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POLICY PAPER



Modern onion nursery and production technology revolutionized farmers – Success stories from Uttarakhand

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ABSTRACT

In order to popularize onion cultivation in Dehradun district of Uttarakhand, Krishi Vigyan Kendra, Dhakrani, Dehradun has taken initiatives to raise onion nursery on large scale and supplied them among farmers on reasonable price during 20014-15 to 2018-19 (five years). A total of 538.08 quintals onion seedlings were produced which grown in an area of 59.77 ha. The production obtained from this much area was 20,004.30 quintals with income of Rs. 318.58 lacs. The introduction of high yielding variety i.e. Agri Found Light Red and supply of its planting material to the farmers significantly increased the area, production, productivity, profitability and established onion as an enterprise as more than 50 entrepreneurs have been developed who are raising nursery of Agri Found Light Red variety and supply them to the farmers and earn about Rs. 2-3 lacs within 3 month of onion nursery season. The interventions made by KVK, Dhakrani, Dehradun gave tremendous impact on onion cultivation due to which presently about 60 per cent farmers grow onion for their own consumption amongst which about 5 per cent farmers cultivate onion commercially. Earlier hardly 20 per cent farmers grew onion for their own consumption but due to poor keeping quality of the variety, farmers consume onion only 2-3 months. The introduction of Agri. Found light Red variety having very good keeping quality and productivity enabled farmers to consume onion up to 7-8 months in a year.

According to an estimate about 5456 farmers have been benefitted directly due to supply of quality planting material of high yielding variety.

INTRODUCTION

Onion is commercially important vegetable crop grown all over the country. The onion is consumed by every family either as raw in the salad form or as cooked along with spices and vegetables. The major onion growing states are Maharashtra, Karnataka, Odisha, Tamil Nadu, Uttar Pradesh, Bihar and Gujarat. In India onion is grown in a area of 1.20 million ha area with a total production of 19.40 million tonnes and productivity of 16.12 tonnes/ha. India is the second largest producer of onion in the world after china. Our country is also one of the exporters of onion. The onion is rich in minerals like phosphorous, calcium and carbohydrates. It has some useful medicinal properties also. Realizing the importance of onion in daily diet of every family, Krishi Vigyan Kendra, Dehradun, Uttarakhand has taken initiatives for its commercial cultivation. Keeping in view the poor availability of quality planting material of high yielding varieties, we have started raising nursery of high yielding variety i.e. Agri Found Light Red developed by National Horticultural Research and Development Foundation (NHRDF), Nasik, Maharashtra. This varieties having very good productivity and keeping quality. The nursery raising technology adopted by us helped in production of quality seedlings of onion and their supply among farming community revolutionized the onion cultivation in Dehradun and adjoining areas.

METHODOLOGY

1. There are six blocks in Dehradun district namely Chakrata, Kalsi, Vikasnagar, Shaspur, Raipur and Doiwala. We have selected five village in each block for detailed survey. Ten families were identified in each village to find out the major problems of onion cultivation.
2. We have conducted survey in 30 villages of 300 farmers. The studies indicated that about 40 per cent families grew onion only for their own consumption. They also highlighted during survey that due to poor availability of onion seedling most of the farmers unable to grow onion. The farmers also do not received optimum productivity.
3. Some farmers raise nursery of onion but due to poor availability of high yielding varieties they were forced to grow local varieties which do not give ideal yield. Besides keeping quality was also very poor. It was also observed during survey that incidence of damping off disease in onion nursery was the major problems, however in standing onion crop, incidence of purple blotch disease has been recorded as one of the constraints in getting optimum productivity.
4. The interventions were made in those 30 villages of 300 farm families where we had conducted detailed survey i.e. before interventions. We have supplied onion seedlings in several parts of Dehradun district but our studies were focused in only 30 villages of 300 families.

5. The total onion seedlings supplied by us have been given in the table. We have also given total production, productivity, income etc. in the table which is based on the investigation carried out in 30 villages of 300 families whose names along with blocks are as follow.

Chakrata block	Kalsi block	Vikasnagar block
1. Kurad	1.Vyasbhud	1.Dharmawala
1. Sujaum	2.Haripur	2. Prateetpur
2. Manjbgaon	3.Aara	3. Jassowala
3. Mindal	4.Maleta	4. Rudrapur
4. Savda	5.Vyasnahari	5. Barotiwala

Shasapur block	Raipur block	Doiwala block
1.Langha	1.Sindhwalgaon	1.Ranipokhri
2.Charba	2.Dharkote	2. Bhaniawala
3.Shankarpur	3.Kothar	3. Bhogpur
4. Rajawala	4.Tangoligarh	4. Ghamandpur
5. Bhauwala	5.Sangaon	5. Shergarh

BEFORE INTERVENTIONS:

1. Onion was cultivated on very small scale in Dehradun District of Uttarkhand.
2. Most of the farmers grown onion was using seeds of local varieties as a result productivity and keeping quality was very low.
3. Nursery raising technology adopted by the farmers was also not satisfactory as a result germination of seed was very poor and incidence of damping off disease was also very high.
4. Awareness among the farmers about onion cultivation particularly about high yielding varieties and their nursery raising technology was also very poor.
5. Survey conducted by KVK, Dehradun in various parts of the district shows that farmers hardly obtained 150-200 quintals onion from one ha area which was very low.
6. The studies also revealed that those farmers who grew onion hardly consume 2-3 months because after that rotting and sprouting started in onion due to very poor keeping quality.
7. The number of nursery men who could have raised quality planting material of high yielding varieties and supply to the farmers was also almost negligible.

Details of onion seedlings produced, area covered, production recorded and revenue generated during 2014-15 to 2018-19

Year	Quantity of onion seedlings supplied to the farmers (Qt)	No. of onion seedling supplied to the farmers	Revenue generated from sale of onion seedlings (Rs.)	Area covered from supply of onion seedlings (ha)	Productivity of onion (Qt./ha)	Production obtained from supply of onion seedlings (Qt.)	Income generated by the farmers from onion cultivation (Rs.)	No of farmers benefited
2014-15	53.34	42,67,200	3,20,040	5.92	326.40	1932.28	2318736	426
2015-16	74.27	59,41,600	4,45,620	8.25	318.64	2628.78	3680292	510
2016-17	111.52	89,21,600	6,69,120	12.39	334.08	4139.25	6622800	940
2017-18	146.09	116,87,200	8,76,540	16.23	342.22	5554.23	8886768	1450
2018-19	152.86	122,28,800	9,17,160	16.98	338.62	5749.76	10349568	2130
Total	538.08	43,046,400	32,28,480	59.77	331.99	20,004.30	31,858,164	5456

- According to an estimate about 80,000 seedlings recorded in one quintal
- Sale price of onion seedling -Rs. 6000 per quintal
- According to an estimate Nine quintal seedlings planted in one ha area
- Sale price of onion was Rs. 1200/ quintal during 2014-15, Rs. 1400/ quintal during 2015-16, Rs. 1600/ quintal during 2016-17, Rs. 1600/ quintal during 2017-18 and Rs. 1800/ quintal during 2018-19

After interventions:

1. We have started raising nursery of onion of Agri Found Light Red during 2014-15. In this year, KVK, Dehradun produced 53.34 quintals seedlings which were planted in 5.92 ha area. A total of 1932.28 quintals Onion was produced in which income of Rs. 23.18 lacs generated. The productivity recorded was 326.40 quintals/ ha and about 426 farmers benefitted.
2. KVK, Dehradun produced 74.27 quintals seedling which cultivated in 8.25 ha area. The total production recorded was 2628.78 quintals while Rs. 36.80 lacs income was generated during 2015-16. According to an estimate about 510 farmers benefitted.
3. Similarly, during 2016-17, we produced 111.52 quintals and income of Rs.66. 22 lacs recorded. In this year, we had supplied onion seedling to 940 farmers.

4. During 2017-18, 146.09 quintals seedlings produced which occupied 16.23 ha area. The production of onion recorded this year was 5554.23 quintals and income was Rs. 88.86 lacs. Number of farmers increased to 1450 and average productivity observed was 342.22 quintals/ ha.
5. We have produced 152.86 quintals seedling which covered 16.98 ha area during 2018-19. The data taken on production shows that 5749.76 quintals onion was produced and income of Rs. 103. 49 lacs. In this year we had supplied onion seedling to 2130 farmers of Dehradun district.

Impact:

1. The Agri Found Light Red variety of *rabi* onion which we have introduced become very popular not only in Dehradun district but in entire Uttarakhand state also. The state Deptt. of Horticulture also started promoting besides NGOs and private nursery men.
2. From the last five years (2014-15 to 2018-19) KVK, Dehradun produced 538.08 quintals onion seedlings which occupied 59.77 ha area. The total production recorded in the five years was 20,004.30 quintals whereas income was Rs. 318.58 lacs and the average productivity of five years was 331.99 quintals/ ha. However, before interventions the average productivity was 175 quintals/ ha. Thus, after interventions increment of 89.70 per cent in average productivity was recorded which happened due to supply of quality seedling of Agri Found Light Red variety and management of purple blotch disease in standing crop of onion.
3. The onion nursery raised by KVK, Dehradun and their supply among farmers encouraged more than 50 farmers who have become entrepreneurs. These entrepreneurs raise onion nursery of Agri Found Light Red and supply them to the farmers. The entrepreneurs roughly earn Rs. 2-3 lacs from sale of onion seedlings within three months. Thus raising onion nursery has become very lucrative enterprise particularly in Vikas Nagar block of Dehradun district to whom KVK, Dhakrani, Dehradun belongs.
4. According to an estimate about 60 per cent farmers grow onion for their own consumption of which about 5 per cent farmers cultivate onion commercially. Before intervention, hardly 20 per cent farmers grow onion for their own consumption but within five years percentage of the farmers increased to 60 percent. However, number of commercial farmers was almost nil which also increased to about 5 per cent.
5. Earlier those 20 farmers who grew onion for their own consumption those hardly consume onion 2-3 month after harvesting but now after the introduction of Agri Found Light Red variety having very good productivity and keeping quality, farmers consume onion up to 7-8 months. Thus about 60 per cent family is not dependent on markets for onion up to 7-8 months in a year.



Covering with polythene after sowing to conserve soil moisture



Proper germination of seed by using polythene sheet



View of supply of onion seedlings



Scientist educating the farmer on nursery raising technology of onion



Farmers scientists interaction in onion nursery



Scientist discussing about performance of onion nursery