

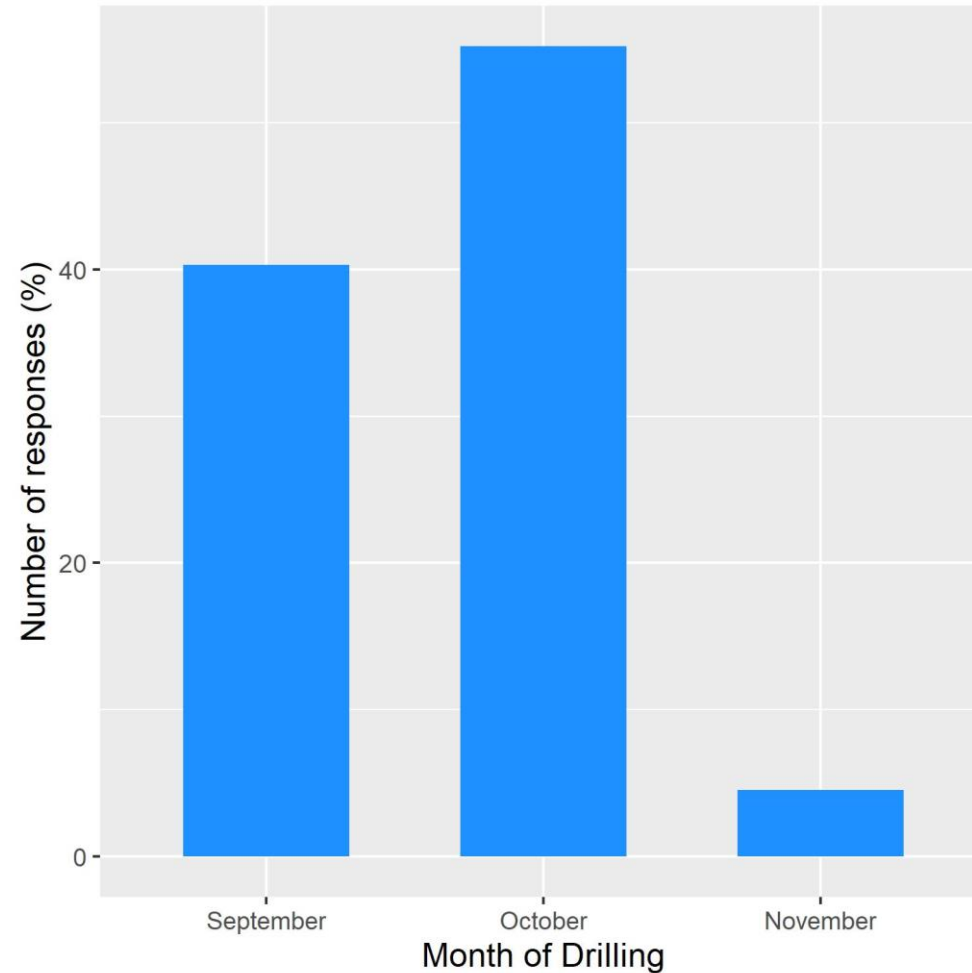


Mechanical weed control – advances in arable crops

WILL SMITH

Current state of weed management for UK arable

- Significant dependence on synthetic herbicides for effective control
- Pressure on these compounds from resistance, regulation and market preferences
- Evidence of uptake of IWM messaging e.g. drilling date, although often reactive to issues
- Alternative in-crop tools are going to be needed in the future



2021 IRG Survey (NIAB-Bayer)

Future methods of direct weed control

Biological control

Electrical weeding

Introduction of new
MoAs

Use of robots

RNAi silencing

Mechanical
control



Mechanical (inter-row) weed control

+

- Mature technology
- Immediately deliverable on farm
- Utilises existing dealer networks for support
- **Delivers effective weed control**
- **Cost-effective solution**

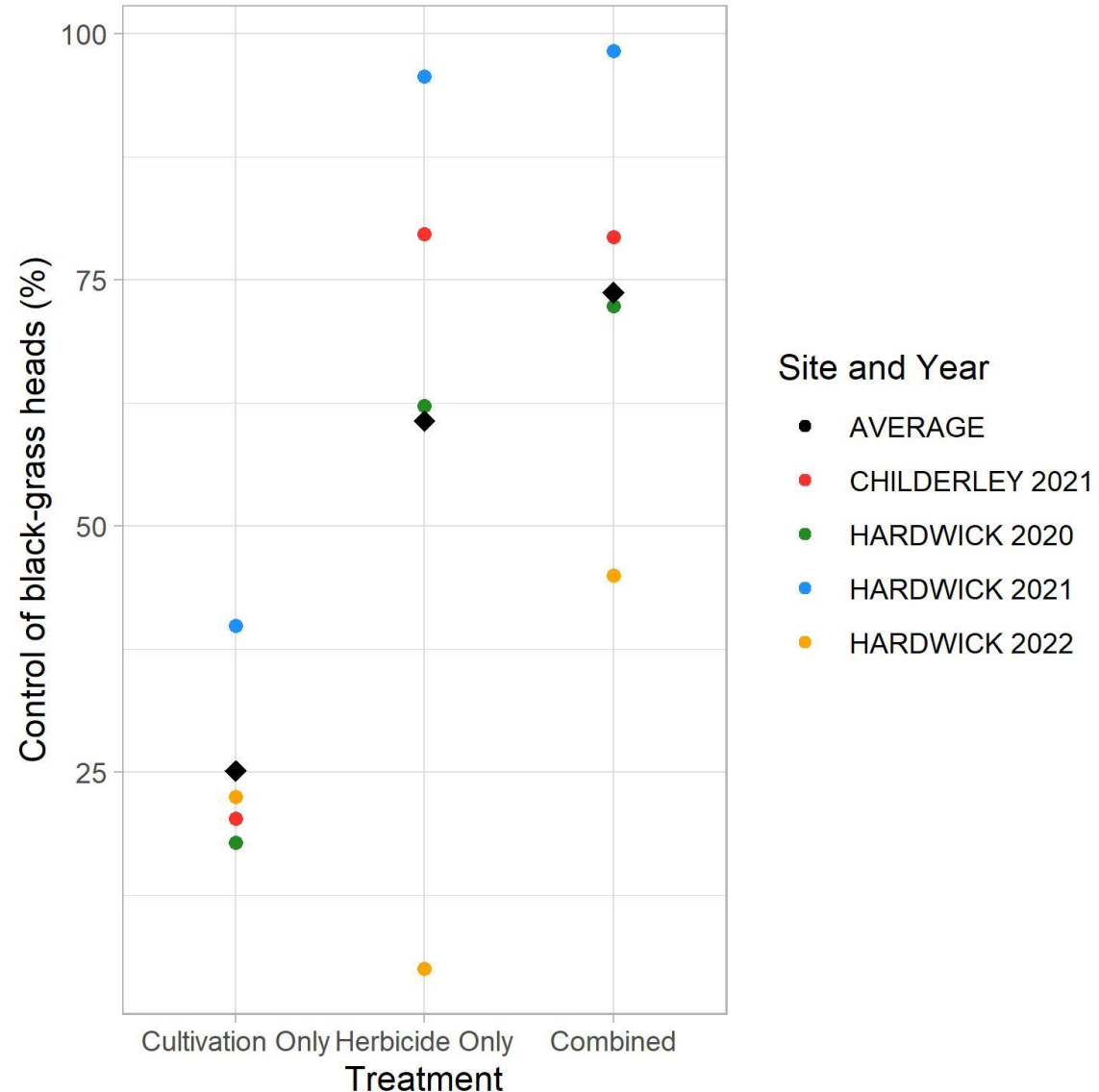
-

- Only targets the inter-row gap
- Requires some specialist knowledge to set-up and get working effectively
- May clash with other field operations

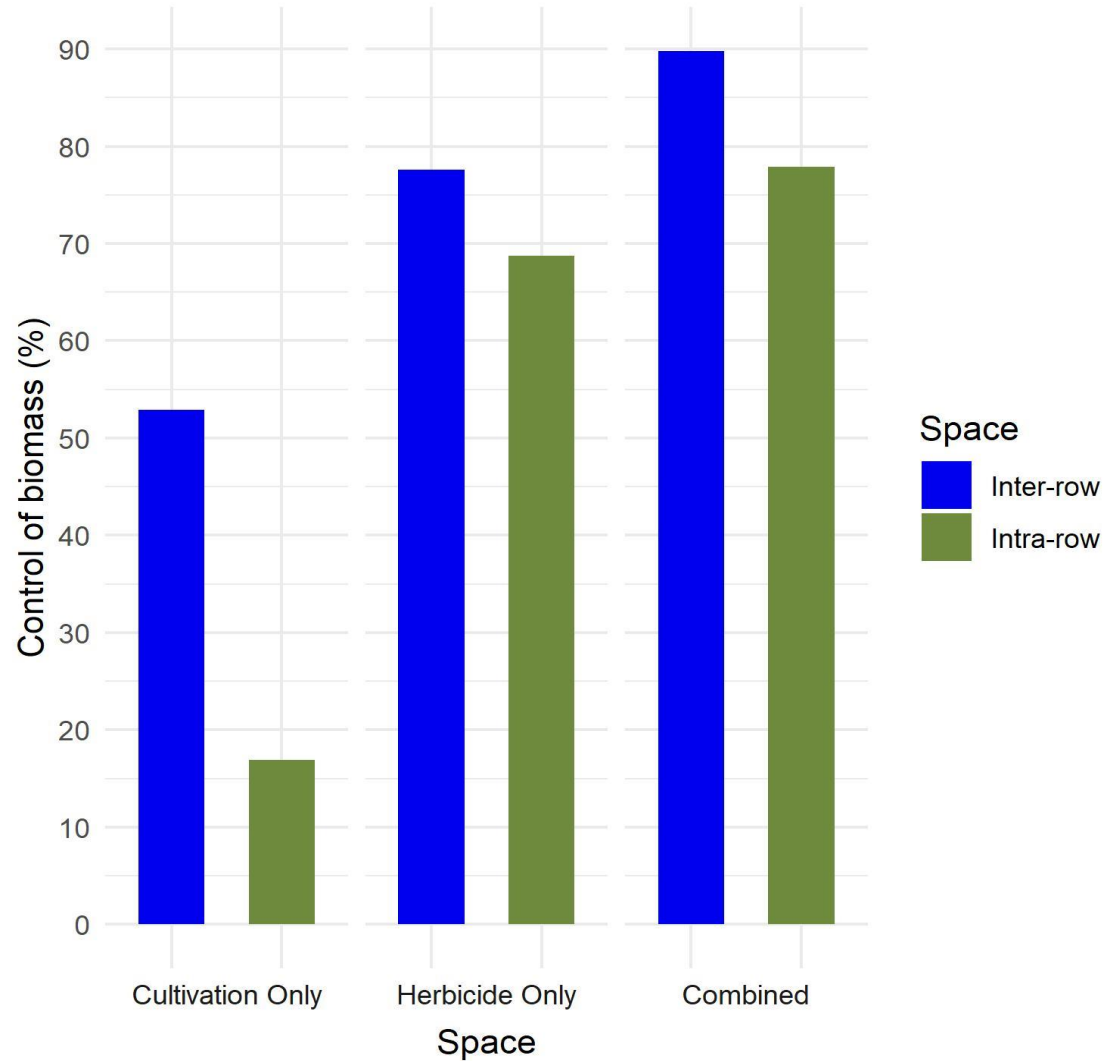


Use of inter-row cultivation

- 25% average control associated with inter-row cultivation, with 13% on-top of herbicide
- Base level of control is low compared to similar work in Denmark – however that did not address grass-weeds specifically
- High potential to further tweak and improve e.g. how close to the row, depths, and timing

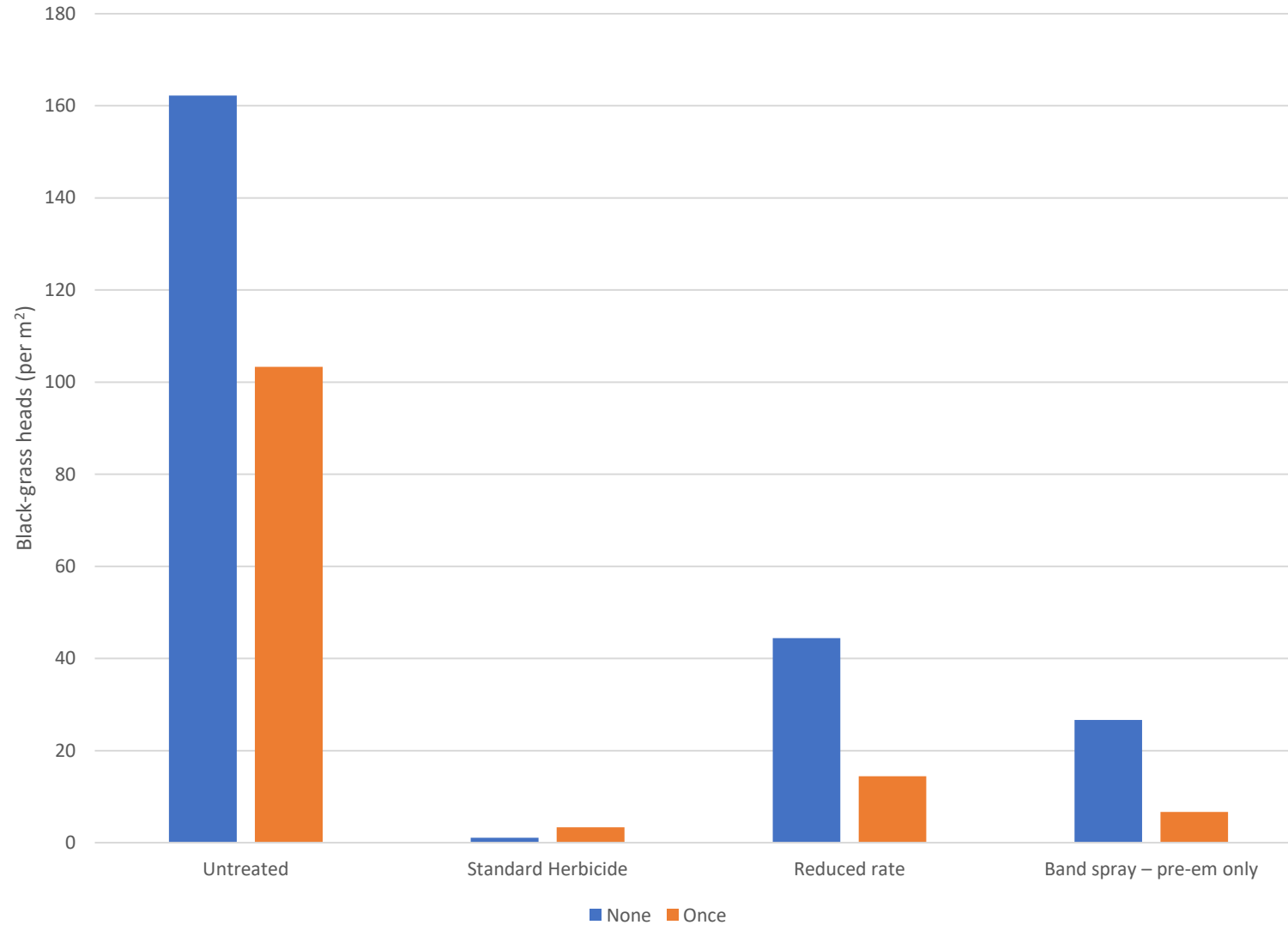


Re-framing the concept of control



- Assessment space needs to be targeted to the treated area

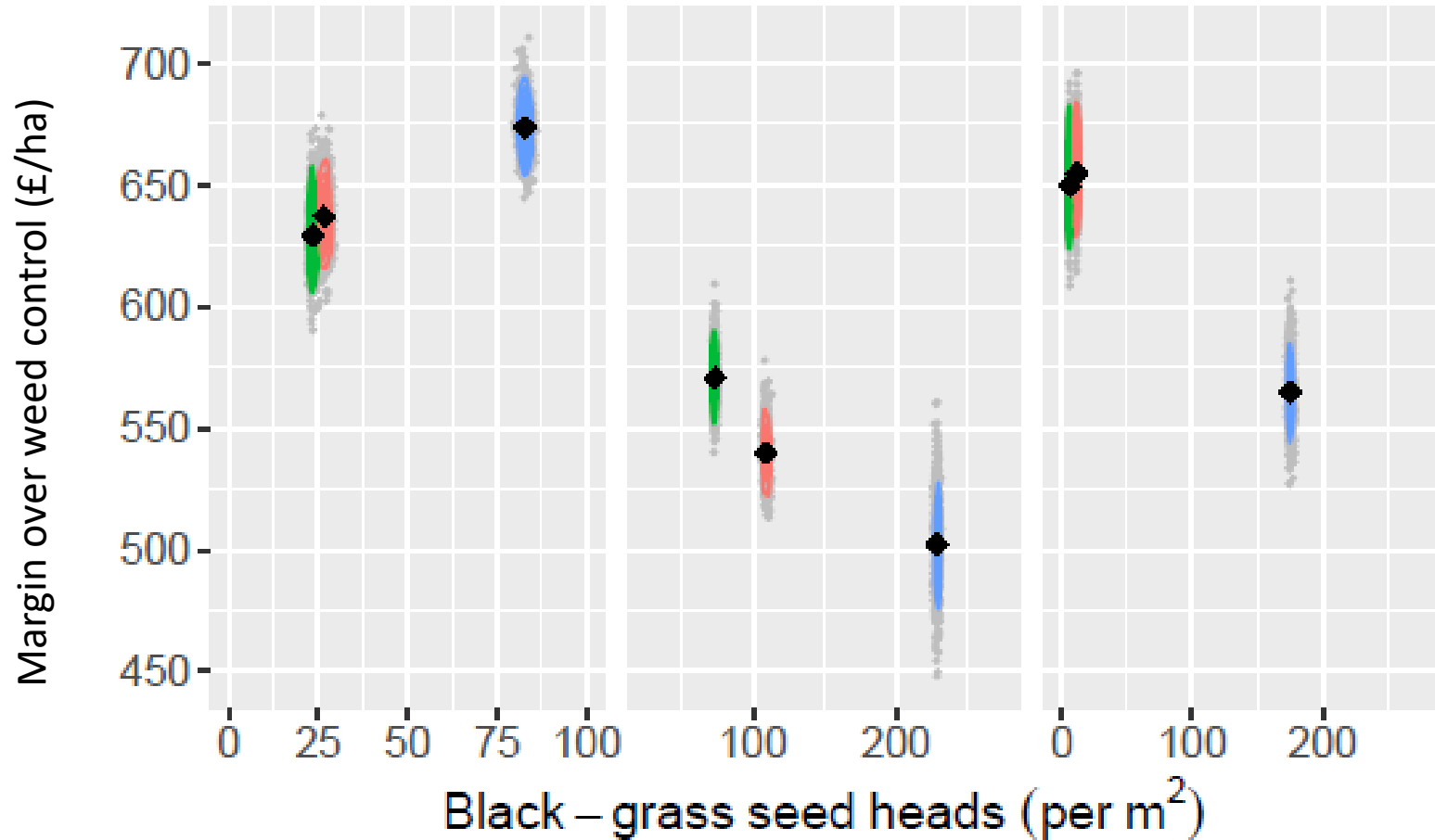
Addressing the weaknesses



Gowan[®]

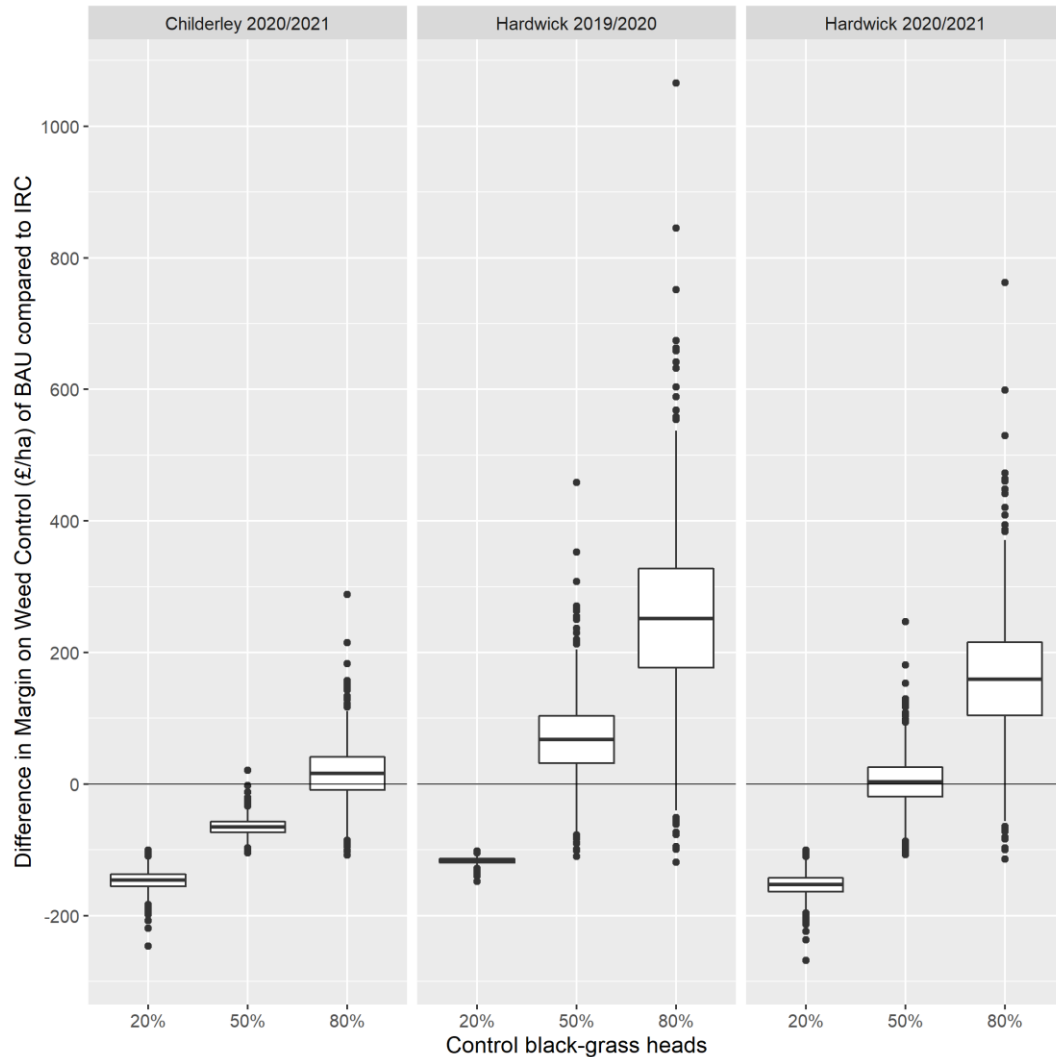


Economic performance



- A combination of IRC and herbicides (green) performs equally to herbicides alone (red)
- At a site where black-grass is low, then IRC alone (blue) may be preferential

Economic performance when herbicide performance declines



- As herbicide performance declines, the economic advantages of moving to mechanical control only is improved.
- When herbicides are only 20% effective, mechanical control might only be 30% effective – so we need to improve this to deliver meaningful weed control

Summary

- Mechanical weed control can support herbicides to deliver improved weed control
- In a future of pesticide reduction targets, mechanical cultivation and banded herbicides could play an important role in delivering effective weed control
- Inter-row cultivation is economically viable, particularly as control with herbicides becomes more challenging

