

Original Research Article

Front Line Demonstrations – An effective of upscaling improved varieties of Onion impact on onion variety Agrifound Dark Red in Mahaboobnagr district of Telangana, India

ABSTRACT

Onion (*Allium cepa* L) is one of the important commercial crops in India. Of many reasons for low productivity, the adoption of traditional methods of cultivation in general and the non-adoption of improved varieties in particular, are the main factors. To reverse the situation and improve the yield and income of onion farmers, 30 no. of front-line demonstrations (FLDs) were conducted in farmer's fields in its adopted villages during 2012-2014 by Krishi Vigyan Kendra, Palem, Mahaboobnagar dist, Telangana. It was observed that the improved onion variety Agrifound dark red recorded a higher yield by 20.3% (2170 kg/ha) over the local check (1800 kg/ha). Further, the technology gap (average 32.3q/ha), technology index (12.9%) and extension gap (37) were also considerably higher in Agrifound Dark red. It is concluded that a wide gap existed in potential and demonstration yield in high yielding Agrifound Dark red variety due to technology and extension gap in Mahaboobnagar district of Telangana. FLDs were found to be the best means of demonstrating and upscaling the new technology in Onion to augment the yield and income thus the livelihood of Onion growers in the state.

Introduction:

Onion is one of the oldest and commercially cultivated crops that form of daily diet but also the highest foreign exchange earner among the fruits and vegetables. Onion occupies an area of 1434 thousand ha, with a production of 26738 thousand tonnes (Agriculture Statistics, Indian Horticulture Database, 2019). The productivity of onions is much low in India than the world average (Pandey, 2000; Lawande, 2005). The production and productivity of onion in Andhra Pradesh are also low compared to Gujarat, Maharashtra, and other onion-growing states (Gupta and Singh, 2010). Similarly, Mahaboobnagar district in Telangana has a sizeable area under onion cultivation but the productivity level is very low. Lack of awareness among farmers about improved cultivation techniques, characteristics of the varieties, seasonality, and adoption of a proper package of practices are the principal reasons for the low production and productivity of onions (Pandey and Bhondey, 2002). Keeping the above point in view, the frontline demonstrations were conducted with an emphasis on improved varieties of onion with an objective of enhancing the productivity in Onion.

Material and Methods:

The Present study on the introduction of onion var. Agrifound Dark Red with the recommended package of practices for three consecutive years viz., 2012-13 to 2014-15 in 30 locations under 12.0 hectares of area in different adopted villages of Krishi Vigyan Kendra, Palem was conducted. In each demonstration, kept one control plot where farmer's practices were carried out. The var. Agrifound Dark red certified seeds were procured from the National Horticultural Research and Development Foundation, Kurnool, A.P., and distributed to farmers. Before conducting FLD on the farmer's field, the demonstration was conducted on the nursery rising in Krishi Vigyan Kendra instructional farm and trained the farmers on the complete package of practices from sowing to harvesting. The results in both cases were recorded. The required primary data on the

cost of cultivation and net returns were collected from demonstration and farmers' practice plots for working out the economic feasibilities of both varieties. The qualitative data were converted into quantitative form and expressed as percent increase in yield and was calculated by using the following formula, The Technology and Extension gap were calculated by using the following formulae as suggested by Eswarprasad et al. 1993 and Samui et al. 2000 [2,11].

$$\% \text{ increased yield} = \frac{\text{Demonstration yield} - \text{Farmers yield}}{\text{Farmers yield}}$$

$$\text{Technology gap} = (\text{Potential yield}) - (\text{Demonstration yield})$$

$$\text{Extension gap} = \text{Demonstration yield} - \text{yield under existing practice}$$

$$\text{Technology index} = \frac{\text{Potential yield} - \text{Demonstration yield}}{\text{Potential yield}} \times 100$$

All the recommended package of practices was followed for improved variety in demonstration plots as per Table 1. Traditional practices were maintained in the case of local. The farmers involved in the demonstration were facilitated by KVK scientists in performing field operations like nursery sowing, transplanting, irrigation, spraying, weeding, harvesting, etc. during the course of training and visit.

Results and discussion

Table1. Particulars showing the details of onion production under frontline demonstration and existing practices

| Operation | Existing practices | Improved practices demonstrated |
|-----------------------------|---|--|
| Variety used | Local variety/ own seed | Improved high-yielding and disease resistant |
| Seed treatment | No seed treatment | Seed treatment with Thiram @ 2gm/kg |
| Method of sowing | Broadcasting | Line sowing; Spacing- Row to row 15 cm and Plant to plant- 10 cm |
| Fertilizer application | Imbalanced application of fertilizer N:P:K @ 60:40:60 kg/ha | Application of recommended dose of fertilizer 150:40:50 (N:P: K Kg./ha.), P through Single super phosphate as it contains 12 % Sulphur. N:P:K @ 60-80:24-32:24 kg/ha |
| Weed management | Hand weeding | Pre-emergence weedicide application of oxyfluorfen 23.5% EC 500 ml /ha +1 HW at 45 DAT |
| Pest and disease management | Non-adoption of Integrated pest and disease management | Adoption of Integrated pest and disease management as |

| | | |
|---|-----------------------------------|--|
| | | recommended. |
| Post-harvest handling and quality improvement at the farm level | Un-hygienic and improper practice | Adoption of improved post-harvest handling and grading |

Table 2. Potential yield, Technology index, and extension gap of onion

| Year | Variety | Potential yield | Demonstration yield | Technology gap | Technology index | Extension gap |
|---------|--------------------|-----------------|---------------------|----------------|------------------|---------------|
| 2012-13 | Agrifound Dark Red | 250 | 210 | 40 | 16 | 35 |
| | Local | 200 | 175 | 25 | 12.5 | |
| 2013-14 | Agrifound Dark Red | 250 | 218 | 32 | 12.8 | 38 |
| | Local | 200 | 180 | 20 | 10 | 40 |
| 2014-15 | Agrifound Dark Red | 250 | 225 | 25 | 10 | |
| | Local | 200 | 185 | 15 | 7.5 | |

Table 3: Economics yield and of onion variety Agrifound Dark Red impact on Local Check

| Year | Variety | No. of locations | Yield q/ha | % yield increase over local check | Cost of cultivation | Gross returns | Net returns | B:C ratio |
|---------|--------------------|------------------|------------|-----------------------------------|---------------------|---------------|-------------|-----------|
| 2012-13 | Agrifound Dark Red | 10 | 210 | 20.0 | 68500 | 1,46,250 | 77,750 | 2.13 |
| | Local | | 175 | | 61300 | 1,18,000 | 56,700 | 1.92 |
| 2013-14 | Agrifound Dark Red | 10 | 218 | 21.1 | 62400 | 154500 | 92,100 | 2.47 |
| | Local | | 180 | | 60200 | 1,21,000 | 60,800 | 2.00 |
| 2014-15 | Agrifound Dark Red | 10 | 225 | 21.6 | 65300 | 1,58,200 | 92,900 | 2.40 |
| | Local | | 185 | | 62500 | 1,20,200 | 57,700 | 1.90 |

From the data presented in table 2, it is inferred that the demonstration yield of the Agrifound Dark Red variety performed better than their respective local. The Agrifound Dark Red variety of onion recorded an average higher yield of 217 q/ha as compared to the average local check (180 q/ha). The data from table 3, The average percent increase in yield over respective local was 14.94 for the Agrifound Dark Red variety of onion. Such superiority of high-yielding varieties over local check was similarly observed by Hiremath et al. (2007), Hiremath and Nagaraj (2010), and Hiremath and Hilli (2012). The results indicate that the improved variety along with technologies

has given a good impact on the farming community of Mahaboobnagar.

The economic analysis of the data over the years revealed that the Agrifound Dark Red variety recorded higher gross returns (Rs. 152983/ha), net returns (Rs.87583/ha), and B: C ratio (1: 2.3) compared to local check (farmer's practice). These results are in line with the findings of Hiremath et al. (2007), Hiremath and Nagaraj (2010), and Hiremath and Hilli (2012). The present study observed that wide yield and management gaps exist between recommended practices and farmers' practices. However, the yield levels under FLD were better than the local variety, and the performance of the improved variety could be further improved by adopting recommended management practices. Hence, it can be concluded from the study that the increased yield was due to the adoption of a variety of Agrifound Dark Red with an improved package of practices. The potential of crops can be increased to a greater extent. This will subsequently increase the income as well as the livelihood of the farming community.

It indicates the need to convince the farmers of the adoption of high-yielding varieties with improved agricultural production technologies. The new technologies will eventually lead the farmers to discontinue using local varieties with the new high-yielding varieties.

Conclusion:

By conducting demonstrations of new onion varieties with improved scientific technologies, the yield potential of onion can be increased to a great extent. There is a need to adopt a multi-pronged strategy that involves enhancing onion production through improved technologies in the Mahaboobnagar district. This should be brought to the access of farmers through the transfer of technology centers like KVK, s, etc.

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