

RESEARCH NOTE

Enhancing Productivity and Quality of Onion through drum roll planting with drip and INM in Solapur district of Maharashtra

L.R. Tambade¹, V.B. Bhise² and Lakhan Singh³

1.Sr. Scientist & Head, 2. SMS (Horti.), KVK, Solapur-I, Maharashtra, 3. Director, ATARI, Zone-VIII, Pune, M.S.

Corresponding author e-mail: kvksolapur@gmail.com

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ABSTRACT

Onion is an important fresh vegetable consumed all over the world. Traditional planting method, irrigation practices and fertilizer application leads to low productivity. Micronutrient deficiency (specially S, Zn, Fe, Mg & Boron) is common feature. KVK promote the drum roll planting (drum shaped raised bed), drip system, integrated nutrient management on the basis of soil testing on farmer's field. The technology includes planting of onion on drum roll (BBF) method, application of 125:70:25 Kg NPK per ha with 25 kg Sulphur, 20kg Zn, 20 kg Fe, 15 kg Mg, 5 kg Boron & 20 kg Silicon per ha, Water management through Drip irrigation system and also use of water soluble fertilizers for foliar application. As a result of that beneficiary farmers had secured 21.25 ton/ ha average yield, where as in local it was 13.76 ton/ha. The improvement in yield was up to 50.60 percent. The B:C ration was 2.40. Due to KVK Intervention the farmers got gross income of Rs. 2,51,580 per ha. The net profit per ha has been improves from Rs. 73,263/- to 1,41,309/- which was 192.87 per cent higher than farmers traditional practices. Also improves A grade Bulbs from 31.47 to 57.07 per cent. The technology spread on 365 ha with the help of line department and total 478 farmers were directly benefited through horizontal dissemination.

Key words: Onion; Drum roll; Integrated Nutrient Management;

Onion is an important fresh vegetable consumed all over the world, India ranks first in acreage in the world covers about 480 thousand hectare (21 per cent of the world area), Maharashtra is the ranked as the leading state accounting for more than 30 per cent area with an average yield of 14.20 ton/ha. Onion is major vegetable cultivated in Solapur district on more than 32000 hectare area and contributes 47 per cent vegetable production. The district productivity is about 13.07 ton/ha due to use of traditional practices.

Front Line Demonstration is the new concept of Field Demonstration evolved by the Indian Council of Agricultural Research with the inception of the technology mission during mid-eighties. The main objective of Front Line Demonstration is to demonstrate newly released crop production technologies and its management practices in the farmer's field under the close supervision of scientists. FLDs are organized in a cluster mode. Only critical inputs, trainings, extension

activities and advisories are provided from the budget, remaining inputs are supplied by farmers themselves. The present study was carried to study the impact of front line demonstrations on productivity & quality of Onion.

METHODOLOGY

The study was carried out in operational area of Krishi Vigyan Kendra (KVK), Solapur located in Western Maharashtra, one hundred and six front line demonstrations were conducted on Onion crop in six villages over the period of five years (2013-14 to 2017-18). The KVK has conducted FLDs on total 56.40 ha area in 106 farmer's field in different villages viz. Narotewadi & Kauthali of North Solapur, Dahitne, Khamgaon and Ghanegaon of Barshi and Ulegaon of South Solapur tahsils respectively. The data and field observations were recorded regularly by the scientists.

All the participating farmer's were trained on various aspects of Hi-tech Onion production

technologies with special reference to drum roll planting, use of drip system, soil test based integrated nutrient management (INM) & fertigation. The demonstration plot of 0.40 ha area with one fifth area was also devoted to grow local standard check (farmers practices). In addition to this, data on traditional practices followed by farmers have also been collected with observations.

In demonstration plots, a few critical inputs in the form of micro-nutrients and soil testing facility were provided and non monetary inputs like timely transplanting by drum roll method, application of soil test based basal fertilizers dose before transplanting, use of stage-wise water soluble fertilizers through fertigation and management of irrigation through drip system.

RESULTS AND DISCUSSION

A comparison of yield and economic performance between demonstrated practices and local checks is shown in Table 1. It was observed that in front line demonstration, due to use of improved drum roll method of planting with drip and integrated nutrient management with water soluble fertilizers recorded the higher yield (21.25 tonn / ha.), when compared to farmers practice (13.76 tonn / ha.). The increase in yield over local check was 50.60 per cent.

Table 1. Yield performance of Onion under farmers practice and FLD

Variables	A	B	C	D	E	F
Farmers practice	13.76	-	68,554	1,46,707	73,263	2.14
FLD	21.25	50.60	85,054	2,51,580	1,41,309	2.95

A=Yield (Tonn./ha.); B= % increase in yield over check;
C= Cost of cultivation (Rs./ha.); D= Gross Return (Rs./ha.)
E= Net Return (Rs./ha.); F= Benefit Cost Ratio

The economics of Onion production under front line demonstration have been also presented in Table 1. The results of economic analysis of Onion production revealed that the gross expenditure in recommended practices was higher than farmers practice by 24 per cent. But the front line demonstrations recorded higher

gross return (Rs. 2,51,580/-) and net return (Rs. 1,41,309/-). The benefit cost of demonstration plot (2.95) was also more than the farmers practice. Further additional cost of Rs. 16,500/- per hectare in demonstration has increased an additional net return of Rs. 68,046/- per hectare with B:C ratio is 2.95, suggesting its higher profitability and economic viability of the demonstration. Similar results were also reported by *Raj et al (2013)*.

Table 2. Quality of Onion in local check and FLD

Variable	A	B	C
Farmers practice	31.47	48.05	20.48
FLD	57.07	34.95	7.98

A=% of A grade bulb (per bulb wt. > 120 gms);

B=% of B grade bulb (per bulb wt. 51 to 120 gms);

C=% of C grade bulb (per bulb wt. < 50 gms)

It was observed (Table 2) that due to use of hi-tech Onion production techniques the number of A grade bulb improves from 31.47 to 57.07 per cent. Further reduction of C grade bulb (per bulb weight less than 50 gms) from 20.48 to 7.98 per cent. Due to bigger bulb size and shiny appearance fetches higher price in market was also seen. It shows significant improvement of quality of bulb due to the interventions of front line demonstrations.

CONCLUSION

The finding of the study revealed that wide gap exists in demonstration yield & farmers practice in Onion due to technological and extension gap in Solapur district. The percent increase in yield in Onion to the extent of 50.60 % and also improve quality of bulb in FLDs over the farmers practice. The FLD beneficiaries also plays important role as a source of information for wider dissemination of technology. It is concluded that FLD programme is a successful tool in enhancing the productivity & quality of Onion through changing the knowledge, attitude & skill of farmers. And as such the technology has been spread on 365 ha on 478 farmers field directly through horizontal dissemination.

REFERENCES

Raj A. D. Yadav V. and Rathod J. H. (2013) Impact of Front Line Demonstration (FLD) on the yield of Pulses. Intl. J. of Scientific and Res. publication, 3 (9), September 2013.

