Beetle management and IPM in pulses

Becky Howard

Pea and bean weevil

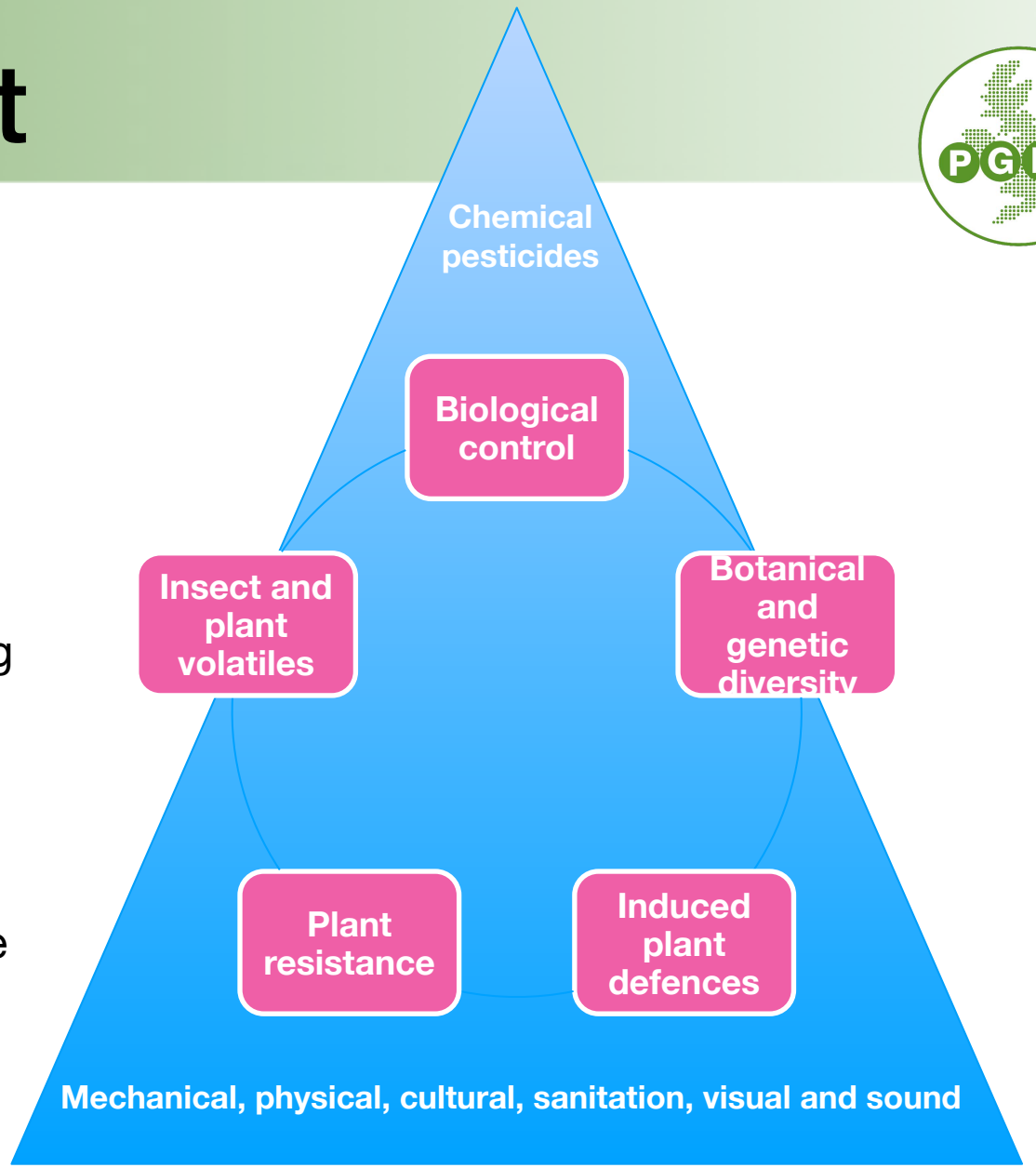
- Adults emerge in spring (when temp > 12.5°C) and fly to the crop from February onwards to feed on foliage, causing ‘U’ shaped notches
- Larvae feed on root nodules leading to reduction in N availability to the plant – highest levels of damage occur during the flowering period
- Yield losses can be significant and are usually greater when damage to nodules occurs in conjunction with other plant stress factors
- Damage to root nodules may lead to greater susceptibility to infection with soil-borne disease

Bruchid beetle

- Adults emerge later in spring and fly to crops when temperature is between 15 and 20°C
- Feed on flowering beans and females lay eggs on the pods
- Larvae develop inside the seed and leave field beans around dry harvest to move to overwintering sites

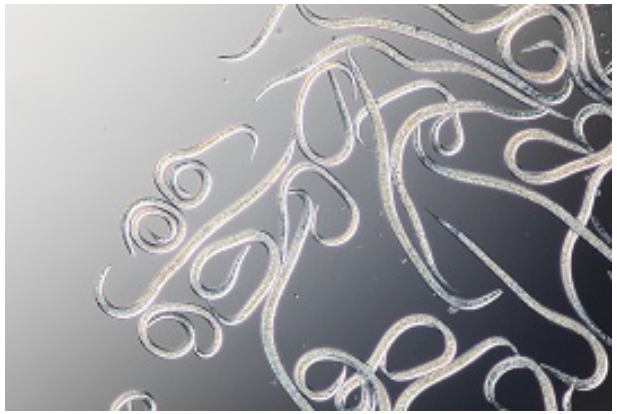
Current management

- Chemical control has been the primary method and for pulses our chemistry is limited to pyrethroids
- For both pests, there is resistance to pyrethroids in populations
- Timing for bruchid insecticide control is during flowering
- Geographical location may influence treatment necessity
- Integrated management techniques are essential for the future



IPM techniques for beetle management in peas and beans

- Encourage natural enemies (generalist predators) such as ground beetles for weevil control
- Entomopathogenic fungi and nematodes – more research is needed to determine the effects on weevil and bruchid populations
- In some countries the use of no- or min-till leads to reduced larval feeding by weevil
- Delaying drilling for 10 days after peak adult emergence will reduce damage caused by weevils (monitoring becomes essential)
- Increase root nodulation – improved soil conditions/ inoculation?



Courtesy of Koppert UK

Monitoring pea and bean weevil

- Identifies seasons where weevil numbers are low, and crops do not require treatment.
- Identifies the time of peak activity and allows crops to be treated at the optimal time.
- Reduces the need for prophylactic spraying.
- Allows the selection of drilling time to avoid periods of serious damage (useful in organic crop production systems).
- An aid in integrated pest management systems for assured produce crops.

- Traps are sited on a single grassy verge or headland of a field which had been cropped with peas or beans the previous year. **They should be sited by mid-February and weevils counted three times each week.**
- Threshold is an average of 30 weevils per trap on a single occasion.

Trap cropping to manage beetle pests in pulses

- 2021 and 2022 trials have included:
- Trap crops: January sown spring beans; vetch; and lucerne mixtures
- Trap crops with and without attractants
- No insecticide applications in any of the main crops (spring beans) at any of the sites in 2021, one field treated in 2022 as a comparison

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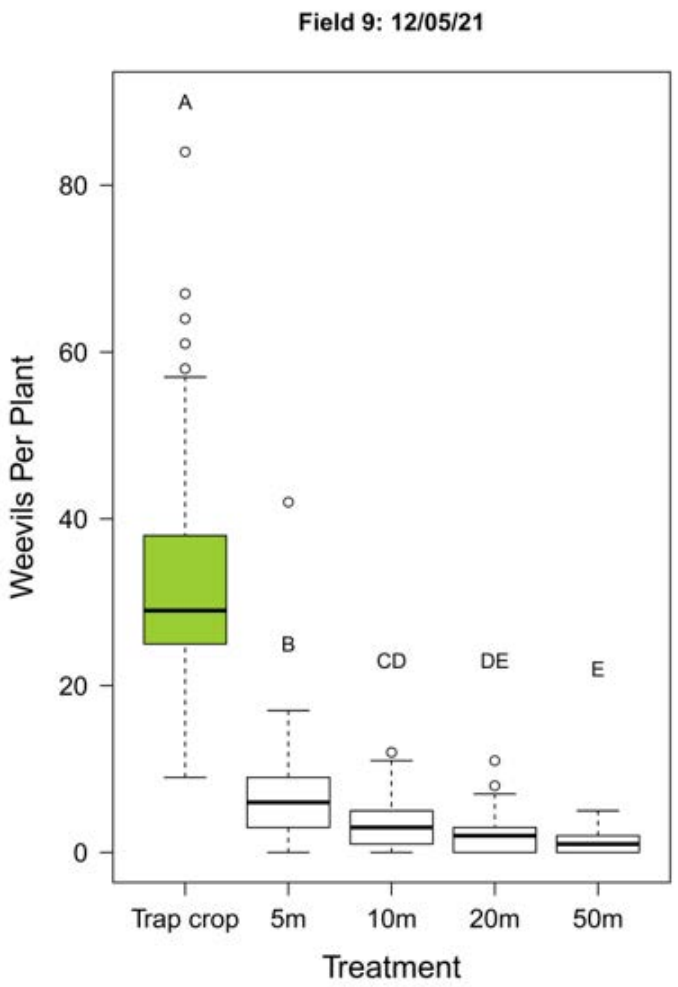
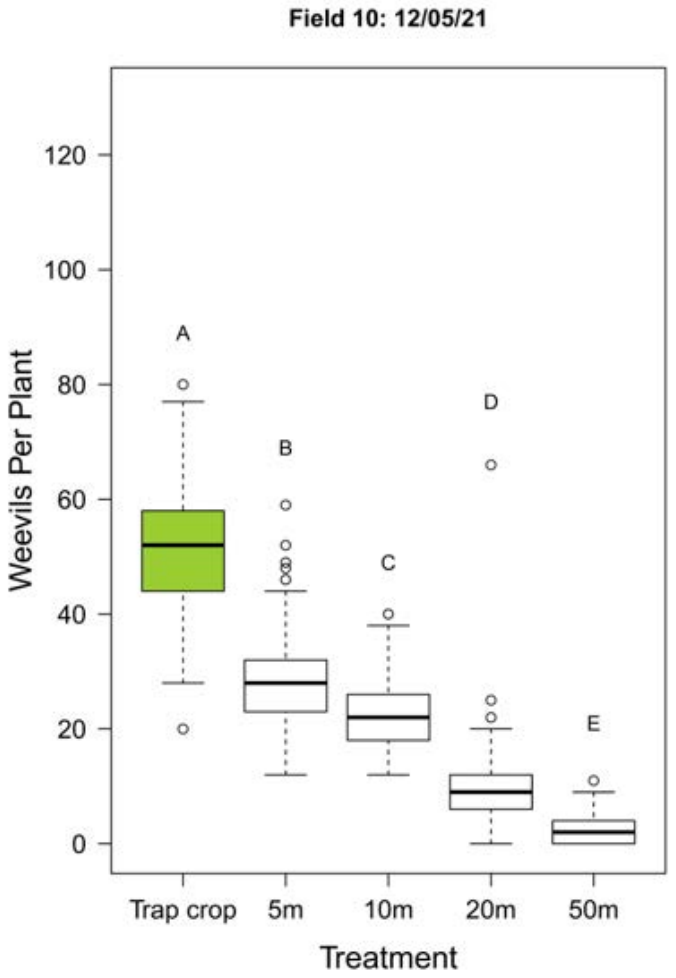
Weevil damage 2021

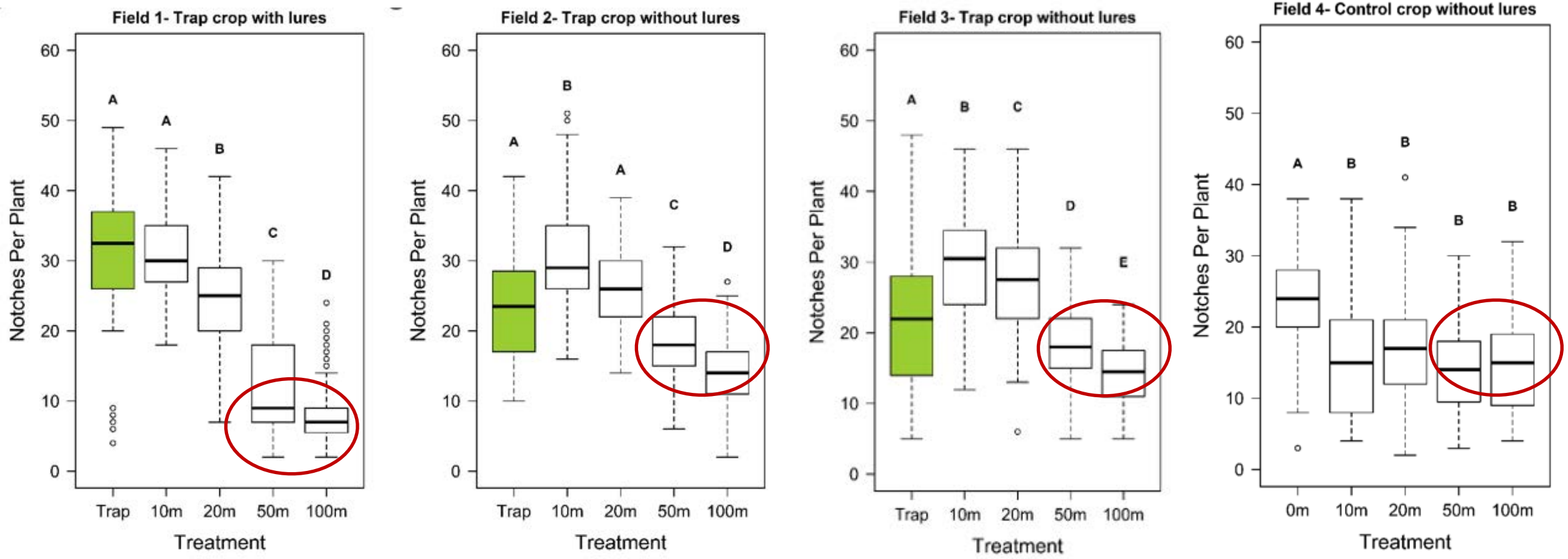


Trap crop without lures

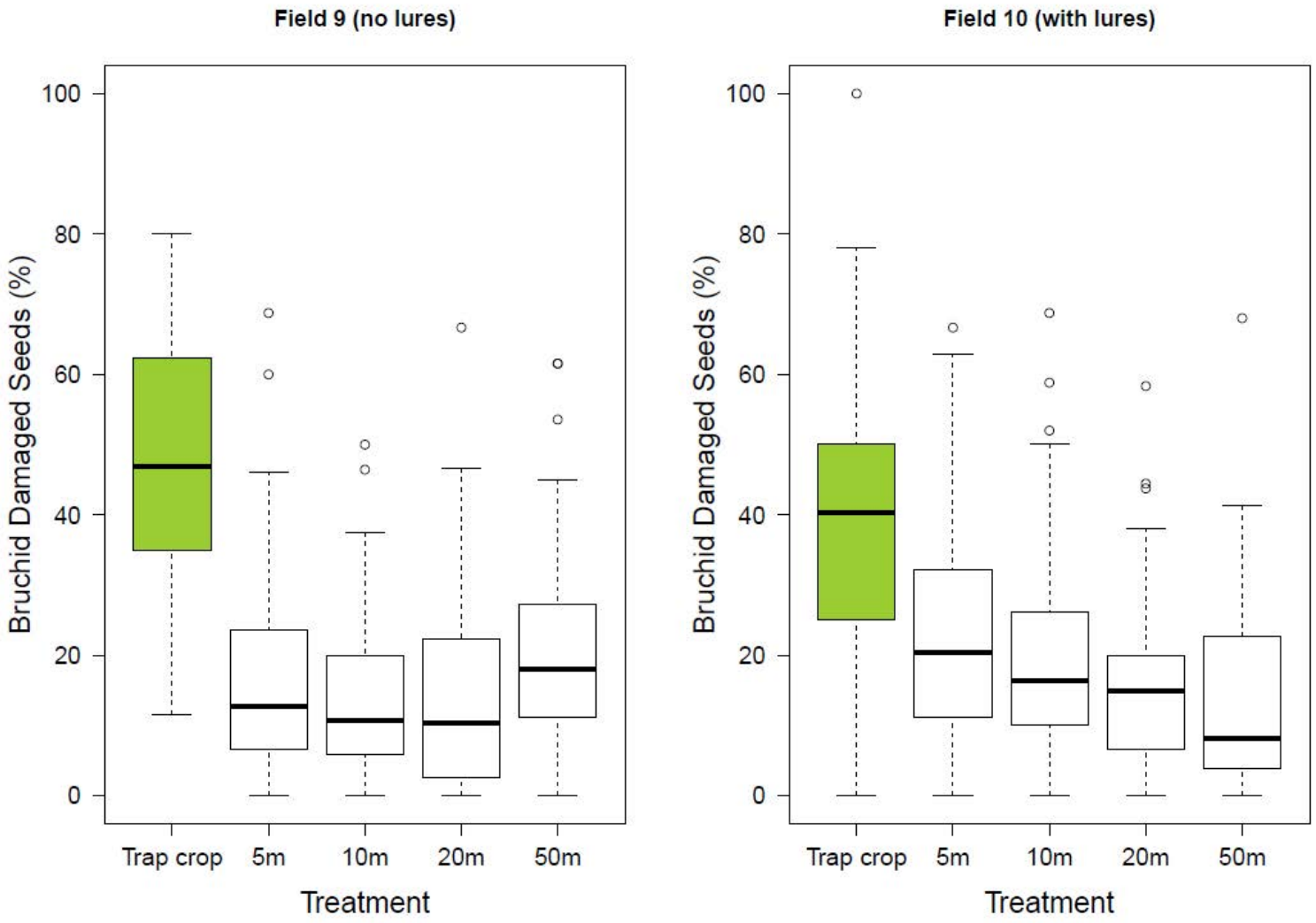


Trap crop with lures

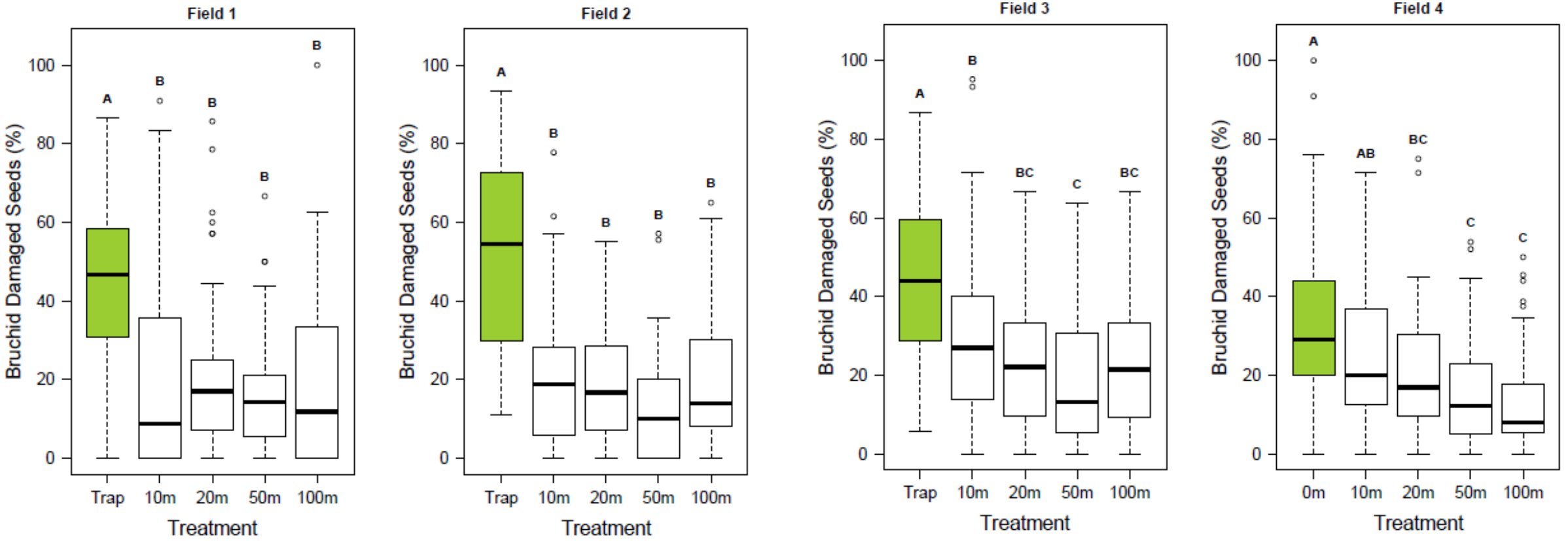
Weevil damage 2022



Bruchid damage 2021

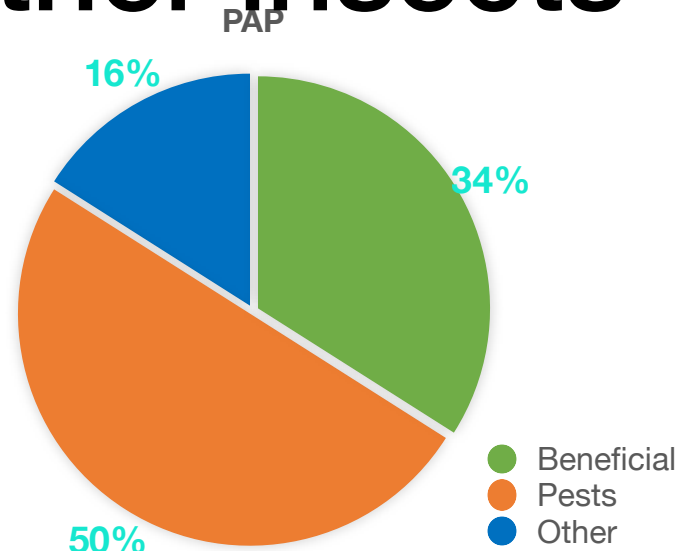


Bruchid damage 2022

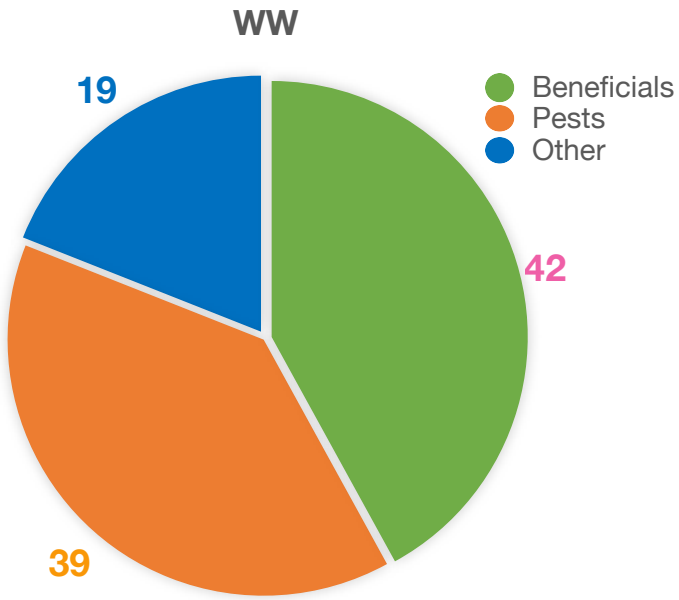


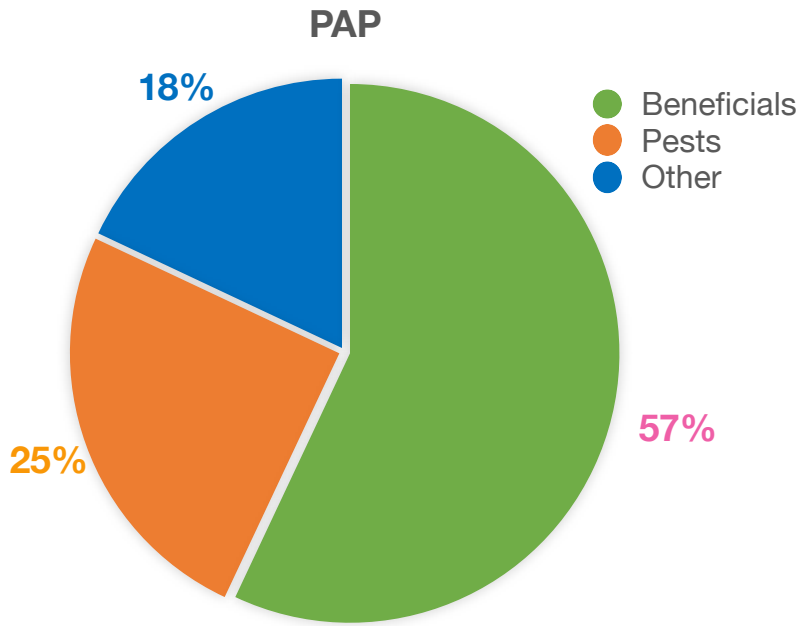
Field 1 = trap crop + lure, Field 2 = trap crop without lures, Field 3 = trap crop without lures (+ bruchid spray), Field 4 = control field (no trap cop or lures)

Pest species and other insects



Sweep netting





Pitfall traps

Further work

- Cover crops in field bean rotations
- AB15 in legume rotations
- Foot rot in field beans – development of testing and risk prediction
- Farm trials
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Q&A


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