

REGIONS IN INDIA FAVOURABLE FOR
THE INCIDENCE AND ESTABLISHMENT OF
THE COLORADO POTATO BEETLE (*LEPTI-
NOTARSA DECEMLINEATA SAY*)

The Colorado potato beetle has become an international pest posing a threat to potato cultivation in many countries. In 1850 there was an epidemic of the beetle causing great damage to the potato crop in the United States of America,

Later, it spread to Europe and is currently entering western Asia. Ships, aircrafts, cargo boats, cars, transport of vegetables aid in its spread. Wind also at times favours its spread. A study was made to see the possible regions of establishing the beetle in India, in case it happens to reach India.

The life cycle of the beetle has been discussed in detail by Hurst (1975). An adult insect and a larva are shown in Fig. 1. Weather conditions

play an important role in the activity, spreading and mortality of the beetle. The beetle is very active in the temperature range of 16° to 27°C with relative humidity about 70 per cent. Annual rainfall of 600 to 1500 mm is favourable for its optimum development. Eggs are laid in batches of 20 to 40 on the underside of the potato leaves. Egg laying is maximum at 25° C and considerable mortality occurs above 30°C. The period of incubation depends upon temperature. It is 5 days at 30° C and 19 days at 12° C. After hatching the insect passes through four larval stages. At the end of the fourth stage, the mature larva falls off from the leaf and pupates in the ground. A temperature of 38°C is lethal for the larva. The beetles generally go for hibernation in the ground when the temperature falls below 12°C. They can tolerate even as low a temperature as -4°C. The adult beetle emerges from the ground in spring or early summer.

The meteorological factors affect the beetle in two ways. Firstly, in favouring more generation of the beetle in a year and secondly, in creating conditions favourable to its activity and spread. The temperature controls the number of generations of the beetle in a year, the times of emergence from the ground and their spread from one place to other. The climatic data of India, like soil temperature, rainfall, humidity, minimum and maximum air temperatures were examined to locate the areas of vulnerability to the beetle. Stations having average annual rainfall of 600 to 1500 mm were selected. Then, those having air temperature range of -4°C to 38°C were marked out. The soil temperature data at 5 cm and 15 cm depth were also examined. Of these, areas which come under potato cultivation were presumed to be favourable for the beetle to establish and complete its life cycle. It can be seen from Fig. 2, that West Bengal, Tamil Nadu and the coastal strip in between are the vulnerable areas. Potato growing period is different in different parts of India, which again is very conducive for the survival of the beetle. As the hibernation period is short, a longer period is available for the activity

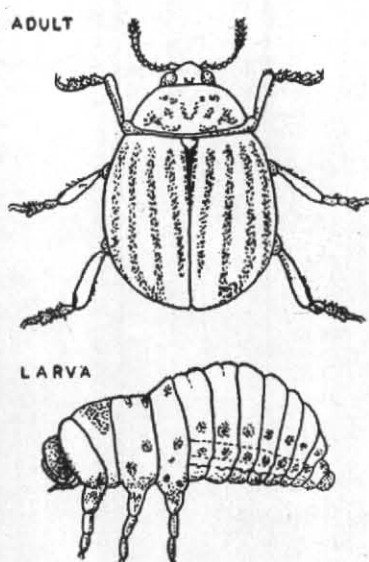


Fig. 1. Colorado potato beetle

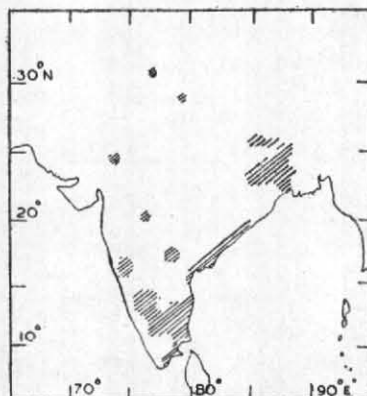


Fig. 2. Regions (hatched) favourable for the incidence and establishment of Colorado potato beetle in India

of the insect when it can damage the crop. It is, therefore, advisable to keep a continuous watch on the spread of the beetle so that suitable control measures may be taken at the appropriate time.

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