# Establishment is key to success of Living Mulches

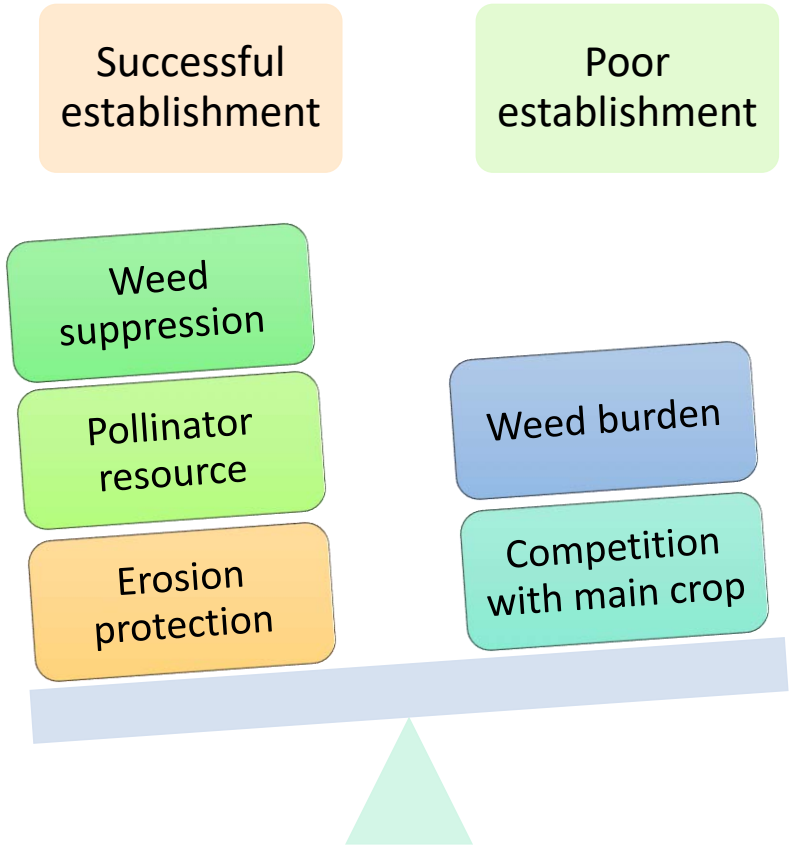
*Learnings from our research at Denby Hall Farm*

Giulia Kessous, Catriona Willoughby, Charlotte Bickler, Hannah Fraser, Alex Fraser

Farming Innovation Programme and Innovate UK

Finding the balance between a healthy thriving mulch and crop-compromising competition can be difficult for growers, particularly in organic systems where management options are limited. In our work with Denby Hall Farm, ORC researchers have found that the decisions made at establishment – including timing and kit used - are key to giving both cash crop and mulches the very best start in the field for a successful season.





# Living Mulches FIP

ORGANIC RESEARCH CENTRE

## *Field 1: Allow mulch to establish prior to main crop*

| Mulch establishment | Year 1 -Crop establishment Winter wheat | Weed Management | Crop Harvest | Year 2- Crop establishment Winter oat |
|---|---|---|---|---|
| August 2024 | October 2024 | Spring 2025 | July 2025 | October 2025 |
| • Mulch species combi drilled into tine cultivated seed bed following mown and disced fertility boosting cover crop. Seed rate 8 kg/ha. Flat rolled. | • Wheat drilled with a direct disc drill (Sky drill), 24th of Oct.<br>• 150% of typical seed rate | • Spring tine harrowed<br>• Flail mown<br>=> Significant weed pressure. | • Low crop yield. Direct drilling not successful in mulch or control strips. | |



*Strip till drill (Claydon).* 150% typical seed rate.

### *Lessons learned*

- August mulch establishment timing combined with direct drilling resulted in a high weed burden.
- Direct drilling was not successful in the mulch or control strips.
- Establishing the crop with a strip till drill in year 2 was more successful.
- Year 2 has a manageable understory of mulch alongside a healthy crop – impacts for year 2 on yield and weed suppression is yet to be seen!

## *Field 2: Establish crop first to limit mulch-crop competition in year 1*

| Year 1 -Crop establishment Winter wheat | Mulch establishment | Crop Harvest | Year 2- Crop establishment Winter oat |
|---|---|---|---|
| October 2024 | Spring 2025 | July 2025 | October 2025 |
| • Wheat drilled with a combi drill, 15th of Oct.<br>• 100% typical seed rate. | • Crop under sown with mulch using a spring tine weeder with seed box. Seed rate 8 kg/ha. | • Full crop yield | • Strip till drill (Claydon) 150% typical seed rate. |

*Mulch establishment year*

*'True' Living Mulch year*

### *Lessons learned*

- Autumn crop undersown with living mulch species in spring allowed full crop harvest in year 1.
- Mulch in year 1 can be patchy, establishment can be difficult in a dry spring.
- Mulch cover variable in spring of Y2 in spring – the impact on year 2 crop harvest is yet to be seen!



## Next steps

**Alex and Hannah's reflections on crop management of living mulches**

- *"Next, we might try to establish the cereals and the mulch together at a time when it's not too late for the clover to germinate and grow, such as mid-September. There is always the potential to top-up in spring in case of low mulch establishment!"*
- *"Instead of planting after harvest, the mulch could be established after an easily mechanically terminatable cover crop with a lot of biomass which can suppress weeds over winter, slightly ahead of the cereal."*
- *"Our farm wasn't suited to direct drilling. The strip till drill is definitely our choice to put your cereal into a mulch."*
- *"It would be good to know which mulch species or mixes are most shade or drought tolerant for spring undersowing to maximise the chances for good clover establishment in year 1."*