Himachal Journal of Agricultural Research 42(1): 94-95(2016)

Short Note

New record of lepidopteran husk feeders, *Garella ruficirra* (Hampson) and *Conogethes* sp. on pecan from India

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Received: 04 May 2016; Accepted: 28 June 2016

Abstract

Pecan [*Carya illinoensis* (Wang) K Koch.] fruits were found infested by two husk feeders, *Garella ruficirra* (Hampson) and *Conogethes* sp. during July-August, 2015 at Palampur representing mid-hill regions of Himachal Pradesh. The infestation ranged from 10-65 per cent in different orchards/ plantations. Feeding by these insects resulted in appreciable reduction in yield due to pre-mature fruit drop and secondary infection of micro-organisms. Amongst two husk feeders, *G. ruficirra* was the dominating species (95%). Both of them were recorded for the first time infesting pecan and seem to be new pest record of pecan in India.

Key words: Husk feeders, *Garella ruficirra*, *Conogethes* sp., Pecan, New record.

Pecan [*Carya illinoensis* (Wang) K Koch.] is the most valuable nut tree native to North America. It is well adapted under sub-tropical regions of the world. In India, it was introduced in 1935 at Government Progeny-cum-Demonstration Orchard, Palampur, Himachal Pradesh. Pecan is now well-acclimatized in hill regions of Himachal Pradesh, Uttrakhand, Jammu & Kashmir and Nilgiri hills (Awasthi *et al.* 1980; Chadha 2013). In Himachal Pradesh, it is grown in parts of Kangra, Solan, Mandi and Kullu districts on an area of 855 ha with a production of 159 thousand MT (Anonymous 2014).

Worldwide, over 270 species of insects have been collected from pecan trees, amongst them coleopterans [*Apriona germari* Hope, *Batocera horsfieldi* Hope, *Curculio caryae* Horn], lepidopterans [*Acrobasis nuxvorella* Neunzig, *Arbela dea* Swinhoe, *Cnidocampa flavescens* walk, *Conogethes* (*Dichocrocis*) *punctiferalis* Guenee, *Cydia caryana* Fitch, *Zeuzera leuconotus* Walker] and hemipteran [*Phylloxera notabilis* Pergande] are of importance (Reid, 2002; Zhanga et al. 2015). In India, four insect and mite pests namely, *Haplothrips ceylonicus* Schmutz*, Brevipalpus californicus* (Banks), *Panonychus ulmi* (Koch) and *Tetranychus* sp.) were recorded associated with pecan (Chowdhuri and Pal 1970; Thakur and Dinabandhoo 2005). Recently, in Palampur, representing mid-hill region of Himachal Pradesh, pecan fruits were found heavily infested by lepidopteran larvae. These were got identified as *Garella ruficirra* (Hampson) (Lepidoptera: Nolidae) and *Conogethes* sp. (Lepidoptera: Crambidae).

During a survey in Kangra district pecan husk feeders were noticed to feed upon pecan fruits. Further studies were carried out in pecan orchards of Department of Horticulture, CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur and nearby localities during July-August, 2015. Detailed observations on nature of damage inflicted by husk feeders were recorded. For recording extent of infestation, pecan fruits were observed for signs of infestation like entry and exit hole as well as presence of excreta and frass on fruits. Infested fruits were collected and brought to laboratory for emergence of adults. Adult insects were killed, preserved and sent to the National Pusa Collection, Division of Entomology, Indian Agricultural Research Institute, New Delhi for identification.

The larvae of both the species bore into husk (fused epicarp and mesocarp) of immature fruits and made irregular hidden galleries. The affected husk became prone to infection by secondary micro-organisms (Plate 1a). This all lead to pre-mature fruit drop and reduction in yield. Larvae did not enter the nut portion (endocarp) of the fruit but their damage affected fruit quality. Affected fruits had holes covered with frass. The

Plate 1. Developmental stages and damage symptoms of husk feeders on pecan

a) Damage to husk by larva

b) Silken pupal cases on fruit

c) Adults of husk feeders: *Garella ruficirra* (left) and *Conogethes* sp. (right)

fruits in a cluster were webbed together with dark excreta. Larvae of *G. ruficirra* were dirty pink with dark coloured head. They pupated in white silken cocoons in feeding galleries as well as outside on fruits (Plate 1b). The adults were brownish moths with wing span of 22-26 mm. The basal region of fore wings exhibited a wavy pattern of lines (Plate 1c). Whereas, the larvae of *Conogethes* sp. were light brown with dark brown head and distinct spots on the body. The adult moths were yellowish with a number of dark spots on wings and measured 20-23 mm in wing expanse. Amongst two species, *G. ruficirra* was observed to be the dominating species (95% proportion) infesting pecan at Palampur. The fruit infestation in managed and unmanaged plantations varied considerably, being 10-20 and 40-60 per cent, respectively.

Yang *et al*. (2010) observed *C. punctiferalis* to inflict 20 per cent loss in pecan fruits in Yunnan Province of China. Also, *G. ruficirra* and *C. punctiferalis* were recorded as serious pests of chestnut (*Castanea mollissima*) in China (DaWei 1998). In India, Mathur (1942) observed *G. ruficirra* to utilize walnut and oak as host in north- eastern Himalayan region. Recently, Kriti *et al.* (2014) recorded *G. ruficirra* to infest walnut in Jammu and Kashmir region. The literature survey revealed that the husk feeders namely, *G. ruficirra* and *Conogethes* sp. to be the new record of pests associated with pecan in India.

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