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Impact of front line demonstration on kharif onion production

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Abstract
A significant gap ensures in requirement and supply of onion in the country during October to January and as a result, the price of onion goes–up in the market. The major constraints identified in onion cultivation include lack awareness of improved varieties, non-implementation of POPs, low productivity and poor market returns w.r.t. quality, quantity and market status. Front line demonstrations (FLDs) were conducted on high yielding variety of onion (Agri-found Dark Red) with recommended production technologies during *Kharif* season in consecutive years 2014, 2015 and 2016 by Krishi Vigyan Kendra, Deoria (ICAR–IIVR Varanasi). Forty nine demonstrations were undertaken for kharif onion production at select farmer's field throughout the district. The major cultivation practices considered under the trials included sowing of high yielding variety with standardised spacing, balanced fertiliser application and followup with recommended plant protection measures. Results indicate that average yield of Agri-found Dark Red was 21.02% higher (253.77 q/ha) than farmers traditional practice i.e. 209.6 q/ha. Net return of INR. 173110 and a BC ratio of 3.14 were recorded from demonstration trials w.r.t Rs. 84700 and 2.0:1 from cultivation by farmer practice. HYV onion variety Agri Found Dark Red when grown with recommended agro-practices gave higher yield with considerable increase in the per capita net return.

Keywords: Onion, agri-found dark red, recommended agro- practices

Introduction
Allium cepa L. commonly known as Onion is one of the oldest commercial bulb vegetable crop of our country that belongs to the family Aliaceae valued most for their characteristic pungent smell and taste. Onion greens, leaves with matured bulbs are used as salad greens (Lannoy, 2001) [6]. It is the base raw material can of nearly every Indian curries, soup and pickles etc. (Straub and Emmett 1992) [12]. Onion has great therapeutic value being rich in minerals like calcium (180 mg/100 g), phosphorous (50 mg/100 g) and carbohydrates. It has been used as a beneficial remedy in colds, coughs, bronchitis and many other diseases. Onion exhibits anti inflammation, anti cholesterol, anti cancerous and number of anti oxidant components beneficial to the human body.

India is the second largest onion producer globally (19.90%). India produces 15118 thousand tonnes onion bulb annually from 1064 thousand hectare with a very low productivity of 14.21 tonnes/ha (Indian Horticulture Database, 2011). Onion crop also has the highest foreign exchange value among various fruits and vegetables. Onion exports amounted to 1309863.26 thousand tonnes with a net revenue of Rs. 1722.85 crore (2011-12).

Eastern Uttar Pradesh abound in the production of this vegetable crop. It is usually grown in the Rabi season (November-May) but only on a small scale during Kharif season. Average productivity is low in the district Deoria. The major yield limiting factors are lacking practice of updated production technologies, disregard of soil fertility status besides lack of technological knowhow of onion growers.

Increasing onion production is of utmost importance in the current scenario. With the introduction of improved cultivation technology and following the recommended package of practices of onion crop there is a way forward. The demonstration trials were undertaken to train the farmers in scientific kharif onion production. It is of utmost significance to achieve the requirement and supply of onion in the market during October to January months and get higher return from market.

Methodology
The present study performance of onion variety Agri-found Dark Red against control (farmers

practice) was evaluated through frontline demonstrations during the Kharif season during 2014-2016. These 49 frontline demonstrations were conducted at select farmers fields at different locations by KVK, Deoria, Uttar Pradesh over an area of 1.70 ha. In practice, all participating members of the farming community were trained and guided by SMS (Horticulture) about nursery bed preparation, sowing of seeds on nursery bed, care of seedlings, field preparation, nutrients management, transplanting of seedlings in main field, irrigation and drain out of excess water, insect pest and diseases management, harvesting of bulb and post harvest practices etc.

In general, medium-low in fertility soil was sandy loam. All recommended crop production technologies were put to action in the demonstrations prominently under sandy loam soils. The soils under consideration were medium-low in fertility. Integrated crop management practices under these FLDs and local check plots are as specified in Table 1.

The data on production cost, yield and yield increase percent, seasonal returns with economic feasibility under benefit cost ratio were assessed through these trials. The data parameter under study were calculated by using following formulae as by Samui *et al*., 2000 [10].

Yield increase % = Demo yield (q/ha) – check yield (q/ha) / check yield (q/ha) X 100

Technology yield gap (q/ha) = Potential yield (q/ha) – Demo yield (q/ha)

Extension yield gap (q/ha) = Demo production (q/ha) – Production under check (q/ha)

Technology index = Potential yield - Demonstration yield / Potential yield x 100

Table 1: Technological parameters as laid down for kharif onion production

Sl. No.	Thematic area	Technological parameters for kharif onion production	
		Recommended POPs	Farmer's practice
1.	Farming situation	Irrigated	Irrigated
2.	Variety	Agri-found Dark Red	Locally available seed
3.	Seed sowing and nursery raising	June IInd and IIIrd week, seed sown on raised bad	June IVth and July Ist week, seed sown on flat bed
4.	Seed required	10 kg	10 to 12 kg
5.	Seed treatment	Treated seed	No seed treatment
6.	Transplanting	6 to 7 weeks after seed sowng	7 to 8 week after seed sowing
7.	Fertilizers application	NPK 100:50:50 per ha, 50% of N and complete dose P_2O_5 and K_2O incorporated during last ploughing of field preparation. The rest of N top dressed after 30 DAT	Imbalanced fertiliser application prominently NPK 60:30:00 per ha
8.	Intercultural operations and plant protection measures	Weeding and hoeing done time to time. Light and frequent irrigation followed as and when required. Application of recommended plant protection chemicals as occurrence of pest and diseases.	Rare weeding, followed heavy irrigation and rarely use of plant protection chemicals

Result and discussion

The onion bulb yield data from front line demonstrations and local check of farmers practice during the demonstrations years 2014, 2015 and 2016 were recorded as reported in table 2 to discuss various parameters for technological and economic significance under the study.

Crop production stats

Kharif onion production data under the study period is presented in table 2 shows that onion production of demonstrations increased over local check of farmers' during all demonstration years. The average yield of onion bulb 253.77 q/ha was recorded from the demonstration showing 21.02% average increase over farmers' practice. The adopted POPs have significantly high technological and economically beneficial result w.r.t farmers existing practice. Increase in yield may be synonymous with integration of HYV - Agri-found Dark Red combined with recommended POPs. Similar findings were reported for the crop under consideration (Hiremath & Hill, 2012; Udit Kumar, 2014; Gupta *et al*. 2015 and Gangwar *et al*., 2017) [4, 5, 2, 1].

Technology yield gap

Average Technology yield gap as observed under Table 2 is 46.23 q/ha. Technology yield gap is a measure of difference between potential yield and production under demonstration. The lesser the gap the better the production season. Technology gap is subject to influence by fertility status of soil types and seasonal weather changes, availability and knowhow of improved seeds, seed quality besides successful integration of intercultural practices. Moreover such location specific recommendations and judicious implementation of POPs in the fields assist to reduce the technology yield gap (Singh *et al*., 2011) [11].

Extension yield gap

Extension yield gap as reported from table 2 is 44.17 q/ha. The gap in the demonstration vs check can mostly be attributed to lack of HYVs and blatant disregard of latest crop specific technologies. High extension yield gap signifies the strong need for farmers to follow latest crop specific technologies over their local practices. The present study findings are similar to as reported by Hiremath & Hill, 2012 [4] and Meena *et al*., 2016 [7].

Technology index

The technology index percent value as evident from table 2 is 15.41%. Technology index indicates the impact of varietal selection on the farmers field. The minimum technology index (11.07%) was observed in demonstration year 2016. As a measure of comparison, the lesser the technological index, more is its on field feasibility (Sagar & Chandra 2004 and Jeengar *et al*., 2006) [8, 9]. Similar findings were reported by Hiremath & Nagraju, 2010 [3] and Hiremath & Hill, 2012 [4].

Table 2: Exploitable productivity, technology yield gaps, extension yield gap and technology index of Kharif onion var. Agri-found Dark Red) under demonstrations and local check of farmer practices.

Years	No. of FLDs	Yield (qha^{-1})			% yield increase	Technology yield gap (q/ha)	Extension yield gap (q/ha)	Technology index (%)
		Potential	Demonstrations	Existing practices				
2014	15	300.00	254.00	208.40	21.88	46.00	45.60	15.33
2015	28	300.00	240.50	204.60	17.55	59.50	35.90	19.83
2016	6	300.00	266.80	215.80	23.63	33.20	51.00	11.07
Average		300.00	253.77	209.6	21.02	46.23	44.17	15.41

Economic analysis

Year wise economics were evaluated for onion production under front line demonstration and result are as under Table 3. Data reveals that B:C ratio from recommended demonstration practices are substantially higher w.r.t farmers practice during the study period. Average higher gross income (2,54,894 Rs/ha), net profit (1,73,110 Rs per ha) and B:C ratio (3.14) was found from demonstrated technology as compared to local check i.e. gross income (1,67,410 Rupees per ha), net profit (89,667 Rs per ha) benefit cost ratio (2.15:1) recorded.

Table 3: Agri -found dark red production economics

Year	Demonstration				Existing farmer's practice			
	Total Cost (Rs /ha)	Total return (Rs /ha)	Total Saving (Rs /ha)	B : C ratio	Gross cost (Rs /ha)	Gross return (Rs /ha)	Total savings (Rs /ha)	B : C ratio
2014	72630	254000	181370	3.49:1	70150	158800	(Rs /ha)	2.26:1
2015	84500	270563	186063	3.20:1	80100	175750	95650	2.19:1
2016	88227	240120	151893	2.72:1	82980	167680	84700	2.02:1
Average	81785	254894	173110	3.14:1	77743	167410	89667	2.15:1

The high returns can be attributed to high quality and larger quantity bulbs yields from improved demonstrated technology. The Similar findings have been reported by Hiremath & Nagaraju, 2010 [3] and Hiremath & Hill 2012 [4]. The production technology under consideration shows potential to enhance kharif onion production. Besides it also exposes need to bridge gaps between attainable potential yield w.r.t demo and check yields. Primarily it signals lack of awareness about growing onion in kharif season.

Conclusion

FLDs on technologies assessed for local suitability have the potential to further increase the kharif onion production. It can be increased with the intervention of high yielding variety of onion NHRDF Agri-found Dark Red in hand with the improved integrated crop production technology. Hence we can come to the conclusion that Kharif onion production reduced the technology gap and extension gap significantly. Kharif onion production has the potential to substantially enhance the net gains of the farmers. Hence, adoption of multi-pronged approach to enhance kharif onion production is the need of the hour in eastern district of Uttar Pradesh.

References

1. Gangwar, Anjali M, Nilima Patil, Jayshri D. Ughade. Effect of integrated weed management on growth yield and economic returns on onion (*Allium cepa* L.). The Asian J Hort. 2017;12(2):193-197.
2. Gupta Nishith, Bhargav KS, Ankita Pandey, Sharma RP. Role of front line demonstration in transfer of improved production technology of kharif onion Res. Environ. Life Sci. 2015;8(3):513-518.
3. Hiremath SM, Nagraju MV. Evaluation of front line demonstration trials on onion in Haveri district of Karnataka. Karnataka J Agri. Sci. 2010;22:1092-1093
4. Hiremath SM, Hill JS. Evaluation of front line demonstrations on onion (*Allium cepa* L.) Advance Research Journal of Social Science. 2012;3(2):160-162.
5. Kumar Udit. Weed management study in onion (*Allium cepa* L.). The Asian J Hort. 2014;9(2):426-430.
6. Lannoy GD. Vegetables crop in Tropical Africa 395 - 522 in crop production in Tropical Africa; c2001. p. 1540.
7. Meena BL, Meena RP, Acharya MM. Evaluation of technology demonstration through demonstration on the yield of onion *Allium cepa* L. International Journal of Science, Environment and Technology. 2016;5(3):1711 - 1717.
8. Sagar RL, Chandra Ganesh. Front line demonstration on sesame in West Bengal. Agric. Exten. Rev. 2004;16(2):7-10.
9. Jeengar KL, Panwar PP, Pareek OP. Front line demonstration on maize in Bhilwara district of Rajasthan. Current Agric. 2006;30(20):115-16
10. Samui SK, Maitra S, Roy DK, Mondal AK, Saha D. Evaluation on front line demonstrations on groundnut (*Arachis hypogaea* L.) J Indian Soc. Coastal Agric. Res. 2000;18(2):180-183.
11. Singh R, Soni RL, Singh V, Bugalia HL. Disseminassion of improved technologies of solanaceous vegetables in Banswara district of Rajsthan through front line dememonstrations. Raj. J Extn Edu. 2011;19:97-100.
12. Straub RW, Emmett B. Pests of monocotyledon crops, in MC Kinley RG (Editor). Vegetable Crop Pests. Mac Millan Press, U.K.; c1992. p. 213-262.