38 q) were recorded with c₂ (Four days curing in field condition).

Keywords: Irrigation, Field and Shade curing, Onion Yield

Introduction

Onion is an important part of our daily diet. Soil moisture management is a key factor in onion production because of having an inefficient rooting system. Onion crop can be grown to maturity under a soil moisture deficit, but higher yield are generally associated with high irrigation. It is used fairly quickly then maximum yields could be achieved by keeping the soil at 80-90% of field capacity. Applying throughout the growing season increased the yield. Curing is the most important operation in the post-harvest technology of onion. It helps in reducing the post-harvest decay and moisture loss due to the removal of excess moisture from the outer skin and neck of freshly harvested onion to a level where shrinkage from the interior will be minimum and reduction in microbial infection. Irrigation and curing of bulbs are the important culture practices in onion crop. Very limited information on these aspects is available for agroclimatic conditions of Gujarat.

Materials and Methods

The trial was conducted at Horticulture Instructional Farm, C. P. College of Agriculture, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar, District-Banaskantha. The seeds of Agrifound light red variety were obtained from NHRDF Maharashtra. Experiment consists of total fifteen treatment combinations with three methods of harvesting [Irrigate the crop before two days of harvesting (m₁), irrigate the crop before three days of harvesting (m₂) and harvesting without irrigation (m₃)] and five time of curing [Two days curing in field condition (c₁), four days curing in field condition (c₂), two days curing in shade condition (c₃), four days curing in shade condition (c₄) and no curing (c₅). The soil of experimental site was loamy sand in texture having pH of 7.8, low in available N (149kg/ha), medium in available P₂O₅ (26kg/ha) and K₂O (287kg/ha). The onion seedling of 8 weeks of uniform size were transplanted at the spacing of 15cmx10cm and harvested in second week of May during the year. A uniform dose of 50kg N, 50kg P₂O₅ and 50kg K₂O/ha was mixed in soil before transplanting and 50kg N/ha was applied at 30, 45 and 60 days after planting in three equal splits last irrigation was applied as per treatments and after harvesting field and shade curing was done per treatment and produce was stored for three months in ambient condition. Necessary data were recorded and analyzed to draw conclusion.

Results and Discussions

Effect of irrigation (Methods of harvesting) on yield

Data pertaining to yield of onion are presented in Table 1.

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The result revealed that the significantly maximum yield per plot (24.434kg), yield per hectare (363.60 q), marketable yield per plot (22.844kg) and marketable yield per hectare (339.95 q) were recorded with treatment m₁. The leaves were drying very slowly and gradually and were not fully dried even at harvest time. The bases of foliage near the neck of bulbs were green. Hence, it may be predicted that the flow of photosynthates or substrates in the foliage continued to the bulbs. These result is in conformity with the findings of Sharma *et al.* (2007)^[8] in onion. Minimum unmarketable yield per plot (0.792kg) and unmarketable yield per hectare (11.78 q) were recorded with treatment m₃, whereas maximum unmarketable yield per plot (1.656kg) and unmarketable yield per hectare (24.65 q) were recorded with treatment m₁. These finding are in close accordance with the findings of Yawalkar and Har (2004)^[9] in elephant yam and Hazra *et al.* (2011)^[3] in radish.

Effect of curing on yield

Data presented in (Table. 1) further indicated that different time of curing was observed significant. The maximum yield per plot (24.788kg) and yield per hectare (368.88 q) were

recorded with treatment c₅, which was statistically at par with treatment c₃, while minimum yield per plot (22.096kg) and yield per hectare (328.81 q) were recorded with treatment c₂. The maximum yield of bulb are due to excess moisture content in bulb without cured treatment and less moisture content in properly cured onion. This result is in close agreement with the findings of Rao *et al.* (1967)^[7] in onion, Pandey *et al.* (1992)^[5] in onion and Sharma *et al.* (2007)^[8] in onion. Minimum unmarketable yield per plot (0.697kg) and unmarketable yield per hectare (10.38q) were recorded with treatment c₂, whereas maximum unmarketable yield per plot (1.866kg), unmarketable yield per hectare (27.77 q) were recorded with c₅. During this process excessive moisture is removed from the outer covering and neck of the bulbs. These findings are in close accordance with finding of Pandey *et al.* (1992)^[5] in onion and Kale *et al.* (1992)^[4] in onion.

Conclusion

Thus, on the basis of the data, it can be concluded that in onion crop, the highest yield was obtained by irrigating the crop before the two days of harvesting (m₁).

Table 1: Effect of irrigation (Method of harvesting) and time of curing on onion yield.

Treatments	Yield		Marketable yield		Unmarketable yield	
	Per plot (kg)	Per hectare (q)	Per plot (kg)	Per hectare (q)	Per plot (kg)	Per hectare (q)
m ₁	24.434	363.60	22.844	339.95	1.656	24.65
m ₂	23.439	348.64	22.382	333.07	1.046	15.57
m ₃	22.074	328.47	21.282	316.69	0.792	11.78
S.Em ±	0.364	5.41	0.352	5.23	0.057	0.85
C.D. at 5%	1.053	15.67	1.019	15.16	0.165	2.46
c ₁	22.722	338.13	21.638	322.00	1.083	16.12
c ₂	22.096	328.81	21.398	318.43	0.697	10.38
c ₃	23.666	352.18	22.472	334.40	1.305	19.42
c ₄	23.288	346.56	22.416	333.58	0.872	12.98
c ₅	24.788	368.88	22.922	341.10	1.866	27.77
S.Em ±	0.470	6.99	0.454	6.76	0.074	1.10
C.D. at 5%	1.360	20.24	NS	NS	0.213	3.17
C.V. %	6.040	6.04	6.150	6.15	18.950	18.95
S.Em ±	0.813	12.10	0.787	11.71	0.127	1.90
C.D. at 5%	NS	NS	NS	NS	NS	NS

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