Cereal Food Story

Script for videos

GCSE Food Preparation & Nutrition

FOOD PROVENANCE – CEREALS FOOD STORY

CEREALS INTRODUCTION

Watch Cereals Intro Video

Cereals belong to the potatoes, bread, rice, pasta 'Eat Well Guide' food group.

They are a good source of starchy foods which should make up just over a third of the food you eat.

Cereals are an important or staple food around the world as they are cheap to produce compared with protein foods

The main types of cereals grown in this country are wheat, barley, oats

These cereals (Maize (for its ripe grains rather than corn on the cob) rice and rye) are not easily grown in this country

We will follow the food story of wheat to see how it is grown in this country - barley and oats are grown in the same way

So let's look at how cereal crops and grown…..

PREPARING THE LAND

Watch Preparing Land Video

Wheat can either be sown in the Autumn – in which case it is called Winter Wheat and harvested the following Summer

Or it can be sown in the spring and harvested the same summer

Before wheat seeds can be planted or sown the farmer needs to prepare the land so the seed when it is sown is in direct contact with the soil and can take up water and germinate.

To prepare the land the farmer uses different implements depending on the soil type and conditions

Here the farmer is ploughing the soil this is just like digging in a garden. It buries any residue from the previous crop which may harbour pests and disease that could infect the new crop.

The ploughing must then be levelled and broken down into smaller lumps to form what is called a seedbed or tilth into which the seeds can be sown.

Sometimes if the conditions are right the farmer will use a different machine that will prepare the seedbed and sow the seed in one pass, this uses less fuel and preserves soil moisture

SOWING THE SEED

Watch Sowing the seed Video

Once the farmer is happy with the seedbed then the seeds will be sown with a seed drill like this

The seed is stored in a hopper

The drill makes a slot in the soil for the seed

The seed is blown down tubes to drop into this slot

And is then covered over with soil

Lots of rows of seeds are sown at once

The amount of seed sown is controlled by a computer in the tractor.

The seed rate will depend on the soil type, weather and time of year.

Computer control means the farmer does not use more seed than is needed.

Using a computer in farming to do this is called 'Precision' Agriculture it means farmers can have accurate control over inputs like seed which are expensive to buy but also use energy to produce and deliver etc

Precision Agriculture is about getting more for less this is done by managing variations in the field accurately to grow more food using fewer resources and reducing production costs

In many cases the drilling and cultivation's are done together in a single pass. This saves time and also fuel so is better for the environment.

CAREERS CATCH-UP

The machines the farmer uses for growing cereals are very high tech and will contain electronic controls Satellite navigation, joystick control and even touch screen computers.

There are many jobs and careers involved in the agricultural part of the Land Based Engineering sector…..

Such as…..

Master Technician

Service Technician

Workshop / Service Manager

Workshop Foreman

Demonstrator

Parts / Stores Manager

Parts / Stores person

Sales Manager

More details at….

www.lantra.co.uk/careers/land-based-engineering

CARING FOR CEREAL CROPS – CROP HUSBANDRY

Watch Crop Care Video

Once the farmer has planted his cereal crop he must look after it until it is ready to harvest – for crop sown in the Autumn (called winter cereals) this can be for 10-11 months until the following summer when they are harvested.

A cereal farmers goal is to grow lots of healthy plants

Such plants can be harvested to produce healthy nutritious food fit for human and animal consumption.

Healthy plants are those whose leaves are able to capture as much light as possible for photosynthesise allowing them to make as much glucose as they can.

The plants then use this glucose with other nutrients such as nitrogen (N) phosphate (P) and potash (K) to produce all the other plant parts…..

Such as the seeds / grains that we harvest for food.

But there is a War going on…..

Crop Care or Husbandry

To get healthy plants a cereal farmer must

- Keep plants free of pests and disease especially the leaves so that they photosynthesise

at the maximum rate.

- Provide the extra nutrients N P K the plants need to make all the materials plants are made from

PROVIDING CROP WITH EXTRA NUTRIENTS

Watch Applying Fertiliser Video

There is not usually enough of these in the soil naturally.

So just like us plants require a balance of nutrients to grow well be healthy

and give the maximum yield. (yield = amount harvested)

Farmers will test the soil in the field to see what nutrients are available naturally from the previous crop.

Peas for example have nodules on their roots which contain bacteria what captures nitrogen from the air and puts it into the soil

This nitrogen is available to the crop grown in a field after peas.

This information will be used to create a map of the field nutrient levels.

This map is then used to work out how much extra nutrients each area of the field needs.

Farmers apply any extra Nitrogen, Phosphate or Potash the crops need either in the form of farm yard manure or artificial fertilizer.

The fertiliser is applied with a fertiliser spreader that is controlled by a computer in the tractor cab

This means that the fertiliser can be applied with precision as just as required in each part of the field according to the field nutrient map.

This saves on cost of fertiliser but also ensures it is not over or under applied or contaminates any water courses as these will be mapped on the computer software.

There are strict rules on applying fertiliser to fields – these rules are designed to protect the environment and stop fertiliser being in a way that can contaminate water courses which can kill the wildlife in the water.

These are set out in the farm assurance schemes cereal farmers must belong to in order to sell their cereals.

Artificial Fertilizer is also very expensive so farmers are even more careful how they apply it and the type of spreaders shown have special attachments which stop fertile being throw into hedges or water courses.

PROTECTING PLANTS FROM ATTACK

Watch Pests & Disease Video

To get healthy plants a cereal farmer must protect his plants from pests and disease especially the leaves so that they photosynthesise

at the maximum rate.

Not only can these pests and diseases destroy the crops but they can also contaminate the crops and harvested produce making them unsuitable or even dangerous for human consumption.

Whilst poppies may look picturesque amongst yellow oilseed rape flowers their seed is very similar to oilseed rape seed so cannot be separated during harvest meaning when crushed for their oil poppy seeds will also be crushed contaminating the oil with poppy 'oil' not what you expect to buy in a bottle of oilseed rape oil!

They will do this using an integrated approach which involves a combination of methods: crop rotation, cultivations plus chemicals

A crop rotation - farmer will rotate or change the crops he grows in a field each year

He will aim to grow different types of crops each year or every few years

Crops like cereals, potatoes, oilseed rape and peas are not attacked by the same pests and disease so by rotating their crops farmers will avoid the build-up of pests and disease in the soil and hedge around the field.

Which would then attack the crops in the fields

A farmer may also try to reduce pests by carrying out cultivations that will reduce the pest.

Such as rolling the seedbed after planting to deter slugs.

If these methods don't control the pest / disease then farmers will have to use chemical sprays.

The chemical sprays are applied using crops sprays that are controlled by a computer in the tractor cab and linked to GPS and SAT Nav

This means that the chemical can be applied with precision just where the disease, pest or weed is.

This saves on the amount of chemical needed but also means that only infected areas are sprayed reducing any possible impact on the environment.

The use of chemicals on food crops is also subject to tight regulations – farmers have to pass a test before they are allowed to do this job. -

Farm Assurance Schemes such as Red Tractor also set out lots of safety and environmental rules farmers must meet before they can sell their cereals for food.

CAREERS CATCH-UP

Technical Consultant; Farm Business Advisor/Consultant; Agricultural Extension Officer; Feed/Additive/Animal Health Specialist/Sales Advisor; Crop Advisors/Agronomists.

Many farmers seek specialist advice on crop nutrition and health.

This advice is given by someone who has chosen a career as an Agronomist they will have a much better knowledge of looking after plants than most farmers.

The Agronomist will be supported by people who have chosen careers such as plant pathologist, laboratory technician.

They will carry out tests on soils and plants as well as monitor disease risks for different crops depending on each seasons weather and pest numbers.

They will then advise the Agronomist on the which pests and diseases to look for in a particular area or season plus the best fertilisers and sprays to use on a particular crop and or field etc.

https://www.basis-reg.co.uk/About/Careers-in-Agronomy

Lantra Poor for this

http://www.lantra.co.uk/careers/career-profile/technical-advisor

Technical Consultant; Farm Business Advisor/Consultant; Agricultural Extension Officer; Feed/Additive/Animal Health Specialist/Sales Advisor; Crop Advisors/Agronomists

HARVESTING THE CROP

Watch Harvesting Cereals Video

Cereal crops are harvested in the summer usually when you are on your summer holidays.

Cereals are harvested by a machine called a Combine Harvester

They record the amount of crop harvested (yield) as they work.

Coupled with a Global Positioning system they can create yield maps for each field.

The farmer can then link this yield map with the field nutrient map he used to apply fertiliser with and see if his fertiliser strategy was successful in producing as much yield / food as possible.

The combine harvester may work right through the night

The purpose is to harvest the results of a year's work – and this is very dependent on the weather so when conditions are right the work must go on……

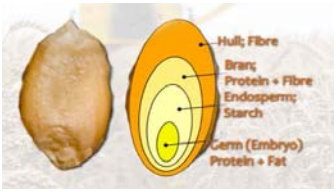
Once the cereal is harvested it must be stored carefully until it is needed for use

This means it must be dried and placed in a large shed for storage

Whilst in the shed it must be monitored as even here it can still be attacked by pests and disease

Once the farmer has sold the cereal it will be collected on a lorry and taken to where it is needed

USES OF CEREALS.



Watch Use of cereals Video

All cereal grains are similar to each other in structure.

Wheat is one of main cereals grown around world so forms a valuable part of the carbohydrates in our diet.

Wheat grains can be used to make flour…

Flour is made by grinding the grains between two large stones called mill stones.

The mill stones are hidden inside this box for safety.

You can see the grains going in….

The flour then comes out and is sieved and separated in to four grades

This is the white flour which you may know but.... (then explanation of different parts of milled wheat by miller - white flour, semolina, middling's, bran)

Flour can be used to bake bread…..

Here's a quick demonstration of the process...

I'm sure your teacher would show you how to make bread....

Mixing the ingredients

Kneading the dough

the dough is now left to rise or proof as the yeast does its work.....

Flour is also used to make cakes and biscuits…..

Some of you may like Malted Milk biscuits – these get their flavour from another cereal grain – BARLEY

Drinks like Horlicks are also flavoured with barley grains as is another drink -....

Beer whose ingredients include ….

barley

Hops - this is a hop plant, these are dired hops

Hops being added to the brew

Yeast is the ingredient which makes the mixture ferment and produce this froth.

Once the beer has stopped fermenting it can then be bottled…. and enjoyed in moderation by your parents – your dad especially!!!!

Some of the cereal grains the farmer harvested are used to feed livestock

These cereal grains are taken to a feed mill

The grains are mixed with other ingredients like these samples

The ingredients are mixed to give the animals a balanced diet.

The animal feed is made into pellets and then put into bags or lorries to be taken back to farms to be fed to livestock