

## **Popularization of innovative approach to manage the deterring crop raiding wild elephants, monkeys and wild boars in hill agriculture at Idukki District, Kerala**

The forests in Idukki district are highly fragmented due to settlements and agriculture. Crop damage by wild animals in agricultural fields, adjoining the forest areas is very heavy. This is mainly due to the straying of wild animals such as Elephant (*Elephas maximus*), wild boar (*Sus scrofa*), Indian porcupine (*Hystrix indica*), gaur (*Bos gaurus*) sambar (*Cervus unicolor*), bonnet macaque (*Macaca radiata*), common langur (*Presbytis entellus*), barking deer (*Muntiacus muntjak*), mouse deer (*Tragulus merninna*), blacknaped hare (*Lepus nigricollis*), Malabar giant squirrel (*Ratufa indica*) and pea fowl (*Pavo cristatus*) were causing damage to the agricultural crops in Idukki. Among these, elephant and Monkey and wild boar did maximum damage to agriculture crops all over Idukki. Elephants and Monkey were primarily involved in destroying crops like small cardamom, Banana, coffee, pepper and paddy. Wild boar destroyed mainly tapioca, sweet potato and Banana. The crop damage was assessed among the randomly selected Ranges. Mathikattanchola Forest Range showed highest crop damage (55%) followed by Munnar Forest Range (39%). It was found that, on an average 30% of the crop was being damaged in the Ranges surveyed. Highest damage was recorded for Small cardamom, Banana, sweet potato and tapioca. Among the animals, wild boar, elephant and gaur causes highest damage followed by sambar, chital, bonnet macaque, porcupine and barking deer.

The Idukki district has 1.45 lakhs ha of small cardamom plantation damaged by elephant and monkey on average 27 percent. Hence, the suitable technology for Mathikattanchola Forest of the region is the need of the hour. To solve the problems, KVK-Idukki has initiated innovative technology of KR-LED lighting system for deterring crop raiding wild elephants in small cardamom plantation with help of Kerala forest department. Beehive fences—surrounding small cardamom fields with beehives attached to fence posts and strung together with wires—may serve as a humane and alarm communication is a key adaptation that helps eco-friendly way to protect crops from elephants and monkey. In multi-location trials organized by the KVK-IDUKKI, the crop damage recorded 15 % increase in yield and the trials organized by Kerala Forest Department and ATMA-IDUKKI recorded 68 % increase in the yield compared to not place LED light and Beehive fence field. The three capacity building programmes were organized at Moolathara Village benefiting 201 farmers. The technological products supply was initiated through demonstration programmes both at the KVK Farm and Farmers' Plots covering an area of 150 acre areas under the Front Line Demonstration Programme of KVK, Idukki. The Field Day organized at Moolathara Village and benefitted 201 farmers and 4 extension personnel.

Wild boars were a major problem in hill agriculture in Idukki District. Wild pigs raided crops and utilized the agro ecosystem for food resources and shelters. Presently, the wild pig populations were fragmented and relatively isolated all over the district. Some of these isolated populations had become overabundant and became dependent upon the agricultural crops, especially in and around the protected areas or managed forests for their food requirements. To solve the problems, KVK-Idukki had introduced innovative technology of castor based herbal extract (NIPHM) smell which is responsible for repelling the wild pigs and saved more than 90 percent crop damage of Banana, Tapioca, Cabbage, cauliflower, Potato, carrot and Sugarcane. 700 farmers have adopted the technology. The technology is horizontal expanded through Kerala Forest Development Corporation and ATMA Idukki to cover various blocks of Idukki District. Based on the demand, the KVK has planned to supply the technological products at the village level covering more area during the year 2021-2022 to meet the farmers' potential demand in the District.



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