

Is the fruit tree tortrix moth (*Archips podana*) a pest of Bramley apples?

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Apple is host to an extensive fauna of tortricid moths. At least 25 species have been recorded as pests of apple in UK orchards. However, most of them have been considered to be of minor importance and out of this array of species only three are considered to be significant pests by growers. These are; (1) the codling moth (*Cydia pomonella*); (2) the summer fruit tortrix moth (*Adoxophyes orana*); (3) the fruit tree tortrix moth (*Archips podana*). It is the latter species that occurs significantly in Bramley orchards (Mowat and Clawson, 1996).

The lifecycle of *Archips podana* in apple orchards

The moths hibernate as young larvae in cocoons fixed to twigs or buds. These emerge in spring over a fairly long period from late March to early May when leaf buds are at the green cluster or flower buds at the pink bud stage (Figure 1). Pupation occurs in late May to early June inside leaves that have been spun together by the larvae. The adult moths appear mid-June and are found up until mid-August. The greatest numbers appear in late June or July, dependent on weather.

Eggs are laid in several batches of 50-100 eggs on the upper surface of leaves during June and July. The egg mass is covered with a wax-like secretion that so closely

matches the green colour of the leaf that detection is difficult. Hatching occurs within 17-23 days. Larvae disperse after hatching and, whilst young, each one lives in a silken web placed beside the midrib on the underside of a leaf. The new generation larvae may cause further damage to the apple fruit before they hibernate. Larvae taken into apple stores can even continue to feed on the fruit. Some of the larvae of the new generation hibernate after moulting once or twice; others develop to maturity and give rise to a second generation of moths in September and early October.

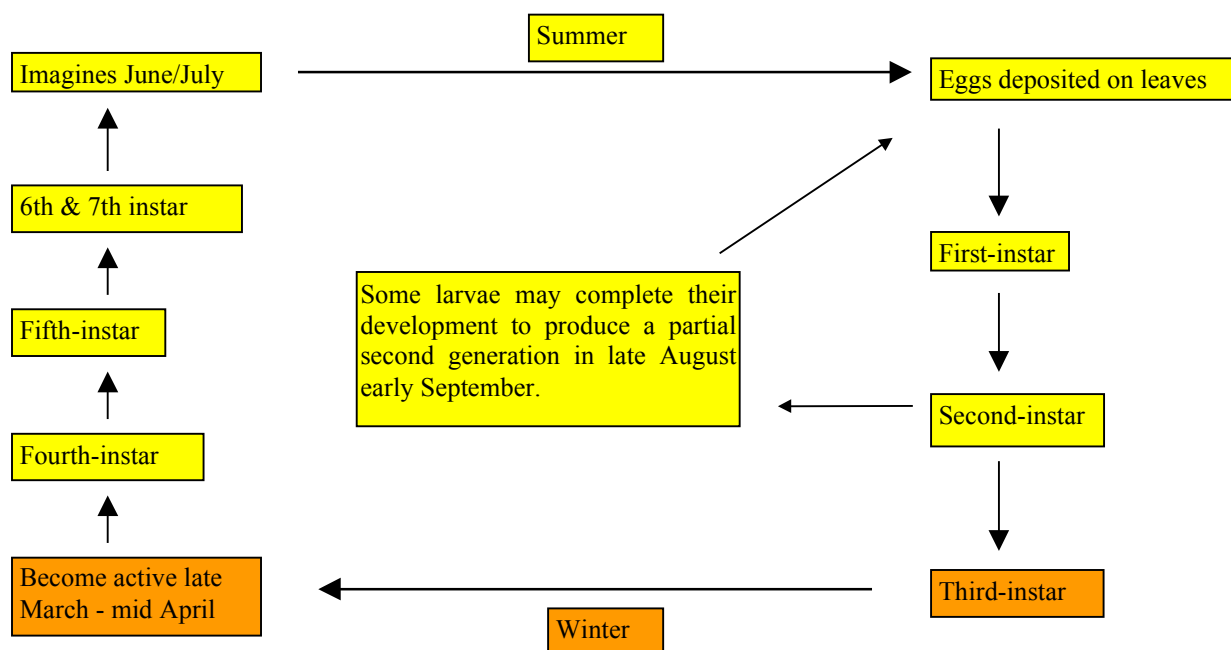


Figure 1. Lifecycle of fruit tree tortrix moth, *Archips podana*.

Monitoring of *Archips podana* in local orchards

Numbers of *A. podana* have been found to regularly exceed the recommended ADAS action threshold of 30 moths per pheromone-baited trap per week in local commercial orchards (Cross and Berrie, 1994; Mowat and Clawson, 1996). Weekly sampling by the current author (Cuthbertson, AGS) within both managed (insecticides applied for

other insect pest control) Bramley orchards and unmanaged (no insecticides applied) habitats during 1997 concluded the same result (Figure 2). However, despite greatly exceeding the threshold few of the apples were considered as unmarketable; although some may have been downgraded, overall the damage was negligible.

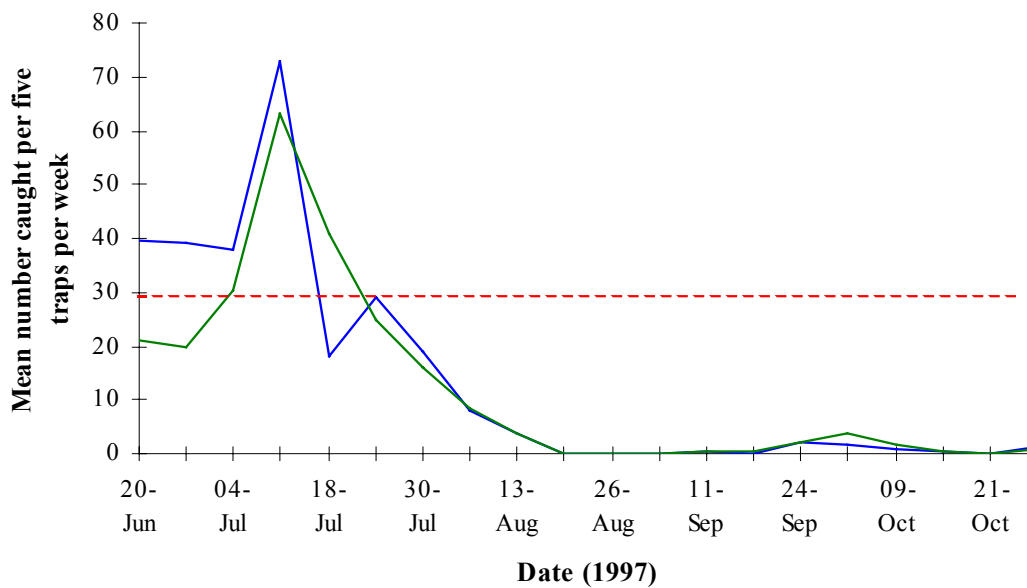


Figure 2. Mean number of *Archips podana* in five managed orchards (—) and five unmanaged habitats (—). Recommended spray threshold shown (---).

Conclusion

With populations well above the spray threshold, damage would be expected. Reasons for this are unclear but it may be due to a feeding preference by the larvae: the Bramley fruit may be too acidic for larvae to feed upon. The current ADAS action threshold for *A. podana* has not been specifically designed for Bramley Seedling orchards but for dessert apple orchards in southern England (Cross and Berrie, 1994). Capture of moths by the pheromone traps also does not prove that the moths are resident in the orchard, nor that their larvae use apple as a host. Pheromone-trap

catches only indicate relative activity for the particular species captured. Therefore, considerable judgement by the individual grower, weighing up the potential of moth larvae damage with the economics of chemical control, needs to be applied before deciding to apply insecticides to control *A. podana* within their orchards.

References / further reading

Cross, J.V. and Berrie, A.M. (1994). Sampling and assessment of pests and diseases as the basis for decision making in orchards in the UK. *Aspects of Applied Biology* **37**: 225-236.

Mowat, D.J. and Clawson, S. (1996). The need for pest control in Northern Ireland Bramley apple orchards. *Crop Protection in Northern Britain* **2**: 225-230.