

INSECT-RESISTANT PINE HEAVILY DAMAGED BY A LEEPER

Blue pine (*Pinus wallichiana*), a beautiful tree of high hills in Pakistan, well known for its resistance against insect pests fell prey to a very robust 10 cm long ugly looking leeper, identified as *Biston regalis* Moore. The measuring worm (Geometridae Lepidoptera), absolutely unknown before, appeared all of a sudden in blue pine forests of Murree (50 km from Islamabad) and Azad Kashmir and ravaged large areas during 1980 killing tens thousands trees of all ages by complete defoliation. Having an annual life cycle the pest hibernates as pupae in the soil, emerging in May/June as adult moths and voraciously devouring blue pine needles from July to October.

The resistance to insect pests prevalent in blue pine was factually not an inherent characteristic of the tree. It was rather the magic of the biotic equilibrium of the undisturbed natural eco-system exercised by a strong complex of bio-control agents, the parasites and predators. During the past half a decade a large scale repeated sprayings of various toxic insecticides against codling moth on apples took a heavy toll of insect friends of man, the parasites and predators resulting in the withdrawal of strong natural checks and free multiplication of insect pests. Blue pine defoliator is one of those many insects which became serious problems in the field of forestry and agriculture as a result of indiscriminate spraying in the area.

In order to combat this menace use of toxicants, apart from being expensive and impracticable in hilly terrain during monsoon rains, would have further aggravated the situation by spoiling bird fauna wildlife and the remaining natural enemies of insect pests. The most effective and long lasting method was to augment the natural enemies of the pest so that the disturbed biological balance is set back in position to exercise for natural check again. In this context large scale mechanical collection of hibernating pupal population was made from all over the affected areas and put in wire-gauze cages on the peripheries of the defoliated patches so as to hold back the large sized adults of the pest and let the parasite/predator adults go back to the field. The method proved such a surprise that in Murree the pest was over powered by the natural enemies in the initial stages and no further damage to the crop occurred. In Azad Kashmir due to defective and partial application of the same method the pest was brought under complete control in the next year. The expenditure on this method was unimaginably low i.e. Rs. 40/- per acre (1981) or US\$ 8 per hectare.

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