

Workshop on Management of Hailstorm for Sustainable Crop Production in Himachal

Experts call for identifying management practices and development of indigenous technologies by addressing technological and researchable issues

To address the threat of agricultural losses due to hailstorms, especially in the apple belts of Himachal Pradesh, 85 progressive farmers from the state and scientists from several premier institutions of the country gathered at Dr YS Parmar University of Horticulture and Forestry (UHF) for a two-day workshop cum interaction meet on the subject. The workshop was organized by UHF's Department of Environmental Science in collaboration with the Department of Horticulture (HP).

Professor SK Bhardwaj, Head Department of Environmental Science said that the workshop focused on identifying suitable hailstorm management practices and assessing its frequency, and crop losses. Developing suitable 'Make in India' technologies along with its evaluation for effectiveness to ensure suitable livelihood of farmers in this specific part of the Himalayan region was another area of focus. A major recommendation of the workshop was the need to undertake research on available technologies to ascertain their effectiveness in the region. Dr Neeraj Kumbhakarna from IIT Mumbai proposed various detonation alternatives to recent technologies. He said that the cost of the guns could be brought down to Rs 6-10 lakh if these machines were produced in the country itself. He suggested that LPG or kerosene could replace acetylene gas in these machines in order to bring down the operational cost.



Professor Sudarshan Kumar from Department of Aerospace Engineering, IIT Mumbai explained the various hailstorm suppression techniques like cloud seeding and anti-hail rockets. He highlighted the need for carrying out research on cloud microphysics, shock waves and analysis of long-term effects of the detonation waves. He also underlined the importance of understanding atmospheric pressure dynamics and called for other prediction models including the utility of radars in the prediction of hails. The scientists were of the view that similar technologies from the field of aerospace could be replicated for manufacturing anti-hail guns. However, to ascertain its effectiveness in this specific region, the scientists would have to undertake research for four to five years in a project mode.

The majority of farmers, with prior experience working in the areas where anti-hail guns have been operational, were in favour of developing newer and cheaper technologies. They also shared that the machines were not a 100 per cent full proof method against hail. Apple growers also shared problems they were facing with some calling for proper scientific verification of installation sites of existing machines. Poor maintenance and lack of weather data and technical expertise including trained professionals to operate the installed guns were other issues raised during the workshop. Many farmers also said that hail had a much more severe effect on several thin-skinned vegetables and fruits like cherry and tomato.

The farmers pegged their losses between 15-25 per cent and any hail event during the flowering stages had a severe impact. DrAnand Sharma, DGMIMD said that though the data regarding the apple production was available, there was an urgent need for long-term quality data regarding the maximum and minimum losses caused due to hail including the size and quantity of hail. He said that the WMO has documented that there is no physical evidence of anti-hail guns efficiency, but the guns may find more utility when used in concordance with the radar. Experts were of the view that that decreased frequency of hailstorms in any area can only be attributed to the functioning of anti-hail guns after proper scientific documentation. The scientists also suggested the need for developing and adopting crop weather calendar by all fruit growers of the state. The installation of hail recorder for real-time data and weather radar for the state for more accurate prediction of the possibility of hail forming clouds and their movements also found mention in the meet.

The scientists advocated the judicious exploitation avenues of Weather Based Crop Insurance Scheme to cover crop losses. However, farmers pointed out many difficulties in this scheme, which needed to be addressed by the insurance companies. The farmers also took up the use of anti-hail nets as an alternative, but rued the high labour and maintenance costs. The apple growers were of the view that the nets hampered the growth of trees and were prone to disease attack to which the scientists suggested the plantation of dwarf varieties and changing the crop architecture to suit various cultural and other operational practices.



During the workshop, a farmers' scientist interaction was also held and the farmers' were registered on the Kisan Portal for receiving weather based agro advisories. Dr HC Sharma, UHF Vice-Chancellor emphasized on the need for assessing the present technologies and stressed for reducing the input cost for doubling farmers' income. AV Suman from California based Newton Systems International; the company that has installed three anti-hail guns in Shimla explained

the operation process of the machine. DrSushila Negi from Department of Science and Technology, New Delhi stressed upon the need for a strong database of local weather conditions for better agro advisories for the mountainous regions.

Sh. RD Dhiman, Principal Secretary Industries, Technical Education, and Horticulture (HP), Dr ML Dhiman, Additional Director Horticulture (HP), Dr Madan Mohan Sharma, Joint Director Horticulture (HP), Dr Suresh Attri, Department of Environment Science and Technology, Government of Himachal Pradesh, Dr Manmohan Singh, Director, Regional MET Centre Shimla, DrJN Sharma, Director Research, UHF and DrKriti C Sahu, IIT Hyderabad also participated and deliberated on various aspects of hailstorms.