

## ES farm Land and Soil 2022-23 update

Looking towards 2022-2023 the ES farm Land and Soil group will continue with the monitoring already in place and widen to include mammals, birds and terrestrial invertebrates. The focus will also be on carbon in the form of soil management, woodland management, hedgerow management plans and demonstration projects.

### Demonstration projects

- Paludiculture Project (PEAT)
  - Also referred to as wet peat farming
  - Funded with a share of a £5 million UK Government fund aimed at solving challenges with lowland peat
  - The project will use Adeney Yard as an exemplar plot where the new farming approaches will be trials as it is a peat soil field on HAU estate
  - Rewetting lowland peat soils can deliver carbon emission reductions, improve food security, boost wetland biodiversity and protect local communities from flooding
  - The aim is to establish HAU as the UK's first research, development, demonstration and knowledge transfer facility for paludiculture.
  - With the emphasis of building knowledge around the cropping techniques, machinery requirements and opportunities and data collection.
  - Also, the collecting data on the social impact and value modelling to establish best practice, relevance, and barriers to paludiculture among the farming community.
  
- Regenerative vs Conventional Farming Project
  - Benefits of regenerative farming:
    1. Minimum mechanical soil disturbance through direct seed and/or fertiliser placement
    2. Permanent soil organic cover (at least 30%) with crop residues and/or cover crops
    3. Species diversification through varied crop sequences and associations involving at least three different crops species
  - The aim is to investigate the true impacts of regenerative agriculture approaches by using a system level design to accurately determine the optimum drilling date and weed control measures.
  - Treatments for conventional approach
    - ❖ Tillage used when deemed necessary
    - ❖ Removal of straw residue
    - ❖ No use of cover crops
  - Treatments for conservation agriculture
    - ❖ Minimal soil disturbance with no cultivation
    - ❖ Maintenance of soil cover by chopping straw residue back onto the soil surface and use of direct drilling thus maintaining the surface biomass of the previous crop

- ❖ A diversified crop rotation by inclusion of cover crops
- Experimental location and design
  - ❖ The experiment was located on a HAU field called Four gates
  - ❖ There were 20 plots each of 12 metre width running across the width of the field in a completely randomised design
- Agronomy
  - ❖ The agronomy for the regenerative and conventional plots were managed independently, meaning each system could be managed in the optimal way for that system.
- The plots were established in early summer 2022, soya was either drilled into a prepared seed bed (conventional) or direct drilled in late June 2022. Due to late drilling combined with a poor summer and a wet autumn the crop failed and was not taken to harvest.
- Project is still ongoing and the next steps are:
  - ❖ Use of a drone with Skippy Scout software to monitor the progress of the crop
  - ❖ Leaving field uncropped over winter and, in the spring, drill either spring wheat or barley following the best agronomic practice for the individual treatments.

### **Woodland Management Plan**

- The aim is to determine the best way of managing the HAU estate woodlands for biodiversity, carbon storage/sequestration and as a teaching resource.
- Focussing on the woodlands in Caynton Gorse, Newpool Plantation, Black Brook Copse, Pingle Wood, Little Pingle Wood and shelter belts.

### **Hedgerow Management Plan**

- The aim is to manage the already existing hedgerows on the HAU estate and also plant new sections of hedgerows
- Hedgerow planting is planned in January 2023 on Bailey Hills and there is a plan to incorporate 500 metres of Black Poplar (*Populus nigra*) into the HAU estate.
- Hedgerow task force will be assembled to conduct the following:
  1. Survey all hedgerows across the farm
  2. Assess carbon storage and sequestration (above and below ground)
  3. Determine diversity and abundance of species associated with hedgerows