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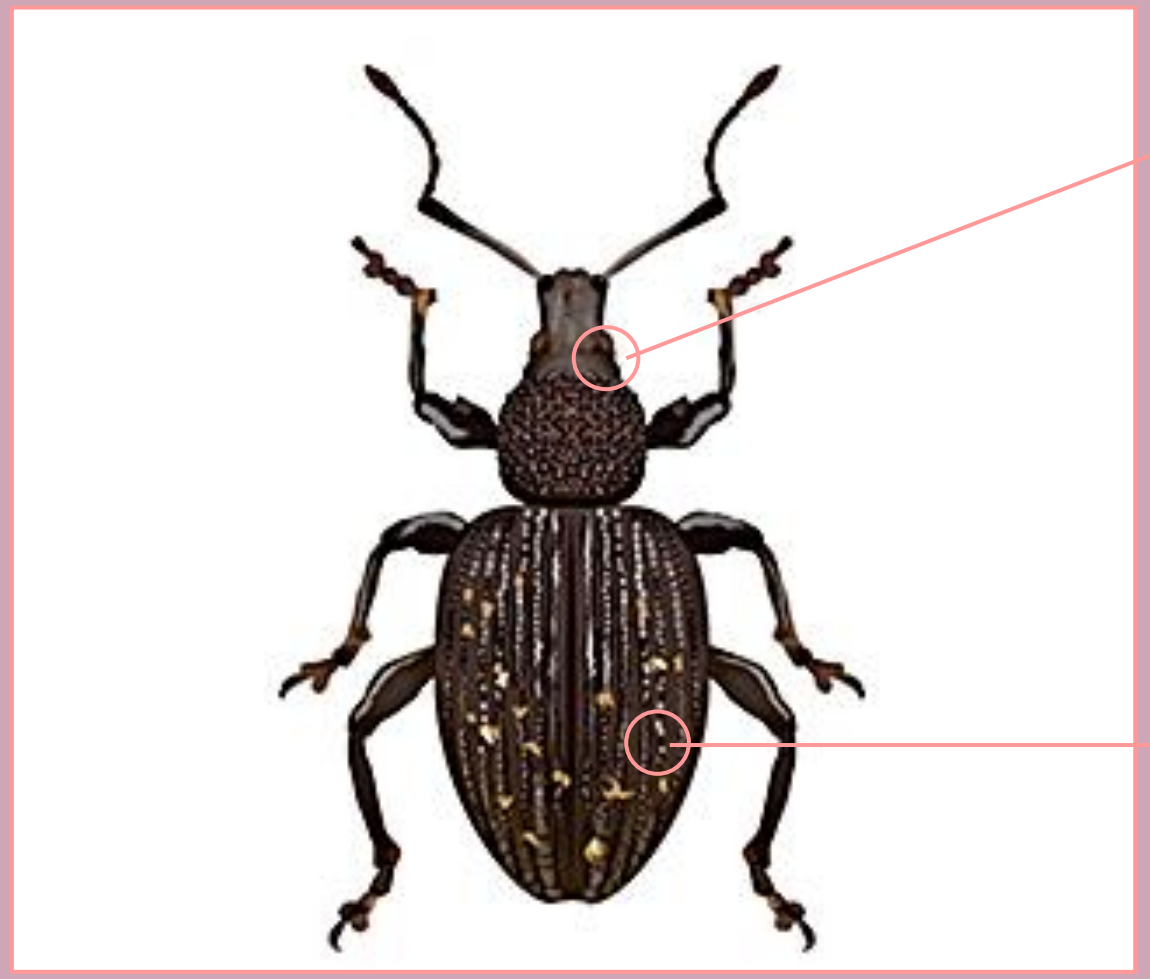
‘Catch me if you can’- improving monitoring and control of black vine weevil (*Otiorhynchus sulcatus*) in soft fruit and ornamental crops

Introduction to vine weevil, *Otiorhynchus sulcatus.*



Black eyes and snout

tufts of orange hairs on the fused wing cases

What makes vine weevil a serious pest?

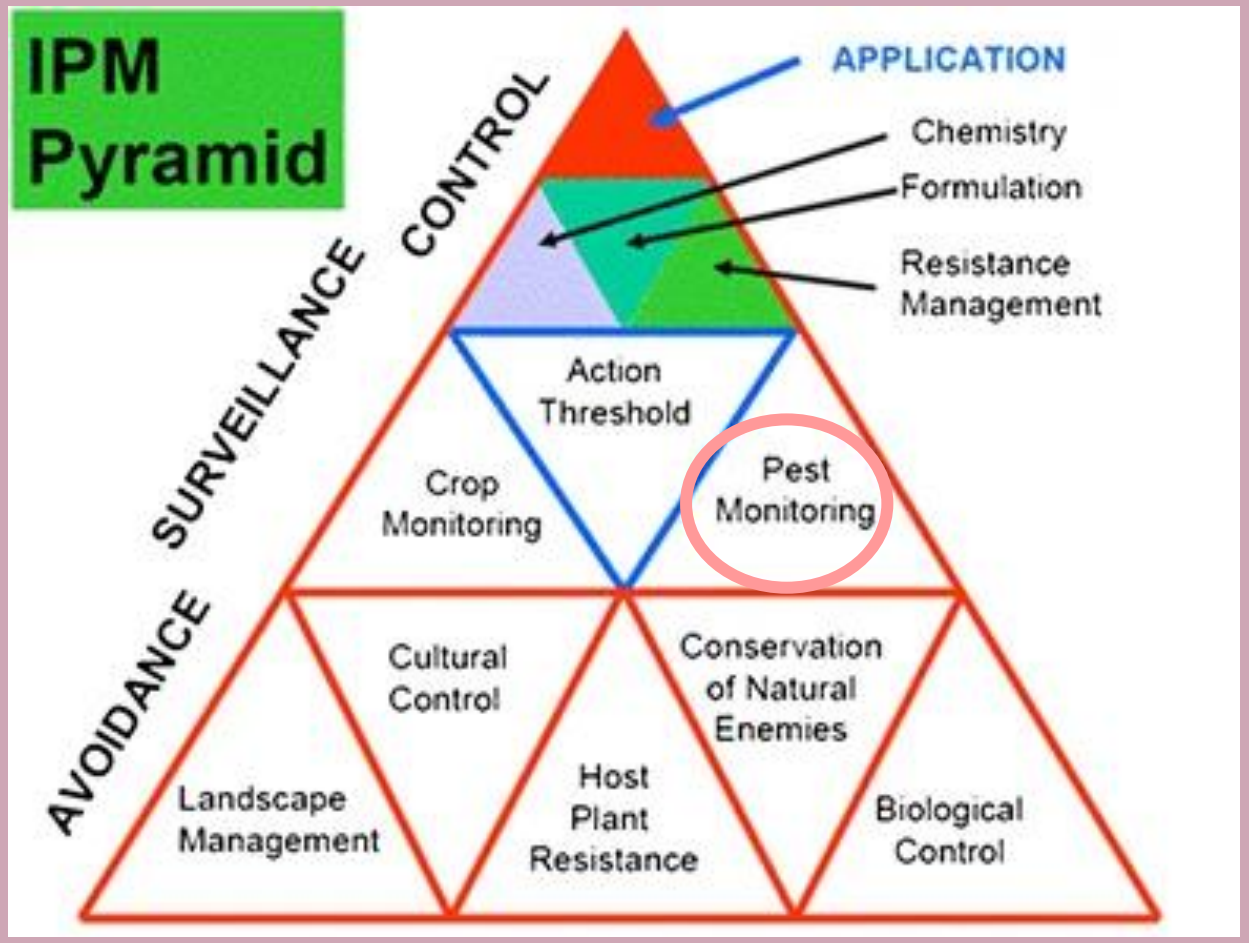
Adult leaf notching feeding marks on *Hosta*

The vine weevil host range has been reported to include over **150 species (**Buxton and Pope, 2011)

What makes vine weevil a serious pest?

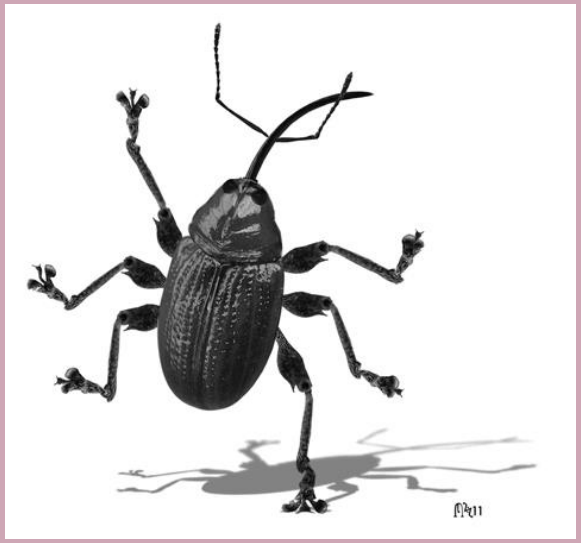
Yield losses can reach as high as **70%** following control failure or up to **100%** in older crops (Bennison *et al*., 2014)

Controlling vine weevil



‘Catch me if you can' – improving monitoring and control of black vine weevil (*Otiorhynchus sulcatus*) in soft fruit and ornamental crops

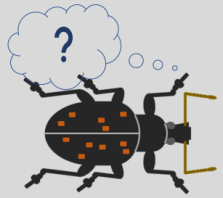
- Improve the sensitivity and reliability of monitoring tool to detect the presence of adult vine weevil
- Identify behaviourally active volatile compounds that may be used to manipulate vine weevil behaviour
- Test registered and near to market biopesticides for use as vine weevil controls
- Develop an effective IPM approach to vine weevil management



Improve the sensitivity and reliability of monitoring tool to detect the presence of adult vine weevil

Determine the effect of colour, size and entrance location on monitoring tool efficacy under laboratory conditions

Determine the effect of colour, size and density on monitoring tool efficacy under glasshouse conditions



- Dark colour
- Entrances at the base
- Tall

- Light colour
- Entrances at the top or side
- Short

*Fezza *et al.* (2022). Optimising vine weevil, *Otiorhynchus sulcatus* F. (Coleoptera: Curculionidae) monitoring tool design. Insects, 13 (1), 80.

"Catch me if you can" – improving black vine weevil (*Otiorhynchus sulcatus*) monitoring tool design.

Fezza E. [1,2], Roberts J.M. [1], Bruce T.J.A. [3], Gaffney M.T. [2], Walsh L.E. [2] & Pope T.W.[1]

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INTRODUCTION

Black vine weevil is one of the most economically important insect pests of horticultural crops. Fezza *et al.* (2022)* showed that under laboratory condition, dark and tall refuges with entrances around their base were preferred by this weevil. Here, behavioural responses of adults to colour and height as well as refuge density were investigated under glasshouse conditions.

METHODS

- Weevils (N= 40) were released at 20:00 into the centre of each tent cage (1.45 x 1.45 x 1.52 m);
- After 12 hours the preference between the different refuge designs and refuge densities tested was checked and recorded.

RESULTS

Vine weevil adults showed a preference for:

- black than white refuges (Figure 1);
- taller than shorter refuges (Figure 2).

In addition, increasing the number of traps per unit area, the number of trapped vine weevil adults increased (Figure 3).

CONCLUSION

Development of improved monitoring systems is currently hindered by a lack of knowledge of whether vine weevil adults select a monitoring tool based on its visual appearance. This study provides further insights into refuge selection by adult vine weevils, which can be exploited to improve monitoring tool design.

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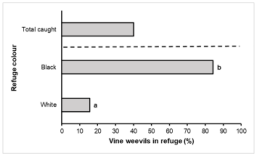

Figure 1. Percentage of vine weevil adults recorded in refuges painted black or white when released as a group of 40 individuals (number of replicate days = 5). Different letters indicate significant differences between refuge choices (Exact binomial test).

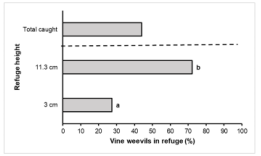

Figure 2. Percentage of vine weevil adults recorded in refuges with a height of 3 or 11.30 cm when released as a group of 40 individuals (number of replicate days = 5). Different letters denote significant differences between refuge choices (Exact binomial test).

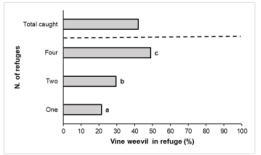

Figure 3. Percentage of vine weevil adults recorded in one, two or four refuges when released as a group of 40 individuals (number of replicate days = 10). Different letters denote significant differences between refuge choices (Tukey's HSD test).

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