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Short Note

Effect of sowing dates on production of off-season coriander under portable plastic low tunnels in mid hills of Himachal Pradesh

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Abstract

Use of fresh leafy greens has increased during last decade as consumer's demand towards more diverse variety of leafy greens in their diets. Low tunnels production provides an opportunity to the growers to meet such demands of the consumers in off season. Coriander is one of the important leafy crops which has all season demand. Its leaves are widely used in culinary purposes all over India. In HP, it is cultivated during winters in almost every house hold in kitchen gardens. During summers, its availability is very less and market rates are exorbitant. The ever increasing demand for green coriander during off season i.e. summer /rainy season is high but it is not possible to grow this crop under open environment conditions due to vagaries of weather. The present study revealed that coriander can be successfully grown under portable low tunnels of size 3.5x1.20x1.0m covered with transparent polythene sheet of 120GSM. Three to four cuttings of green leaves with average yield yarying from 250g to 983.33 g/m² can be obtained during rainy/autumn season and the produce can be easily sold at prices varying from Rs.100 to 200/kg in the local market.

Key words: low tunnel, protected cultivation, coriander, sowing date.

Coriander (*Coriandrum sativum* L) commonly known as ***Dhania*** is an annual herb and grown for both green leaves and dried seeds. Green leaves of coriander are extensively used for culinary purposes. It is extensively grown in many parts of the country. Rajasthan is the main growing state and contributes about 40 per cent production of the country. The entire plant has a fragrant odour and pleasant aromatic taste. The principle constituent of essential oil is dextro-linalol. The volatile oil is used in cosmetic products and beverages. Dried seeds are used in flavoring sauces, meat products, bakery and confectionery items. It is also used as major ingredient in most of the curry product. The fruits are considered as carminative, diuretic, anti-bilious, refrigerant and aphrodisiac. The young plants and leaves are used to prepare chutney and flavoring the curry, soup, sauce, chutney and many other recipes.

Coriander is grown in almost every household in kitchen gardens during winters and green leaves are used for culinary purposes. During summer/off-season, its cultivation under open field conditions is not possible and the prices are very high in local and plain markets. Keeping in view its limited availability, poor quality and exorbitant prices during summer-rainy season, preliminary studies conducted in mid hills of Himachal Pradesh at Palampur revealed that it can be a remunerative crop to the growers during off-season. Plastic low tunnels technology has been standardized at CSKHPKV-Palampur, where it has been found that a portable low plastic tunnel of size 3.5x1.2x1.0m size with polythene sheet of 120 GSM is found suitable for production of off-season nursery (Kumar *et al.* 2012). The seedlings germinate faster under portable low tunnels and their hardening is done simultaneously by removing the portable tunnels during day time or when the weather conditions are favourable. These plastic low tunnels provide the

best way for off season vegetable nursery production by modifying the microclimate around the plants. These also offer several advantages like protection of the seedlings from frost, hails and heavy rainfall (Singh 2005 and Wells 1996). These portable tunnels are cheaper and the cost of polytunnels measuring 3.5x1.2x1.0m with 120 GSM polythene sheet varies from Rs.3000 to Rs.3500 and these can be easily handled and shifted from one place to another. These polytunnels can also be used to grow other leafy vegetables like spinach during off-seasons.

The present investigation was undertaken at the Experimental Farm of Department of Vegetable Science and Floriculture, CSK Himachal Pradesh Krishi Vishavavidyalaya, Palampur during 2011. The experimental farm is situated at 32^0 6' N latitude and 76^0 3' E longitudes at an elevation of 1290.80 m above mean sea level. Severe winters and mild summers with high rainfall characterize the place. Agro-climatically, the location represents the mid-hill zone of Himachal Pradesh and is characterized by humid sub-temperate climate with high rainfall (2500 mm), of which 80% is received during June to September. The experiment was conducted to find out the most suitable sowing date under portable low tunnels for production of coriander in off season i.e. summer season-rainy season. The hybrid H-1 was sown in six beds of 3x1x0.15m size each covered with portable low tunnels of size 3.5x1.20x1.0m with transparent polythene sheet of 120GSM. The seeds were sown at 5cm spacing on 6 different dates i.e. 22-6-11, 7-7-11, 21-7-11, 5-8-11, 19-8-11 and 3-9-11.

All the sowing dates affected the average green leaf yield of coriander hybrid H-1 in portable low tunnels sown at almost 15 days interval. The different sowings resulted in variation in average yield per square meter. The coriander hybrid H-1 sown on 7th July 2011 produced highest green leaf yield of 2950g/ polytunnel i.e. 983.33g/m^2 after 22 days of sowing i.e. on 29.7.2011. Whereas, sowing on 19th August 2011 produced minimum yield of 750g/polytunnels i.e. 250g/ m^2 (Table 1 and Figure 1).The average yield per cutting was 741.67g in 1st cutting, 341.67g, 266.67, 183.33g in 2nd, 3rd and 4th cuttings, respectively. It has also been observed in the study that green leaf yield was highest in 1st cutting and it decreased with each next cutting, which may be due to less number of tillers /leaves per plant.

The total green leaf yield was calculated by adding yield of 3 to 4 cuttings harvested at different intervals. The results are in conformity with those of

Table 1.Effect of sowing dates on green leaf yield of coriander

Polytunnel	DOS	Hybrid	Yield (g/polytunnel)					
			1st cutting	2nd cutting	3rd cutting	4th cutting	Total yield (g)/ polytunnel	yield (g)/m^2
1	22-06-2011	H-1	1000	200	100	150	1450	483.33
2	07-07-2011	H-1	1700	300	650	300	2950	983.33
3	21-07-2011	H-1	600	300	-	100	1000	333.33
4	05-08-2011	H-1	550	350	200	150	1250	416.67
5	19-08-2011	H-1	400	-	250	100	750	250.00
6	03-09-2011	H-1	200	900	400	300	1800	600.00
Total			4450	2050	1600	1100	9200	
Average yield/cutting			741.67	341.67	266.67	183.33	1,533.33	

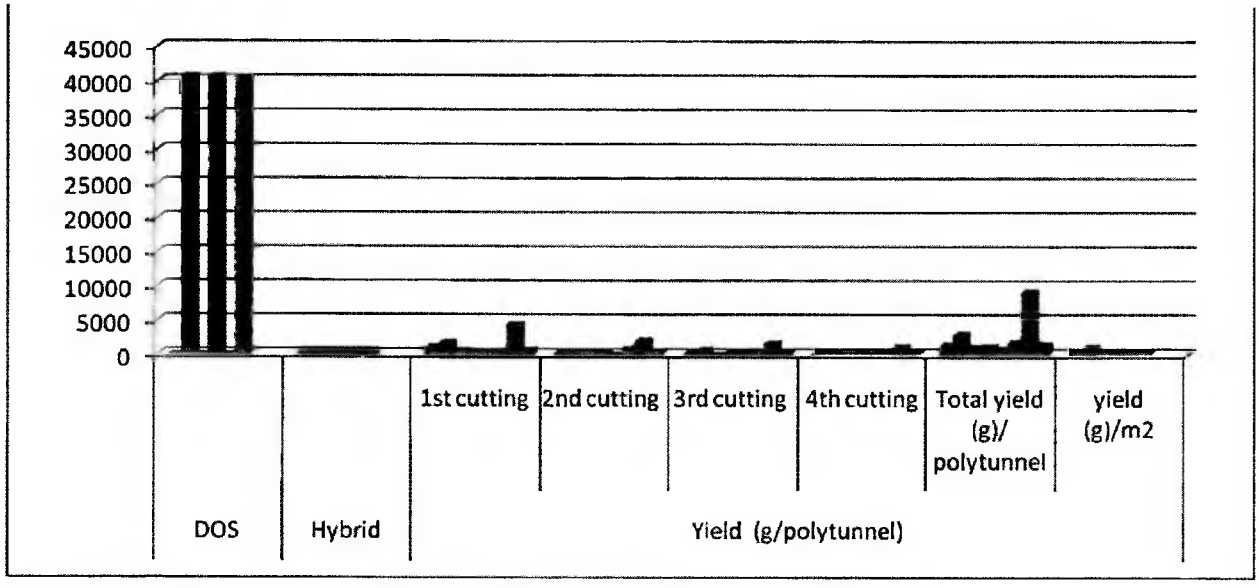


Fig.1 Influence of date of sowing on green leaf yield of coriander under portable low tunnels

Datta *et al* (2008) and Khan, (2009), who have also reported effect of leaf cutting on yield and variation in green coriander yield due to influence of sowing dates. Dixit (2007) revealed that yield of leafy vegetables under protected structure was higher as compared to open field conditions. The greenhouse effect of the tunnel resulted in enhancing seed germination, root growth, shoot growth and maturity and provided shelter to the crop from hails and heavy downpour during the experimental period. The present investigation revealed that low tunnel is useful for encouraging crop development during various stages of plant growth and off- season harvest. The growers can be benefitted in terms of lucrative returns and assured access to high quality green coriander during off-season i.e. summers/rainy season by adopting plastic portable low tunnels technique, which will ensure increased profit margin and access to good quality green coriander thereby ensuring both financial and nutritional security of the stakeholders.

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