

## POPULARISING ORGANIC FARMING OF SPICE CROPS THROUGH FRONTLINE DEMONSTRATIONS IN FARMERS FIELDS OF HIMACHAL PRADESH

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Spices are an integral part of human diet imparting aroma and flavour besides valuable source of nutrients and possess medicinal properties. India produces a wide range of spices due to varying agro climatic conditions from arid to temperate regions and is the largest producer, consumer and exporter of spices in the world. Spice crops also contribute in the diversification of crops to achieve faster and inclusive growth in agriculture sector. The area under spice crops in India is 3878 thousand ha and production is 8124 thousand MT (2017-18). Himachal Pradesh also produces ginger and other spices on sizeable acreage. These crops are intensively cultivated mostly in valley and pockets of different districts like Sirmour, Solan, Shimla, Bilaspur, and Kullu. Sirmour, Kullu and

Shimla districts have the maximum area under garlic and ginger cultivation and in other districts these spice crops are mostly grown on smaller scale. During the year 2018-19, the area under spice crops in H.P. was estimated to be 6.89 thousand ha with a production of 18.22 thousand MT. However, there exists a great scope to upscale the cultivation of these spice crops in all parts of state because in general the spices grown in Himachal have special acceptance in the market owing to the better quality of produce with off-seasonality. This hilly state is bestowed with varied agro-climatic conditions and has enormous potential for the off-season production of these crops with superior quality which can be successfully grown in the season when not



FLD at Farmer's Field- Location 2 (Ginger)



FLD at Farmer's Field- Location 1 (Ginger)

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available in nearby markets of the neighbouring states. Moreover, the returns from off-season cultivation are very high as compared to traditional cultivation.

Among spices crops grown in Himachal Pradesh (2015-16) ginger occupies an area of 2.27 thousand hectares under cultivation with a production of 14.58 thousand MT. Its cultivation is practised either in monoculture or mixed with coriander, maize or capsicum and now it is being recommended to intercropped in orchards as well. Similarly the turmeric is grown over an area of 0.26 thousand hectares with a production of 0.43 thousand MT and will certainly pave the way out for increasing the acreage if these crops are cultivated under orchards as per our recommendations in the trainings/seminars under transfer of technology programmes of MIDH programmes. The another major spice crop of sub-temperate region which thrives well in cool and humid climate in Himachal Pradesh is garlic. The area covered under its cultivation is 4.57 thousand hectares with production potential of 9.35 thousand MT. This crop is tolerant to frost and prefers low temperature, long and dry days at the bulb formation, hence the farmers are getting off-season prices from its cultivation in mid hills. Nowadays the apple orchardists are being recommended to grow garlic as an intercrop in their orchards for more returns and better root and canopy environment. This practice also keeps some of the insects away from infesting fruits due to characteristic smell of the garlic. The other crops which have a bright future for their cultivation are fenugreek and coriander due to prevailing conducive climatic conditions. The department is advocating the cultivation of

all these spices crops on large scale so that the farmers can earn more profits besides having benefit of diversification.

Looking at its commercial importance and making spice crop's cultivation more profitable to attract growers, there is a need to adopt alternative farming systems. Organic farming of these crops can be one such way which can bring a sea change in the status of cultivation since organic produce of such crops being nutritional and quality rich has great demand in the market and is also sold at premium prices during off-season. The work on organic farming of ginger and turmeric was initiated way back but this activity received a momentum with the start of Centrally Sponsored Scheme under Mission for Integrated Development of Horticulture on development programmes on spices and aromatic plants sanctioned by Directorate of Arecanut and Spices development, Calicut, Ministry of Agriculture and Farmers Welfare, Govt. of India to the Department of Seed Science & Technology, YSP University of Horticulture and Forestry, Nauni - Solan (HP) during the year 2015-16. Under the component of frontline demonstrations on organic farming of ginger, turmeric and seed spices (Table-1), the farmers were demonstrated the technology for organic production of these crops by providing rhizomes, seeds and biopesticides. The scientists of the department are actively collaborating with the farmers in extending all technical support including a package for scientific production of these crops through various seminars and trainings besides field visits also. The technology dissemination programmes like organising various seminars, trainings and farmers scientist's interactions



FLD at Farmer's Field- Location 3 (Turmeric)



Planting material production at Research Farm

for farmers focussing on complete package of cultivation practices to have improved quality and production of spice crops were organized through this project so that the farmers get the better returns and their produce may find a export market.

The farmers were selected from Solan and Sirmour districts of Himachal Pradesh which are commercially growing these crops and advised to grow different spice crops with

**Table-1 : Year wise Frontline demonstra- tions in farmers fields**

Sr. No.	Crop/ Planting material	Year 2015- 16	Year 2016- 17	Year 2017- 18	Year 2018- 19
1	Ginger	10	3	4	3
2	Turmeric	10	3	4	3
3	Fenugreek	10	5	10	3
4	Coriander	-	-	10	3
5	Chilli	10	-	-	-

our interventions. The details of quality seed/ planting material and organic inputs from the project in order to have organic and quality produce without harming the environment is given below in Table-2.

The selected farmers were advised to select a piece of land having gentle slope with

sandy loam soil and the field should not have been used for growing spices in the previous season. Land should be thoroughly ploughed and exposed to sun and brought to fine tilth by adding farm yard manure (FYM) @ 24 q/bigha before sowing. In case of ginger and turmeric, the disease free and healthy planting material be treated in a solution of *Trichoderma viride* @ 4 g/l of water for one kg of seed rhizomes for 60 minutes. The rhizomes are to be air dried in shade for 48 hours at normal temperature and then used for planting (20-30 g rhizome bits) in the main field at 30x20 cm spacing with a planting hole of 5 cm in May. After covering the bits with soil enriched with FYM, mulching with dry grass was done and sufficient irrigation was carried over after the emergence of seedling till the onset of monsoon in July. Stagnation of water was avoided in the field by resorting to proper drainage. As prophylactic measures, regular sprays of *Bacillus thuringiensis var kurstaki* @ 1g/l or neem oil @ 3ml/l were given alternately at an interval of 15-20 days during September and October months to take care of plant protection measures.

In case of fenugreek and coriander plantings, the seed is to be treated with *Trichoderma viride* @ 4 g/kg of seed and planted at

a spacing of 30 X 7.5 cm in the month of October. Two sprays of neem oil @ 3 ml/l of water one after the other at a fortnightly interval can be given on observing infestation by aphids. Data on yield were recorded at the time of harvest in

all the crops and the same for this year are given in Table-2.

One of the progressive farmer, Sh Durga Ram, has adopted this technology and

**Table-2 : Details of the FLD's given in the year 2018-19 below:**

Sr. No	No.Name & Address	Crop	Inputs	Yield /0.25 ha
1	Sh. Durga Ram R/o Village Darodeveria , Tehsil Pachhad, District Sirmour (HP)	Ginger Variety: Himgiri	Ginger rhizomes, <i>Bacillus thuringiensis</i> var. <i>Kurstaki</i> , Nulear Poly Hedrosis Virus and Neem oil	20.1q
	Sh. Ram Lal R/o Village Deonghat, Post office Saproon, District Solan (HP)			19.3q
	Sh. Budh Ram R/o Village Dankari, Tehsil & District Solan, (HP)			18.2q
2	Sh. Jia Lal R/o Village Katal Kathar, PO Bohali, District Solan (HP)	Turmeric Variety: Palam Pitamber	Turmeric rhizomes, <i>Bacillus thuringiensis</i> var. <i>Kurstaki</i> , Nulear Poly Hedrosis Virus and Neem oil	33.4q
	Sh. Tula Ram R/o Village Katal Kathar, PO Bohali, District Solan (HP)			29.3q
	Sh. Dyal Dutt R/o Village Neri Kalan, PO Sultanpur District Solan (HP)			31.6q
3	Sh. Bali Dutt R/o Village & PO Damkari, Tehsil & District Solan (HP)	Fenugreek Var. IC-74 & Coriander	Fenugreek and coriander seed, <i>Bacillus thuringiensis</i> var. <i>Kurstaki</i> , Nulear Poly Hedrosis Virus and Neem oil	1.20q seed yield
	Sh. Hardev Singh R/o Village Kanah - Bhajnal , Tehsil & District Solan (HP)			3.2q (Green leaves yield)
	Sh. Naresh Kumar R/o Village & PO Damkari, Tehsil & District Solan (HP)			40 kg seed + green leaf yield





FLD at Farmer's Field- Location 2 (Fenugreek)

is growing ginger and feels happy to share his experiences with us and other farmers. He told that for growing ginger organically on 800 sq m area, the total cost of production was Rs. 37,600/- whereas he harvested about 1.2 t of yield from that area and sold it in the market and achieved Rs. 59,400/- as gross income. Similarly Sh Ram Lal, another farmer in the district Solan of Himachal Pradesh, earned a gross income of Rs. 65,500/- after sowing the ginger in 900 sq m. He further informed that during the cropping season 15 more farmers visited his fields and enquired about the crop production technology. Sh Budh Ram and his brother from Jaunaji village in district Solan have also produced good crop harvest of ginger and fenugreek in their fields and could get high

returns. It is to be noted that the produce was sold at the prevailing price in the local market equal to the rate of inorganically produced these spice crops. If the prices for organic produce are fixed separately which are certainly high, the net returns will be more than what has been achieved.

The outcome of the whole programme is that if the farmers grow spice crops by way of organic farming using standardized technology then there is ample scope to increase the quality of produce and income per unit area of production and also find a better remuneration for their produce in the national and international markets. The DASD programme has provided many resources to make the farmers aware of recent technology in the field of spices cultivation.

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