

Seed is key factor in onion production- Farmer's feedback

Sh. Shyamalbhai Dhulabhai Patel, a farmer of village Matoda, Tal. Khedbrahma, Dist. Sabarkantha, Gujarat was transplanting *rabi* onion by purchasing locally available seedlings. He was unable to get satisfactory income because of higher seedling cost, bolting and doubling of bulbs per cent, mixture of different varieties bulbs thereby low yield. KVK scientists helped him to enhance bulb yield potential with quality and income than income generated from onion crop transplanted by purchasing locally available seedlings.

KVK, Sardarkrushinagar Dantiwada Agricultural University, Sabarkantha, Gujarat intervention

Sh. Shyamalbhai Dhulabhai Patel came in contact with KVK, Sabarkantha and discussed his problem with Horticulture scientist of the KVK. He wanted help to procure improved variety's quality seed from authentic source, intervention for nursery management, integrated crop management (ICM) for potential bulb yield with quality, reduction in seedlings cost and more income generation per unit area. As a result of farmer-scientist's interactions, Sh. Shyamalbhai came with an idea of raising onion nursery on his own farm under guidance of KVK scientist. KVK scientist provided onion seed of variety NHRDF Red 4 from National Horticulture Research and Development Foundation (NHRDF) office, Mahuva, Gujarat and also provided technical knowledge through activities like field visit, diagnostic visit, farmers-scientist's interactions on farm etc., timely.

KVK's intervention of *rabi* onion nursery management

Earlier, the farmer was transplanting *rabi* onion by purchasing locally available costly seedlings. He was advised to raise onion nursery under guidance of KVK scientist on his own farm.

About 5 guntha nursery area is recommended for getting seedlings to transplant in one hectare. This farmer was advised to prepare nursery beds of 2-3 m length and 1-1.5 m width. However, in case of drip and sprinkler irrigation availability, raised beds of 10-15 cm height, 1- 1.5 m width and 2-3 m length are recommended. About 5-6 kg seeds are required to raise seedlings for one hectare. He was advised to apply 500 kg organic manure and 2:1:1 kg NPK/5 guntha before seed sowing as basal dose and 1 kg N 20 days after sowing (DAS). Apply *Trichoderma*



KVK scientist visit to onion nursery



Rabi onion CV. NHRDF Red 4 nursery on farmer's own field under KVK scientist's guidance



Hand weeding nursery

1.25 kg/ha and *Pseudomonas fluorescens* 2.5-5 kg/ha with FYM or vermicompost or neem cake to manage damping off (generally after one week of basal RDF application). KVK scientist timely visited farmer's onion nursery to advise on weed management practices.

The farmer was advised for 2-3 hand weedings as per weed intensity for effective weed management in onion nursery. Application of pre-emergence herbicide pendimethalin @ 2 ml/l of water immediately after sowing (before onion seed germination) followed by 1-2 hand weeding at 20-25 days intervals can be also done.

He was advised to spray fipronil 5 SC @ 1 ml/l or carbosulfan 25% EC @ 2 ml/l water along with sticker to manage thrips population. Spray carbendazim 12% + mancozeb 63% (compound fungicide) @ 2.5 g or propiconazole 25% EC 1 ml/l of water to manage blight infection.



Thrips and blight attack in onion nursery and spraying



Thrips and blight management in *rabi* onion nursery with recommended practices

Drench metalaxyl 4% + mancozeb 64% (compound fungicide) @ 2 g/ l of water between the rows for wilt management. Different nutrient's deficiency can be rectified by spraying 19:19:19 @ 2.5 g and Grade-IV (Zn 6 %, Fe 4 %, Mn 1 %, Cu 0.5 % and B 0.5 %) @ 1 g /l of water along with silicon spreader at 20 DAS.



Nutritional deficiency (Yellowing)



Management of nutrient deficiency in onion nursery with recommended practices

Integrated crop management (ICM) interventions

The farmer was advised to transplant about 50-60 days old seedlings at 15 cm × 10 cm spacing during November-December. One third top portion of the seedlings is to be cut at the time of transplanting.



Rabi onion CV. NHRDF Red 4 seedlings ready for transplanting

Dipping onion seedling's root in the solution of carbendazim 1 g and carbosulfan 2 ml/l of water before transplanting is recommended to control pest and diseases.



View of farmer's *rabi* onion CV. NHRDF Red 4 field

Practice	Yield (t/acre)	Gross return (₹)	Total expenditure	Net return (₹)	B:C ratio
Farmer's practice: Transplanting by purchasing locally available seedlings and inadequate ICM	9.60	144000	90865	53135	1.58
KVK intervention: CV. NHRDF Red 4, Nursery and Integrated Crop Management under KVK scientist guidance	17.60	264000	71065	192935	3.71

This farmer was advised to apply FYM @ 25 t/ha and a fertilizer dose of 100:50:50 kg N:P₂O₅:K₂O/ha. Half dose of N and full dose of P₂O₅ and K₂O is to be applied as basal dose. The remaining dose of N is to be applied in two equal splits at 30 and 45 DAT. Apply sulphur 20-40 kg/ha before transplanting. Apply *Azotobacter* 5 kg, *Phosphorus Solubilizing Bacteria* (PSB) 5 kg and *Trichoderma* 1.25 kg/ha with vermicompost or FYM generally after one week of basal RDF application. If plant showed deficiency symptoms of micronutrients, spray Grade-IV (Zn 6 %, Fe 4 %, Mn 1 %, Cu 0.5 % and B 0.5 %) @ 2 g/l of water at 30 and 45 days after transplanting along with silicon spreader.

Apply oxyfluorfen 23.5% EC @ 1-1.5 ml/l of water before transplanting or within week after transplanting followed by one hand weeding (HW) at 30 DAT. Or apply of oxyfluorfen 23.5% EC at 1-1.5 ml and quizalofop ethyl 5% EC at 1 ml/l of water at 25 DAT followed by one HW at 45 DAT.



Spraying of oxyfluorfen 1-1.5 ml/L at 3 DAT



View of weed controlled field after spray

Seedlings dipping treatment is recommended at the time of transplanting. This farmer was advised to apply *Trichoderma* spp. 1.25 kg/ha with neem cake or vermicompost. Spray mancozeb 2.5 g + fipronil 1 ml/l water at appearance of pest and disease, propiconazole 1 ml + carbosulfan 2 ml/l water at 45 DAT and copper oxychloride 2.5 g + profenofos 1 ml/ 1 water along with sticker at 60 DAT as per pest and disease intensity.

Outcome

Bulb maturity is dependent upon variety, soil, climate etc. Generally bulbs become ready for harvest 110-130 DAT.



View of bulbs



Bolting free farmer's rabi onion CV. NHRDF Red 4 field



Bolting



Bulbs with inferior quality in local variety

Outcome per acre from Sh. Shyamalbhai Patel's rabi onion field (2021-22)

Onion crop transplanted by purchasing locally available costly seedlings with inadequate ICM practice (farmer's practice) gave yield 9.60 t/acre, average net return of ₹ 53135 per acre with B:C ratio of 1.58. While, KVK intervention practice gave yield 17.60 t/acre, average net return of ₹192,935 per acre with B:C ratio of 3.71. Average selling price of farmer's onion produce during 2021-22 was ₹ 15/kg.

Note: Seedling purchase cost in farmer's practice is ₹ 25,000. While, seed cost in intervention is ₹ 5200 to prepare nursery for 1 acre transplanting. No bolting and bulb doubling was found in intervention practice.

For further interaction, please write to

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