

Making an opportunity in changing climatic scenario

A case of Kullu and Lahaul valley

While rising temperatures and changes in weather conditions is affecting agriculture and is a matter of serious concern, farmers in Himachal Pradesh have converted it into an opportunity. Apple farmers affected by climate change have shifted to crops like kiwi and pomegranate. Farmers who were earlier not able to grow apples are happy growing apples now, in few other districts.

Raj Pal Meena and P R Kumar

Among all fruits, apple is the main crop of Himachal Pradesh occupying the place of pride in its economy. Though Kullu in Northern Himachal Pradesh, is well known for apple cultivation, the lower areas were also suitable for apple cultivation. However, the rise in temperatures over years has adversely affected apple cultivation in both these regions.

Twenty years ago snowfall was a regular phenomenon in Kullu town but in the last 20 years, only 2 – 3 instances of snowfall have been recorded. It was recorded that the average maximum temperature of the Kullu valley rose by 0.58°C from the year of 1963 to 2007, whereas the average minimum temperature rose by 2.75°C. Chilling affects the flowering and subsequent fruit setting qualitatively as well as quantitatively. Inadequate chilling leads to poor flowering and fruit setting. The average minimum temperature during December, January and February, which is the chilling sensitive period, has gone up by 2.27, 2.68 and 3.63°C, respectively. There is no surprise that the orchards below 1300 M above MSL have been rendered unproductive. Lack of chilling, late snowfall and quick rise in temperature in February have become common these days leading to reduction in period of pollination and uncondusive weather during fruit setting.

The miserable situation created by changing temperature regime is compounded by inappropriate and indiscriminate use of pesticides. Alarming increase in the number of colonies of red spider mites owing to faulty use of insecticides, is one example. A survey revealed that about 69 per cent apple orchards in Shimla, Mandi and Kullu districts were infested with mites. The most affected areas include Thanedhar, Kotgarh, Kiari, Panog, Badon, Chadol, Kotkhai, Baghi, Ratnari, Kalbog, Chamain, Keeth, Kiarvi, Gopalpur, Nankhari, Bahli, Jubbal, Mandpur, Chhajpur, Kumarsain, Chopal, Marog and Rieul valley in Shimla district, Mahog and Charkari areas of Mandi district and Anni and Arsu areas of Kullu district. Out of 80,388 hectares of area under apple, 55,545 hectares is under attack of mites. The bee population in natural fauna has dwindled during last 6 - 7 decades owing to destruction of natural habitats and indiscriminate pesticide use. The changed temperature has affected the activity of remaining population adversely. Prolonged hot and dry spells during summers has aggravated the problem further.

These factors have led to declining production of apples in the state, as brought out by some studies. This has adversely affected the business of the apple and plum cultivators.

Some apple farmers of Kullu valley have however, tried alternative methods to reduce the impacts. The orchardists are also switching to organic cultivation and minimizing the use of costly external inputs. Instead of using pesticides to control leaf fall disease in apple crop, farmers have even taken to Homa (Agnihotra) which is reported to have given positive effects in terms of warding off harmful insects and diseases besides attracting useful insects. After a survey by joint team of Indian and Swiss experts, it was found that heavy use of chemical fertilizers and pesticides has degraded the soils and ecosystem. During their awareness campaign they were surprised to find that 80 farmers were practicing organic farming with good results. Although this is only a microscopic minority with spreading awareness, this may take form of a revolution in due course.

Making crop choices

With apple production being greatly affected, farmers are steadily moving towards other crop options. Farmers have shifted to cultivation of pomegranate, kiwi and organic vegetables like garlic, tomato, peas, cauliflower, broccoli, cabbage, lettuce etc. i.e., diversion from cultivation of traditional crops.

In order to save the livelihoods, a group of farmers in Kullu started cultivation of pomegranates as cash crop from 2002. The yield has been good and many farmers have benefited from the cultivation of this crop. Presently, pomegranate is cultivated on almost 435 hectares of land. Varieties like Kandhari, Hansi, Mridula and Sindhuri are mostly preferred. The pomegranate cultivation has ushered the farmers to a new socio-economic life style. "Of late, the pomegranate cultivation has proved to be a boon for this area. In all, we produce pomegranate worth about rupees one lakh (\$2000) from one bigha (0.625 acre) of land. This year, my target is to earn Rs. 1.5 lakh (\$3000) from one bigha" said Jai Kishan, a pomegranate cultivator.

Similarly, some far-sighted farmers in Kullu imported kiwi saplings and took up kiwi cultivation. Although it may mean a heavy one time investment in terms of concrete and wire trellis required, the orchards require very less maintenance costs for annual manuring, training and pruning. The orchards are now fully established and mature. "From the small orchard of 150 sq.m, I earned Rs. 10000 (\$200) last year", says Mrs. Yangking Thakur, a farmer of Katrain.

In the valley, several exotic vegetables (broccoli, heading lettuce, asparagus, parsley, celery and Chinese cabbage being the prime among them) are coming in cultivation. The farmers grow snowball cauliflower, zucchini, tomato and bell peppers during summers, which fetch high price in market because the low night temperature and clear sunny days help in producing a quality crop. For instance, Shambhu Kumar and brothers engaged in production of exotic vegetables in Kullu valley base their production on minimum use