

# Arable plants: ecology and conservation resource pack

## Lecturer notes

---

### Aims of arable plant education resources:

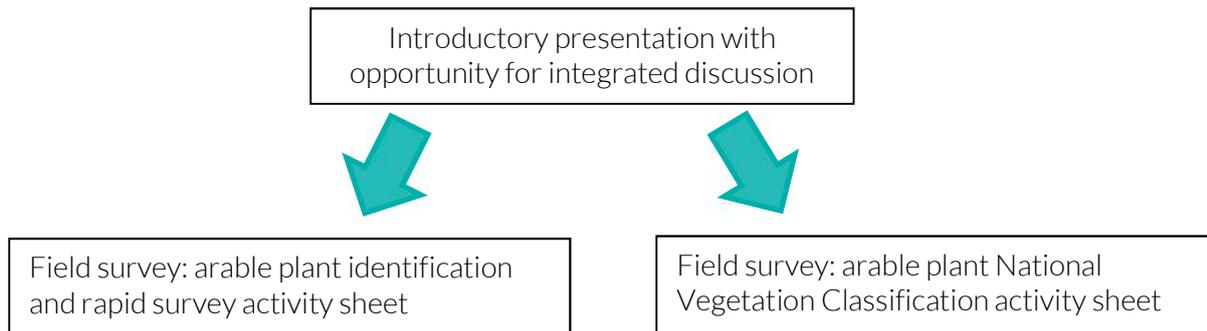
- To raise awareness of arable plants among future land managers.
- To engage future land managers in arable plant conservation and management.
- To develop practical field skills in arable plant identification and survey.

### Level and indicative subjects:

Adaptable for Further and Higher Education.

Agriculture; environment; ecology; biology; conservation; geography; countryside.

### Ecology and conservation pack structure:



### Do I need access to a farm?

Not necessarily. Many arable plants are found on other types of disturbed land, such as road sides, cemeteries, brownfield sites, and wasteland. Look for a site with a suite of annual plants. Activities can be adapted to suit these sites.

### How much time is needed?

As much or as little as suits your course. A few slides or species case studies could be integrated into a lecture, up to a full day workshop activity.

### When should these activities be done?

Although these activities could be run from early spring, it is best to do them when the plants are in flower or fruit from mid-June to early August before harvest.

### Who provides the risk assessment?

This is the responsibility of the staff leading the activity. As the risk assessment is specific to your institution, site and students, it is not provided as part of the pack.

There are three activities:

- Activity 1 - Arable Plant Rapid Survey
- Activity 2 - Introduction to Arable National Vegetation Classification
- Activity 3 - Arable Plant NVC Quadrat Survey

Suggested session plan:

Activity	Lecturer	Student
Introductory presentation	Presents the topics with discussion and Q&A encouraged throughout.	Contributes to discussion, takes notes.
<p><b>How can the presentation be adapted?</b></p> <ul style="list-style-type: none"> <li>• Adapt the slides to make the presentation more interactive, to shift focus, or to fit time available.</li> <li>• Ask students to create slides in advance of the session.</li> <li>• Change the title to appeal to different groups or objectives e.g. 'identification and survey'.</li> <li>• Change examples of species or crops to suit local agricultural practices and soil types.</li> </ul>		
Field practical survey	Choose and adapt either the rapid survey and/or the NVC survey. Risk assess.	Work in groups of 3-5 to plan, design, and carry out field survey. Use resources to identify species.
Rapid survey (Activity 1) and/or NVC (Activity 2)	Explain the fieldwork protocol. Ask students to form groups to plan the fieldwork activity. Monitor and advise during fieldwork.	Record species data either on paper or electronically.
<p><b>How can the field activity be adapted?</b></p> <ul style="list-style-type: none"> <li>• The rapid survey is suitable across a range of subjects and can be made simpler or more challenging.</li> <li>• National Vegetation Classification is a more complex survey technique, requiring identification skills for all species present. Ideal if you already teach NVC and need an applied activity.</li> <li>• Students may use a range of identification resources such as botanical key, field guide, or app depending on which skills they need to develop.</li> <li>• Give students more or less autonomy in designing the field survey or with species identification, depending on desired outcomes for the course. Easily adaptable for an assessment activity.</li> </ul>		
Using the survey data	Both the rapid survey and NVC field survey documents contain suggestions for using the survey data.	Report back on findings to demonstrate understanding and skills gained.
<p><b>How can use of survey data be adapted?</b></p> <ul style="list-style-type: none"> <li>• Activities such as a verbal summary or slide presentation, up to a research project.</li> <li>• Decide whether to use the data for a formative or summative activity. Both survey types could be expanded or replicated for professional reporting or academic research projects.</li> <li>• Collect monitoring data over seasons/ years with different groups to genuinely inform site management or to develop higher level research projects or dissertations.</li> </ul>		
Virtual practical survey	Download the slide pack (in MP4 format) and activity sheet and distribute to students.	Work alone or in small groups to identify the species present in each quadrat.
NVC quadrats (Activity 3)	Advise during practical.	Discuss the type of vegetation community.
<ul style="list-style-type: none"> <li>• A results sheet providing stock answers for the NVC quadrat survey and identification of vegetation community is overleaf.</li> </ul>		



## National Vegetation Survey Recording Form for the Arable Plant Quadrat Survey

Put a tick or 'P' for present in the quadrat if the species is present.

Species	1	2	3	4	5	6	7	8	9	10
Fat Hen ( <i>Chenopodium album</i> )	P	P	P	P	P	P			P	
Field Bindweed ( <i>Convolvulus arvensis</i> )				P		P			P	
Sunspurge ( <i>Euphorbia helioscopia</i> )							P			
Black Bindweed ( <i>Fallopia convolvulus</i> )								P		
Common Fumitory ( <i>Fumaria officinalis</i> )	P	P		P		P	P	P	P	P
Crane's-bill ( <i>Geranium sp.</i> )		P				P			P	
Henbit Dead-nettle ( <i>Lamium amplexicaule</i> )	P						P	P		P
Red Dead-nettle ( <i>Lamium purpureum</i> )	P	P	P	P	P	P	P	P	P	P
Venus's-looking-glass ( <i>Legousia hybrida</i> )	P		P			P	P	P	P	P
Scarlet Pimpernel ( <i>Lysimachia arvensis</i> )	P	P	P				P	P	P	P
Black Medick ( <i>Medicago lupulina</i> )	P		P		P		P	P	P	
Common Poppy ( <i>Papaver rhoeas</i> )			P	P	P	P	P	P	P	P
Broadleaved Dock ( <i>Rumex obtusifolius</i> )	P				P					
Field Madder ( <i>Sherardia arvensis</i> )	P	P					P	P	P	
White Campion ( <i>Silene latifolia</i> )								P		
Charlock ( <i>Sinapis arvensis</i> )			P	P						
Prickly Sowthistle ( <i>Sonchus asper</i> )	P	P			P					
Smooth Sowthistle ( <i>Sonchus oleraceus</i> )				P			P			
Common Chickweed ( <i>Stellaria media</i> )				P						
Dandelion ( <i>Taraxacum officinale</i> )						P				
Field Pennycress ( <i>Thlaspi arvense</i> )	P	P	P	P	P		P		P	P
Common Field-speedwell ( <i>Veronica persica</i> )	P		P		P	P		P	P	P
Field Pansy ( <i>Viola arvensis</i> )	P		P		P	P		P	P	

Name changes:

Scarlet Pimpernel *Anagallis arvensis* = *Lysimachia arvensis*.

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

What is the NVC community using the key? Do you agree? And why do you or don't you agree with this assessment?

The route through the key should follow (species present in the sample in bold):

1 = None of the above [go to 44].

44 = Open or closed, often rank, sometimes luxuriant, weedy vegetation with frequent records for at least come of *Polygonum aviculare*, ***Stellaria media***, *Matricaria perforata*, ***Chenopodium album***, *Poa annua*, *Elymus repens* and ***Bilderdykia convolvulus*** but usually without *Spergula arvensis*, *Chrysanthemum segetum*, *Rumex acetosella*, *Aphanes microcrpa*, *Briza minor* or *Silene gallica* [go to 45].

45 = ***Veronica persica***, *V. polita* and ***Anagallis arvensis*** occasional to frequent with some of *Euphorbia exigua*, *Kickxia elatine*, *Kickxia spuria*, *Silene noctiflora*, ***Papaver rhoeas***, *Reseda lutea*, *Descurainia sophia* and *Lycopsis arvensis* [go to 46].

46 = OV15 ***Anagallis arvensis*** – ***Veronica persica*** community, *Kickxietum spuriae* sub-community [go to 47].

47 = *Stellaria media* and *Convolvulus arvensis* frequent with *Legousia hybrida*, *Chaenorhinum minus*, *Ranunculus repens* or acrocarpous mosses only scarce at most.

OV15 *Anagallis arvensis* – *Veronica persica* community, Kickxietum spuriae; *Stellaria media* – *Convolvulus arvensis* sub-community.

Although neither Fluellens (*Kickxia*) or Dwarf Spurge (*Euphorbia exigua*) are present, there are other plants present in the sample that are constituents of this community, such as Common Chickweed (*Stellaria media*) and Field Bindweed (*Convolvulus arvensis*). Fat Hen (*Chenopodium album*) is also occasional in the sward, with other constant species of Scarlet Pimpernel (*Lysimachia arvensis*) and Common Field-speedwell (*Veronica persica*).

**What is the NVC community using MAVIS? Do you agree? and why do you or don't you agree with this assessment?**

The top ten MAVIS (most recent 2016 version) classification percentage matches are:

Community	Percentage fit
OV15b	36.51
OV3	34.72
OV9a	33.97
OV16	33.59
OV13	33.23
OV7	33.09
OV13a	32.96
OV15	32.15
OV18	30.85
OV9	30.79

**Write a description of the community using the species above with regard to composition of species, frequency of species and overall characteristics?**

Red Dead-nettle (*Lamium purpureum*), Field Pennycress (*Thlaspi arvense*), Common Fumitory (*Fumaria officinalis*) and Common Poppy (*Papaver rhoeas*) are constant species being found in 80% of the quadrats. Common Field-speedwell (*Veronica persica*), Fat Hen (*Chenopodium album*), Venus's-looking-glass (*Legousia hybrida*), Scarlet Pimpernel (*Lysimachia arvensis*) and Common Field-speedwell (*Veronica persica*) are abundant, with Field Pansy (*Viola arvensis*), Black Medick (*Medicago lupulina*), Field Madder (*Sherardia arvensis*) and Henbit Dead-nettle (*Lamium amplexicaule*) being frequent.

This has more affinity with OV13 Common Chickweed *Stellaria media* – Shepherd's-purse *Capsella bursa-pastoris* community, particularly the Common Fumitory *Fumaria officinalis* – *Euphorbia helioscopia* sub-community. In this community Common Field-speedwell *Veronica persica* and Red Dead-nettle *Lamium purpureum* are especially frequent and Common Fumitory *Fumaria officinalis* is preferential.

**After writing your community description, do you still agree with either the outcomes of the comparison to NVC communities above?**

This community falls between OV13 and OV15b. This shows that there is a degree of deviation within the Open Vegetation Communities and that the results of NVC analysis show the best fit but perhaps not always the most suitable community.