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

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

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• 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

Bar chart showing:
- Cultivation Only
- Herbicide Only
- Combined

Space categories:
- Inter-row
- Intra-row
Addressing the weaknesses

- Untreated
- Standard Herbicide
- Reduced rate
- Band spray – pre-em only

Black grass heads (per m²)

- None
- Once
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