

# Arable

Arable land can be high yielding and fundamental to food security. In Scotland, the growth of high value arable crops is largely constrained to the central belt and east coast where high-quality soils and climatic conditions support growth. Consequently, arable land only covers about 9.4% of Scotland's agricultural land.

## Ecosystem services supplied by arable

Provisioning	Cultural	Supporting
<ul style="list-style-type: none"> <li>• Crops (and feed)</li> <li>• Livestock</li> <li>• Water supplies</li> <li>• Renewable energy</li> </ul>	<ul style="list-style-type: none"> <li>• Opportunities for recreation</li> <li>• Landscape and Aesthetic value</li> <li>• Cultural heritage</li> </ul>	<ul style="list-style-type: none"> <li>• Nutrient cycling</li> <li>• Soil formation</li> <li>• Water cycling</li> </ul>
Regulating		<p>In 2019 “Collectively, Scottish farmers produced around 4.7 million tonnes of arable produce....In terms of value, the combined output was around £1.1 billion, accounting for a third of Scotland’s total agricultural output by value.”</p>
<ul style="list-style-type: none"> <li>• Local climate regulation</li> <li>• Carbon storage and sequestration</li> <li>• Soil quality and erosion regulation</li> </ul>	<ul style="list-style-type: none"> <li>• Pest and disease regulation</li> <li>• Water purification</li> <li>• Air purification</li> <li>• Pollination</li> <li>• Flood control</li> </ul>	

## Ecosystem service example – Food production

Scotland has over 5.64 million hectares (ha) of agricultural land from which, in 2021, nearly 10% was used for arable production (cereals, crops, fruits and vegetables). The combined contribution to the Scottish economy surpasses £1 billion and **employs over 67,000 people**. The provisioning service of growing crops and feed from arable production is key to our economy and livelihood. The Scottish arable industry contributes around 15% of the total export production from the UK.

As pressure increases from climate change, public perceptions, politics and rising costs, the ability to grow sustainable, local food within Scotland is key. Utilising the land and environment to produce food is a key ecosystem service.



# Biodiversity

## Risks to be aware of

Enhancing and improving the **biodiversity on your farm** can offer huge benefit to the potential capacity for food production whilst contributing to farm profitability and resilience.

## Moving away from monoculture

Monoculture farming has been widespread throughout Scotland as land managers try to farm as efficiently as they can. However, this has its negatives. Large areas dedicated to one species do not allow for biodiversity to thrive and key ecosystem services are at risk, while significantly increasing pest and disease pressures. With climate changing and a deterioration in soil health, arable land is at risk. **Studies are being conducted to see the impact of moving to mixed species crops.** By introducing more species and structural diversity through **mixed species crop**, agroforestry, buffer strips etc., the gain to the productivity of land could be considerable for the longevity of the farm.

## 3D buffers

3D buffers are riparian buffer strips and can be designed to build on and enhance the ecosystem services provided by standard buffers by combining the benefits of grassy buffers and woody buffers. For more information on how 3D buffers can help your land visit **SRUC**.

## Winter stubbles

Arable land over the past 60 years has seen a great decline in seed eating bird populations as farming practices have changed. Over summer and autumn bird populations can find food and shelter, however, over winter months bird populations are limited. By incorporating **overwinter stubbles following spring cropping** habitats and a food source for farmland birds are provided. In addition the stubble helps protect soil, reducing erosion and runoff.

## Field margins

Field margins offer many **ecosystem services**, while ensuring that you meet cross compliance and regulations. Margins act as a buffer from fields to the surrounding area, with the ability to reduce diffuse pollution and act as biodiversity corridors. Importantly, buffers provide important habitats for pollinators and pest predatory species, which are currently facing dwindling populations.



## Management actions to enhance biodiversity

As the climate changes, ensuring that your is farm resilient is key to the success of your business and the biodiversity on your land. Growing a variation of crops and ensuring that your crop rotation is more diverse will be increasingly important. Establishing flower-rich field margins, conservation headlands, buffer strips, hedgerows and beetle banks in arable fields can provide valuable habitat for insect pollinators, natural enemies and wider biodiversity. Supporting a diversity of beneficial insects can increase pollination services positively impacting on yield and provide natural pest regulation, thereby reducing the need for pesticide use and manufacturing. Integrating legumes in your rotation and establishing herb rich grass areas can provide essential habitats for pollinator species, support local biodiversity, whilst helping your farm resilience and profit margins.

Retaining habitat for birds, such as winter stubbles or through creating areas of wild bird seed can provide key habitats for these species over winter, as well as supporting a large number of invertebrates. Incorporating an **Integrated Pest Management** (IPM) plan into your business can maximise productivity and increase profit margins while trying to reduce the negative impact on the environment. IPM uses a whole farm approach, highlighting areas where land managers can reduce the reliance on pesticides by using a variety of non-chemical measures first.

## Assessing the condition of arable land

The primary ecosystem service provided by arable land is food production, therefore, assessing soil health is thus crucial. With respect to **soil health both the structure and the soil biota are key**. A **Visual Evaluation of Soil Structure (VESS)** is a rapid and easy way to test soil structure, enabling quick detection of issues such as compaction. There are a variety of ways to measure the health of the soil biota from burying your undies and determining how fast they decompose to counting the earthworms in a spade of soil. Earthworms can improve soil structure, as their burrows offer paths for roots, which can transfer nutrients and moisture to crops. High worm counts can increase plant productivity.

With our changing climate, the capacity of soils to uptake and retain water is becoming increasingly recognised. **Measuring the rate that water infiltrates the soil** provides a good measure of the soils ability to uptake and regulate water flows.

Using a variety of practices, promoting soil health will help to increase water regulation and nutrient cycling and uptake thereby enhancing yield, reducing the risk of nutrient run-off and building resilience into the cropping system.

## Where to Find More Information

[Farm Wildlife](#)

[Agricology](#)

[FAS: How to increase pollinators on your farm](#)

[ADHB: How to count earthworms](#)

[Plant Heath Centre Scottish IMP](#)

[FAS: Insect Pollinators & Pollination](#)