Data Sheets on Quarantine Pests

Premnotrypes spp. (Andean)

IDENTITY

Name: *Premnotrypes* spp. (Andean)
Taxonomic position: Insecta: Coleoptera: Curculionidae
Common names: Andean potato weevil (English)
Charançon andin de la pomme de terre (French)
Gorgojo de los Andes, gusano blanco de la papa, gorgojo de la papa (Spanish)
Notes on taxonomy and nomenclature: There are at least eight distinct species of *Premnotrypes* attacking potato in the Andean zone, and it is difficult to consider individually their biology and significance. The most frequently cited in the literature are *Premnotrypes latithorax* (Pierce), *P. suturicallus* Kuschel and *P. vorax* (Hustache). Others include *P. fractirostris* Marshall, *P. piercei* Alcalá, *P. pusillus* Kuschel, *P. sanfordi* (Pierce), *P. solani* Pierce.
Bayer computer code: PREMSP
EPPO A1 list: No. 143
EU Annex designation: I/A1 - as *Premnotrypes* spp. (non-European)

HOSTS

Potatoes are the primary host, but adults and larvae have occasionally been seen associated with a number of other plant species.

GEOGRAPHICAL DISTRIBUTION

Premnotrypes spp. attacking potatoes occur only in South America and the EPPO designation of "Andean" for the group is thus completely equivalent in practice to the EU designation "non-European".
EPPO region: Absent.
Central America and Caribbean: Costa Rica (*P. suturicallus*).
South America: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Peru, Venezuela, particularly in the high-altitude potato-growing areas around 3000 m in the tropics.
EU: Absent.

For additional information, see Anon. (1960), Angeles (1966), Angeles & Rodriguez (1971), Aréstigui (1976).

BIOLOGY

The life-cycles of all species appear basically similar though there are differences in detail and in habits. The dry winter season is passed as adults either within the tuber or in the soil. When the rains start, the adults emerge and feed mainly on the leaves and stems of the potato plants. They lay their eggs in weeds, soil or in the potato plant. The larvae move to the developing tubers and tunnel into them. They may move from one tuber to another. The

larvae of *Premnotrypes pusillus* feed more superficially. Pupation is either within the tuber or in an earthen cell in the surrounding soil. There is usually one generation per year.

For further information, see also Munro (1954), Carrasco (1961), Molleda (1965), Squire (1972), Alcalá & Alcázar (1976).

DETECTION AND IDENTIFICATION

Symptoms

Feeding by adults produces semi-circular notches along the edges of leaves. The larvae tunnel in the tubers, causing little externally visible damage.

Morphology

Adults of *Premnotrypes* spp. are stout weevils about 4-8 mm long. Their colour varies from greyish-brown through brown to black. The eyes are large and the rostrum short and broad (the length only about twice the width). An ocular lobe on the prothorax covers part of the eye. Most species have tubercles or sculpturing on the elytra and in some the abdomen is squarely truncated posteriorly: a key to species is given by Kuschel (1956). The larvae and pupae are typical of the Curculionidae but no description giving larval characters diagnostic of the genus has been found in the literature.

MEANS OF MOVEMENT AND DISPERSAL

The larvae feed inside the tubers and their presence usually cannot be detected by external inspection. Infested tubers have been an important means of spread from field to field, and *Premnotrypes vorax* is thought to have been introduced into Venezuela with illegally imported potatoes. Larvae of several species have been intercepted on South American potatoes imported into the USA.

PEST SIGNIFICANCE

Economic impact

The genus *Premnotrypes* includes the most important weevil species on potatoes in the Andes, although some other weevil species have been cited as pests, including *Canephorotomus jelskyi* and *Rhigopsidius tucumanus* Heller (Munro, 1968). In many areas, *Premnotrypes* spp. are the most important pests of potatoes, sometimes causing complete destruction of unsprayed crops. The adults feed on young potato plants, and *P. latithorax* adults have been reported to destroy fields of young potato plants entirely, leaving nothing visible above ground. Larval damage to tubers is also important, especially when populations are high, and as many as 20 larvae may be found feeding in one tuber. In Peru, 70-100% of unsprayed crops may be infested with *P. latithorax*, and crops with up to 80% of tubers damaged by *P. vorax* have been reported from Venezuela.

Control

Simon (1958) and Tardieu *et al*. (1980) have given details on the chemical control of the pests. In Colombia, more than US$ 22 million are spent each year for spraying insecticides against *Premnotrypes* spp. (CIP, 1984). However, research is being done on the use of resistant cultivars, entomopathogenic fungi (e.g. *Beauveria bassiana*), predators (*Harpalus* spp. and *Metius* spp.) and aggregation pheromones, in order to implement a programme of integrated control (Raman, 1988).

Phytosanitary risk

The Andean species of *Premnotrypes* are listed by EPPO (OEPP/EPPO, 1984) as A1 quarantine pests and also by COSAVE, CPPC and OIRSA. The potential of these potato

weevils in Europe is difficult to assess, owing to the unusual character of the high montane climate of the tropical Andes with its extreme diurnal fluctuations in temperature and high solar radiation. It is likely that pests from such an environment will be much better adapted to the temperate climates of Europe than would those from the lowlands of South America. Colorado beetle (*Leptinotarsa decemlineata*) (EPPO/CABI, 1996) is an example of a montane species which has shown great adaptability. The Andean potato weevils are likely to cause economic damage in some of the potato-growing areas in Europe, if introduced, although it is difficult to predict exactly where.

PHYTOSANITARY MEASURES

Premnotrypes spp. belong to the group of South American pests of potato which justifies post-entry quarantine procedures in the EPPO region, together with equivalent checks before export. Only material for scientific purposes should normally be imported from South America (OEPP/EPPO, 1990).

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