



Expansion of Area in Gujarat State for Quality Bulb Production of White Onion For Processing Industry and Export Purpose

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ABSTRACT

The present demonstration of White onion variety - Agrifound White was conducted in NHRDF Rajkot & Talaja center in Gujarat state during the year of Rabi season 2009 – 2010 and 2010-2011 with help of financial assistance of NHB Gurgaon for 32 ha. Per year. The result observed from demonstration of 4 districts i.e. Amreli, Bhavnagar, Junagadh Rajkot, onion bulb yield levels were higher in Amreli & Bhavnagar compared to Rajkot & Junagadh district. In Amreli district, yields ranged from 215 to 252 quintal per ha. in demonstration with average of 229.7 qt./ha. Compared to 202 qt. per ha in General plots, thereby giving more than 13% increase in yield. Similarly yield level of demonstration was ranging from 218-247 qt. per hectare for demonstration plots of Bhavnagar area with average yield 232.8 qt. per hectare compared to 206 qt. per hectare in general plots, thereby giving 13% increase in yield. The T.S.S. & Dry matter ranged even up to 16-17% at some location in Bhavnagar district indicating that these areas can produce better quality of white onion as required for processing industries & export purpose.

Key Word- demonstration, white onion, Dehydration, export, processing

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INTRODUCTION

Onion is an important commercial crop of India with 10, 87,000 ha with production of 175, 11,000 MT and productivity of 16.1 t/ha [1]. In Gujarat state onion is grown in an area of 62000 ha with a production of 1464000 MT and with a productivity of 23.61 t/ha [1, 2]. In Gujarat state these as good scope area expansion for quality production of white onion in sourashtra region the soil and climate is suitable for production of white onion and good scope for modify of white onion excess. It is field necessary to be up work on area expansion and guidance to farmers for increasing production of improved quality of white onion in Gujarat state. Good quality high TSS white onion production is the first & impotent attribute to the dehydrated industries/ plants of onion for export of white onion flakes, white onion mince/ granule and white onion power. Keeping above view NHB Gurgaon provide financial Assistance to arrangement of demonstration of white onion variety A.W. by NHRDF Rajkot & Talaja center in Gujarat state. The demonstration was arranged on white onion production of improved varieties like Agrifound White having high TSS and suitable for dehydrations industries well as locally selected adopted variety of Gujarat state is suitable for processing purpose the demonstration was arranged on farmer's field for 0.4 ha. Area under each demonstration in 4 districts in Gujarat i.e. Amreli, Bhavnagar, Junagadh and Rajkot. These demonstrations would help the farmers of these districts to learn the technology suited to their condition to get higher production and better quality of onion bulbs [3,4]. Major Onion Exporting Countries China, India, Netherlands, Egypt, Iran, Turkey, USA, Brazil and Major Onion Importing Countries Sri Lanka, Malaysia, Maldives, Nepal, Dubai, Kuwait, Indonesia, UAE, Singapore, Seychelles, Pakistan, Saudi Arabia, Qatar, Bangladesh

MATERIAL AND METHODS

The present demonstration was arranged in 4 districts in Gujarat state i.e. Amreli, Bhavnagar, Rajkot & Junagadh. The manly above district comes in north Saurashtra Agro climatic Zone – VI consist forty taluka

of five districts except only Junagadh Rajkot district is a part of North Saurashtra Agro climatic zone – VI of Gujarat state. The above four district were selected purposively for demonstration and progressive and interested farmers were selected in four district of Gujarat state each and every district 8 ha area arrange for Demonstration (0.4ha area each farmers) were 20 farmers each district seed distributed. So total 32 ha. Areas were distributed to 80 no of farmers in four districts. A quality seed of white onion variety Agrifound white along with literature on improved package of produce were supplied to the farmers free of cost. The Technical guidance at different crop stage provided by Rajkot and Talaja center by inspection of demonstration plots. During cropping be nod of white onion 20 training programme were arranged at different growth stages with the thereof quality production of white onion for processing industries and export. The above training programs were arranged periodically in selected potential villages and experts from NHRDF as well as JAU Junagadh, officers of KVK and agriculture department officers were invited to disseminated technical know how to the demonstration growers and other farmers in the area. After harvested of the plots yield of demonstration plot compared to general plots were collected and quality characters like TSS %, Dry Matter% and pyruvic acid were estimated. The all data's recoded by NHRDF-Technical person on time to time.

RESULT AND DISCUSSION

White onions are grown on commercial scale in few states, Maharashtra, Gujarat that too restricted to few districts. Due to lack of adequate infrastructure non existence of pre and post harvesting technological inputs as well as dearth of dedicated R & D effort; The state dehydrated plants has only remained as producer to red onions for fresh market. Red onions is not suitable for dehydration & export primarily due to poor quality, low productivity, low solids low pungency level & high reducing sugars. Dehydrator onion mostly white, having high solids more than 17%, even up to 22-27% T.S.S. in some hybrids comparatively low moisture content Less than 84%, globe shaped having small based. Agrifound White variety selected from NHRDF Nasik grown during Rabi & Late Kharif season. Bulbs are globular in shape, tight skin silvery attractive white Colour and 4-6cm in diameter T.S.S. more than 15% and pyruvic acid 12micro mole/g. Good variety for dehydration with drying ratio 7.10.1. [5]. From report of field demonstration presented in table -1. It is observed in Rajkot Distt the bulb yield of demonstrated plots ranged between 200-215 qt/ ha. Compared to 187-206 qt per hectare in general fields. Thereby giving about 5% increased in the bulb yield. The T.S.S. and dry matter ranged from 13-14% showing the suitability of bulbs for use in processing dehydration similarly the pyruvic acid contents rare more than 11 moles per gram as required for processing of onions.

Results of distt Junagadh demonstration plot presented in table 2 and observed average yield 205.5 qt per hectare Compared to 195 qt per hectare in general fields. Thereby giving about 5% increased higher yield in demonstration. The T.S.S., dry matter and pyruvic acid contents were in the same level as that for Rajkot & suitable for processing. Result for Amreli District presented in table-3, the yields range from 215 to 252 qutt. Per ha. In demonstration with average of 229.7 qtt. Per ha. Compared to 202 qtt. Per ha in General plots, thereby giving more than 13% increase in yield. Similarly yield level for demonstration Bhavnagar Distt presented in table -2 and ranging from 218-247 qt. per hectare for demonstration plots of Bhavnagar area with average yield 232.8 qt. per hectare compared to 206 qt. per hectare in general plots, thereby giving 13% increase in yield. The T.S.S. & Dry matter ranged even up to 16-17% at some location in Bhavnagar district indicating that these areas can produce better quality of white onion as required for processing and export.

Trainings:

Total 40 no. Farmer's trainings have conducted at 4 district places during Rabi 2009-10 and Rabi 2010-11 cropping period of white onion and lump sum 4000 – 4200 no Farmers benefited the above training programmes. In the farmers training programmes covered different aspect of white onion crop production like Nursery management, field crop management, post harvest management and storage. The training programme have supported by exhibition and audio video aids to get the proper adoption of technology by the farmers. The training has conducted with the help of Junagadh Agriculture University- Junagadh Scientist, Department of Horticulture Govt. of Gujarat state, NHRDF-Scientist and expert from processing industry and exporters.

Impact of farmers trainings:

Impact of training was very good. Farmers learned about demand of white onion in Gujarat state & out of country through exporters and processing industry person. Some farmers directly linked with processing industry, especially committed by Maharaja and Five Star Dehydrations plant. Mahuva A.P.M.C. is suitable for sale of white onion, which is produce by farmers. Sale rate will be decided on the basis of TSS value of white onion.

Farmers feel very happy by training at different place in Saurashtra because onion bulb yield and quality may be improved and also increase export of white onion. They are interested to know improve new technology in farming. Cultivation of white onion started in irrigated area and development the drip and sprinkler system of irrigation for export of now good quality onion bulb production. To reduce the expenditure and increase income and also to reduce the losses after harvesting farmers trained the problem comes in export and their removal measures. Control of inset pest and disease through biological control and their management, management of weed control and cultivated onion according to export & processing industry requirement. Farmers may take more returns by exporting their produce of white onion. Farmers also explained that how storage losses can reduces by adopting suitable storage of onion etc.

Table -1: Farmers wise and district wise white Onion Production Potential in Gujarat state for the year 2009-2010.

| S. N. | Amreli | | | Bhavnagar | | | Junagarh | | | Rajkot | | |
|-------|----------------|---------|------|----------------|---------|------|----------------|---------|------|----------------|---------|------|
| | Yield Qtls./ha | General | | Yield Qtls./ha | General | | Yield Qtls./ha | General | | Yield Qtls./ha | General | |
| | | Demo | 200 | | Demo | 200 | | Demo | 200 | | Demo | 200 |
| 1 | 14.5 | 15.7 | 11.9 | 14.8 | 11.0 | 11.0 | 13.5 | 13.2 | 13.2 | 12.4 | 10.5 | 10.5 |
| 2 | 14.6 | 15.7 | 11.2 | 12.9 | 10.1 | 10.1 | 15.6 | 12.9 | 12.9 | 13.0 | 11.1 | 11.1 |
| 3 | 15.2 | 15.5 | 11.0 | 14.3 | 10.6 | 10.6 | 13.5 | 11.0 | 11.0 | 14.0 | 12.0 | 12.0 |
| 4 | 15.2 | 15.3 | 11.1 | 14.1 | 10.7 | 10.7 | 13.6 | 10.5 | 10.5 | 12.7 | 11.2 | 11.2 |
| 5 | 15.0 | 15.4 | 11.1 | 13.4 | 10.1 | 10.1 | 14.9 | 11.9 | 11.9 | 12.0 | 10.0 | 10.0 |
| 6 | 15.1 | 15.2 | 11.2 | 13.2 | 10.2 | 10.2 | 15.6 | 12.8 | 12.8 | 12.0 | 10.0 | 10.0 |
| 7 | 14.3 | 15.2 | 11.1 | 14.1 | 10.2 | 10.2 | 13.0 | 10.0 | 10.0 | 14.5 | 12.0 | 12.0 |
| 8 | 15.3 | 16.2 | 11.0 | 15.0 | 10.6 | 10.6 | 14.2 | 11.3 | 11.3 | 13.2 | 11.2 | 11.2 |
| 9 | 14.0 | 16.3 | 11.7 | 14.6 | 10.8 | 10.8 | 14.1 | 12.9 | 12.9 | 14.3 | 12.0 | 12.0 |
| 10 | 14.3 | 15.3 | 11.1 | 14.3 | 10.8 | 10.8 | 16.0 | 13.0 | 13.0 | 13.2 | 11.9 | 11.9 |
| 11 | 15.5 | 14.5 | 11.1 | 16.8 | 10.6 | 10.6 | 13.4 | 10.0 | 10.0 | 13.1 | 11.3 | 11.3 |
| 12 | 13.7 | 14.6 | 10.8 | 14.3 | 10.5 | 10.5 | 13.6 | 11.1 | 11.1 | 11.3 | 09.9 | 09.9 |
| 13 | 14.8 | 15.2 | 11.6 | 14.0 | 10.6 | 10.6 | 15.5 | 12.9 | 12.9 | 12.2 | 10.1 | 10.1 |
| 14 | 13.3 | 16.0 | 12.2 | 16.5 | 10.5 | 10.5 | 13.0 | 09.9 | 09.9 | 13.3 | 11.0 | 11.0 |

| | | | | | | |
|------|------|------|------|------|------|---------|
| 191 | 190 | 195 | 200 | 185 | 189 | 193.9 |
| 200 | 203 | 210 | 210 | 197 | 201 | 202.8 |
| 11.6 | 10.5 | 10.2 | 11.2 | 12.5 | 11.5 | 11.08 |
| 14.3 | 14.0 | 13.4 | 14.5 | 15.3 | 14.4 | 14.06 |
| 13.2 | 12.6 | 12.3 | 13.2 | 14.6 | 13.1 | 13.01 |
| 175 | 175 | 170 | 171 | 225 | 170 | 190.05 |
| 188 | 188 | 180 | 185 | 250 | 182 | 204.3 |
| 10.9 | 12.5 | 11.2 | 12.2 | 11.5 | 11.9 | 11.68 |
| 13.4 | 15.1 | 13.2 | 15.3 | 15.0 | 14.5 | 14.3 |
| 12.4 | 14.3 | 12.5 | 14.3 | 14.0 | 13.7 | 13.28 |
| 209 | 220 | 211 | 213 | 205 | 215 | 206.35 |
| 230 | 231 | 230 | 225 | 228 | 238 | 230.85 |
| 11.1 | 11.0 | 10.5 | 10.9 | 10.3 | 10.0 | 10.55 |
| 15.5 | 14.5 | 13.7 | 15.0 | 14.1 | 14.0 | 14.45 |
| 13.9 | 13.6 | 12.0 | 13.0 | 13.2 | 12.1 | 13.97 |
| 210 | 210 | 210 | 188 | 108 | 118 | 193.5 |
| 240 | 230 | 240 | 225 | 230 | 228 | 228.8 |
| 11.3 | 10.6 | 10.2 | 10.2 | 10.2 | 10.3 | 11.04 |
| 16.1 | 14.3 | 14.4 | 14.6 | 14.0 | 14.1 | 15.18 |
| 13.4 | 14.0 | 12.8 | 11.9 | 12.5 | 12.4 | 14.09 |
| 15 | 16 | 17 | 18 | 19 | 20 | Average |

Table - 2: Farmers wise and district wise white Onion Production Potential in Gujarat state for the year 2010-2011.

| S. N. | Amreli | | | Bhavnagar | | | Junagarh | | | Rajkot | | |
|-------|----------------|-----------------------|-------|----------------|-----------------------|-------|----------------|-----------------------|-------|----------------|-----------------------|-------|
| | Yield Qnts./ha | Pyruvic Acid u mole/g | TSS % | Yield Qnts./ha | Pyruvic Acid u mole/g | TSS % | Yield Qnts./ha | Pyruvic Acid u mole/g | TSS % | Yield Qnts./ha | Pyruvic Acid u mole/g | TSS % |
| | | | | | | | | | | | | |
| 1 | 195 | 11.8 | 15.2 | 241 | 11.1 | 12.2 | 180 | 13.3 | 12.5 | 200 | 10.6 | 200 |
| 2 | 200 | 11.1 | 12.8 | 218 | 10.0 | 14.6 | 230 | 12.8 | 12.9 | 199 | 11.0 | 199 |
| 3 | 196 | 11.2 | 14.5 | 236 | 10.7 | 12.8 | 185 | 10.9 | 13.9 | 204 | 11.9 | 204 |
| 4 | 210 | 11.0 | 12.8 | 227 | 10.8 | 12.4 | 231 | 10.6 | 12.8 | 198 | 11.3 | 198 |
| 5 | 201 | 11.2 | 13.1 | 242 | 10.0 | 13.8 | 236 | 11.8 | 11.9 | 192 | 9.8 | 192 |
| 6 | 203 | 11.0 | 14.2 | 221 | 10.1 | 14.8 | 230 | 12.7 | 12.1 | 201 | 10.1 | 201 |
| 7 | 198 | 11.0 | 14.2 | 232 | 10.1 | 11.6 | 185 | 9.9 | 14.6 | 206 | 12.1 | 206 |
| 8 | 200 | 11.1 | 14.4 | 229 | 10.7 | 13.3 | 198 | 11.2 | 13.3 | 198 | 11.0 | 198 |
| 9 | 205 | 11.8 | 16.3 | 247 | 10.9 | 13.0 | 215 | 12.8 | 14.4 | 188 | 12.2 | 188 |
| 10 | 238 | 14.4 | 13.97 | 238 | 14.0 | 14.3 | 215 | 14.3 | 13.01 | 201 | 11.5 | 201 |
| 11 | 228.8 | 15.18 | 13.97 | 228.8 | 14.0 | 13.28 | 204.3 | 14.3 | 13.01 | 189 | 11.5 | 189 |
| 12 | 11.04 | 14.09 | 13.97 | 11.04 | 10.55 | 13.28 | 11.68 | 11.2 | 13.01 | 193.9 | 11.08 | 193.9 |

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|------|------|------|------|------|------|------|------|------|------|------|---------|
| 191 | 193 | 199 | 201 | 202 | 187 | 198 | 203 | 206 | 187 | 201 | 196.5 |
| 202 | 203 | 208 | 205 | 208 | 202 | 209 | 212 | 215 | 202 | 208 | 206.6 |
| 11.8 | 11.4 | 9.7 | 10.0 | 11.1 | 11.7 | 11.6 | 10.3 | 11.4 | 12.6 | 11.6 | 11.2 |
| 14.5 | 14.3 | 12.1 | 13.1 | 14.4 | 14.2 | 13.9 | 13.5 | 14.6 | 15.4 | 14.5 | 14.1 |
| 13.3 | 13.2 | 11.4 | 12.0 | 13.4 | 13.2 | 12.7 | 12.4 | 13.3 | 14.5 | 13.2 | 13.3 |
| 230 | 168 | 200 | 198 | 170 | 173 | 178 | 173 | 170 | 230 | 171 | 195.0 |
| 250 | 182 | 206 | 210 | 180 | 190 | 190 | 182 | 180 | 260 | 185 | 205.5 |
| 12.9 | 9.7 | 11.0 | 13.0 | 9.8 | 10.8 | 12.4 | 11.1 | 12.1 | 11.6 | 11.8 | 11.6 |
| 15.9 | 13.3 | 13.7 | 15.6 | 12.9 | 13.5 | 15.2 | 13.1 | 15.2 | 14.9 | 14.6 | 14.2 |
| 14.7 | 11.8 | 12.7 | 14.4 | 11.7 | 12.5 | 14.4 | 12.4 | 14.2 | 13.9 | 13.6 | 13.3 |
| 196 | 207 | 213 | 185 | 206 | 215 | 227 | 215 | 217 | 209 | 218 | 206.0 |
| 239 | 232 | 236 | 221 | 237 | 231 | 235 | 232 | 227 | 231 | 241 | 232.8 |
| 10.9 | 11.7 | 10.5 | 10.7 | 11.6 | 11.2 | 10.9 | 10.4 | 10.8 | 10.2 | 9.8 | 10.7 |
| 14.2 | 17.0 | 14.2 | 14.1 | 16.6 | 15.6 | 14.6 | 13.8 | 15.1 | 14.0 | 13.9 | 14.5 |
| 15.2 | 15.3 | 16.1 | 13.7 | 14.4 | 13.8 | 13.5 | 11.9 | 12.9 | 13.2 | 12.2 | 13.1 |
| 215 | 203 | 207 | 200 | 196 | 208 | 212 | 208 | 189 | 210 | 219 | 202.0 |
| 235 | 219 | 231 | 215 | 225 | 239 | 232 | 241 | 229 | 232 | 230 | 229.7 |
| 11.2 | 11.0 | 10.7 | 11.7 | 12.3 | 11.2 | 10.5 | 10.1 | 10.2 | 10.1 | 10.2 | 10.5 |
| 15.0 | 14.4 | 14.4 | 15.0 | 15.9 | 16.0 | 14.2 | 14.3 | 14.5 | 13.9 | 14.2 | 14.3 |
| 14.2 | 14.6 | 13.6 | 14.5 | 13.2 | 13.2 | 13.8 | 12.6 | 11.7 | 12.3 | 12.1 | 13.0 |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | Average |

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Training Gallery





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