

# Arable Plant Communities and Seasonal Cultivation Activity

## Objectives:

- To practice research design and plant identification skills.
- To compare arable plant species communities in spring and autumn sown crop.

## Context:

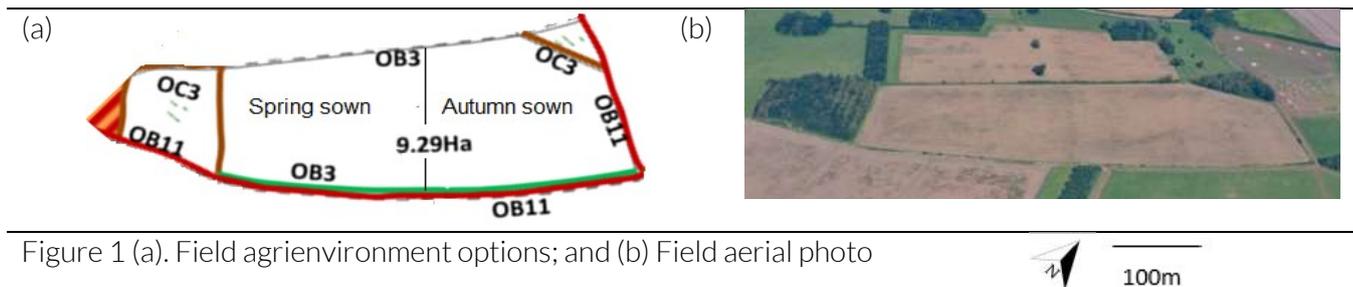
Many arable plants germinate in the spring or autumn and there are different communities depending on the season of cultivation (Wilson and King, 2003). Changes to farming practices include a shift to autumn sowing may detrimentally affect arable plants. There is debate in the research around the extent to which this change has contributed to a decline in arable plant populations (Albrecht, Cambecèdes, Lang & Wagner, 2016).

## Study site:

Spring and autumn sown wheat were located in adjacent halves of a single field (Fig. 1). Therefore, variability in soil and environmental factors is reduced. The field is under a five year organic rotation:

1 year Spring Barley → 1 year Winter Wheat → 1 year Spring Rye → 2 years Pigs/ Grass-ley/ Fallow

The last year of Environmental Stewardship Higher Level Scheme.



## Virtual survey design

This information sheet accompanies the sequences of real images of arable plants:

- spring sown wheat taken on 29<sup>th</sup> June
- autumn sown wheat taken on 1<sup>st</sup> July

Twelve 1x1m quadrats were surveyed in each using a random sampling strategy. Within each quadrat species presence was recorded but not percentage cover or abundance. Most images are taken to emphasise one species, but some contain more than one.

**You need to:**

- Identify the species in each image using the list below and identification guides, for example The Wild Flower Key by Francis Rose or New Flora of the British Isles (fourth edition) by Clive Stace.
- Play the presentation examining each picture for each quadrat. Images are taken to emphasise one species, but sometimes they contain more than one. You can put down all the species that you can identify from each image.
- Use the NVC data collection form to show species presence in each quadrat by putting a tick or a 'P' for presence in each quadrat where a species was present.
- The use British Plant Communities Volume 5 Habitats of Open Vegetation (Ed. J Rodwell) and the Key to the vegetation of open habitats on pages 325-333 to assess which community these samples fits into.

**Consider the questions:**

- Is there a difference between the NVC community for spring and autumn cultivated areas and why?
- Are either spring or autumn arable plants more threatened and why?
- How would you manage for these different groups of plants in an agricultural setting?
- Could different management be applied?
- How could depth of cultivation affect arable plants?
- How could injurious and problem weeds be managed alongside rare and threatened arable plants?

---

Fool's Parsley ( <i>Aethusa cynapium</i> )	Red bartsia ( <i>Odontites vernus</i> )
Parsley-piert ( <i>Aphanes arvensis</i> )	Common Poppy ( <i>Papaver rhoeas</i> )
Thyme-leaved sandwort ( <i>Arenaria serpyllifolia</i> )	Broadleaved Dock ( <i>Rumex obtusifolius</i> )
Wild Oat ( <i>Avena fatua</i> )	Field Madder ( <i>Sherardia arvensis</i> )
Fat Hen ( <i>Chenopodium album</i> )	White Campion ( <i>Silene latifolia</i> )
Field Bindweed ( <i>Convolvulus arvensis</i> )	Charlock ( <i>Sinapis arvensis</i> )
Sunspurge ( <i>Euphorbia helioscopia</i> )	Prickly Sowthistle ( <i>Sonchus asper</i> )
Black Bindweed ( <i>Fallopia convolvulus</i> )	Smooth Sowthistle ( <i>Sonchus oleraceus</i> )
Common Fumitory ( <i>Fumaria officinalis</i> )	Common Chickweed ( <i>Stellaria media</i> )
Crane's-bill ( <i>Geranium</i> sp.)	Dandelion ( <i>Taraxacum officinale</i> )
Cut-leaved geranium ( <i>Geranium dissectum</i> )	Field Pennycress ( <i>Thlaspi arvense</i> )
Henbit Dead-nettle ( <i>Lamium amplexicaule</i> )	Knotted hedge-parsley ( <i>Torilis nodosa</i> )
Red Dead-nettle ( <i>Lamium purpureum</i> )	White clover ( <i>Trifolium repens</i> )
Venus's-looking-glass ( <i>Legousia hybrida</i> )	Scentless mayweed ( <i>Tripleurospermum inodorum</i> )
Scarlet Pimpernel ( <i>Lysimachia arvensis</i> )	Common Field-speedwell ( <i>Veronica persica</i> )
Black Medick ( <i>Medicago lupulina</i> )	Field Pansy ( <i>Viola arvensis</i> )
Field forget-me-not ( <i>Myosotis arvensis</i> )	

---

**Name changes:**

Scarlet Pimpernel *Anagallis arvensis* = *Lysimachia arvensis*

Black Bindweed *Bilderdykia convolvulus* / *Polygonum convolvulus* = *Fallopia convolvulus*

**References and identification resources:**

Agriculture and Horticulture Development Board (2018). *Encyclopaedia of arable weeds*. AHDB

Albrecht, H., Cambecèdes, J., Lang, M., & Wagner, M. (2016). Management options for the conservation of rare arable plants in Europe. *Botany Letters*, 163(4), 389-415.

Centre for Ecology and Hydrology (2016) *Rare arable flower app*. Retrieved from:

<https://www.brc.ac.uk/app/rare-arable-flowers-app>

Plantlife (2008). *Threatened arable plant identification guide*. Available from:

<https://www.plantlife.org.uk/uk/our-work/publications/threatened-arable-plants-identification-guide>

Plantlife (2019). *Arable plant identification keys*. Retrieved from

<https://www.plantlife.org.uk/uk/discover-wild-plants-nature/habitats/arable-farmland>

Wilson, P. & King, M. (2003). *Arable plants: a field guide*. Wild Guides.