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Species Profiling of Scarab Beetles with the Help of Light Trap in Western Himalayan Region of Uttarakhand

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Abstract : White grub (Coleoptera: Scarabaeidae), locally known as Kurmula, Pagra, Chinchu, is a major destructive pest in western Himalayan region of Uttarakhand state of India. Various crops like cereals (up land paddy, wheat, and barley), vegetables (capsicum, cabbage, tomato, cauliflower, carrot etc) and some pulse (like pigeon pea, green gram, black gram) are grown with limited availability of primary resources. Among the various limitations in successful cultivation of these crops, white grub has been proved a major constraint in for all crops grown in hilly area. The losses incurred due to white grubs are huge in case of commercial crops like sugarcane, groundnut, potato, maize and upland rice. Moreover, it has been proved major constraint in potato production in mid and higher hills of India. Adults emerge in May-June following the onset of monsoon and thereafter defoliate the apple, apricot, plum, and walnut during night while 2nd and 3rd instar grubs feed on live roots of cultivated as well as non cultivated crops from August to January. Survey was conducted in hilly (Pauri and Tehri) as well as plain area (Haridwar district) of Uttarakhand state. Collection of beetle was done from various locations from August to September of five consecutive years with the help of light trap and directly from host plant. The grub was also collected by excavating one square meter area from different locations and reared in laboratory to find out adult. During the collection, the diseased or dead cadaver were also collected and brought in the laboratory and identified the causal organisms. Total 25 species of white grub was identified out of which Holotrichia longipennis, Anomala dimidiata, Holotrichia lineatopennis, Maladera insanabilis, Brahmina sp. make complex problem in different area of Uttarakhand where they cause severe damage to various crops. During the survey, it was observed that white grubs beetles have variation in preference of host plant, even in choice of fruit and leaves of host plant. It was observed that, a white grub species, which identified as Lepidiota mansueta Burmeister., was causing severe havoc to sugarcane crop grown in major sugarcane growing belt of Haridwar district. The study also revealed that Bacillus cereus, Beauveria bassiana, Metarhizium anisopliae, Steinernema, Heterorhabditis are major disease causing agents in immature stage of white grub under rain-fed condition of Uttarakhand which caused 15.55 to 21.63 percent natural mortality of grubs with an average of 18.91 percent. However, among the microorganisms, B. cereus found to be significantly more efficient (7.03 percent mortality) then the entomopathogenic fungi (3.80 percent mortality) and nematodes (3.20 percent mortality).

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