

## LEMON TREE BORER DAMAGE ON PERSIMMON

B.H. ROHITHA, T. HARTLEY and S.J. FRANKLIN

*Ruakura Agricultural Centre, Private Bag, Hamilton.*

Lemon tree borer (*Oemona hirta*) is a native of New Zealand and it damages the sapwood of living trees by tunnelling inside the stem (Hosking 1978). Spiller and Wise (1982) reported over 30 species of trees infested by this insect in New Zealand. Its significance and biology on citrus has been discussed by Clearwater and Muggleston (1985). Another tree crop affected by the lemon tree borer is persimmon (*Diospyros kaki*). Persimmon is a relatively new crop to New Zealand. While several insect pests have been recorded colonising the persimmon fruits (Steven and Sale 1985; Prestidge *et al* 1990) the lemon tree borer affects the fruit-bearing wood. Its damage potential is proportional to the extent of fruiting wood supported by the damaged branch. Lemon tree borer damage can affect the tree's long-term longevity and the yield of the persimmon trees. Some characteristics of lemon tree borer attack on persimmon in the Waikato is presented in this communication.

A 1 ha persimmon (cultivar Fuyu) orchard block on Horotiu sandy loam in Tamahere, Hamilton, was used for this study. The 6-year-old trees were free standing supported by two horizontal wires. The orchard was adjacent to a row of *Pinus radiata* trees on the east and surrounded by pasture. One hundred persimmon trees were examined at random for signs of lemon tree borer attack. The study was done in mid May 1992 when the leaves had fallen and damage was clearly visible on the wood. Jelly like tree secretions (sometimes up to 10 ml) accumulate near the frass ejection holes (Clearwater and Wouts 1980) made by the insect. The parameters recorded were the number of incidences of attack per plant, mean diameter and the class of wood (primary-i.e. main verticals, secondary etc.) damaged, length of the affected area as evident from the frass ejection holes, and the height from ground to the wound.

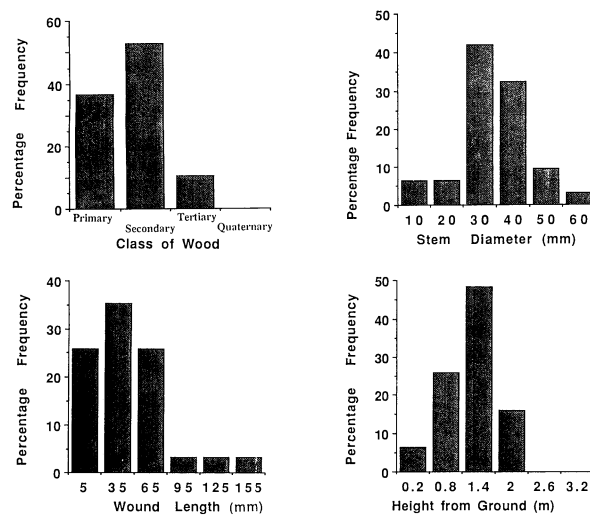
Lemon tree borer damage was found on 41% of the trees in the orchard. Four percent had two attacks per tree while 1% had three attacks per tree. Secondary wood was the most frequently affected class of wood (Fig. 1a). No damage was discovered on the new wood. Ninety five percent of the damaged wood was between 31 and 39 mm in diameter (Fig. 1b). The proportion of the wood diameter at the damaged site compared to at the graft was a mean of 0.5. These results demonstrate that the insect mainly attacks mature wood which is important for the long-term structure and productivity of the tree. The fact that damage is most prevalent in secondary branches results in considerable fruit loss on the upper fruit-bearing tertiary and quaternary branches. The mean length of the damaged wood was 43 mm with 95% of the wounds ranging from 30 to 57 mm (Fig. 1c), indicating the extent of weakening in the wood. The weakened branches, break and can die resulting in loss of production. Ninety five percent of the damage occurred between 1.0 m and 1.3 m above the ground (Fig. 1d) when the average tree height was over 3 m. This is important because the loss of a branch low down in the plant cannot be replaced easily and this will result in a long-term yield loss for the tree.

The severity of the infestation in a persimmon orchard may be the result of specific management regimes of the trees and other cultural practices. The flight period of the adult borer could extend over many months (Clearwater and Muggleston 1985). As a result persimmon trees are exposed to borer attack most of the growing season. Unprotected pruning wounds would be a major influencing factor on the incidence of this insect. Persimmon is known to have a brittle wood structure prone to cracking and breakage in strong winds and under heavy crop load. These factors provide additional points of entry to the borer. Clearwater and Muggleston (1985) report that with citrus, larvae are protected from most control measures once they enter the wood. High infestations would thus recur in subsequent years in orchards. This emphasises

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the importance of preventive measures in borer management in persimmon. This study shows that lemon tree borer may be an important problem on persimmon in the Waikato.

An ichneumonid parasite and a pathogenic fungus have been recorded causing mortality of the lemon tree borer (Hosking 1978). The level of control exerted by these biocontrol agents on the borer population is not known. The use of a parasitic nematode (Clearwater and Wouts 1980) and the use of lindane (unregistered) as a pruning wound dressing in citrus have been discussed (Clearwater and Muggleston 1985). The potential for biological, chemical and cultural practices to prevent borer damage in persimmon warrants further study.



**Fig.1:** Some characteristics of lemon tree borer attack in persimmon. (a) Class of wood affected; (b) Stem diameter at the damage; (c) Apparent external wound length; (d) Damage height from ground level.

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