LIVESTOCK GRAZING IN ARABLE ROTATIONS UK

Grass- clover or herbal leys and the reintroduction of sheep into arable farming

SHEEP AND ARABLE

Historically sheep and arable went hand in hand, providing the perfect tool for weed control and soil fertility building.

The drive towards intensification after WW2 saw the reduction of such practices.

Now the current desire to rebuild soil health is opening the door for their return. But in a time of reclaiming lost knowledge, what are the best ways to proceed?



Over the past 50 years, UK arable soils have experienced "worrying declines in carbon levels", with around 70% of soil carbon being lost since the industrial revolution Lal et al., 2007; Zomer et al., 2017; PFLA, 2018

THE CASE STUDY

This study aims to assess the benefits of reintroducing livestock into arable rotations from the perspective of both arable and sheep farmers.

Two leys were established within a 12 hectare arable field, one with a grass clover mix and the other a herbal mix. The study had to be abandoned due to drought in 2018 but grazing began in 2019 with sixty ewes and their twin lambs assigned to each ley.

Pasture growth rates were recorded as were lamb weights and worm burdens in both the herbal ley and grass clover groups.









The benefits for livestock and soil



SOIL & VEGETATION

Soil structure:

The introduction of a herbal ley had some advantages with respect to soil structure and root development.

Vegetation:

Both leys recovered well following grazing over a 14 day period during the middle of July 2019.

Herbal leys appeared to have quicker recovery rates. Potentially a benefit of deeper rooting species enabling access to soil moisture for longer, aiding improved performance under warm temperatures.

After the 2018 drought the leys had to be undersown. The photographs indicate that undersowing was successful and a method that may enable easy improvements of pastures.



Herbal ley 2019 recovery

(a) Grass/clover mixture 2 March 2019

(b) Grass/clover mixture 5 April 2019





"Farmers used sheep to increase fertility of poor ground by allowing them to graze rich fertile land then moving them onto the poor land, so they transferred the nutrients over in their gut and deposited them in their droppings" Barker 2019

LIVESTOCK

Drought conditions experienced across the UK during summer 2018 meant all data collected in relation to livestock derives from 2019.

Lamb Growth:

As a group, lambs on the herbal ley had heavier weights than those on the grass/clover ley at both the 8 week and the 12 week weighing.

Parasite Burden:

Faecal egg counts indicated that levels of Strongyles and Nematodirus were higher in the grass/clover ley group than the herbal ley group i.e. parasite burdens were lower in lambs grazing the herbal ley.



Reintroducing livestock into arable: the challenges



OUTCOMES

- Herbal leys have the capacity to provide additional benefits for both soil and livestock when compared to a grass/clover ley
- Leys that incorporate a diversity of species have a greater capacity for climate resilience and soil structure improvements
- If managed correctly incorporating livestock can bring in additional income for the enterprise
- Livestock and arable is a potential mechanism for reducing reliance on artificial herbicides and pesticides and in turn reducing input costs

A sustainable way for future farming?



"With appropriate management of grazing enterprises, soil function can be regenerated to improve essential ecosystem services and farm profitability" Teague 2018



POTENTIAL & LIMITATIONS

Manure from grazing sheep spreads additional nutrients across the field which benefits the following arable crops. This short study suggests that the inclusion of herbal leys benefits both the soil and livestock when managed correctly. Herbal leys have potential benefits during warm conditions, with deeper rooting systems improving soil structure and accessing moisture. Lambs on herbal leys showed improved growth rates and had lower worm burdens.

There are a number of challenges that need to be addressed from both sides (arable and sheep farmer) in order to be successful, from compliance and locating a good herdsmen to tenure rights and weather conditions. All of which can be mitigated with the **right advice** from national advisory boards and **good communication** on both sides.





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