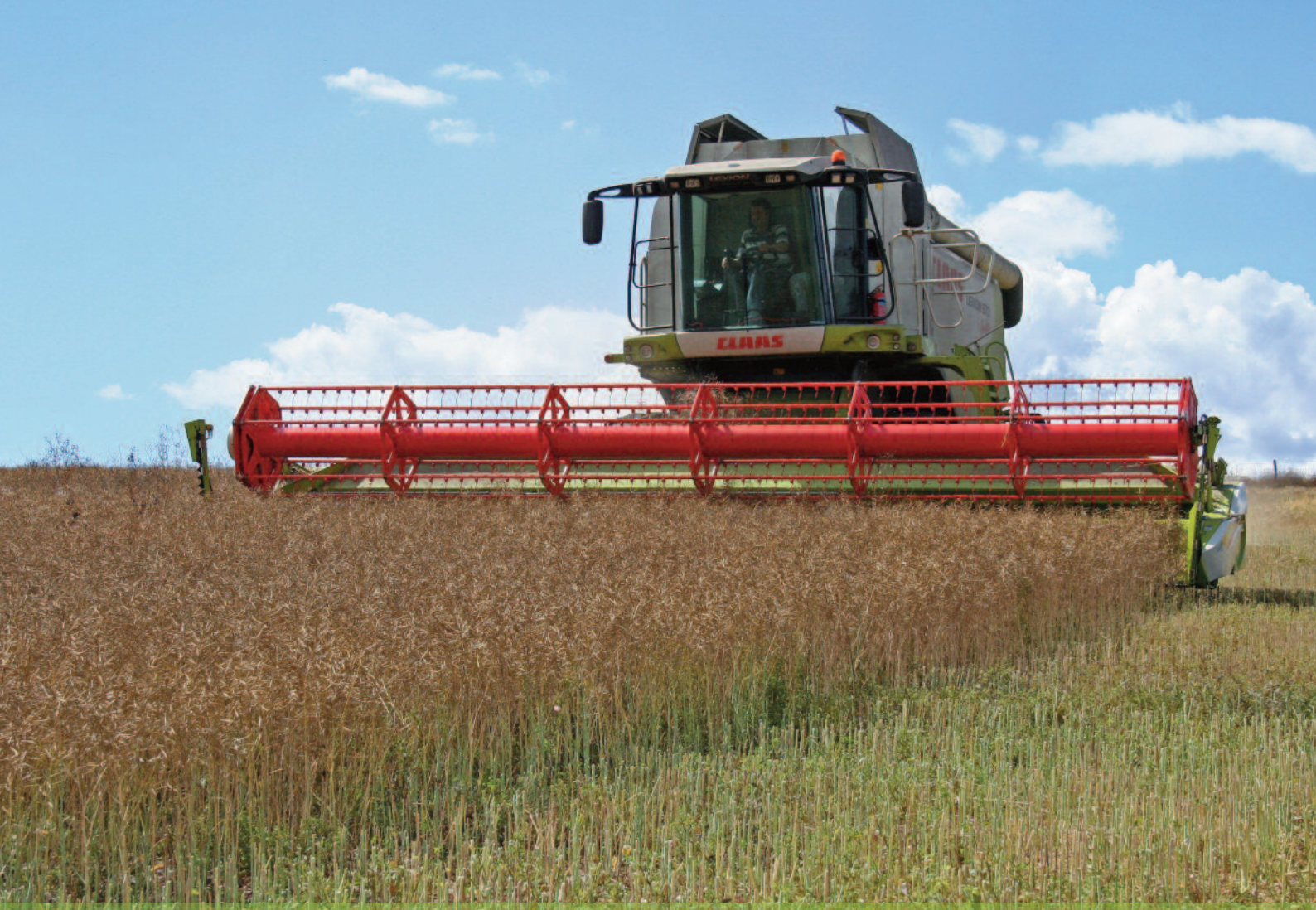


Why Farming Matters to the South Downs





Education Pack - Key Stage 1 & 2

FACE

WHY FARMING MATTERS

NFU

Education Pack - Key Stage 1 & 2

Foreword

The South Downs National Park owes its beauty and diversity to centuries of care, management and nurture by farmers and landowners. It's a living, working landscape that is vital for food production, for wildlife and for people.

The rolling hills of the South Downs provide a sharp contrast to the urban areas that surround them. A visit to the National Park provides an amazing opportunity for young people to experience the wide-open spaces of our farmed countryside, with its stunning scenery and diverse plant and animal life.

This resource has been designed to further your understanding of why farming matters to the South Downs. We hope you'll be inspired to help young people to visit a farm on the South Downs. They'll gain a unique opportunity to meet the people who shape this landscape, ensuring it remains a special place for future generations to enjoy.

Bill Graham OBE, FACE
(Farming & Countryside Education)

Introduction

You might think the beautiful South Downs National Park is a natural landscape, but it's better described as 'semi-natural'. Centuries of man's activities, particularly farming, have shaped the Downs.

Management of this National Park depends upon profitable agriculture and farmers will remain here for as long as they can run a successful business, producing our food.

Farmers on the Downs help to ensure we have a safe and secure supply of food. The farming industry provides food, jobs and beautiful countryside, boosting the health and well-being of residents and visitors alike.

So farming is at the heart of the area's vibrant rural economy. It supports many other industries including tourism and food processing.

What are the South Downs?

The South Downs National Park is Britain's newest National Park. The Downs are rolling chalk hills, with steep dry valleys, that run from Winchester in the west to Eastbourne in the east. The ancient chalk downland, grazed by livestock for thousands of years, supports a wealth of specialist wildflowers and insects.

But the South Downs National Park isn't all chalk. The new National Park is incredibly diverse with many different landscape types, habitats and wildlife. It takes in the western Weald, based on sandstone and clay soils, with its characteristic heathlands and wooded estates, and the Hampshire Hangers - steep-sided beech and yew woods. The river valleys of the Meon and the Itchen lie in the west, with the Arun and the Adur in the centre and the Ouse and the Cuckmere in the eastern part of the Downs.

Centuries of human activity on the South Downs have produced a rich cultural heritage - the area is littered with distinct buildings and archaeology. There is evidence of people on the South Downs from as long ago as the Palaeolithic era (Old Stone Age).

The South Downs is located in the most densely populated corner of the UK. Around 10 million people live on its doorstep with 108,000 living in the Park*. And 39 million leisure trips were made to and within the South Downs in 2003*. This number may rise in the future.

Unlike other National Park landscapes, around 85 per cent of the South Downs is farmed and an estimated 1,100 farm businesses operate within the Park*.

There are countless reasons and opportunities to visit the South Downs. In many cases, there are farms and other centres that welcome visits from educational groups.

**Why Farming Matters to the South Downs, NFU South East, 2010.*

How were the South Downs formed?

The history of the earth and its life is recorded in rocks. Geology, the study of the earth's crust, can tell us how and when the earth was formed over millions of years.

In this country, there is a close relationship between the underlying rock and the kind of soil that is associated with it. In the National Park, the underlying rocks are chalk, sandstone and clay. They are made from sediment, such as sand or mud, which has gradually hardened into rock. These sediments were laid down under the sea and freshwater lakes millions of years ago. Most of the rocks that make up the South Downs were formed between 140 million and 65 million years ago. These rocks were pushed up by earth movements from under the sea into a huge dome which formed the South Downs.

Chalk is a fairly soft, white rock that breaks down easily. It is composed of the shells and skeletons of prehistoric creatures which lived in an ancient sea.

Chalk also contains countless fossils of creatures such as sea urchins and sea snails. Fossils are the remains or traces of ancient living animals and plants. They can give us clues about the life of plants and animals in the past which are the ancestors of those living today.

The chalk of the South Downs is divided into the Lower, Middle and Upper chalk and also has narrow bands of flint running through it. Flint can be found in lots of different shapes and sizes, ranging from small pebbles (easily found on the beach) to large stones, and even thick sheets. Humans have used flints since prehistoric times to provide tools for preparing food and clothing, as axe heads for chopping wood and for weapons such as arrow and spear heads. These tools were very sharp, sometimes even sharper than a surgeon's scalpel! In more modern times flints have been used for building walls and making roads.

Chalk is made up of lots of fairly loose particles and it is porous. It acts like a giant sponge and holds water underground, releasing it slowly. Wells are sometimes sunk down into this huge, underground reservoir, which is called an 'aquifer'. The aquifer feeds water from springs into streams and rivers, providing people and animals in and around an area with drinking water. These springs turn into streams during the wetter months of the year, when the water table is high, many disappearing during summer. They are known as 'winterbournes' - an old English term meaning streams that flow during winter.

Soils

Soil is a thin layer of material on the earth's surface and is made up of three main components: minerals that come from rocks below or nearby, organic matter which is the remains of plants and animals that use the soil, and the creatures that live in the soil. In addition, soil also contains water and air.

Different sized mineral particles including sand, silt, and clay are the basic types of soil. Most soils are made up of a combination of these three. The texture of the soil, how it looks and feels, depends upon the amount of each one in that particular soil. The type of soil varies dramatically around the world, across the country and in the South Downs National Park. Soil types can vary within your local park and in small spaces like your own garden. And the kind of soil you have will affect what can live or grow there.

Soil is formed by the 'weathering' of rocks and minerals over one thousand years or more. Weathering is the action of wind, water and frost on rocks which breaks them down into smaller stones and particles. These smaller stones then become mixed with moss and organic matter. Soil develops when small creatures break down material such as decaying leaves, decomposing wood and even dead animals, adding more organic matter. This helps to make the soil thick and rich in nutrients, supporting many different plants and animals. Natural processes can take more than 500 years to form one inch of topsoil.

The soils that come from the chalk of the South Downs are mostly thin, well drained and poor in several minerals and nutrients. This means that plants are only able to grow slowly which enables the wide variety of small, low-growing herbs to grow in the downland turf creating a very special habitat. However, chalk is a form of limestone which contains lime from sea water and this means that chalky soil contains plenty of calcium. So the Downs can provide excellent grazing for dairy cows as the grassland provides them with the calcium that they need to keep healthy while producing milk.

The soils on the South Downs are usually described as being very 'light'. This means that they are easy to plough and cultivate. With underlying chalk, most of the farmland on the South Downs drains well. This is useful to the farmer as it means that there are not many times when the ground is too wet to tend or harvest his crops. Cattle and sheep can also live outside during the winter on pastures that don't become waterlogged. Bordering the chalk in the west is an area known as the western Weald, with light soils based on Greensand, and heavier clay soils, all of which support ancient woodlands and heathland.

Soil erosion, caused by wind and rain, can change land by wearing down mountains, creating valleys, making rivers appear and disappear. It is a slow and gradual process that takes thousands, even millions of years. But erosion may be speeded up greatly by human activities. Soil takes a long time to develop but can be lost over time. The clearing of land for development, commercial use, leisure and farming can damage soil. These activities speed up the process of erosion by leaving soil exposed to the elements. Erosion may also prevent the development of new soil by removing the plants and animals that help build the organic matter.

Activity

Do you know your soil?

Take a handful of moist soil and roll it between your palms until it forms a sausage shape.

If it feels gritty and breaks apart immediately, the soil is mainly ***sand.***

If the soil feels smooth, and holds its shape for a short time before breaking apart, it is mostly **silt.**

However, if it feels sticky and holds together, then it is mainly ***clay.***

TOOLKIT

www.face-online.org.uk/ biodiversity/ biodiversity-project

Soil is one of the most valuable assets to mankind. We need soil to produce our food. Today's farmers try to farm in a way that protects soil from erosion. Farmers add organic matter such as straw or manure to a field, as this builds up soil structure and fertility. Fertile soil helps crops and grass put down strong roots that hold the soil together, helping to prevent erosion and soil loss. Soil is an important resource that we all must protect as without soil there is no life.

Farming the four seasons – Farmers' Diaries

Arable farming, the growing of crops including cereals and oilseeds, is the main farming type on the South Downs. But mixed farming enterprises (farms with crops and livestock) underpin the management of the South Downs.

Look out for our farmers' diaries, in which four real farmers say what happens in their specialist sector of agriculture throughout the year. But remember, every farm is different and these seasonal diaries only aim to give a general picture of commercial agriculture.

On a mixed farm, with both livestock and crops, many of the jobs described in each of the diaries will all need doing at the same time! So now you know why farmers are so busy! Farmers often work long days to ensure that animals are cared for and crops are harvested at their best.

The busiest times include lambing (during spring when lambs are born), and harvest (late summer). A hard winter can bring extra work for livestock farmers who must ensure animals have plenty to eat when it is cold. Driveways must be kept clear of snow and ice so that lorries can bring vital deliveries of feed onto the farm. Milk must be collected by tankers almost daily and taken to dairies for processing.

Farming is a way of life, not just a job. Farm workers can be reasonably well paid and jobs on farms often come with a house.

Those who work on the South Downs, whatever the weather, realise that they're lucky to live here.

These sections on farming types and the farmers' diaries cover a wide range of subjects. Use them to help pupils to understand and discuss landscapes and land use, settlement patterns, weather and seasons, technology and other topics that they highlight.

Ben Taylor – Arable

Millie Nye – Sheep

Hugh Passmore – Beef

Joanna Cheyney – Dairy

Farming Types

Remember, a farmer is running a business, they aren't running a farm for fun! Every farmer chooses farming activities that will be most suitable and profitable for their own farm.

Farmers operate within a global marketplace. They make business decisions about the way they farm and the goods that they produce. Farmers on the South Downs are competing with millions of farmers worldwide who are selling crops such as wheat. Top prices are paid for the best quality wheat which can be milled into flour for bread-making.

The kind of land and soil a farmer has will help them to decide which crops to grow and whether keeping cattle and sheep will be profitable. There can be many different soil types on a farm and even within a single field.
Free draining soils are better for cereal growing.

Heavier soils retain moisture so they are good for growing grass for cattle and sheep to graze. The bottom of river valleys can provide good grazing land. Farmers can also produce grass crops including silage and hay (preserved grass that is fed to animals during winter).

Arable cropping is the commonest type of farming activity - however, many mixed farming enterprises remain on the Downs. Mixed farming activities underpin the management of the South Downs. As its name suggests, a 'mixed farm' is a farm with a mixture of livestock and crops. Some of the commonest farming types on the Downs are covered here.

Arable farming

Arable cropping is the most common type of farming today.

It is the growing of cereal crops such as wheat, barley and oats, oilseeds and other 'combinable' crops in fields. These crops are grown for human consumption, for animal feed and sometimes for industrial uses. Combinable crops are crops that can be harvested by a combine harvester. You might also see field beans and peas which can be harvested when dry and used in animal feed.

Combine harvester

Cultivation - preparing soil before sowing seeds

Field guide to crops

Cereal crops such as wheat, barley and oats are mainly sown during the autumn. Harvesting begins in mid July when combine harvesters are used to cut the crop and then separate the grain from the straw and the chaff. Straw is baled for use as animal feed and bedding.

Barley - for beer

High quality barley is grown on the lighter soils, particularly on the chalk hills. The best is used to make malt - for the brewing of beer and lager. Lower grade barley goes into animal feed. A small amount of malting barley is used in distilleries to make alcoholic spirits such as whisky.

Wheat - your daily bread

Around 40 per cent of the wheat crop is made into animal feed. Top grade wheat is milled into flour - the best is used for bread, the rest for cakes, biscuits, pastry and other products. A small amount of wheat goes to the distillery industry to make alcoholic spirits. Wheat can also be used to produce a green fuel, bioethanol.

Oats - make sure you get yours!

About one third of the oat crop is made into high quality animal feed and a proportion is for human consumption. The cosmetics industry uses oats for products such as hair conditioners and facial scrubs.

Oilseed rape - the sunshine crop

Oilseed rape, which is easily identified by its bright yellow flowers in early summer, is an important, multi-purpose crop grown throughout the South East.

Rape is in fact a member of the cabbage family, which includes mustards. It is usually sown in late August and harvested in July.

Rape-seed oil contains the lowest level of saturated fatty acids of any vegetable oil and is high in mono-unsaturated fatty acids.

Canola is a type of rape-seed lower in erucic acid than some varieties - it is used to produce oil for cooking, salad dressings and margarine.

Certain types of rape (known as forage rape) are suitable for animals to graze.

Activity

Spot the difference *between wheat and barley - the barley has whiskers!*

Oats have dangling seed heads

Wheat

Barley

TOOLKIT

www.thegrainchain.com

Countless ideas for teachers, with curriculum linked resources and lesson plans. Educational story posters about crops are also available, featuring the growing year, processing and end products.

Oilseed Rape

Oats

Field guide to crops

The splashes of blue that can sometimes be seen across the countryside in summer are fields of linseed or flax.

Most of the linseed crop is grown for use in the manufacture of high-grade oil for paints, varnishes and linoleum. Some varieties, called 'linola' types, produce an oil that is suitable for human consumption.

Cultivated flax can have blue or white flowers. The long-stemmed varieties are propagated for fibre production. Flax can be woven into linen or made into highly absorbent bedding for horses.

The oil from certain types of flaxseed can be used as a cooking oil. Flaxseed oil contains beneficial fatty acids so it is also used in health products.

Maize

All types of maize are sown during spring. Maize needs warm soil and long daylight hours to germinate and grow well.

There are different types of maize. People often confuse maize that is grown for cattle feed (forage maize) with sweetcorn (maize grown for human consumption) because they look similar. Most maize in this country is grown for animal feed.

Forage maize - cattle feed

Maize seed can be sown straight into the ground and some farmers grow it under biodegradable plastic to keep it warm and to help it to grow well. Forage maize is grown to feed cattle during the winter months. Most forage maize is harvested from September onwards, usually with a forage harvester, and it is conserved as silage (ensiled). Silage is fed to cattle during winter. Some forage maize is grown for its grains. This crop will be harvested by a combine harvester. The grains are fed as 'grain maize' to cattle on a high protein diet. Dairy cows need a good diet if they are to give plenty of milk. Beef cattle that are being 'finished' (or fattened for meat) also benefit from good food.

Sunflowers - for oil

Sunflower seeds can be pressed to produce cooking oil. Plant breeders are working hard to produce types of sunflower that are suitable for growing in Britain. However, most of the sunflower crops that are grown in the South East are to provide food for wild birds, especially game birds.

Activity

Invite a farmer to visit school:

Ask them to dig up some growing wheat and bring it in a bucket, along with a sample of wheat grain (undressed seed).

Provide a small coffee grinder for pupils to grind wheat into flour. Ask pupils to bring products containing cereals/oilseeds to school.

Examples include bread, Weetabix, pastry, biscuits (including biscuits for pet dogs/cats), oatmeal cosmetics, cereal bar, rapeseed cooking oil, flapjacks, malt drink, Marmite, flaxseed oil.

Enjoy your discussions!

TOOLKIT

www.face-online.org.uk/crunch/crunch

Free booklet 'Crunch - my little A - Z of food and farming facts'

Flax

Forage maize

Sunflower


Nick Spurling

Field guide to crops

On the South Downs you may also see field beans and peas. Beans and peas are collectively known as 'pulses'. They are grown for their seed which is high in protein and used in animal feed.

Field beans

The field bean crop divides into two groups: winter and spring. 'Winter beans' are actually sown in the late autumn. They will be high yielding but lower in quality than the spring-sown beans as they face greater risks from pests and diseases. Spring beans will be lower yielding, as they grow at a drier time of year, but their resulting seeds will be higher quality than those from the winter crop. Field beans look very like broad beans - you may have grown these in your veg plot. Their white flowers bloom from June and they smell lovely when blooming, especially to bees! Field beans are harvested by a combine harvester when the pods have matured and the seeds are dry.

Field peas

Field peas are generally sown during spring. They are known as 'combining peas' because, like beans, they can be harvested by a combine. Peas are also grown in the eastern counties for human consumption. They are known as 'vining peas' and are harvested when fresh to become either fresh or frozen peas.

*[**Teacher's note:** A handful of farmers also grow lupins for feed. Beans, peas and lupins are members of the legume family. Legumes take nitrogen from the air, making it available in the soil and then enriching the protein content of the plant and the seed.]*


Blackthorn Arable

TOOLKIT

www.britishbeekeepers.com

www.bbka.org.uk/learn/bees_for_kids/teachers

www.face-online.org.uk/resources-all

www.buglife.org.uk/discoverbugs/knowledge

www.syngenta.com/OperationPollinator

Programme to boost pollinators on farmland.

www.syngenta.com/teachingscience

Key stage linked resources and fun ways to learn about agriculture, science and food.

Field guide to crops

Pollination

Many of the UK's most valuable crops, including oilseed rape, apples, strawberries, field beans and field peas are pollinated by insects. Much of this work is done by honeybees and wild insects such as wild bumblebees and hoverflies. Some farmers and growers actively encourage beekeepers to keep bee hives on their farms. Hives of honeybees are most common in orchards as apples are the most important UK crop that requires bee pollination. The value of pollinators to UK crop production is £430 million per year [University of Reading].

Scientists are doing lots of research to find out how pollinators can be encouraged. To help pollinators, many farmers try to ensure that insects have access to different sources of nectar over a long period of time.
Well-managed, species-rich hedges can be full of flowering plants, shrubs and trees that provide good sources of nectar. Farmers can use funding from conservation schemes to manage semi-natural, flower-rich grassland. The sowing and growing of wildflowers, along with pollen and nectar margins next to arable crops, is also encouraged.

- Worker honeybees tell their friends where to find the best places for collecting nectar and pollen by doing a waggle dance!
- To make 1lb (almost 500g) of honey, honey bees collect nectar from flowers up to three miles from their hive and can make a total of 10,000 journeys

Nature's pest squad

Farmers also provide beetle banks - banks that are created in cropped fields as a home for insects. They are usually sown with tussocky grasses to encourage beneficial insects including ladybirds, predatory wasps and rove beetles that prey on insect pests in the crop. Other insects including wild bees may take up residence in beetle banks.

Activity

Help pupils to research the eyesight of a bee

***See like a bee** - to see colours like a bee, cut out a square of purple cellophane (available from craft shops) and look through it!*

Bees cannot see red - they only have three colour receptors - for UV (ultraviolet), blue and green, compared with the human set-up of blue, green and red. This means that they see everything in vivid colours. They see best in the blue-green, violet, and 'bee's purple' colour range. Bee's purple is a mixture of a mixture of yellow and ultraviolet!

***Critter vision** - encourage pupils to draw a section of a compound eye*

Insects, including bees, have compound eyes. A compound eye is a convex structure made up of thousands of tiny lenses. Scientists think that each lens in a compound eye takes in one small part of the insect's vision. The brain then takes the image from each tiny lens and creates one large mosaic-like picture. This image is a bit like the image produced on a television screen, in which the "picture" is a grid made of dots of light. Compound eyes are good at detecting movement. Honeybees also have three smaller eyes in addition to the compound eyes. These simple eyes or "ocelli" are located above the compound eyes and are sensitive to light, but can't see images.

Smart farming

Farmers have a mechanical tool (often supported by sophisticated technology) for almost every job that needs doing on the farm. Here we simply aim to give you an idea of how high-tech the farming industry is!

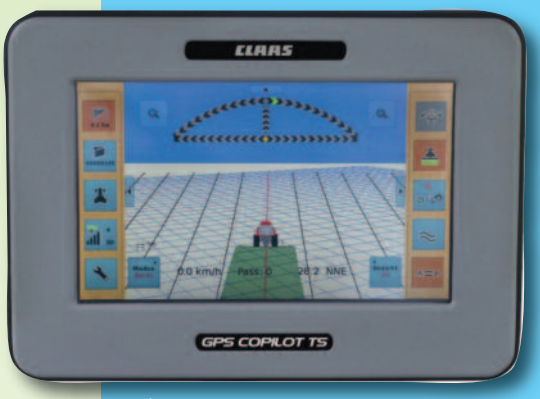
All farmers, not just arable farmers, are becoming increasingly efficient, using technology to drive down costs and make the best use of precious resources.

Lots of farmers are now using smart farming techniques. This is when they follow the very latest thinking on soils, chemical inputs, crop management and use the latest machinery. Smart farmers know what kinds of soil are on their farms so they can make decisions about what to plant and where. They choose the best and newest varieties of seeds to sow, applying the most modern techniques and using the latest technology to grow crops profitably.

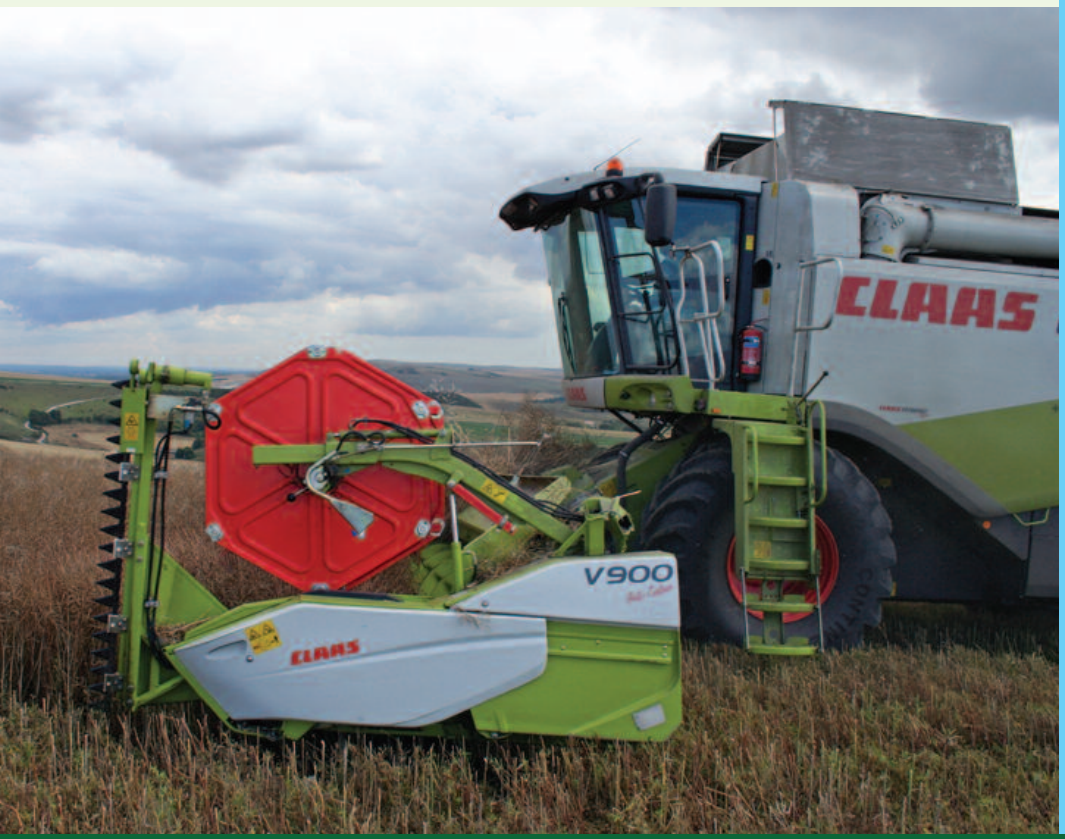
Modern farm machinery makes use of GPS (Global Positioning Systems) technology - like the sat navs that we have in our cars - and on-line information systems (through onboard computers). These technologies enable the driver to control the direction and speed of a vehicle. Automated steering is often linked to a satellite map of the field the machine is working in and satellite navigation can be accurate to 5cm in the field.

Features such as automated steering can prevent a driver working on the same bit of land twice so they save time, money and fuel.

Modern combine harvesters can produce 'yield maps' that tell a farmer how much grain the field has produced and even which bits of the field are best for producing grain. Some of the latest combine harvesters are linked to the manufacturer's computer during harvest.



Claas.com



Activity

Invite a farmer to school or visit a farm:

Pupils can ask the farmer questions and learn more about farming businesses and a life on the land. Discuss how to stay safe when visiting a farm and how to enjoy the countryside, while respecting it as a workplace.

Ask the farmer how much a new tractor might cost?

Why must a farmer invest so much in a tractor? How long will the farmer keep it? What can it do?

What can be done to protect machinery from theft?

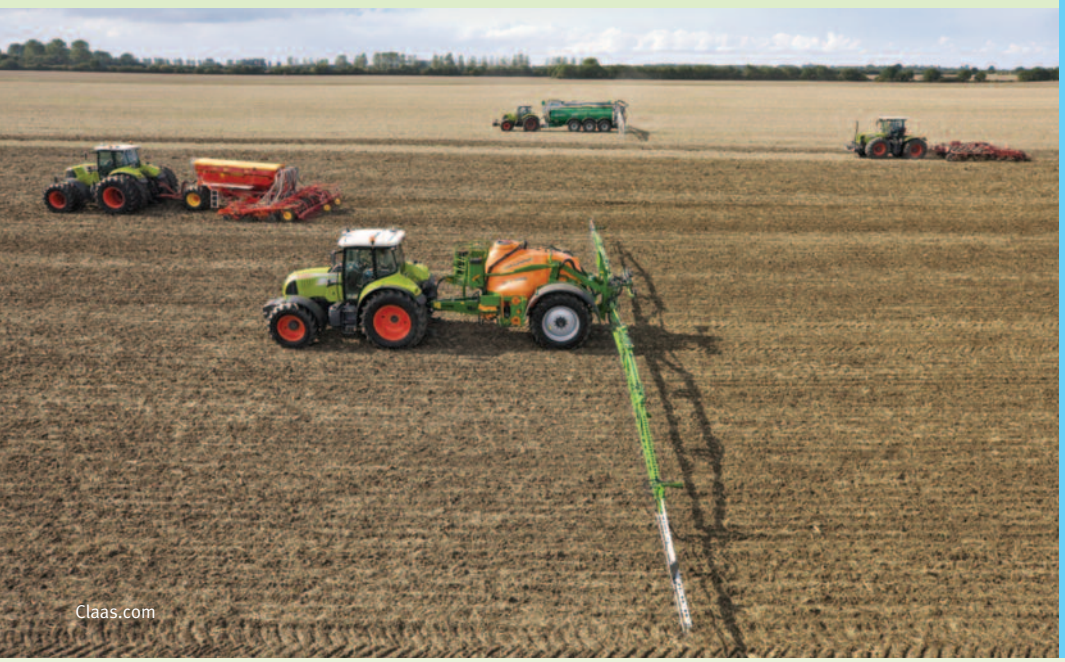
Discuss technology that the farmer has

Discuss the farm yard, a workplace, not a playground - Health and Safety aspects

How to respect, protect and enjoy our living, working countryside

Write out/type up The Countryside Code and illustrate it - pupils can show directional signs, gates, farm animals, dogs on leads, litter bins and wildlife on the South Downs (see Toolkit).

Smart farming


Claas.com

TOOLKIT

www.face-online.org.uk/resources-all

www.naturalengland.org.uk/ourwork/enjoying/countrysidecode/

The Countryside Code - a code to help people respect, protect and enjoy the countryside. It includes a section on 'considering other people'.

There are a number of useful publications designed to promote The Countryside Code and open access, plus educational resources to download.

The farmer will get a daily report which comes straight to his computer that helps him to fine-tune the combine harvester to improve its performance.

Fertilisers are expensive so the last thing a farmer wants to do is waste these. Farmers can use technology that helps them apply exactly the right amount of fertiliser to a particular part of a field. The tractor's computer can hold detailed maps showing the fields and the crop yields for different areas of the field. The farmer can use these maps to decide where to put more fertiliser next time.

Sprayers are set to ensure that only the exact amount of crop protection product is applied. The wind must be below a certain speed for a farmer to spray.

Most farmers will check weather forecasts and measure wind speed before spraying. It is good practice to spray when there is very little wind so it reaches the crop that it is intended for. Lots of farmers have mini weather stations on their farms and keep detailed records of rainfall for the Met Office.

Livestock farmers also use lots of technology. Electronic tags can be used to identify cattle and sheep. Dairy cows can wear collars that map their activity levels and help the farmer to pinpoint the best time to put the cows in calf. These types of devices can also ensure that an animal receives the correct amount of food. Electronic sorting gates can be used to sort tagged cattle into groups, helping the farmer to separate certain animals from the main herd, for example to trim their feet or so they can be checked over by a vet.


Claas.com

Farmer's Diary

Ben Taylor, East Sussex - My arable farming diary

Spring - March, April, May

During the spring there are many jobs to do, firstly cultivating (preparation of soil) and sowing (planting) of spring crops such as barley, linseed and peas. As the crops grow they need to be fed and protected from disease and pests.

We apply fertilisers such as Nitrogen, Phosphate and Potassium to help crops grow. Rates are carefully calculated to avoid wasting fertiliser, and some farmers use satellite pictures to determine which areas of each field need more or less, saving even more valuable fertiliser.

Disease and pests can infect a crop very quickly, but by using carefully selected chemicals the threat can be reduced. We are very careful to only target the insects which damage the crop, as most insects are beneficial for things like pollination, and eating other bugs!

Fungal diseases are controlled using fungicides, and as with all spraying, highly trained agronomists advise us of the best product to use and the appropriate dose rate. Without spraying or fertiliser the yield of the crop would be reduced dramatically, but we are careful to use as little as possible as it is expensive, and damaging if used to excess.

Summer - June, July, August

By June there is little more we can do to nurse our crops, and we depend on rain and sunshine to swell the grains. Our thoughts begin to turn towards harvest which starts in July. The machinery is prepared and grain stores are cleaned. It's also a good time to take a holiday before things get busy. If everything has gone to plan and the weather has been good we can expect a good harvest, but drought or too much rain can soon turn early promise into disappointment.

Before we can harvest, the crop needs to be dry, otherwise it can spoil in the shed, so we eagerly wait for good weather, and when the sun shines we work every day and into the night to gather the harvest.

Oilseed rape is usually the first crop to be cut in July, followed by the wheat and barley. Some of the straw is baled and stored for bedding animals in the winter, or sold to other farmers. As soon as the field is clear we start to cultivate it to get ready for sowing in the autumn.

If we are lucky by the end of August all the crops will be gathered and put in the grain store. We sell the crop through the year, hopefully when the price is high. It is always a relief when everything is in the shed and the fruits of a year's work are safe.

Farmer's Diary

Ben Taylor, East Sussex - My arable farming diary (continued)

Autumn - September, October, November

We don't have time to rest after harvest because some fields must be cultivated and sown with crops for the coming year.

This starts with oilseed rape at the end of August and then wheat and barley in September. Modern tractors use GPS to drive themselves in a dead straight line which means our tracks are parallel and we don't work the same bit of the field twice. GPS also makes it easier to drive the tractor for long hours as you can relax a little and listen to the radio. (In a big field you can even put your feet up for a few minutes!) Cropped fields are then sprayed with a weedkiller and put to bed for the winter.

Winter - December, January, February

Maintenance of machinery takes place now. Also repairs to buildings, fencing and gates are carried out. This is a quiet time of year so I also catch up with office work and go to meetings to try to learn about something to improve for next year.

Hedge-cutting takes place in late winter, after the birds have eaten all the berries and before the bird nesting season, so the best time is late January until early February.

However, as it turns cold, pigeons and rabbits do their best to eat our crops. It is important to scare them off using gas guns (which make a loud 'BANG') or bird-scaring kites. To keep rabbits away, we put up a special fence to stop them coming into the field. Some are also shot. Without controlling these pests some fields would be bald by the end of the winter and would have to be re-sown.

Pictures (excluding tractor)
James Pike, Jimpix.com

Livestock farming

Grazing animals are vital to countryside management. Many types of habitat must be managed by grazing, particularly the chalk grassland of the South Downs.

Sheep - a boost for biodiversity

The rolling hills of the Downs are ideal for sheep production and have been nibbled for centuries!

Grazing sheep help to conserve the flower-rich chalk grassland of the South Downs. Vigorous plant species are kept at bay, allowing the specialised chalk-loving flowers and herbs to support a wide range of often scarce insects and butterflies. If grazing stops, then scrub and trees grow up and the scarcer species may disappear.

Why do farmers rear sheep?

Nowadays, farmers raise sheep almost entirely for their meat. The market for wool has contracted dramatically, but in 2011 wool prices hit a 25-year-high owing to a worldwide decline in the number of wool-producing sheep. This shortage of wool fibre for textile production is good news for farmers. The sale of the wool can help to cover the costs of shearing the sheep. Sheep must be sheared for health reasons. If left unshorn, they would get too hot under a thick woolly fleece during summer. Problems with flies can be avoided if the wool is short.

There is a small market for sheepskins. They can be used for making goods such as sheepskin rugs, fine leather gloves and clothing, furnishings and footwear. Most skins are exported.

Sheep breeds

On commercial farms within the South Downs you can see flocks of mainly cross-bred animals reared for meat. These animals are bred from recognised breeds that produce a good quality carcase. Favoured breeds include the Suffolk, Charollais, Texel, Lleyn and Romney. A third of Europe's sheep meat production is UK-based. There are 40 pure breeds of sheep and 12 recognised cross-breeds in the UK, their characteristics reflecting the landscapes where they evolved. The Southdown, from the South Downs, is a dual purpose breed, for both meat and wool production. It is smaller than the lean modern meat breeds but remains popular with enthusiasts. The Hampshire Down, another breed from the South Downs, has been bred from the South Downs and is a larger animal altogether that is proving its worth commercially.

The Southdown

BWMB

TOOLKIT

www.britishwool.org.uk/education

The British Wool Marketing Board offers a wealth of education resources about wool, sheep and related issues.

www.eblexretail.co.uk

Posters of Guide To Lamb - showing cuts of meat.

Livestock farming

Meat production

The word 'lamb' conjures up images of a cute and cuddly young sheep. But lamb meat can come from a young sheep that is slaughtered anywhere between the age of three months and one year. They weigh between 35KG and 50KG.

New season spring lamb meat, from young animals butchered between Easter and July 1st, is tender and pale pink in colour when cooked. Later lamb is pinkish-red. Sheep that are more than one year old are called 'hoggets' - the meat has a stronger flavour than lamb. Hoggets are less profitable than lambs for the farmer as their meat is processed differently and this extra processing costs more.

Mutton

It's fairly unusual to find mutton, from animals that are more than two years old, in supermarkets. It is darker in colour than lamb and less tender. It can be available all year but the best meat is produced between October and March. This is because the sheep have access to nutritious summer and autumn grass and are able to put on fat before being slaughtered. Towards the end of the mutton season, animals are fed on root crops and silage to fatten them well. The Southdown has a reputation for producing delicious mutton. Mutton benefits from being cooked slowly for a long time.

Activity

Ask a sheep farmer to come to school to talk about the farming year:

Ask them to bring along items connected to sheep farming such as a shepherd's crook, sheep EID reader and tag, foot trimming equipment, photos of sheepdog/lambing. Pupils can imagine they are a sheep farmer and write a diary about a working day/a weekend on the farm.

Sheep place names:

Pupils can you find historical evidence of the sheep industry in and around the South Downs? Find examples of place names connected to sheep farming such as Sheep Street, The Old Sheep Fair, Sheep Pen Lane, Sheepwash Lane, Wool Lane, The Woolpack, Whitewool Farm.

Make a woolly sheep!

MATERIALS:

Washed sheep's wool - wash fleece in cold water and washing powder, rinse well and dry gradually in a warm room/airing cupboard. If no wool available, you could use cotton wool balls.

Joggle eyes x 2

PVA glue & brush

A4 black card or thick black 'sugar paper'

A4 white card

Pipe cleaners - cut into lengths of 7-8 cms x 2

Black/grey knitting wool - optional

Lollypop stick x 1(large 14 cms x 2 cms) - optional

Masking tape - optional

METHOD:

Cut out (teachers can cut these card pieces in advance)

- *One oval of white card (body) - approximately 18cms wide x 14cms tall*
- *One oval of black card (head) - approximately 10cms x 8cms*
- *Two small ovals of black card (ears) - approximately 4cms x 1cms*

Glue

- *Head on body at an angle*
- *Ears on head*
- *Pipe cleaners behind ears for little horns (optional)*
- *Eyes on head*
- *Head to body*
- *Sheep's wool to body*

The legs/feet (optional)

- *Cut four pieces of black/grey knitting wool*
- *Put into pairs, by knotting two pieces together at both ends.*
- *Fold each pair in half and attach at base of the body so they dangle down*

Finally (optional)

- *Attach a lollypop stick to the back of the sheep with masking tape - to be used as a handle.*

Farmer's Diary

Millie Nye, West Sussex - My sheep farming year

I breed pedigree Suffolk sheep and Suffolk-cross mules. Mules are crossbred sheep and usually have speckly faces. They are normally a cross between a lowland ram (male sheep), such as a Suffolk or a Hampshire Down breed, and an upland or hill breed ewe (female sheep) such as a Scottish Blackface. I use either a Texel ram, a Hampshire Down ram or a Suffolk ram.

Spring - March, April, May

My 750 ewes (adult female sheep) go to the ram in the autumn but after lambing, I have almost 2,000 sheep on the farm! Lambing is when our ewes give birth to lambs - on my farm lambing takes place from February onwards. This is a busy time - I must be with them around the clock in case any ewes and newborn lambs need help.

The pedigree Suffolk sheep and Suffolk cross sheep are pretty big for me to handle and I find it easier to bring them into a barn for lambing. Any mule ewes that are having triplets are also brought into the barn. The rest of the crossbred ewes have their lambs out on the Downs from April.

I write in a book how many lambs a ewe has given birth to. The newborn lambs need to be numbered so we know which lambs belong to which ewes. We spray numbers onto their wool. Single lambs have a green number, twins have a purple number and triplets have an orange number.

Tail docking

We fit a thick elastic band to the tails of all our newborn lambs. This is used to dock (shorten) their long tails. The band constricts the blood supply to the tail so it will eventually drop off painlessly. Sheep with long tails can get lots of muck around their bottoms which attracts flies. We dock their tails so they don't get 'flystrike' which can kill them. Flies love muck and they can lay their eggs on the skin of a sheep's tail. When the eggs hatch they turn into nasty maggots which eat through the animal's skin, causing serious infection and sometimes even death.

An inspector calls

Every year an inspector checks our working practices, animal welfare standards and records because we market our sheep under a 'farm assurance scheme'. This scheme helps us to sell the sheep -buyers know they're getting animals that have been well-looked after. After a few days, ewes with lambs that have been born in barns go out to graze new pastures. We choose the best lambs as 'replacements' - these lambs will grow up to be breeding ewes (adult females) in my flock, replacing any older ewes that have died or been sold.

Farmer's Diary

Millie Nye, West Sussex - My sheep farming year (continued)

Summer - June, July, August

Shearing

Adult sheep are shorn of their fleeces to keep them cool and cut the risk of flystrike. Some farmers do this themselves but it is hard work so most hire gangs of professional sheep shearers. My sheep shearer is English but he employs skilled shearers who come from major sheep-producing nations around the world - usually New Zealand, Australia and even the Falkland Islands.

Wool sales

The wool, known as 'the clip', is sold to the British Wool Marketing Board - a body that sells British wool on the international market with the aim of getting the best prices. Wool prices have been quite low but they are improving because of increased demand and a decline in the number of wool-producing sheep breeds worldwide. Selling the wool covers the costs of taking it off the sheep and transporting it to the sales. My wool is collected from my farm near Worthing and taken to a big collection centre in Kent where it is sorted and 'graded' - in other words its quality is assessed before sale.

Electronic identification

In July, we give lambs their official identification. We fit an electronic identification eartag in one of their ears. This doesn't hurt them. Each animal has a number on its eartag and the tag carries information that can be scanned and read by a machine called a 'reader identifier'. [The tag is a bit like a barcode on your shopping. You've probably seen a cashier scanning the code on things to get the prices so the till can add up your shopping bill].

I can store information on the eartag such as our official flock number, the lamb's own identification number, its birthday, details of who its Mum and Dad are, any medicines it has been given and its birthweight. I can also add other information such as the lamb's weight as it grows and later on, how many lambs a ewe (adult female) has given birth to. Animals that are going for meat also have a tag. I use the 'reader' to scan each animal's eartag and the reader can then transfer all this information onto a computer, which is very handy for me!

We weigh some of the lambs and we begin to sell some. My lambs are reared for meat and the meat is often sold through local butchers. I also sell some meat privately - local people buy boxes of half lambs from me.

Farmer's Diary

Millie Nye, West Sussex - My sheep farming year (continued)

We put a special insect-repellant on the lambs which helps to keep flies away for the summer. Some farmers give their flock medicines at this time to kill internal parasites (worms). You may have seen your Mum or Dad 'worming' your pet dog or cat - sheep also need to be wormed.

I buy in hay and straw from other farmers as feed and bedding for my sheep during the winter months. I also buy in a root crop called fodder beet - a winter feed for sheep - but next year I hope to grow my own. Neighbouring farmers plant fodder crops (feed crops) for sheep to graze. These include stubble turnips, forage rape and mustard.

I go to the sales to buy rams and I sometimes sell my pedigree Suffolk ewe lambs to other breeders. There's a chance to show off your best animals and to win a prize! The sales are a good place for breeders like me to advertise. I choose big strong rams because I want to breed healthy, productive animals.

Autumn - September, October, November

I wean any unsold lambs. They are old enough to leave their Mums by now. I have usually decided which ones to keep as 'replacements' to replace older ewes that have died or been sold.

I check all my adult sheep to ensure they're healthy and trim their feet if necessary. Old or unproductive ewes are sold through Hailsham Livestock Market in East Sussex. They go for meat.

Rams are introduced to ewes to produce lambs for next spring

I give my sheep extra feed now the weather is colder. It's important for pregnant ewes to stay warm if they are to produce strong lambs.

Winter - December, January, February

Routine repairs to fencing, buildings and machinery, checking of water supplies.

We 'scan' (check) the ewes to see which ones are in lamb (pregnant) and to see how many lambs each ewe is expecting. I expect you know pregnant human mums go to a doctor for ultrasound scans that show a picture of the unborn baby on a screen.
Well, it's the same for sheep as for humans!

We bring some ewes into a barn for lambing.
We give them straw beds and feed them hay.

Livestock farming

Pedigree Sussex herd

Beef farming

On commercial farms within the South Downs you can see herds of both pedigree and cross-bred cattle that are reared for meat. The market for cattle hides and calf skins is tiny in this country as the UK tanning/leather-making industry has shrunk beyond recognition since the 19th century.

Breeds

Popular British beef breeds that produce a good quality carcase include the Aberdeen Angus, the South Devon and the Hereford. Favoured continental breeds include the Limousin, Simmental, Belgian Blue and Charolais. A traditional British beef breed that is enjoying a comeback is the Sussex. The Sussex is thought to have descended from the wild red cattle that roamed southern England when the Romans invaded.

Meat production

Most beef cattle eat grass during summer. They usually live in barns during winter and are fed a variety of nutritious foods such as hay, maize silage, cereals, peas and beans. But on the free-draining slopes of the Downs they can live outside all year. Beef tends to be available all year round. Meat is usually produced from beef-bred animals that are between one year and 18 months or so at slaughter, although traditional breeds mature more slowly. Beef can also be produced from cattle that are descended from dairy herds.

Veal is very lean, tender meat from calves aged 16 to 22 weeks. Traditionally veal is produced using the male calves of dairy cows but it can come from animals of beef parentage too. The calves will be fed milk substitutes in their early weeks and a forage-based diet, with silage or hay being fed from late summer. Veal calves live on pastures or in airy, straw filled pens. Veal is a niche market product - specialist butchers and restaurateurs are prepared to pay a premium for it. It is pink in colour, even after cooking, and is often marketed by its French name, veal rosé or rose veal.

Activity

Ask a beef farmer to come to school to talk about the farming year:

Ask them to bring a cattle passport, a picture showing cattle eartags and, if possible, samples of cattle feed for youngsters to see and smell (assess allergy risk).

Pupils can bring in examples of products containing by-products made from cattle:

Such as leather shoes, a leather wallet, beef stock cubes, Bovril, oxtail soup, gelatine.

Pupils can imagine they are a beef farmer:

And write a diary about a working day/a weekend on the farm.

TOOLKIT

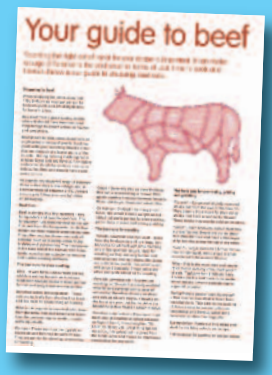
www.face-online.org.uk/resources/factsheets/discovering/beef.pdf

www.manorfarmsurrey.com/manorfarmsurrey.com/beef.asp

www.manorfarmsurrey.com/manorfarmsurrey.com/sucklerherd.asp

www.eblexretail.co.uk

Posters of Guide To Beef showing cuts of meat



Farmer's Diary

Hugh Passmore, West Sussex - My beef farming diary

Spring - March, April, May

I have a herd of pedigree Limousin cattle and some Sussex cross animals. My herd is described as a suckler herd because the mother cows suckle their calves. It is a 'spring-calving herd' - I have planned my business so that the calves are born during the spring. Calves are born outside (at grass) during the spring.

The cows live on the Downs during the winter. Younger animals that are still growing may be kept in a barn over the winter to keep them in optimum condition.

Some farmers may have a visit from the vet to test cattle for certain health conditions/diseases during spring. Any cattle that have been housed in barns during winter are turned out to grass.

An inspector calls at this time of year. We market our cattle under a 'farm assurance scheme' - this means we can sell them easily as buyers know they are buying a good product. Every year an inspector comes to the farm to check all aspects of the business, our working practices, animal welfare standards, records and so on.

I usually feed barley straw and silage (preserved grass) to cows that are due to calve. Cows with calves need a good diet as they are 'in milk' and suckling (feeding) their young. During early spring, I give the cows with calves extra feed before the grass really starts to grow.

Calves are fitted with eartags when they are born. By law, every cow in the UK must have its own passport and its ears tagged. When calves are born, we put a special paste on their hornbuds to stop their horns from growing. This is for their own safety as cattle with horns can harm each other and their handlers.

Bulls are introduced to the cows to produce calves for the following spring.

Summer - June, July, August

Cattle are enjoying the lush summer grazing - we move them to the best grass for the summer. Cows must be in good condition to produce plenty of milk for their calves, to produce meat and to stay healthy during the coming winter.

Haymaking and silage making takes place. Straw, a by product of the cereal harvest, is baled and stored for winter bedding and feed.

Farmer's Diary

Hugh Passmore, West Sussex - My beef farming diary (continued)

Autumn - September, October, November

Creep feeding of calves

We put out extra feed for the calves in a special feeder which is fenced off so that only a calf can creep into it to eat. Only the calves can reach this food - the adults can't! The calves are fed extra food (concentrates) which usually includes barley.

Calves are weaned, usually by November - they are old enough to leave their Mums by now. At weaning, we select the best heifer calves as 'replacements' for older cows that may have died or been sold because they have become unproductive. We sell any surplus calves to other beef farmers. Any older cows that have become unproductive will be sold for meat.

All cattle are wormed at this time - we give them medicine to remove harmful internal parasites. This is just like when the vet gives you medicine for your pet cat or dog to kill worms that live inside them.

During the winter, our remaining calves live in a barn to keep them warm, healthy and in good condition. We want them to be big and strong.

We have two bulls and at this time of year we separate them from the main herd of cows. They live in a paddock with a quiet cow each. These two cows keep the bulls company until April when they rejoin the main herd.

Winter - December, January, February

Routine maintenance such as repairs to fencing, buildings and checking of water supplies. Young cattle are housed. Routine work includes feeding and 'bedding up' yards or barns where cattle are living for the winter. Young cattle housed inside will eat a barley/lupin mix with hay and barley straw to give them roughage in their diet. The older cows that are living outdoors will be given barley straw.

Livestock farming

Dairy farming

A dairy cow is a female cow kept for milk production. Dairy cows must give birth to a calf to give milk. The calf stays with its mother for a short while, then the calf is fed milk substitutes so that its mother can be milked. A cow can have one calf every year and she gives most milk in the first six weeks after her calf is born.

There are many breeds of dairy cow kept by UK farmers. You're most likely to see black-and-white Holstein or British Friesians. But some farmers keep Jersey and Guernsey cows, which produce the creamiest milk. These Channel Island breeds are golden brown and reddish brown and white in colour. Their milk is naturally higher in energy, protein, vitamins and calcium than normal whole milk.

For a cow to produce milk, she should be allowed to eat large quantities of food and drink lots of water. Dairy cattle graze outside between March and October. Surplus grass is preserved for the winter as silage (fermented grass) and maize can also be ensiled (preserved as a winter feed). Cows eat silage or hay (dried grass) when they are kept indoors during winter. The modern dairy cow is fed extra food for energy, protein, vitamins and minerals. A mixture of cereals, rape meal, sunflower meal, peas, soya are ground and pressed by into small, brown pellets. The average sized dairy herd is about 100 cows but there is a trend towards larger herds and greater efficiency.

- One dairy cow produces on average, 10,409 pints of milk in a year, enough to supply 22 families with their daily pintas or 33 pints a day - enough milk for every child in an average-sized class.

Complex industry

The dairy industry is very complicated. Almost all farmers sell their milk to dairy processors.

Milk is collected from farms for processing and bottling or to be used for other dairy products such as cheese and yogurt. Processors then process the product and sell it on to retailers. This complex supply chain means that dairy farmers do not always get the best price for their milk.

Decline

Dairy farming has been in decline over the past decade or so. A significant number of dairy farmers have been receiving poor prices that do not cover their costs of production. For this reason, about two thirds of dairy farmers have sold their cows and stopped producing milk. This is true of many in and around the South Downs National Park. However, those dairy farmers who remain in milk production are likely to have favourable contractual arrangements, meaning that they receive a price that covers the costs of producing milk.

Niche markets

It is very expensive for a dairy farmer to bottle, process and market their own milk. Very few bottle and sell their own milk because their costs of production would be high and they couldn't compete with supermarket prices for milk. However, a number of dairy farmers have branched out into the production of artisan cheeses quite unlike those you would find in a supermarket. These niche market cheeses command a premium price and allow enterprising dairy farmers to make a profit on a small volume of their milk.

Livestock farming

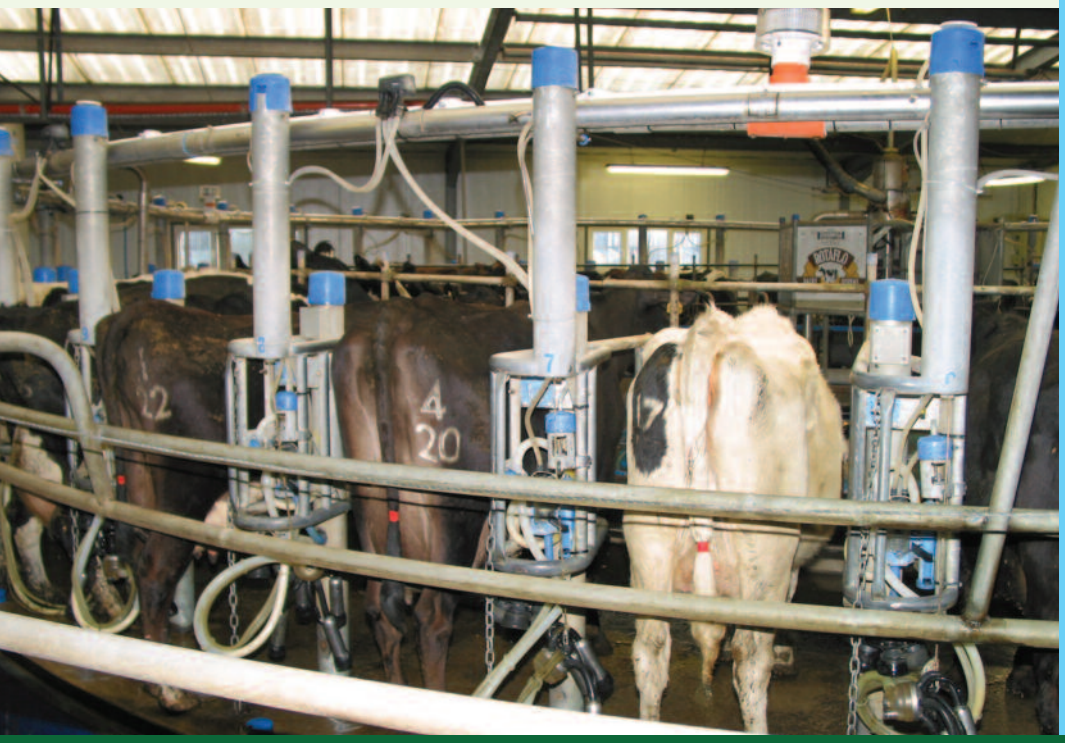
The relationship between the beef and dairy industries

The dairy and beef industries work together. For a dairy cow to give milk, she must give birth to a calf once a year. Each dairy cow can produce at least four calves in her lifetime and the farmer will decide the breed of bull to mate the cow with.

*[**Teacher's note:** Modern dairy farmers often breed cattle using a method known as 'artificial insemination' or 'AI'. The farmer can buy frozen semen, purchased in "straws", from the breeder of a high-quality bull and then the farmer can artificially inseminate a cow so that she becomes pregnant.]*

If the farmer puts the pure-bred dairy cow to a beef bull, the result will be a crossbred calf that can be slaughtered for meat. This will happen three times out of four. As the calf has 50% beef characteristics, it will yield more meat than a pure dairy calf. It is common practice to put Friesian dairy cows to Hereford beef bulls, for example.

If the farmer puts the dairy cow to a dairy bull, the hope is that the resulting pure-bred dairy calf is a heifer (female) to replace its mother when her milk yields decrease.



Activity

Cow mask making:

See following page for cut -out cow mask

TOOLKIT

www.face-online.org.uk/visit-a-dairy-farm/visiting-a-dairy-farm

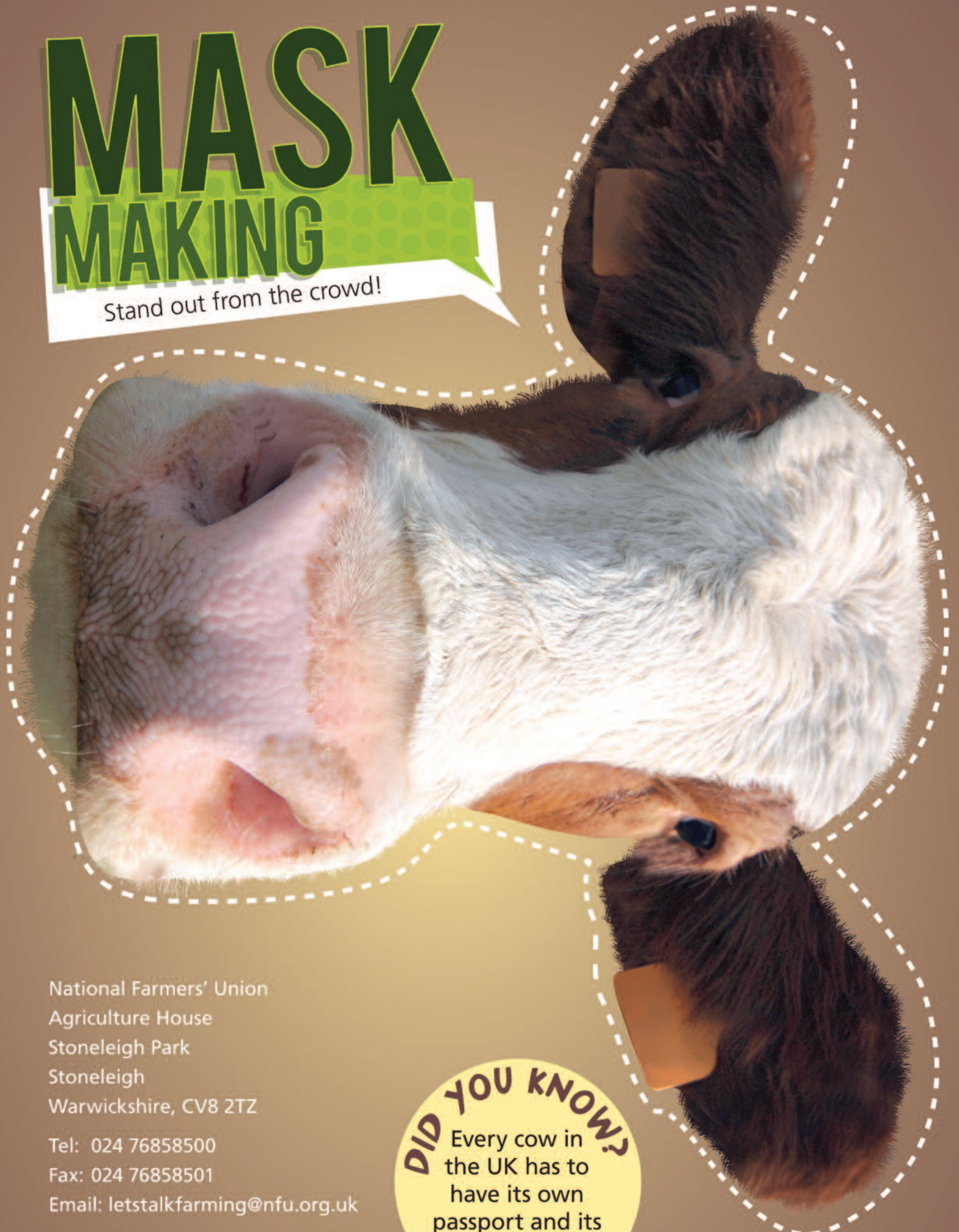
www.dairyco.net/school-milk/ahdb-education-programmes/education-resources/hard-copy-resources.aspx

To find out about life on a dairy farm and how milk is produced, explore ***www.thisisdairyfarming.com***

Explore a 'virtual dairy farm' and learn how farmers look after the welfare of their cows and what they are doing to protect the environment.

MASK MAKING

Stand out from the crowd!



National Farmers' Union
Agriculture House
Stoneleigh Park
Stoneleigh
Warwickshire, CV8 2TZ

Tel: 024 76858500
Fax: 024 76858501
Email: letstalkfarming@nfu.org.uk

NFU
www.nfuonline.com

DID YOU KNOW?

Every cow in the UK has to have its own passport and its ears tagged.

Farmer's Diary

Joanna Cheyney, Hampshire - My dairy farming diary

I have a spring and autumn calving herd -cows give birth during spring and autumn

Spring - March, April, May

Worm and freeze brand young animals. [Worming is when we give the cattle medicine to kill any worms that may be living inside them, just like you give a pet cat or dog medicine to kill worms/internal parasites].

Turn out - we let our cows out to grass at the end of April.

Sow fodder beet (a root crop to feed cattle during the winter).

Sow maize end of April.

Spraying to control weeds takes place during May.

First half of May - cut grass and make silage (preserved grass). Our silage is a mixture of grass and clover or lucerne - part of a nutritious diet for our dairy cows to eat during winter. When harvesting the grass, we apply an additive to preserve and enhance it.

We take three cuts in all - most of this grass goes into a clamp for feeding cattle that are housed during winter. Some can be baled so that the 'silage' can be moved around easily if cows are in groups in different places around the farm.

Farm inspectors call. You've probably seen the Red Tractor mark on milk in the supermarket - well we market our milk through this scheme. The inspector for this scheme checks our record keeping, herd health and animal welfare. We also get a visit from a dairy hygiene inspector who spot-checks that our facilities are clean and suitable for producing milk.

Summer - June, July, August

We stop milking cows two months before they are due to calve (give birth to a calf). This is called 'drying off' when we let their milk dry up. To do this, we restrict the amount of grass they can eat and they receive special food - a 'dry cow' ration. This food ensures that they go on to produce healthy calves and are in the right condition to return to the milking herd.

All year round, we check our cows' feet and if necessary, we trim their feet. The youngstock (young animals) go out onto 'clean' pasture that hasn't had other livestock on it - this is important as young animals can catch worms/parasites.

Farmer's Diary

Joanna Cheyney, Hampshire - My dairy farming diary (continued)

Cows calve (give birth) from mid August until the end of May. Once they have calved, the vet comes every fortnight to check their health. He also checks to see which of our other cows are pregnant (in calf). This is called PD or pregnancy diagnosis. [Teacher's note: Modern dairy farmers often breed cattle using a method known as 'artificial insemination' or 'AI'. The farmer can buy frozen semen, purchased in "straws", from the breeder of a high-quality bull and then the farmer can artificially inseminate a cow so that she becomes pregnant.]

During August, we bale straw (a by-product of the cereal harvest). We use straw as winter bedding for the cows. If we have plenty of grass we make more silage.

Autumn - September, October, November

In October we 'house' the dairy cows (put them in barns) as the weather is getting colder and there is less good quality grass. We begin feeding them special food (a winter ration) which is a mixture of maize and grass silage or lucerne silage, with cereals and soya. Adult dairy cows need a balanced diet to ensure they remain healthy before being put in calf (by Artificial Insemination) in October, and to promote milk production after calving. Calves are housed too but some young cattle will spend the winter outside. Female calves will grow up to join our dairy herd as 'replacements' to replace any older cows that are unproductive or have died We sell male calves throughout the year to a local beef farmer who rears them to produce beef.

We drill grass seed for next year's silage during August and September. We harvest maize at the end of September/beginning of October. This is included in the cow's winter ration (diet for winter).

In October we also lift fodder beet, a root crop grown to feed the cattle during the winter months. It is very sweet - the cows love it! (see picture below).

Winter - December, January, February

Our daily routine sees us bedding up the cows on straw and feeding the groups of cows and calves. Around Christmas time, our bull visits any young cows (heifers) that have not come into calf by AI (Artificial Insemination). He is a pedigree Holstein called Elmo!

We record our milk yield monthly and make a note of our milk quality and herd health. If conditions are right, we spread muck on the fields from mid January before cultivating them for arable crops sown during the spring. Routine maintenance.

Glossary of farming terms

This glossary is not an exhaustive list, but a reference tool to explain some of the farming terminology that you may encounter when meeting a farmer and/or visiting a farm on the South Downs.

It includes terms that relate to the main farming types on the Downs, plus some extra words that may be useful.

It may help you to develop classroom discussions although you may need to assist youngsters with the language.

Agronomist	a qualified adviser helping farmers to protect crops against pests/diseases
Arable farming	the growing of crops in fields, such as cereal crops that produce grain, oilseeds [crops with oil-rich seeds], field beans, peas and other crops
Bacon	cured meat from the back/sides of a pig
Baler/ baling	a machine that gathers up dried grass or straw into bales; making bales
Barn	a farm building used for the sheltering of animals, the preservation or processing of food/crops or the storage of equipment/machinery
Beef farming	the rearing of cattle for meat; beef is the meat that comes from cattle
Bedding/ bedding up	material for animals to lie on, such as straw; putting down a thick layer of material for animals to lie on
Bird scarer	a piece of equipment to scare birds, especially pigeons, off a crop
Boar	a grown-up male pig
Bull	a grown-up (mature) male bovine animal, (a male 'cow')
Bullock	a young castrated male bovine
Calf	a young bovine animal in its first year
Calving	the process of calves (baby cows) being born; the time of year when baby cows are born
Cereal crops	crops that produce edible grains such as wheat, barley and oats
Chaff	the husks of corn left over once the grains have been extracted/threshed
Chicken	a domestic fowl (hen) kept for its eggs and/or meat, especially a young one; the meat from a domestic fowl
Cock/ cockerel	a male domestic fowl, (a male 'hen')
Combinable crops	crops that can be harvested with a combine harvester, usually cereals, oilseeds, pulses (peas and beans)
Contractor	a farmer who is paid by other farmers, on a contractual basis, to do farm work
Cow	a female bovine animal
Combine harvester	a machine used to harvest cereal grains, oilseeds and pulses
Cultivation	preparing land/soil ready for the sowing of seeds/crops
Cultivator	a piece of equipment that turns the soil over ready for sowing seeds
Dairy farming	the rearing of cattle to produce milk
Dry cow	a female cow that is not currently being milked/ whose milk has dried up
Ewe	a female sheep

EID electronic identification eartags which can be fitted to cattle and sheep. They can be scanned by a special reader identifier and information about the animal stored on computer

Fallow land left uncultivated, land not being used to produce crops or for raising livestock

Fertiliser a product applied to land to enrich soil and make it fertile for the growing of crops

Feeding the process of giving food to animals, the process of animals eating

Fodder crops crops grown for animal feed eg fodder maize

Fowl (poultry) domestic bird, especially a cock or hen

Forage bulky, high fibre food for animals such as silage

Fungicide a product that prevents certain fungal infections (especially in crops)

Game wild animals or birds (including pheasants) conserved and hunted/ shot for sport

Game cover plants or crops grown to shelter/feed game birds

Gilt a young female pig

Grain/ grain store a single small hard seed: general term for cereal grains; a building where grain is stored after harvest, it may include a grain drier

Grazing (of animals) the act of feeding on grass or pasture, grassland for animals to eat

Ham the cured/ dried thigh of a pig

Harvest the process of gathering in crops when they are ripe/at their best

Hay grass that is cut and dried in the sun before being baled for storage. It is greenish in colour and is made into bales that are stored and used as feed for animals during winter

Heifer a young female cow

Herbicide a weedkiller that is used to kill certain unwanted plants in a crop

Herdsman a general term for a person who cares for cattle/cows

Hen a female domestic fowl kept for its eggs and/ or meat

Hogget a sheep that is a year old or more

Housed (of livestock) living in barns

Insecticide a crop protection product that targets certain insect pests

Lamb a young sheep, usually aged between three months and one year; the meat of a young sheep

Lambing the process of baby sheep being born; the time of year when lambs are born

Livestock the farming of livestock, usually beef and/or dairy cattle and sheep.

Maize a cereal crop, originally from central America, with large grains set in a cob; maize is grown for cattle feed in this country

Meat the flesh of animals used as food

Milk/ milking a white liquid produced by a female animal to feed its young; the process of taking milk from a cow

Mixed farm a mixed farm has a mixture of both livestock and crops

Mule a cross bred sheep (usually a hill sheep breed crossed with a lowland breed)

Mutton the flesh/meat of a sheep older than two years old

Niche markets small parts of the market; 'niche market' products appeal to a certain type of consumer

Oilseeds crops that produce oil-rich seeds such as oilseed rape and linseed (used to produce vegetable oil, for food and industrial use)

Parlour the building where dairy cows are milked, the parlour is fitted with special milking equipment

Pesticides products that protect crops by killing certain (insect) pests

Plough a piece of equipment that is used to turn the soil over

Ploughing turning up the soil into ridges and furrows, usually before planting seeds

Pork meat/flesh of a pig

Poultry farming the raising of domestic fowl (eg hens, geese, ducks, turkeys, guinea fowl) to produce meat or eggs

Precision farming modern ways of farming profitably using the latest knowledge, equipment and technology; also called 'smart farming'

Ram a male sheep

Ration food (for livestock), usually a specially mixed feed containing fibre, protein, vitamins and minerals

Scanning when female animals are checked by ultrasound scans to see if they are pregnant

Sector a particular division of the farming industry, eg dairy farming

Shearing the process of cutting off the hair/fleece from a sheep

Sheep farming the raising of sheep for meat and wool

Shepherd a person who cares for sheep

Silage grass (or another crop such as maize) that is cut, allowed to dry a little, then harvested and conserved in a pit or silo (ensiled) or baled. It is fed to animals during winter

Silo a pit or airtight chamber, a tall storage tower, usually cylindrical, used to store loose material/feed

Smart farming modern ways of farming profitably, using the latest knowledge, equipment and technology; also called 'precision farming'

Sprayer a machine that sprays crops with crop protection products to keep pests and diseases away

Steer a young male bovine, (a young male 'cow')

Straw the left-over bright yellow stalks of cereal crops after the grain has been harvested. Straw is usually baled up for use as animal feed and bedding

Sow *(noun)* a female pig

Sow *(verb)* to plant seeds

Sowing the planting of seeds/crops for the coming months

Tillage preparing land/soil ready for the sowing of seeds/crops

Tup a male sheep or ram

Tupping (sheep breeding) time when the ram is put in among female sheep to breed

Turnout spring-time when animals are 'turned out' of winter housing and let out to eat grass

Uncultivated (land) not being used for the growing of crops or for raising livestock

Veal the meat of a young calf

Vet veterinary surgeon who gives medical treatment to animals

Vines/ vineyard woody climbing plants that produce grapes; an area of land for the growing of grapes, usually for wine production

Weaning the process of separating a young animal from its mother and getting it used to food other than its mother's milk

Weedkiller a product to kill certain unwanted plants, especially in a crop/field

Wool fleece, the hair of a sheep

Worming the process of giving animals medicine to kill internal parasites/worms

Yield the full amount of an agricultural product provided by a field/crop/animal

Visiting a farm on the South Downs

The different types of farming on the South Downs have shaped the landscape, so what better way to learn about and experience the Downs than through a farm visit? This information should help you to find a farm and arrange for your class to visit it.

How do I find a farm to visit?

Some schools are able to build a link with their local farmer, or a farm that somebody within the school is connected to. Are there any children in your school who come from a farm?

Lists of farms that welcome visits from school groups can be found on:

The Growing Schools website:
www.growingschools.org.uk
Enter your postcode into the interactive map to locate farms in your area

The Natural England website:
www.naturalengland.org.uk
Follow the links for teachers for information about sites with Educational Access

The FACE (Farming and Countryside Education) Regional Co-ordinator has a list of farms that welcome school visits and may be able to suggest one near your school. ***Contact Louisa Devismes***
e: louisa@face-online.org.uk
t: 01273 892096

Be assured of a high quality farm visit by visiting a CEVAS-trained farmer - visit the Growing Schools website to find one or check with the FACE co-ordinator. (CEVAS is the Countryside Educational Visits Accreditation scheme - a training course, run by Access to Farms, for farmers who provide educational access).

Some farms also hold the Learning Outside of the Classroom Quality Badge. More information and a list of sites can be found on
www.lotcqualitybadge.org.uk

Visiting a farm on the South Downs (continued)

What will a farm visit cost?

Farms that provide visits through the Natural England Educational Access Scheme do not make a charge. However, school staff will be asked to complete a form at the end of the visit.

Some farms make a charge for each group or visitor, others may ask the school to help cover the cost of additional expenses arising from the visit. Research by FACE has found that charges by farms usually fall within the range of £2.00-£7.00 per head.

Planning a farm visit: What should I look for?

Look for a farm that has made provision for school groups, and preferably has the LOtC Quality Badge, or at least a CEVAS trained member of staff as well as:

- a risk assessment for group visits that covers the parts of the site you will visit and the activities that the farmer is arranging for you
- adequate hand wash and toilet arrangements for the number of visitors attending
- arrangements on the farm to control hazards eg livestock, moving farm machinery, chemicals, straw bale stacks in the area you are to visit
- provision of shelter in the case of bad weather
- somewhere to eat away from livestock (if the group will be eating on the farm)
- a free pre-visit planning and risk assessment session on the farm for teaching staff
- printed information about arrangements for school visits

What will a farmer expect of a school group leader?

- To come for a pre-visit meeting at the farm to plan the programme for the day
- To bring an adequate number of adults who will actively supervise the pupils throughout the visit
- To supervise the group taking into account the health and safety requirements of a farm site

Health and safety during farm visits

Any activity carries risks. Risks of infection from contact with animals highlight the need for stringent hygiene arrangements for all those visiting farms with livestock, especially young children. The measures to minimise the risks are relatively simple but must be followed rigorously to ensure that the risk of infection from animal contact is low.

When planning a visit, teachers should read the Health and Safety Executives Information sheet AIS23 (rev) 'Preventing or controlling ill health from animal contact at visitor attractions'. This includes a supplement for teachers (and others) who organise visits for children. Teachers should ensure that the arrangements for the visit comply with this document.
www.hse.gov.uk/pubns/ais23.pdf

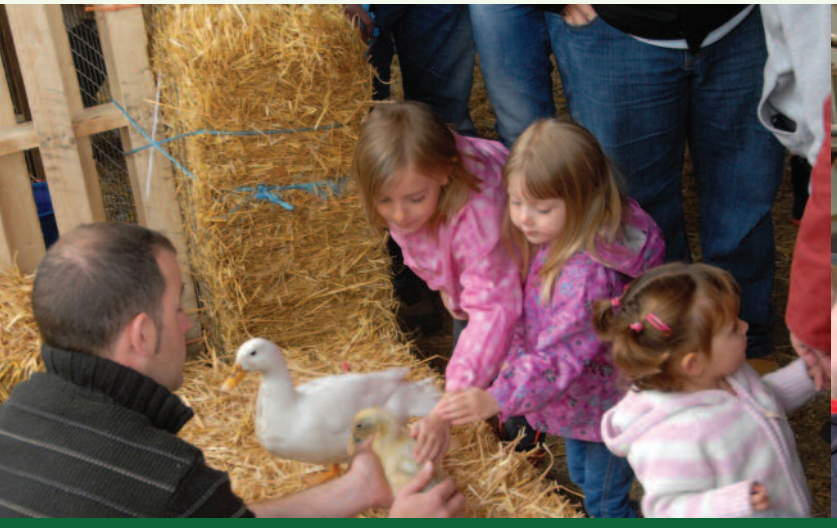
There is also a helpful document in the support section of the Growing Schools website ***www.growingschools.org.uk***

Advice for farmers

Visit My Farm is a unique information hub for farmers who would like to find out more about hosting educational visits. This guide contains all the information farmers need to get started.
www.visitmyfarm.org

Keeping children safe on farms

Health and Safety Executive - includes publications and interactive elements.
www.hse.gov.uk/campaigns/farmsafe/



The History of the South Downs

There is evidence of people on the South Downs from as long ago as the Paleolithic era (Old Stone Age). However, the earliest signs of occupation that can be seen today are from the Neolithic, or New Stone Age, around 6,000 years ago.

During this time, hunter-gatherer people gave up hunting and started to farm to provide their food. Large scale clearance of woodland took place as grazing was provided for livestock and men created the first enclosed fields. These people were using stone tools, as this was before the introduction of metal technology, and so the traces of old flint mines can be seen.

Bronze was introduced gradually alongside flint from about 3,500 years ago, while Iron first appeared on the Downs 1,000 years or so later. The Bronze Age peoples left notable monuments across the landscape, especially 'tumuli' - burial mounds or barrows. Many of these mounds never contained any human bones, and those that did almost always held only cremated remains. Vast numbers were plundered by Victorian treasure hunters, depriving later generations of valuable information that could have been obtained by modern archaeologists. Bronze Age men, though, also left another legacy - the heathland of the western Weald. It is the result of poor acid soils being cleared for agriculture, and the land becoming impoverished without the replacement of any nutrients. Communities of acid-loving plants took hold, making the habitat we see today.

The Iron Age peoples left majestic hillforts along the South Downs ridge. Among the best examples are Old Winchester Hill in Hampshire, Cissbury Ring in West Sussex, the Devil's Dyke and Ditchling Beacon in East Sussex. Iron Age or "Celtic" field systems are also common. Hillforts were later used as beacon sites by the Anglo-Saxons who lit fires on hilltops to warn their communities of invading tribes and imminent danger. This tradition has continued into modern times, notably during the Napoleonic wars, and for celebrations, marking historic occasions such as the Royal Jubilees and the end of World War Two.

TOOLKIT

www.bournemouth.ac.uk/caah/landscapeandtownscapearchaeology/neolithic_flint_mines_of_sussex.html

The Neolithic Flint Mines of Sussex: Britain's Earliest Monuments - overview with pictures

www.bignorromanvilla.co.uk

Bignor Roman Villa

www3.hants.gov.uk/museum.htm

Guide to Hampshire museums and collections

www.nationaltrail.co.uk/Southdowns

National Trails - The South Downs Way

www.ordnancesurvey.co.uk/oswebsite/freefun/didyouknow/placenames

Overview of history/meanings of place names with a place name search tool linked to Ordnance Survey map shop

[Teacher's recommended reading: Oxford Dictionary of English Place Names by A D Mills, ISBN 0-19-283131-3]

www.sussexpast.co.uk/properties-to-discover/the-long-man

The Sussex Archaeological Society looks after The Long Man of Wilmington and other monuments

www.sussexmuseums.co.uk

Sussex Museums Group -weblinks to museums in Sussex

www.wealddown.co.uk

The Weald and Downland Open Air Museum, Singleton, West Sussex has more than 45 historic houses and agricultural buildings dating from the 13th century to Victorian times, rescued from destruction and rebuilt on site.

Bignor Roman villa, West Sussex

The History of the South Downs (continued)

The Downs are littered with Roman villas or farmsteads. Perhaps the best known is Bignor Roman villa in West Sussex which was uncovered in 1811 by a farmer ploughing. Bignor lies near one of the best known Roman roads across the Downs - Stane Street. Place names around the Downs indicate the locations of Roman army camps such as Winchester and Chichester, '- chester' being the Old English 'ceaster' coming from the Roman 'castra' or 'camp'.

In fact, the Downs show traces of all periods of history, ranging from the great white chalk figure at Wilmington in East Sussex, known as The Long Man, whose origins mystify historians, to deserted medieval villages, a stark reminder of the Black Death.

By the medieval period people grew arable crops and grazed sheep on the Downs, and this has continued until modern times. The ploughing of land in recent centuries has been related to good corn prices, with surges in demand coming during the Napoleonic Wars, for example. During periods of economic depression, land would fall fallow again.

World War Two saw large areas of the Downs used for military training, with more and more land cultivated to feed the nation. But the biggest changes came afterwards. Mechanised agriculture, production-based subsidies, and the extensive use of artificial pesticides and fertilisers allowed the greatest cultivation of land ever seen. The steepest downland slopes are still best suited to sheep grazing though!

Activity

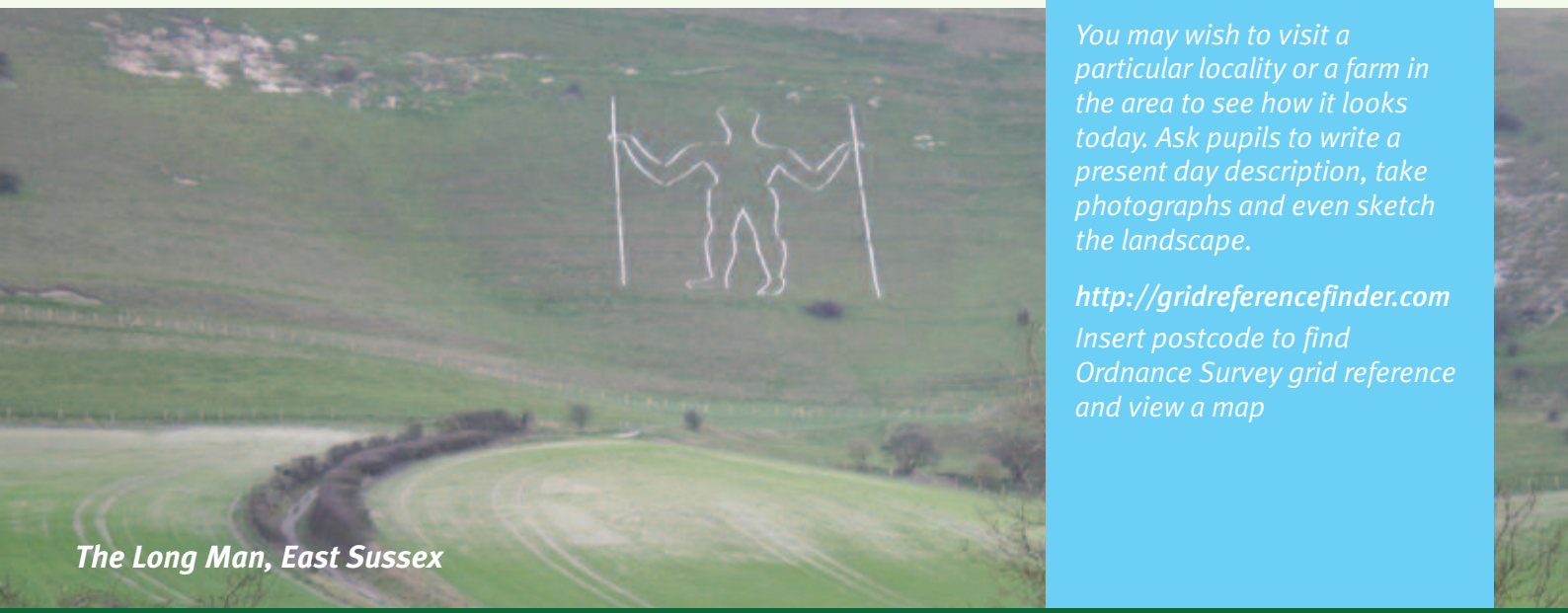
Look at a map of the area surrounding your school and encourage pupils to use the glossary of place names (overleaf) to work out the meaning of place names nearby.

The place names may give you clues about what was there in the past and what may still be there. The names may also describe how you would expect the landscape to look and what types of farming activity may have taken place and may still happen there.

Pupils can write a description of what the area and the landscape would have looked like to the early settlers, using words from the glossary.

You may wish to visit a particular locality or a farm in the area to see how it looks today. Ask pupils to write a present day description, take photographs and even sketch the landscape.

http://gridreferencefinder.com
Insert postcode to find Ordnance Survey grid reference and view a map



The Long Man, East Sussex

Investigating the history of your local area

What's in a place name?

Many place names are derived from the person or group of people who first settled in the area. As such, most English place-names are Old English (Anglo-Saxon) and our ancestors chose these names carefully to describe the people, the wildlife, or the countryside where they lived.

In their earliest form, many place names indicated a place of settlement or homestead such as a 'farm' or 'enclosure' and referred to some sort of habitation. These words were combined with a variety of other elements, such as natural or man-made landscape features, to give more precise information about a place. The names of natural or man-made features in the landscape tend to be older than those of settlements. Names were given to hills, valleys, wooded areas, settlement types together with plant and wildlife names and, in some cases, personal names such as those of important chieftains or land-owners. Place names can help us create an image of a place besides giving information about its likely size, status and possibly even the activities practised by the community there.

The boundaries of today's counties would be unrecognisable to the early settlers. However, the place names they have left us act as a time-capsule revealing secrets of what the traveller would have seen between 1,000 and 1,500 years ago.

Glossary - *The meaning of place names. We have also put place name endings with a '–' in front of the word eg –chester, -ham, -ton.*

Barrow	site of a mound or a burial mound, usually Bronze Age
Beacon	a hilltop (or high tower) used for giving signs, usually warning signals, by lighting a fire
Bourne	a stream
Bostal	a narrow track leading up the Downs, once used by people driving cattle or sheep to fields or to market
Bottom	the deepest or lowest part of a valley
Bridge	a structure crossing over a gap or barrier, such as a river or a deep valley, that allows people to get over it
Brook	a stream smaller than a river
Brooks	meadows next to a river that flood during winter. These lush grassy places were grazed by cattle and then cut for hay during summer
Brow	the top edge of a steep place: the brow of a hill
Bury	originally (a place next to) a fort or a village with a big fence
Butt/Butts	site of mound(s) or burial mound(s), usually Bronze Age
Chase	a place where hunting took place, a hunting ground where rich men and even kings could hunt deer and wild boar
-chester	a place that was once a Roman walled town or a Roman army camp
Common	an area of open land commonly used by the ordinary people who live there who have the right to let their livestock graze there
Coombe	a valley (usually a short or wide valley)
Copse	a thicket of small trees and bushes
Cot/Cote	a small hut, a cottage
Croft	a small field
Dean (Dene)	a valley or a place in a valley
-den	a grassy area in woodland, often used by pigs; a valley
Down	a gently rolling hill
Dyke	a ditch, usually a deep ditch around a fort, or a ditch carrying water
Edge	the side of a steep slope or hill
Enclosure	an area of land surrounded by a fence
End	the outside edge or the far side of a piece of land; a boundary
Estate	a large area of land with property/farms in the countryside
Farm	an area of land used for producing food, with crops/and/or farm animals

Field an open area of land, but nowadays a fenced area of land

Firle a place covered with oak trees

Ford a river crossing - a shallow part of a river that can be crossed easily

Forest a very big area of woodland/trees

Forge a place where a blacksmith or a metal worker makes horse shoes and other metal items

Frith an area with woodland or bushes

Green a grassy area in a village or town commonly used by all the people who live there

Grove a small wood or stand of trees lacking dense undergrowth

Glynde a valley

-ham a small settlement, village or estate; also a fenced-off area, a piece of land next to a river bend or a marsh

Hanger a wood on a steep hill

-hatch the entrance to a forest

Haven a sheltered place, often a small harbour, where ships can anchor safely

-head The end of a valley or a place where land meets the sea; a landing place on a river/at the seaside

Heath a sandy area of land with heather, prickly gorse bushes and rough grasses, dotted with small woods and wet land

Holt a wood or wooded hill

Hurst a wooded hill

Lea/Leigh/ -ley a clearing, a grassy area

Lodge a small house in the grounds of a country estate or a park, often used by a caretaker or gatekeeper

Manor land belonging to an important man

Meadow a low-lying piece of grassland, often boggy and near a river, often used for hay or for grazing of animals

Mere a pool, pond or lake

Moor/ More a broad area of open land, often high but poorly drained, with patches of heather and peat bogs; a wet area

Mount a mountain or a big hill

Mill a building fitted with machinery for grinding or crushing; usually a place where grain was crushed into flour or meal

Park a piece of land around a country house, usually with big gardens, woods, fields and sometimes an area for deer

Pasture grass or other vegetation eaten as food by grazing animals

Plantation a place planted with trees

Pound a fenced off area where animals can be kept; a place where farm animals can be handled

Range a wide area of open land on which livestock wander and graze

Rough rugged, overgrown land

Shaw a small wood

Stoke a place, or a small farm away from the main village

-stead a place, a fenced off grassy place, a site

Top the highest point, the peak of a hill

-ton a farmstead, village or estate

Tye an old fashioned word for land that animals graze

Vale a valley

View a scene or vista

Warren an area where rabbits were kept in burrows, usually for food

Weald land between the North and South Downs, with sandy areas and heavily wooded hills on clay soils. Its name comes from the Old English 'wald' for 'forest'

Weir a dam in a river

Well a spring or a place where water is drawn out of the ground

-wick a village or town, a dairy farm, a business centre

Wood an area with trees growing thickly together and undergrowth/brushwood

Worth a fenced off area, a village behind a fence

Hedges and hedge-laying

Hedges are among our best loved landscape features. A hedge is a boundary line of woody trees or shrubs more than 20 metres long and usually one or two rows of trees wide. Sometimes a bank may form part of a hedge.

Hedges may appear natural but they are actually man-made and they are regularly maintained by farmers and landowners. Hedges have been planted since prehistoric times to mark boundaries and to enclose livestock in fields. The basic pattern of hedges and fields we see today dates from Anglo-Saxon times and in some areas it hasn't changed much.

Hedges provide food, shelter and breeding grounds for small mammals, birds and insects. The older a hedge is, the greater the range of species of trees, shrubs and flowering plants that will be found within it. Attractive woodland flowers such as primroses, violets, bluebells and foxgloves can often be found growing beneath hedges.

During the autumn, hedges can be laden with fruit and nuts!

So often we take hedges for granted, but remember hedges take a lot of looking after. Hedges should ideally be trimmed every third year, in late winter when the birds have eaten the hedgerow fruit and before the nesting season. This is normally done with a tractor-mounted hedge-trimmer.

As hedges grow they become more tree-like and less bush-like. An older or unmanaged hedge can develop gaps towards the base and then it is no longer an effective barrier. But a traditional management practice, called hedge-laying, can restore a hedge to a bushy, stock-proof boundary.

TOOLKIT

www.field-studies-council.org/publications/pubs/a-guide-to-hedgerows.aspx

Field Studies Council - fold out chart on hedgerows

www3.hants.gov.uk/education/schoolgrounds/what-do-we-do-next/looking-after-your-grounds/hedges-habitat.htm

Hampshire County Council school grounds support network

http://www.hedgelink.org.uk/hedgeucation-learning-teaching-resource.htm

Hedgelink - resources include a hedge plant identifier leaflet to download and poster

www.virtualfarmwalk.org/walk.html

LEAF's virtual farm walk - includes a tour of hedges

www.woodlandtrust.org.uk/en/learning-kids/schools/Pages/stuff-to-do.aspx &

www.naturedetectives.org.uk/download/id_leaves.htm

The Woodland Trust - teaching resources and downloads on trees and hedge plants

Hedges and hedge-laying (continued)

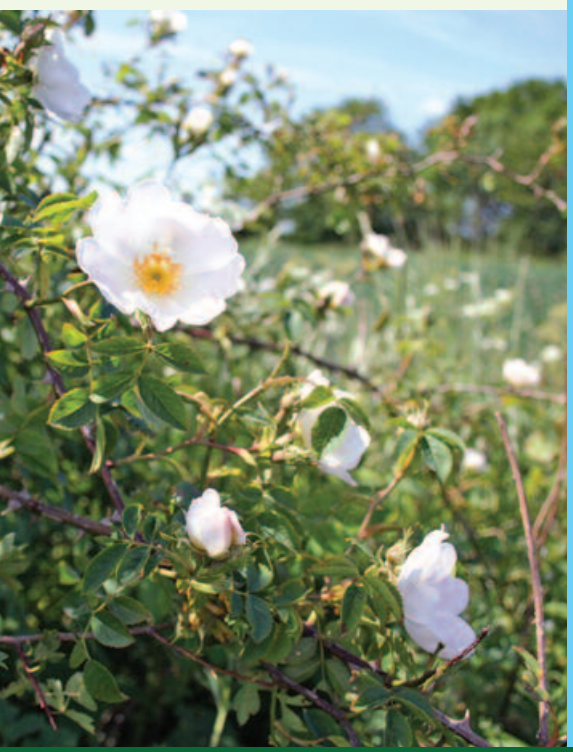
Hedge-laying

The basics of hedge laying are the same around the country, although there are different styles in certain areas. Experienced people cut half way through the stems and bend the hedge-plants sideways. This reinvigorates the trees and shrubs, helping them to bush out.

The laid stems are called 'pleachers' and they are staked in place to form a barrier. Although the laid stems will die back over many years, by that time a vigorous new young hedge will have grown back up. The end result is an attractive stock-proof hedge of great value for wildlife.

Hedge-planting

Hedges are planted during winter so that the young plants can become well established during the wetter months of the year, growing strongly through the summer. Farmers will usually plant hedges of native species, with young saplings, known as 'whips', purchased from specialist tree nurseries.



Activity

Discuss with pupils what hedges are. Hedges to mark ownership of land; shelter for farm animals; prickly fences to keep animals under control; part of the patchwork of our countryside; 'cafés for wildlife'/wildlife corridors.

Ask pupils to illustrate a countryside/historic scene with hedges and add labels/notes, if they wish.

Estimate the age of a hedge

This activity works on a farm or in the school grounds, if you have 60 or more metres of hedgerow to survey. Assess the risks before your hedge survey. You will need a 30 metre builder's measuring tape, help from your class and tree identification charts (see Toolkit). It's not absolutely necessary to identify every tree species in a hedge, but it is important to be able to distinguish between different species.

First measure out a 30 metre length of hedge

Count each woody tree/shrub species that you find (wild roses do count, but not other climbers/brambles)

Repeat this process with two or three 30 metre sections of hedge

Calculate how many woody species on average you find in the hedge

Each species you find equals 100 years

So if you found five woody species, then your hedge may be about 500 years old. A hedge with five or more species is called 'species rich' which means it is important for wildlife.

Teacher's note:

The results from this hedge dating formula can vary by 200 years either way. If you found nine species, then the hedge could be 900 years old, 700 years old or 1,100!

Try to find historic or documentary evidence about the hedge - old maps sometimes show boundaries/hedges. Sometimes hedges follow ancient roads and tracks. www.old-maps.co.uk

Ask the landowner how the hedge has been managed previously. Farmers often remove species such as elder, because they can take over a hedge, and also poisonous plants that could kill farm animals. This might affect the age you calculate. Nowadays some farmers will choose to plant a hedge of mixed species.

Historic farm buildings

Traditional flint barns, often clad with weather boarding, are among the most iconic features of the landscape of the South Downs.

Thousands of examples, particularly timber-framed buildings, have gradually fallen into disrepair or vanished over the centuries. Their disappearance reflects the ever-changing nature of farm businesses, particularly since mechanisation. But happily, countless former farm buildings have found a new future, being converted to homes or business premises. Recent changes to European rural development funding have meant that conservation grants have been available for the restoration of historic buildings. Many redundant buildings can continue to be used on the farm when given a new purpose. There are bound to be some prime examples in or near your locality.

All farm buildings have a story to tell. They were purpose-built to conserve food supplies and some were used for the processing of food. Others were used to shelter livestock or to store farm implements. Many are grouped together in farmyards but some stand alone, right out in the fields.

A wide range of farmstead sizes reflects the variety of farm sizes and farming types. You will find large barns in areas known for arable farming, for example. All these buildings are a product of their downland environment. They have been constructed with materials sourced nearby, sometimes recycled materials.

Some buildings near the coast even include cobbles from the beach in their construction and roof trusses made from reclaimed ships' timbers are not uncommon across the southern part of the Downs.

So you can see why vernacular buildings (built by local craftsmen with local materials) provide a fascinating record of distinctive traditions and skills handed down through the generations. They also tell us a great deal about the development of agriculture and settlement patterns.

Historic farm buildings (continued)

Walls

Compare the flint walls of different buildings and you may see different degrees of 'knapping'. Knapping is the term used to describe the shaping of flint to provide a flat-faced stone for building or facing walls. The quality of knapping may vary according to a building's status or the wealth of its owner. The flint walls of a humble Georgian cart shed may differ considerably from a 'model farmyard' built by a Victorian farmer showing off his wealth, or a dairy on a prosperous country estate.

During the 19th and early 20th centuries, there was an increase in the use of brick in the construction of farm buildings, thanks to mechanised brick production and improved transport links. Brick-making was concentrated in areas with clay beds – notably the Weald. Early use of brick for walling tends to be seen in larger, more important buildings. It was more usual in the 17th and 18th centuries for brick (which was then expensive) to be used in the base of a wall, with a timber structure placed on top. On rare occasions, you may even find earth walls, known as 'cob', particularly in the west of the downs. In the chalk areas, the cob is 'chalk cob', made from chalk with a touch of straw and water. Sometimes a lime render or limewash is applied to the outside of the cob to protect it.

Roofing

Thatch

Long-straw thatch was made with readily available straw, a by-product of the cereal harvest. Straw thatched roofs can be seen on farm buildings in the west of the Downs (notably Hampshire), but thatch was often later replaced by clay tiles as tiles were long lasting and easy to source. Nowadays, modern cereal crops have fairly short stems so thatchers source straw from traditional 'long-straw' varieties which are grown specially.

Stone slates

Occasionally thin stone sheets are used for roofing. In Sussex, you may see a sandstone being used - it is known as 'Horsham stone' and the stone was once widely quarried in the Weald.

Clay tiles

From the medieval period, clay was used to make tiles. Tiles came from the Weald where thriving brick-making and tile-making industries existed, owing to the area's abundance of clay. Clay tiles became more commonplace when production became mechanised and transport links improved, with the burgeoning network of canals and railways.

Activity

Investigating Historic Farm Buildings

Look at an old farm building - can you answer the following questions?

Where is this building?

Why do you think it was built here?

What does it look like?

What is it built from?

How big is it?

How many rooms do you think it has?

Does it have unusual features?

Ask the farmer how old it is, what it was used for and what it is used for today

Historic farm buildings (continued)

Types of buildings

Threshing barns

Before the coming of mechanical threshing machines, the threshing barn was the most important building on the farm. Here grain was processed and stored. Inside the threshing barn would be the harvested sheaves, ready for threshing and later, the grain and the threshed straw would be stored in it. A gang of farm workers would 'thresh' or 'thrash' the sheaves against the floor of the barn to separate the grain from the ears of corn and the straw. You've probably heard the expression 'separating the wheat from the chaff', meaning sorting out the valuable things from the insignificant. Many threshing barns have large doors - this feature allowed for a through draught to help blow the chaff from the wheat. Nowadays this process is done by a combine harvester.

Granaries

Granaries, for the storage of grain, are very distinctive. They are generally free-standing, being raised off the ground on mushroom shaped 'staddle stones'. They can be brick and timber or clad in weather -boarding, under a roof of clay tiles, slates or thatch. They were raised up to prevent vermin entering and spoiling the cereals inside. Internal timber grain bins sometimes survive inside. Compare them to a modern grain store!

Cart sheds

Cart sheds are generally open-fronted for easy access - a bit like a modern-day car-port - with spaces between the door posts allowing for the passage of vehicles. They have survived fairly well as they can easily be re-used for storage purposes.

Activity

Field of finds

Invite a farmer to come to school or visit their farm. Ask the farmer to show pupils five to ten objects that they have found on the farm or in a particular field. Pupils can look at the objects and choose one or two objects each. Ask youngsters to consider who they might have belonged to and how they might have arrived on the farm/in a particular field?

If the objects come from a particular field, then ask the farmer to show you a map of the farm/or explore the field. Pupils can use the place names to find any clues about the objects. Pupils can also draw an item, weigh it and measure it.

Ask them:

What does your object look and feel like?

How old do you think it is?

What might it have been used for?

Who might have owned them and why were they at the farm or travelling through the field?

Historic farm buildings (continued)

Cattle housing

Look out for open fronted shelters facing onto a yard or later housing for dairy cows. Inside cow houses you may see stalls or cubicles (little rooms) where the cows would stand and be milked.

Stables

Horses were vital to the farm business, particularly in the areas dependant on arable farming, so housing for horses was fairly high quality. You can spot stables as they have windows for good ventilation, split doors so the horse could look out over the door and often a hayloft above. High quality or decorative brickwork is often used, reflecting the importance of horse power on the farm!

Piggeries and dovecotes

Pigs were reared for meat and were very often fed on domestic food waste so early pig sties were usually next to the farmhouse. In some areas, they were also allowed to roam freely in woodland during the autumn. You can recognise pig sties as they look like small houses with doors and a small wall around them, often with a built-in trough. Larger piggeries were built in Victorian times as farmers responded to soaring demand for bacon and pork in the nation's growing towns and cities. Being smaller than other animal houses, pig sties and piggeries have not survived as well as other buildings because they don't lend themselves to new uses.

From medieval times, pigeons and doves were kept in dovecotes or pigeon lofts for their meat and eggs. They are usually square or circular buildings, often brick and flint, with small, pigeon-sized entrance holes high above the ground, out of reach of foxes. Inside are nesting boxes where the birds can lay their eggs. Sometimes dovecotes were built into the tops of barn walls over the entrances.

TOOLKIT

www.britarch.ac.uk

Council for British Archaeology

www.yac-uk.org

Young Archaeologist Club

County archaeology services

Local authorities maintain the Historic Environment Record (HER) which would be useful to locate sites to 'investigate'.

The HER in each county is an index to the known archaeological sites and finds, historic buildings, designed and historic landscapes, parks and gardens, and industrial monuments. It includes sites and finds dating from the prehistoric period, to buildings and defences of the 20th century. The records range from impressive monuments, such as Iron Age hillforts, to single finds reported by members of the public.

www.eastsussex.gov.uk/environment/archaeology

East Sussex County Council archaeology service

www3.hants.gov.uk

Archaeology and Historic Buildings Record, Hampshire

www.history.org/kids/games/dirtdetective.cfm

Dirt Detective, Junior Archaeologist - interactive and fun introduction to what you might find on an archaeological dig. It could be used after the first stages of looking at the landscape and 'surveying' buildings.

www.westsussex.gov.uk

History of West Sussex, Archaeology.

Historic farm buildings (continued)

Since time immemorial, horses have pulled vehicles and machinery for working the land.

But with increasing mechanisation, working horses had almost disappeared from farms by the mid 1950s. Horses, donkeys and mules were also used to power machinery to thresh corn and raise water from wells sunk deep into the chalk hills.

Historically, before the development of electricity, people harnessed wind power by erecting windmills on the South Downs ridge. [Nowadays modern wind turbines generate electricity]. But in the past, most windmills were flour mills and some were windpumps that pumped water up from underground.

At Clayton, in West Sussex, there are two restored Sussex 'post mills' that can still mill wheat into stoneground flour.

There is a 'smock mill' at Rottingdean, near Brighton, which has a brick base with a rotating wooden top. Brick tower mills were also common in the more recent past. Mills in various states of repair are found across the Downs at sites including Ashcombe, near Lewes in East Sussex. Many former windmills have been converted into unusual homes, like the one at Butser Hill, near Clanfield, in Hampshire.

Watermills are perhaps less obvious in the landscape, but there are many along the rivers of the South Downs and most were flour mills. The majority have been turned into dwellings. Some drove machinery for other manufacturing processes such as paper making, which started in Hampshire's Meon valley around 1618.

TOOLKIT

www.chawton.org

Chawton House, Hampshire - Dyer's Barn is an outstanding example of 18th century vernacular architecture that was relocated from nearby Alton and rebuilt at Chawton

www.hampshiremills.org/

Hampshire Mills Group - mills of all types in Hampshire

www.reading.ac.uk/merl/the_collections/MERL.html

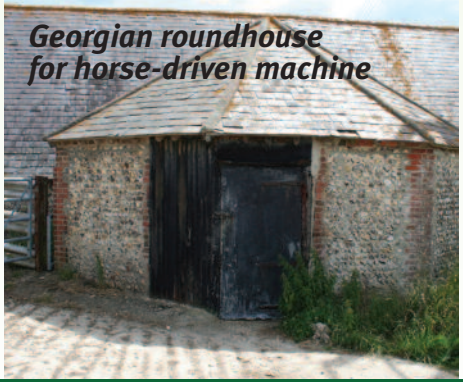
Museum of English Rural Life (MERL) - part of the University of Reading, a national research and information centre for the history of farming, food and the countryside. Its high quality collections relate to farming, rural crafts and industries, and country life. Nationally significant collections of farm wagons (including some from southern English counties), horse drawn ploughs, dairying equipment and smocks dating mainly from 1850 to 1950.

www.sussexmillsgroup.org.uk/index.html

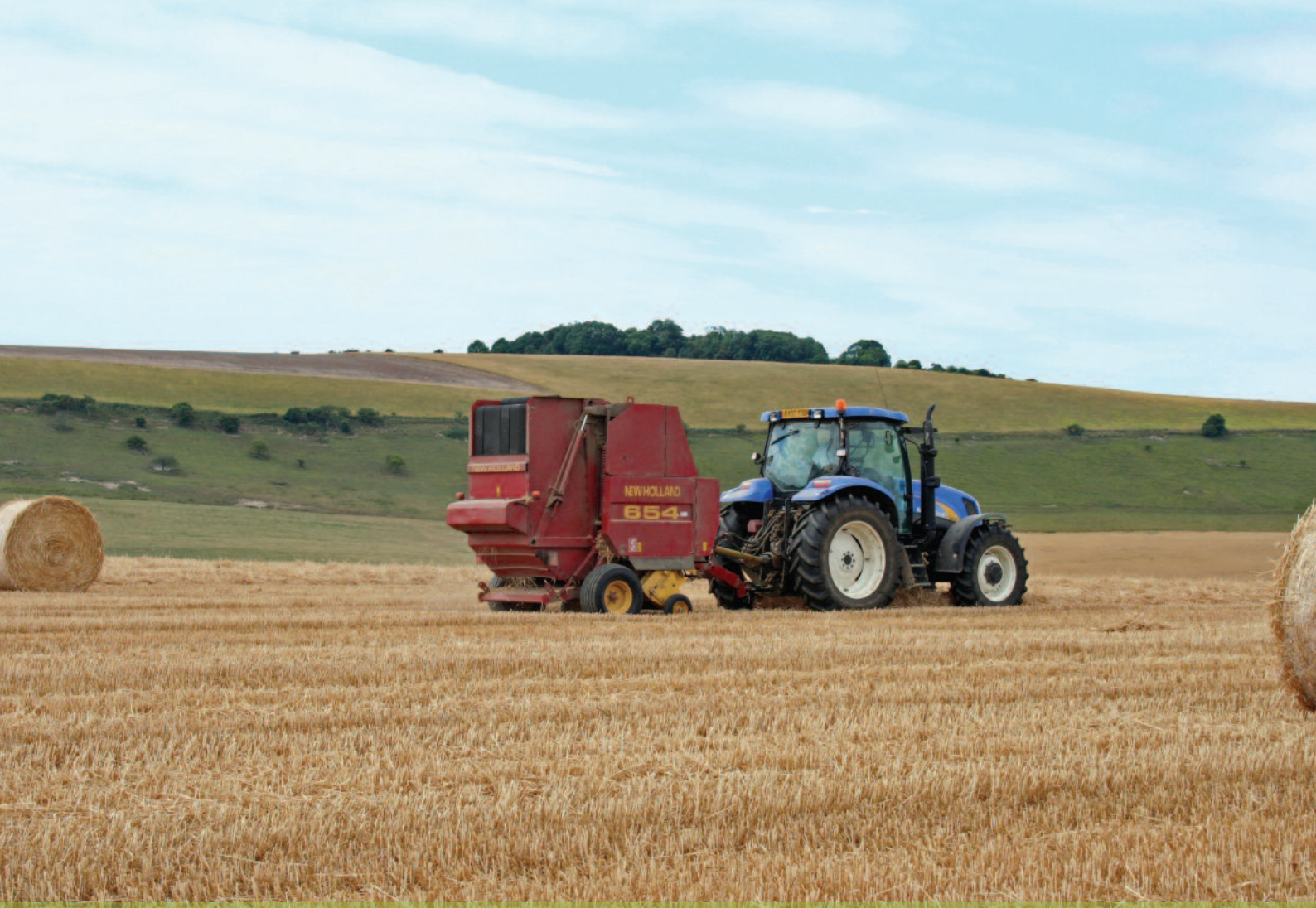
Sussex mills - mills in East and West Sussex

www.wealddown.co.uk

The Weald and Downland Museum has a working watermill and a windpump in its collection, along with many farm buildings.



Georgian roundhouse for horse-driven machine



Why Farming Matters to the South Downs





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