

# Farming

## Key Stage 2 Thematic Unit

Supporting the Areas of Learning and STEM



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This Thematic Unit is for teachers of Key Stage 2 children. Schools can decide which year group will use this unit and it should be presented in a manner relevant to the age, ability and interests of the pupils.

This Thematic Units sets out a range of teaching and learning activities to support teachers in delivering the objectives of the Northern Ireland Curriculum. It also supports the STEM initiative.

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# Farms and Tractors

Planning together for the theme.

Investigating how a tractor works.

Designing, making and racing a model tractor.

Designing a fair test.

Investigating friction.

Finding out about the life and work of Harry Ferguson,  
a famous engineer and inventor.

# SECTION 1





# Activity 1

## What Do We Know about Farming?



### Suggested Learning Intentions

We are learning to:

- contribute to the planning for our learning; and
- use various methods for presenting our ideas and thoughts to others.

Introduce the theme of 'farming' to the children. The children could each create a **Mind Map\***, detailing their own thoughts and experiences (if any) about farming. Alternatively, use the **Art Spiral\*** activity with the children to explore this topic. Distribute a piece of A2 paper to each group, with a large spiral drawn on it (try to make the spiral the full size of the sheet). Give the children some coloured markers or pencils and ask them to write and draw things which represent their thoughts on the topic on a free space on the spiral. When they have completed the task, allow time for the groups to rotate around the room and to look at the other spirals in the class.

When the children have returned to their seats, make a list of key questions and statements on both what the children know about farming and what they would like to find out about farming. In an area of the classroom, create a planning board and add the spirals to it. The planning board can be added to throughout the theme.

You may find it useful to ask children to create a 'Farming Scrapbook'. At this point they can add their mind maps and some of their key questions and statements to this. Throughout the theme, the children will continue to add to their scrapbook as a record of the learning that has taken place.



\* see *Active Learning and Teaching Methods for Key Stages 1&2*

#### CONNECTED LEARNING OPPORTUNITIES

##### The World Around Us

Investigate how 'people activity' affects the environment. Learn why materials are chosen for their uses.

#### ASSESSMENT FOR LEARNING OPPORTUNITIES

##### Fist to Five!

Get the children to demonstrate how much they feel they know about farming. Five fingers indicates that the children are very confident, three fingers means partial success and a fist if they feel they have made little or no progress. The activity may be repeated throughout the theme as a means of self-assessment.

# Activity 2

## How Big Is It?

### New Words and Phrases

estimate

length

height

width

drawing to

scale

in proportion

### Suggested Learning Intentions

We are learning to:

- make sensible estimates and measure accurately;
- calculate and draw to scale; and
- work with others in a group.

### Estimating, Measuring and Drawing to Scale

Using books or a suitable search engine, ask the children what size they think a tractor is. Hold up a metre ruler as a visual guide and ask the children to estimate the length and height of a tractor. Allow the children to discuss this in groups and get each group to write down their estimated figures.



Give each group a sheet of paper, a pencil and some metre rulers. If appropriate, and with sufficient adult supervision, take the children into an area of the school car park, ensuring that there will be no cars driving in or out of that area. With permission from the car owner, tell each group that they should measure a car to find out its length and height. Ensure that the children are aware that they must not lean on or rub against the car in case they damage it.

\* see *Active Learning and Teaching Methods for Key Stages 1&2*

Back in the classroom, ask the children to consider how they could now use their measurements to draw the side profile of the car on a page. Explain to the children that any drawing they make needs to be *in proportion*. You may need to explain what in proportion means. Give the children some time to discuss and then take a few suggestions from them as to how they think they could draw the car. If necessary, introduce the term 'scale-drawing' to them. Discuss the possible scales that the children could use, for example, could each ten centimetres of the real measurements be shown as one centimetre on the page? As an introduction to 'scale drawings', you may like to use these simple scenarios with the children:

- Mr Brown's cattle pen measures 10 metres long and 6.5 metres wide. Using centimetre squared paper, draw the cattle pen to scale.
- Mr Brown's cattle house measures 45 metres long and 18 metres wide, make a scale drawing of the shed.

*Depending on the age and experience of the children, this activity could lead to simple activities on perimeter and area.*

### CONNECTED LEARNING OPPORTUNITIES

#### Mathematics and Numeracy

Investigate scale, perimeter and area problems; Data collection.

#### The Arts

Create a scale model.

#### Using ICT

Use ICT to design a model.

### ASSESSMENT FOR LEARNING OPPORTUNITIES

#### Independent Learning Skills

Invest time in helping pupils to develop their independent learning skills.

Enable them to make a plan and carry out their work with purpose and structure.



When you have decided with the class the scale that you are going to use, discuss the real measurements that the groups got when they measured the car. Demonstrate how to convert these measurements into the scale measurements. Using centimetre squared paper, ask the children to use the measurements to draw a box. They then draw the car to the dimensions of the box. If time allows and health and safety has been taken into consideration, the children could perhaps go back into the car park to measure other parts of the car, in order to work out the correct scale measurements (for example, the wheels or windows).

## Visit a Farm

If possible, arrange a visit to a working farm. Get the children to create a data collection sheet to use at the farm to record information about the different types of machinery they see there. Visit [www.nicurriculum.org.uk](http://www.nicurriculum.org.uk) to view the Farming Photo Pack. Follow the links to 'Key Stages 1 & 2' and 'Thematic Units'. A full list of available images can be found in Resource L. The children could record information about the numbers and types of machinery, number of wheels or licence plate numbers for example. Back at school, the data could be displayed on frequency tables and entered into a database or spreadsheet. The children could then use this data to generate graphs and charts, either using ICT or by hand.



# Activity 3

## Tractor Investigation

### New Words and Phrases

components  
observations  
axle  
track bar  
engine  
steering column  
cab  
hydraulics  
surface  
most suitable  
fixed-wheel  
movement

### Suggested Learning Intentions

We are learning to:

- ask focused questions about how different types of machinery work;
- experiment with ideas and designs;
- select the most appropriate methods to construct a model tractor; and
- organise ourselves and our work without the teacher's help, when working in a group.

### What Is It?

Tell the children to work with a partner, and to decide between themselves, who will be partner A or partner B. Arrange the children's chairs so each child sits back-to-back with their partner. The 'A' children face the front of the room and the 'B' children close their eyes. Show the 'A' children a picture of a tractor (Farming Photo Pack - see Resource L for details), but tell them not to say out loud what it is. Use the **Back-to-Back\*** activity to encourage the children to work together. Give child B a blank page and pencil. Child A must describe the tractor for child B, who draws what they hear being

described on the page. Child B is allowed to ask questions to help them. The only question they cannot ask is 'What is it?'. You should give the children the following advice before they begin:

- Listen carefully to what your partner is saying.
- Let your partner know where on the page to begin drawing. For example, should they begin in the top right corner or in the centre?
- Describe not only the shape of each part to your partner, but also the size.

\* see *Active Learning and Teaching Methods for Key Stages 1&2*



### CONNECTED LEARNING OPPORTUNITIES

#### The Arts

Create images of farms and farm machinery using different media.

#### Language and Literacy

Write a report about the planning process for making a model tractor.

#### The World Around Us

Find out about the machinery used on farms and in other industries. Investigate levers, hinges and axles.

### ASSESSMENT FOR LEARNING OPPORTUNITIES

#### Formative Feedback!

Give encouragement and motivation to pupils during their model tractor activity, for example, "I think this is a really clever way to have chosen to join these materials together!"



## Tractor Components

If it is possible, arrange for the children to visit a farm. During this visit, arrange for the children to undertake some first hand observations of a tractor or other farm machinery. If this is not possible show them the tractor in the Farming Photo Pack in (see Resource L for details), bring in some model tractors or use a suitable search engine to find good images of tractors which show as much detail as possible. Get the children to make annotated drawings of the tractor, noting as many details as they can.

Along with their observations of tractors, get the children to find out a bit more about the main components of a working tractor. If your school is in a rural location, it may be more useful to set this as a homework task, as children may have access to a wealth of knowledge at home. Otherwise, put the children into groups and using books and suitable search engines, ask each group to try and find out some useful information about the following tractor components:

- front axle and steering;
- track bar that makes wheels steer;
- engine;
- transmission (gear box);
- rear axle (differential and brakes);
- hydraulics (lifts);
- cab; and
- materials used – sheet metal, plastic and fibre glass.

## Plan and Make a Model Tractor

When they have had an opportunity to observe a tractor, real or otherwise, get the children to begin to design a tractor model which they will then build and race against each other. Get them to discuss their ideas with a partner and then begin to draw a simple plan to illustrate their design together, marking on the main components.

They should consider which materials would be suitable to use for the construction of the model and think about what materials are available to them. Over the next week or so, allow the children to bring things in from home to add to any available school resources. The items they bring in may include cardboard boxes, thread spools, scraps of metal or pieces of wood. They may also need to experiment with the joining of materials. Get the children to generate possible solutions, try out alternatives and evaluate the outcomes before deciding on what they will definitely use in their model.

While planning and building, the children should consider the following points:

- What materials would be suitable for the cab and for the body of the tractor?
- How will they ensure that the tractor can move quickly?
- What will they use to join the pieces of the model together?
- What could be used to make the wheels?
- How will the wheels be attached to the model?
- How will they make the wheels drive straight?
- Will it be able to steer around corners?

The children work with a partner to build the model tractor. This may take several sessions. Allow time for the children to test each component as they make it. For example, if the wheels do not turn quickly or smoothly enough, can they change the design of the axle or the materials used so that it works better?

# Activity 4

## Tractor Challenge

### New Words and Phrases

friction  
surface  
rough  
smooth  
grip  
fair test  
impact

### Suggested Learning Intentions

We are learning to:

- consider various factors when making a decision about the best option;
- understand what friction is and how it works;
- design and carry out a fair test; and
- record and analyse results.

### What Surface to Use?

In order to get the best results from the tractors, get the children to first test out which surface will be the most suitable for the race. With the children, decide upon a list of surfaces that they could use, for example:

- carpet;
- tiles;
- vinyl;
- wood;
- tarmac; or
- cement.

Give the children the opportunity to try out their tractor on each surface. Each pair of children will have to award marks out of ten for each of the surfaces, making a note of their scores.

When the children are back in class, correlate the marks on a whole-class results table and add them together so that the children can see which surface is the most popular. This will be the surface used for the race.

### Friction

Get the children to discuss in groups why the tractor moved further and faster over some of the surfaces and not on others. Ask them to consider the following questions:

- Look at all of the surfaces with the highest scores. Do these surfaces have anything in common? Why did they get such a high score?
- Look at all of the surfaces with the lowest scores. What factors have made these surfaces get such a low score?

Introduce the term 'friction' to the children. Explain to the children that friction is a force that works against a moving object and makes it slow down. You may find it useful to show the children a demonstration of friction at work. A good example of this can be found at [www.bbc.co.uk/schools](http://www.bbc.co.uk/schools). Follow the links to 'Science Clips', 'Ages 8-9' and 'Friction'.

### CONNECTED LEARNING OPPORTUNITIES

#### Language and Literacy

Create a presentation showing how they tested the model tractors and how they reduced friction.

#### The World Around Us

Design and carry out investigations to show what friction is and the effect it can have on moving objects.

#### The Arts

Using junk materials in a creative way.

### ASSESSMENT FOR LEARNING OPPORTUNITIES

#### Self-Evaluation!

It is important for pupils to reflect on *how* they have learned as well as *what* they have learned. Help this evaluation process by giving them prompts to consider such as:

- "What I have learned that is new is..."
- "What surprised me was..."
- "I think I could use this skill again when..."



Brainstorm a list of factors that cause increased surface friction, for example:

- When the grip of a surface is greater, the friction will also be greater.
- Smooth surfaces give lower friction.

## Tractor Challenge

Before the children can race their tractors, you will need to decide with them on the equipment needed for the race and how they can ensure it is a fair test. For example:

- Will they race the tractors on a flat or sloped surface?
- Will they push the tractors to make them move or let them run down a slope themselves?
- If they are going to push the tractor, how will they ensure that the same strength of push is being applied each time?
- If they are going to race the tractor on a slope, how will they create this (perhaps a PE bench hooked up to another piece of apparatus)?
- How will they ensure that they are testing the tractors on the surface that had the least friction from their investigation earlier?
- Will they all 'race' their tractor at the same time, or should they do it one at a time? If they all do it together, will they be able to measure easily? Is there a chance that the tractor models may crash into each other and distort the results?
- If they do it one at a time, what do they need to measure in order to find the winner?

Due to the fact that the children have all made their models from junk materials, they may have used different objects for the wheels. Therefore, make the children aware that their test will not be able to be a *fair test* in terms of the wheels used on each.

When the class have come to a decision about how to make the race a fair test allow each pair of children to try out their

tractor, using the method agreed on. Get the children to measure how far the tractor travelled and record the results. When all of the children have had an opportunity to race their tractor, look at the results to see who the winner is.

Ask the children to look closer at the winning tractor model and discuss why that particular tractor travelled the furthest. They should take into account whether the wheels used on the winning tractor had an impact on the friction generated.

# Activity 5

## Harry Ferguson

### New Words and Phrases

biography  
 apprentice  
 revolutionised  
 three-point  
 linkage system  
 plough  
 working depth  
 traction

### Suggested Learning Intentions

We are learning to:

- find out about the life of Henry George (Harry) Ferguson;
- consider the impact that Harry Ferguson’s inventions had on farming;
- create a biography; and
- evaluate the reliability of sources of information.

### Writing a Biography

Set the children a task of writing a biography of Harry Ferguson. Give the children a copy of Resource A, ‘Harry Ferguson Fact File’, and read through it with them. Tell the children to underline or make a note of any new words or phrases they come across. Using dictionaries or suitable search engines, get the children to work in small groups to find out what these words mean and create a glossary of words related to Harry Ferguson. This can be included in their biography.

The children should carry out additional research on Harry Ferguson (see the ‘Useful Resources’ section for websites to use). Tell the children to consider whether the information they find on Harry Ferguson is reliable and

accurate. Ask them how can they be sure of the information’s reliability. If possible, arrange a visit to the Ulster Folk and Transport Museum at Cultra, where children can see an example of Ferguson’s early tractor and plough on display.

Ask children to also include the following in their biography:

- Four important sentences about Harry Ferguson;
- Another fact about Harry Ferguson’s life (not already included in Resource A);
- A picture or drawing of the ‘Wee Fergie’; and
- A list of other Harry Ferguson inventions.



### CONNECTED LEARNING OPPORTUNITIES

#### Language and Literacy

Write a factual account.

#### The World Around Us

Research other famous engineers and inventors. Create a farming timeline to show how developments in technology have impacted on farming practices.

### ASSESSMENT FOR LEARNING OPPORTUNITIES

#### Peer Assessment!

Use the **Two Stars and a Wish\*** strategy to encourage positive feedback and ideas for improvement when children have completed their biographies.

# Five-A-Day

Learning about pollinizers and pollinators in relation to apple trees.

Designing a 'pollination managed' orchard.

Designing and making an apple bin.

Learning about a controlled environment.

Finding out about the journey of the apple, from the orchard to a fruit processing plant.

Learning about a year in the life of a fruit and vegetable farmer.

Investigating various types of packaging used for fruit and vegetables.

Discussing the ideal conditions for keeping fruit and vegetables fresh.

# SECTION 2





# Activity 6

## How Does a Farmer Make Apples Grow?

### New Words and Phrases

orchard  
 bramley  
 self-unfruitful  
 pollinator  
 pollinizer  
 cross-pollination  
 management  
 variety  
 pruned  
 harvest  
 crop  
 apple bin  
 carbon dioxide

### Suggested Learning Intentions

We are learning to:

- research how apples are grown;
- find out how pollinizers and pollinators work; and
- report information so that others can understand.

### What Do We Know About Apples?

Ask the children what they know about apples. In groups, get them to write down three things about apples. Discuss these points and collate them into a class list. Next, get the groups to write three questions about apples that they would like to find the answer to and collate these into a class list.

As an introduction, get the children, in groups, to find out about one of the following questions and report back to the rest of the class:

- Where are the ideal growing conditions and positions for an orchard? *Locations for orchards are chosen because of the type of soil and amount of rainfall. Apple trees can be grown in any position except in low-lying areas where there would be frost.*
- Why is County Armagh famous for its apple growing?
- Where would be a good place to plant some apple trees in the school grounds?

The children should add any new information to their 'Farming Scrapbook'.



### Pollinizers and Pollinators

Distribute copies of the Apple Fact Sheet in Resource B to the children. Read through all of the facts and then draw the children's attention to the second point. Do the children know what a 'pollinator' means? Ask them to use dictionaries to try and find out.

Explain to the children that most apple trees are **self-unfruitful**. This means that the pollen they produce will not fertilize its seeds or the seeds of another tree of

### CONNECTED LEARNING OPPORTUNITIES

#### The World Around Us

Investigate the differences between the seeds from different fruits.

#### Language and Literacy

Research and write a report about County Armagh and its apple orchards.

#### Personal Development and Mutual Understanding

Find out about a balanced diet and why it is important for health.

### ASSESSMENT FOR LEARNING OPPORTUNITIES

#### Assessment for Learning Opportunities

Get the children to picture an imaginary number line running from one to ten, along one side of the room. According to the amount of knowledge they feel they have about 'Apples', ask them to position themselves on the line. Repeat this activity at intervals throughout the theme as a means of self-assessment.

the same type. It needs pollen from a different type of apple tree in order for the fruit to grow. This is called **cross-pollination**. For an apple farmer, 'pollination management' is an important part of the job. If the farmer doesn't make sure that this works, then no crop will grow. For this reason, the farmer plants a variety of different types of apple tree in the orchard. These other trees are known as the **pollinizers**.

However, the farmer's job is not done yet! In order to make sure that the pollen from the pollinizer tree gets to the other apple trees, the farmer must introduce a **pollinator**. These can be wasps, flies or bees. To make sure that the pollinators move from tree to tree and visit both the crop trees and the pollinizer trees, the farmer needs to make sure that the trees aren't planted more than 100 feet away from each other.

# Activity 7

## An Orchard



### New Words and Phrases

blossoms  
volume  
dimensions

### Suggested Learning Intentions

We are learning to:

- design an orchard which uses 'pollination management';
- use thinking, problem solving and decision making skills;
- manage information and work with others; and
- investigate volume and create an apple bin.

### Design an Orchard

Give each child a copy of Resource C, My Apple Orchard. Recapping on Activity 6 and on the Apple fact Sheet in Resource B, tell the children that they need to create a design for their own orchard, making sure that their design would work and the trees would all be pollinated. For their design, they must draw a plan with symbols to represent all of the things needed for the orchard. They should also create a key to show what these symbols

mean. Before the children begin, give them the following additional tips:

- A farmer would build beehives in the orchard and move bees into them when the first blossoms open on the trees.
- Some farmers allow dandelions to grow at the base of the apple trees. Bees love dandelions and will be attracted to them throughout the season.



#### CONNECTED LEARNING OPPORTUNITIES

##### The Arts

Use junk materials to make farm items.

##### Mathematics and Numeracy

Explore volume and capacity.

##### The World Around Us

Investigate how various foodstuffs are stored.

#### ASSESSMENT FOR LEARNING OPPORTUNITIES

##### Finding Good Role Models!

Consider how you could incorporate the idea of positive role models into your classroom. Good role models that the children are familiar with can offer inspiration and support by what they say or do.

- Every fourth row in an orchard, and every fourth tree in that row is a pollinizer which may be a variety of eating apple.

They should include the following in their design:

- apple trees (crop trees);
- pollinizer trees;
- pollinators (such as a beehive); and/or;
- dandelions.

## Design and Make an Apple Bin

Show the children the picture of the apple bin in the Farming Photo Pack (see Resource L for details). Talk to the children about the design of the apple bin and the reason that there are gaps in the bin (see Apple Fact Sheet, Resource B) as well as any advantages that this gives to

the bin, for example, in terms of stacking and air circulation.

Set the children the task of planning and building a small apple bin that will hold twelve apples. The children will first have to work out the volume of the apple bin. Explain to the children that volume is worked out as length x breadth x height. Therefore, they need to work out how tall the bin needs to be, how wide it needs to be and how long it needs to be. Give each group twelve apples each and ask them to investigate ways of working this out.

When the groups have worked out the dimensions of the apple bin, allow them to use strips of cardboard or wood to make their apple bin. Discuss with the children which materials would be ideal for the apple bin, for example, the material used would have to be strong, waterproof and lightweight.



# Activity 8

## Apple Processing

### New Words and Phrases

controlled  
environment  
contamination  
humidity  
bramley apple  
dessert apple  
pasteurised  
survey  
porous

### Suggested Learning Intentions

We are learning to:

- understand what a controlled environment is;
- design and make a juice presser; and
- find out about apple processing.

### A Controlled Environment

Discuss with the children what they think is meant in the Apple Juice Fact Sheet in Resource D by 'a controlled environment'. Explain to the children that a controlled environment is a room or area where lots of factors are precisely controlled. These factors may include:

- moisture in the air (humidity);
- temperature;
- dust;
- pests; and
- other contamination, such as gases.

Working in groups, the children draw an imaginative design of a room that would hold fruit and could control the factors above. They will need to consider things such as:

- How will they ensure that air can get in and out of the room, but that dust will not be able to get in?
- How will they ensure that pests such as mice and insects cannot get into the room and at the fruit?
- How will they measure the temperature of the room?
- Should they also measure the temperature of the fruit itself?



### What Does It Mean?

Show the children a bag of apples and a carton of apple juice. Ask the children to suggest how the juice gets from the apple to the carton. As the discussion unfolds, create a flow diagram to show the main points in the process. This may need to be edited throughout the activity.

Photocopy Resource D and cut it in strips so that each fact is on a separate piece of paper. Use a strategy such as **Each One Teach One\*** to discuss the factual information with the class. Put the children into ten groups and give each group one of the facts. Allow the groups

\* see *Active Learning and Teaching Methods for Key Stages 1&2*

### CONNECTED LEARNING OPPORTUNITIES

#### The World Around Us

Design an experiment in the classroom that will measure the impact a 'controlled environment' can have.

#### Mathematics and Numeracy

Estimating and measuring. Calculating total amounts based on evidence of smaller amounts.

### ASSESSMENT FOR LEARNING OPPORTUNITIES

#### Motivation!

How children perceive themselves and their abilities has a significant impact on their success. Encourage children to adopt a 'self-improvement' rather than a 'prove myself' attitude.



to have some discussion time about what they think the fact on their piece of paper means. One at a time, ask a spokesperson from each group to read out their fact, and another spokesperson to explain what they think the fact means. Allow other children in the class to then comment and then come to a class consensus about what the fact means.

### Journey of Apple to Juice

Give the children a copy of the Apple Fact Sheet in Resource B. Use the apple processing photos from the Farming Photo Pack (see Resource L for details) to show the children some of the elements of apple processing. In small groups or pairs, get the children, on an A3 page, to create a flow chart using words and pictures that demonstrates the journey of apple to apple juice.

### Making Apple Juice

Ask the children to consider how they would make apple juice themselves in the classroom, without a machine to do it for them. Talk to the children about what pulp is and how they could 'squeeze' the juice from an apple without having the pulp left behind.

Working in groups, the children design a way of making apple juice. They can use any method they want, providing that it can be done safely in the classroom. Talk to them about hygiene and ensuring that the juice they make will be fit for consumption.

Provide the groups with the following key questions as a means of structuring their discussion and design, making sure they understand all of the terms used:

- How will the fruit be squashed?
- What materials do you need?
- Would the fruit have to be covered by something before pressing?
- Which materials would be strong yet porous?
- How can you make sure the juice falls into a suitable container?





The children should write up their design in a report using the following headings:

- Aim;
- Equipment; and
- Method.

Make a list of all of the required equipment and over the next few days, get the children to gather the equipment they need, from school and from home.

Provide each group with six apples. Get each group to mark on a plastic cup, beaker or measuring jug the estimated amount of apple juice they think they will get from the six apples. Remind the children again about hygiene and ask them to wash their hands and equipment before beginning.

Give the children a set amount of time to complete their apple squeezing. If the children are using knives, ensure adequate adult supervision, or only allow an adult to use the knife. When the children have completed their investigation, get them to compare the amount of apple juice they actually got from the six apples, with the estimate they made earlier. They should add these results and what they have learned from the investigation to the report that they produced earlier under the headings:

- Results; and
- Conclusion.

Based on their results, get the children to work out the estimated amount of juice that they would expect from other quantities of apples.

# Activity 9

## From Field to Table

### New Words and Phrases

drainage  
 fertiliser  
 packing house  
 grading  
 product code  
 traced

### Suggested Learning Intentions

We are learning to:

- research and manage information effectively;
- use factual information to write a creative story;
- recognise the growing seasons of common vegetables; and
- consider options for planting suitable vegetables in our own garden.

### Mr Green's Carrots

Hold up a carrot for the children to see. In pairs, give them one minute to write down as many things as they can think of about a carrot. When they have done this, record their answers on the 'Know' section of a large **KWL\*** grid. Next, give

the children another minute to write down as many things as they can that they would like to find out about carrots. Record these in the 'Want to know' section of the grid.



\* see *Active Learning and Teaching Methods for Key Stages 1&2*

### CONNECTED LEARNING OPPORTUNITIES

#### Language and Literacy

Write a creative story about how a vegetable gets from field to fridge.

#### Personal Development and Mutual Understanding

Research food wastage in our homes. How is food availability different here, compared to other parts of the world?

#### The World Around Us

Find out how to create a vegetable garden and what each plants needs to grow healthy.

### ASSESSMENT FOR LEARNING OPPORTUNITIES

#### Generate Pupil Questions

Before beginning the activity, to promote pupil involvement and enthusiasm, ask the children to think of a variety of questions about where vegetables come from.



Give the children a copy of Resource E, 'Mr Green's Carrots', and read through together. Stop after each paragraph and discuss the information with the children. Record each new fact in the L 'Learned' section of the grid. Read the following beginning of a story to the children:

### Casper the Carrot

Casper was feeling squashed. In fact, he felt very squashed! The man in the supermarket had just piled the carrot bags one on top of the other ready for the Friday shoppers. Casper was waiting to be picked, brought to a home and eaten. All the vegetables in the supermarket were there every day, all year round for people to enjoy. Casper wondered if the shoppers really knew how he and his friends had been grown, looked after and harvested. He began to think of how it all began...

Get the children to work individually or in pairs to complete the story. They should use the information in Resource E to help them with the factual information for their story.

### All Year Round

Give all the children a copy of the table in Resource F, 'When Do Vegetables Grow?'. Set the children a research challenge of finding out the growing season for each of the vegetables on the table. Please note, that websites and books will give slightly differing information, where this is the case discuss the issue with the children, and come to a general consensus.

When the children have gathered the information, give each of them an A3 page. In the middle of the page, get them to draw around a large circle. This will be their 'Farming Clock'. They should divide the circle into quarters and label these, in order, with the names of the seasons. They should then add the months, just like the numbers on a clock. Ask the children to illustrate the various vegetables around the clock in the right places, depending on when they are grown. They could add this piece of work to their farming scrapbook.

### Creating a Vegetable Garden

Look around the school grounds and check the suitability of any areas for cultivation. Ask the parents of children in the class to donate any old containers that could be used for growing vegetables. These could range from biscuit tins, to watering cans, to various bits of pottery.

When you have gathered a selection of these in school, provide the children with acrylic paints with which to decorate the containers. Be aware that acrylic paint is plastic-based and will not wash-off easily if it gets onto clothes, so ensure that the children are wearing protective clothing. If you do not have access to acrylic paints, the children could use poster paints. When the painted containers have dried, get an adult to cover them in a layer of clear varnish, or a mixture of PVA glue and water. This will appear white on application, but will dry clear.

The children could write letters to local garden centres to ask for donations of soil, seeds and bulbs. They will need to look at a range of seed packets to decide which ones are best for planting at that time of year. They could also plan their planting year and sow crops that could be harvested within each school term.

A school vegetable shop could be created to sell produce to staff, parents and other pupils. Any profits could be put back into maintaining and expanding the garden. See the 'Additional Resources' section for useful websites to help this activity.

# Activity 10

## Finding Out About Packaging

### New Words and Phrases

grammes  
kilogrammes  
use by  
best before  
shelf-life  
vitamins  
packaging  
biodegradable

### Suggested Learning Intentions

We are learning to:

- use scales accurately to measure weight;
- understand how to use 'best before' and 'use by' dates; and
- plan and carry out a survey.

### What Can Packaging Tell Us?

The children bring samples of fruit or vegetable packaging into school. Ask each child to write down three sentences about their packaging, for example:

- My packaging is see-through.
- It has small holes in it.
- It is open at one end.

Give each group of children a set of scales. Ask them to look at their packaging and see if they can see the weight of the fruit or vegetables that were once in it. Allow the groups to work

together to gather some items from around the classroom that are the same weight as the previous contents of the packaging.

Next, get the children to look at the dates on the package. Explain to the children that when they see 'Best Before' on an item, it gives advice about when the food is at its best. However, when they see 'Use By' on packaging that means that you must use it by that date for health and safety reasons.



### CONNECTED LEARNING OPPORTUNITIES

#### The Arts

Design and make printed wrapping paper. Use junk materials to make a musical instrument.

#### Mathematics and Numeracy

Investigate percentage of salt and sugar in a variety of foodstuffs.

### ASSESSMENT FOR LEARNING OPPORTUNITIES

Set targets for good teamwork!



Looking at the dates on all of the packaging in their group, can the children work out:

- Which items have the longest shelf-life?
- Which items have the shortest shelf-life?

### Packaging Survey

Give each child a copy of the packaging survey grid in Resource G. In their groups, they should record the properties of the various packages, by placing a tick in the columns that are applicable. When they have completed the grid, the children should look at the results carefully and consider the following questions:

- Can you explain why some containers are sealed and others are not?
- Why are some vegetables in rigid containers?
- Which vegetables are in biodegradable packages?
- Packaging costs money. Which kinds of package may be cheapest to produce?
- Can you list the most common properties of the packaging materials?
- What do you think the ideal kind of packaging for vegetables is? Consider issues such as protection, freshness, cost of production and impact on the environment.

### Extension Activities

The topic of packaging could be explored further by asking children to undertake the following activities:

- If you were going to cook the product, research how you would prepare and cook the vegetable;
- Some of the packages are biodegradable. Find out about what that means and how it could help the environment;
- Look at the information on a typical 100g serving. Could you show by drawing a diagram, such as a pie chart, what that really means?
- Find out what vitamins are good for your health. Can you match the vegetables that contain those vitamins?
- Can you plan out a weekly food menu based on the dates where a family could eat all their vegetables before the best before date? Choose a variety of vegetables for the week.

# Activity 11

## Keeping it Fresh

### New Words and Phrases

freshness  
signs of decay  
fair test  
storage  
conditions  
observation  
moisture  
temperature

### Suggested Learning Intentions

We are learning to:

- design and carry out a fair test;
- carry out an experiment with more than one factor being tested;
- monitor an experiment to get accurate results; and
- find out about the ideal storage conditions for fruit and vegetables.

### What Can Packaging Tell Us?

In this activity, the children must design an experiment that will try to find out the ideal conditions for keeping fruit or vegetables fresh. First, ask them to choose the fruit and/or vegetable that they would like to test. The aim of their experiment is to investigate the combination of packaging and storage conditions that will allow the fruit or vegetable to stay fresher for longer.

Ask the children to consider and agree on the following:

- How can the experiment be made fair?
- What factors should be changed, measured or kept the same? For example, the fruit or vegetable should be the same quality, size, and have the same best before date.

- Where will the produce be stored for observation? The places chosen should vary to allow changes in the light, temperature and/or moisture.
- How will they measure the temperature?
- What packaging will be used on all of the pieces of fruit or vegetable?
- How will the test ensure that it finds out the best packaging as well as the most suitable storage conditions?

As a class, design a table for recording the results of the experiment. The table should include space for recording:

- date;
- storage location/position;
- temperature; and
- any observations.



### CONNECTED LEARNING OPPORTUNITIES

#### The World Around Us

Make a box that will protect a digestive biscuit from breaking. Consider size, materials needed and design.

### ASSESSMENT FOR LEARNING OPPORTUNITIES

Discuss and agree on success criteria.



The experiment will run over two weeks. At the beginning, ask the children to examine a fresh piece of the chosen fruit or vegetable and record its characteristics, such as whether it is crunchy, rigid, solid or moist. During the two weeks, children should observe any changes that may occur in the fruit/vegetable, such as signs of decay, and record these on the class record chart.

When they have gathered their results, analyse these as a class and agree on the ideal conditions and packaging for the fruit or vegetable.



# Beef Farm and Dairy Farm

Learning how a specialised beef farm operates.

Finding out how a beef farmer manages his farm throughout the year.

Understanding how milk gets from the cow to the fridge.

Working out number problems from farm scenarios.

Investigating where various produce comes from.

# SECTION 3





## Activity 12

# Mr Brown's Beef Farm



### New Words and Phrases

beef farm  
 cattle market  
 meat plant  
 breeds of cattle  
 Aberdeen  
 Angus  
 Charolais  
 silage  
 rolled barley  
 maize  
 feeder wagon  
 cattle house

### Suggested Learning Intentions

We are learning to:

- find relevant information using websites and class library material;
- appreciate the link between our lives and the farms which produce our food;
- present information in different ways so that others will understand; and
- use problem solving techniques to plan feed quantities and how to use fields.

### A Beef Farm Dictionary

Read the information about 'Mr Brown and his Beef Farm' (Resource H) to the children. Read it to them again, and during the second reading ask them to take a note of all of the new words and phrases that they hear, for example, meat plant, breeds of cattle, Aberdeen Angus or feeder wagon. In groups, the children carry out research

to find out what these words and phrases mean, using suitable search engines. If the list of words and phrases is long, divide the words alphabetically amongst the groups, so that each group has a different set of words to research. When the groups have completed their research, create a class 'Beef Farm Dictionary' with words and



### CONNECTED LEARNING OPPORTUNITIES

#### Language and Literacy

Write a newspaper report on an event that has taken place on a farm (use fact and fiction in the report).

#### The World Around Us

Create a calendar of the yearly cycle on a farm.

#### Using Maths

Work out volume, capacity and weight problems.

### ASSESSMENT FOR LEARNING OPPORTUNITIES

#### Pupil Reflection!

Develop pupils' ability to look at their work critically and constructively. Allow them to create and use a WILF (What I'm Looking For) sheet where they can mark themselves on meeting set criteria.

meanings and perhaps illustrations or printed images, which can be referred to and added to throughout the section.

If possible, you may like to invite a beef farmer into school so that the children can interview him/her. The children create a list of questions that they would like to find out the answers to before the visit, for example:

- What is your busiest time of year?
- What is your favourite time of year?
- Are there any parts of your job that you don't like?
- What made you want to be a beef farmer?
- What time do you start work in the morning?

## A Busy Man



Refer back to Resource H, and discuss with the children all of the things that Mr Brown has to do in a year. Talk to them about why certain things need to be done at specific times of year. Ask the children what would happen if Mr Brown didn't do all of his jobs at the right time of year.

Give the children a copy of Resource I, 'A Busy Man!', and a blank A3 page. Discuss with the children when in the year they think each thing on Resource I happens.

On the A3 page, the children create a flow chart or cycle of a year on the beef farm. For this they can either gather information from Resource H, or cut out and use the pieces of information on Resource I. The children may wish to divide their A3 page into four quarters,

one for each season. They then write or stick on cut-out pieces of information at each season and illustrate. Allow them to work with a partner to discuss whether they are adding information to the correct part of the year, and encourage them to give each other positive feedback.

## Work It Out!



Use the context of a beef farm to get the children to develop their Using Maths skills, by setting some of the following activities:

- One hectare is approximately 2.5 acres. Using squared paper, decide with the class upon a unit to represent one hectare. Get them to draw this on squared paper. Mr Brown has worked out that one hectare is big enough for three bullocks (castrated bulls). On their squared paper, can the children draw a field that is the right size to accommodate 12, 27 and 32 bullocks?
- Mr Brown is mixing all his feed in the feeder wagon. One load of feed weighs around 3.5 tons. This would feed about 140 cattle. Can the children work out how much feed Mr Brown would need if he had 70 cattle or 300 cattle?

Set the children the task of creating other questions like these. Use all of their questions in a class mental maths quiz to see who has the quickest and most accurate answers.

# Activity 13

## Life on a Dairy Farm

### New Words and Phrases

Friesian  
Holstein  
calf  
bull  
heifer  
concentrates  
digestion  
monitored  
dairy parlour  
reared

### Suggested Learning Intentions

We are learning to:

- ask clear questions in order to find out useful information;
- understand how milk is produced on a dairy farm; and
- analyse data in order to answer number questions

### What Happens on a Dairy Farm?

Use the 'Life on a Dairy Farm Sheet' in Resource J and the photos in the Farming Photo Pack (see Resource L for details) to talk to the children about life on a dairy farm. Ask the children to write down three questions they have about dairy farms. Discuss these questions with the children. Alternatively, give the children time to undertake research about dairy farming, using suitable search engines. More

images of a day in the life of a dairy farm can be seen at [www.ukagriculture.com](http://www.ukagriculture.com) by following the links: 'Field to Fridge' – 'Milk production' – 'More pictures'. Here, you can see a sequence of pictures for every hour of the day on a dairy farm. (You can find other useful websites detailed in the Additional Resources section.) If possible, arrange a visit to a dairy farm to help the children's research.



### CONNECTED LEARNING OPPORTUNITIES

#### The Arts

Use images of cows to create an abstract collage of a farm.

#### Mathematics and Numeracy

Work out calculations based on real-life scenarios.

#### Language and Literacy

Use images of life on a dairy farm to create a chronological account of a day in the life of a dairy farmer.

### ASSESSMENT FOR LEARNING OPPORTUNITIES

#### Thinking Time!

Aim to extend participation in whole class and group questioning to all children by giving them time to think. This will allow all children the opportunity to process the information and contribute to discussion.



## Milk It!

Give each child a copy of Resource K, 'Milking Numbers', and draw their attention to the table shown in 'Number Bank 1', which shows the milk produced by five cows on a dairy farm.

Using calculators and/or pencil and paper, ask the children to work out the following questions:

- Can you fill in the missing numbers in the table?
- What is the total amount of milk produced by the five cows that day?
- Can you work out the average amount produced that day?
- Can you work out the average for morning and evening milking?
- Could you pick out one cow and fill a container with water to represent the amount of milk she gave at one time (either morning or evening)?
- Why do you think all cows don't give the same amount of milk?
- Choose one cow – work out how much milk that cow will produce in a week.

Get the children to look at 'Number Bank 2' in Resource K and ask them the following questions:

- When a cow is being milked, how much is it fed per week?
- If a cow that is being fed silage is producing 16 litres of milk per day, what amount of concentrates would it receive?

# Activity 14

## Dairy Products



### New Words and Phrases

product  
produced  
sourced locally  
recipe  
ingredients  
method

### Suggested Learning Intentions

We are learning to:

- investigate the variety of dairy products available in the shop or supermarket;
- look at the variety of dairy products available in Northern Ireland; and
- be able to make some simple food dishes using dairy produce.

### Where Does It Come From?

In this activity, children research the different types of dairy products available in Northern Ireland. If possible, a visit to a local supermarket would be useful so that the class can make notes about the dairy produce displayed. Alternatively, a selection of dairy products can be brought to school and investigated there.

Ask the children to produce a record sheet such as the one shown below. They should use this to record information about the dairy products they find.

They should look at a wide range of products and examine the labelling to see where the product is sourced or made.

Ask the children to make a note of any trends in where the products are made. Are the ingredients sourced and the product made in the same place?

When the children have compiled all their information, they could carry out a survey to see which of the dairy products are most popular in the class and use ICT to display their results.

### Daring Dairy Recipes

Let the children use recipe books or suitable search engines to find some recipes that contain dairy produce. They should each choose a favourite recipe and compile a class 'Daring Dairy Recipe Book'.

Product Name	Food	Quantity	Where are the ingredients sourced?	Where is it produced?
Dromona	butter	500g		

### CONNECTED LEARNING OPPORTUNITIES

#### The Arts

Use a variety of materials and textiles to create a 3-D model of a dessert.

#### Language and Literacy

Write instructional texts.

#### Mathematics and Numeracy

Work out quantities needed for a recipe for three people, six people and so on.

### ASSESSMENT FOR LEARNING OPPORTUNITIES

#### Formative Feedback

Hold an 'Application of Learning' day in school. Invite parents/carers into the classroom to see the children completing their work on the theme. Children talk to the parents/carers about the knowledge and skills that they have developed during the course of the theme.

The children could make a simple strawberry cheesecake following the method below:

### Ingredients

- 100g butter and 200g digestive biscuits (for the base);
- 200g cream cheese (for the topping);
- 250ml whipping cream;
- 100ml strawberry fromage frais;
- 50g icing sugar; and
- strawberries (to decorate).

### Method

1. Melt the butter.
2. Crush the biscuits and stir them into the butter.
3. Press the mixture into a tin.
4. Whip the cream and beat in the cheese, fromage frais and icing sugar.
5. Put the mixture on the biscuit base and decorate with strawberries.
6. Put in fridge to cool for at least three hours.
7. Remember that this has a high fat content, so cut small portions and enjoy!



# Resources

## Resource A

# Harry Ferguson Fact File

**Henry George (Harry) Ferguson (1884–1960)**

**A Famous Engineer and Inventor**

Harry Ferguson was born on his father's farm at Growell, near Dromore in County Down.

His brother, Joe, had a car and cycle business in Belfast. Harry went there as an apprentice and soon became interested in designing a motorcycle and racing car of his own. He was also interested in flying.

In 1914 he was selling American tractors and decided to design and build a new plough which would be linked to the tractor. The Ferguson System revolutionised farming as the tractor and plough were joined together by a three point linkage system so they both formed a single unit. The links were arranged to pull the plough down to its working depth.

Improved traction was obtained by placing the weight of the plough and the forces involved in ploughing, firmly on the tractor. This meant the tractor didn't rear up if the plough hit something in the ground.

Harry Ferguson also designed a light-weight tractor known as the 'Wee Fergie,' or 'TC 20'. About 500,000 of these were made in Coventry, England.

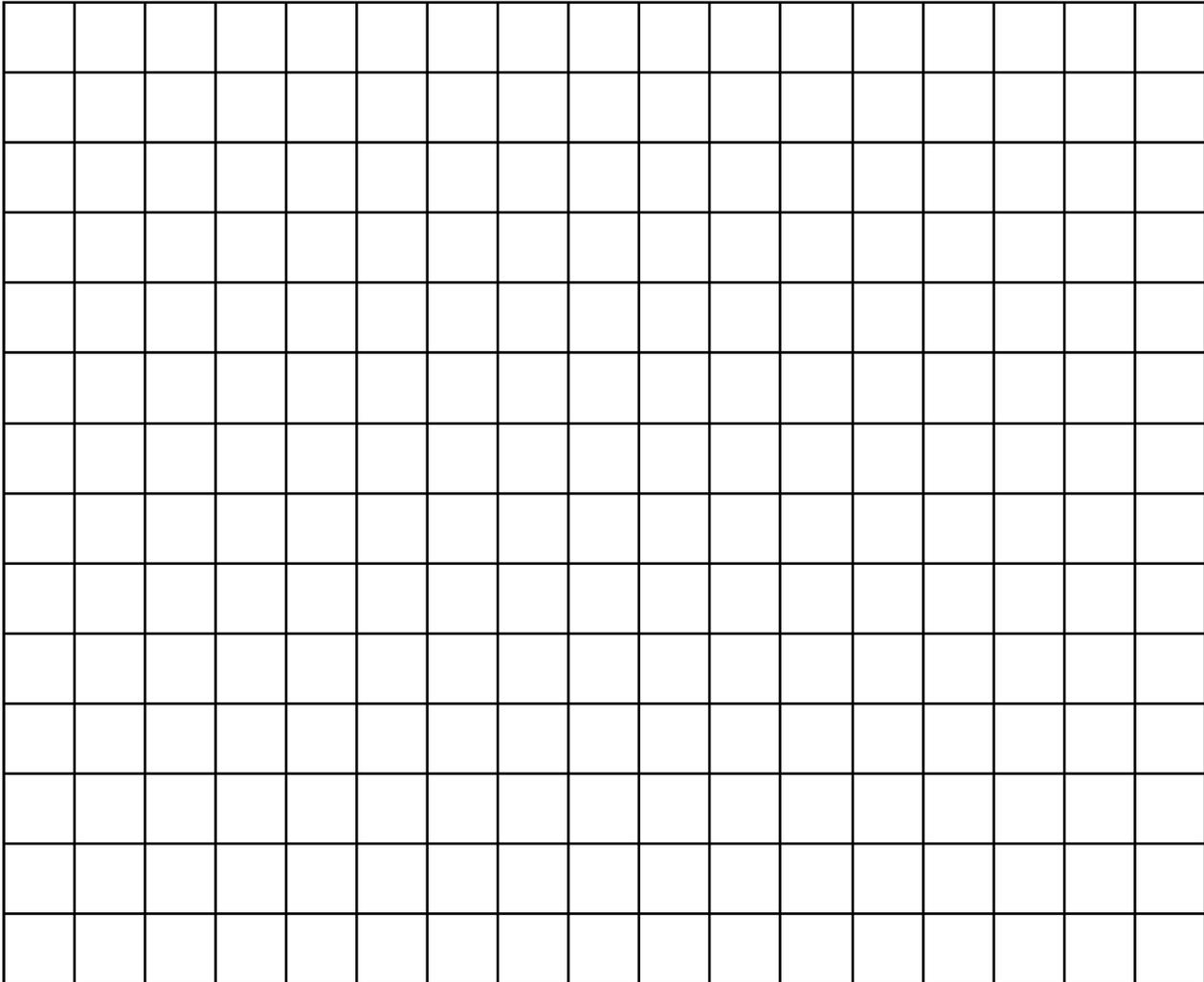
## Resource B

# Apple Fact Sheet

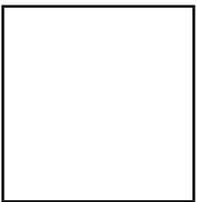
- The main variety of cooking apples that are grown in Northern Ireland are Bramley apples.
- In each orchard, another apple variety is used as a pollinizer. Every fourth row in an orchard, and every fourth tree in that row is a pollinizer which may be a variety of eating apple.
- The farmer sprays the crop at various times of the year to prevent disease on the trees or apples.
- The trees are pruned so the trees don't grow too big. Pruning means that small shoots and branches are cut off.
- The crop is harvested in September or October.
- 35,000 tonnes of Bramley apple seedlings are harvested in County Armagh.
- The apples are picked off the trees by pullers and placed carefully in a large wooden apple bin. The sides are slatted to allow air circulation and there is an extra piece on the bottom to let a fork-lift or pallet-shifter, carry the bin.
- The bins are drawn out of the orchard by tractor. The apples are then sold or stored in a controlled environment.
- The controlled environment in the store preserves the apples using carbon dioxide which the crop produces itself.
- The apples are stored until sold or used for processing.

# Resource C

## My Apple Orchard



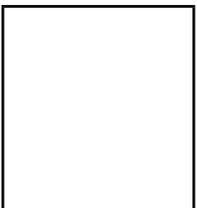
### Key



\_\_\_\_\_



\_\_\_\_\_



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## Resource D

# Apple Juice Fact Sheet

- Apple juice is normally made from Bramley apples and dessert apples. Some types of dessert apple used are Discovery, Worcester and Jonagored. Most apple breakfast juices are made up of 80% Bramley apples and 20% dessert apples.
- The apples are graded by size and appearance.
- They are placed in a store with a controlled environment. The fruit is 'put to sleep' as the oxygen levels are lowered and more carbon dioxide is produced. The fruit is removed from storage slowly by increasing the oxygen levels. This 'awakens' the fruit.
- Apples can be stored all year round so that the farmer can continually supply the supermarkets.
- Before processing, the apples are inspected for any decay.
- The fruit is chopped up and then put through a press and roller system, a bit like a mangle. Everything is squashed: the core, skins and flesh. The juice flows out through tiny holes in the belt.
- The bits that are left go onto a conveyer belt and are fed to cattle. This diet is ideal for cattle as it is high in fibre.
- The juice fills a tank and is allowed to settle for 12 to 24 hours. This allows any particles to go to the bottom and not go into the juice.
- The juice is also gently pasteurised by a heat treatment, then bottled, capped, labelled, packed and cooled.

## Resource E

# Mr Green's Carrots

During the winter months of January and February, Mr Green the vegetable farmer is looking for suitable fields for growing carrots. He cannot grow the same type of crop in the same field every year as the field needs time to get back all of the nutrients that were used up the year before. The field needs time to develop fresh soil to prevent disease.

In order for his carrots to grow well, Mr Green looks for soil that is not too sloped, is a little bit stony and which has good drainage. Mr Green also looks at the soil and maybe tests it to see what kind of fertiliser the field needs to grow good carrots.

Between January and April the field is ploughed so that the sowing and planting can happen from mid-March to mid-July. The fields are sprayed to seal the ground after planting to help reduce the weed growth.

Mr Green maintains the crop and sprays it if he needs to. Carrots are harvested all the year round, except for three weeks in the year. During these three weeks, countries such as France supplies many supermarkets in Northern Ireland with carrots as there are not many Northern Irish carrots available.

The carrots are dug out of the field by a big machine and brought to the packing house for washing and storing.

After that a machine grades the carrots by size and shape. They are sorted into small, medium and large carrots and inspected to make sure they are the quality required by the supermarket. The supermarket has already said what kind of carrot they will buy from Mr Green to sell in their supermarket, so he has to make sure that those are the size and shape of carrot that are provided.

Mr Green's sorting machine weighs the carrots and guides them into plastic film which it seals at both ends by a machine. Some of the people in the pack house also bag the carrots by hand.

Every bag of carrots is labelled with the product code. This means that the carrots can be traced from the day it was packed.

They are then brought by lorry to the supermarket depot.

Mr Green tries to recycle as much as he can, so that nothing is wasted. The soil from the carrots is put back into the field, and the carrots that don't make it to the supermarket are sold to other farmers for animal feed.

## Resource F

# When Do Vegetables Grow?

Product	Growing Season
green cabbage	
savoy cabbage	
white cabbage	
red cabbage	
sweetheart cabbage	
carrots	
broccoli	
cauliflower	
scallions (spring onions)	
leeks	
parsnips	
spring greens	
swede	

# Resource G

## Packaging Survey

Properties of the Package	Other			
	Flexible/ Rigid			
	Stretch/ Not Stretched			
	Sealed/Not Sealed			
	Biodegradable			
	Translucent			
Materials Used in Package				
Name of Vegetable				

## Resource H

# Mr Brown and his Beef Farm

Mr Brown owns a beef farm. He lives in the countryside, about three miles from the nearest town. He lives in a farm house, surrounded by all his fields and farm buildings.

Mr Brown has to go to the cattle market to buy his cattle. The breeds of cattle that Mr Brown buys at a cattle market are mostly Aberdeen Angus and Charolais.

The cattle are about eighteen months old when he buys them and he rears them for beef. Mr Brown feeds the cattle until they are fat enough to be sold to the meat plant for beef. He sells the cattle to the meat plant and gets money for each animal that he sells.

Mr Brown looks after his cattle very well. His farm is in a quality assurance scheme. This means that every eighteen months, the farm is inspected to check the health and welfare of the animals and the environment where they are living. Every farmer who is in the scheme has to follow very strict standards!

In the summer time the cattle eat grass in the field, but in the winter they are housed inside and are fed special food, a mixture of grass, silage, rolled barley, maize and wheat. This food is mixed up in a feeder wagon and fed to the cattle in the cattle house.

At certain times of the year Mr Brown has lots of jobs to do to help maintain his beef farm. In the spring and summer, Mr Brown, with help from his sons and workers, cuts grass for silage. In the autumn, he harvests barley, wheat and maize. These crops are stored for the cattle to eat indoors in winter.

Slurry is a type of fertiliser or manure which is used to help fields grow. It is made from animal excrement. Slurry cannot be put out on the fields between mid-October and mid-February. The reason for this is to protect the environment, so that no slurry will be washed into rivers or waterways.

Any solid manure produced by the cattle in the cattle house can be put on the fields all year round, weather permitting.

Hedge cutting is limited from September to March so that the bird's nests will not be destroyed.

Mr Brown also has to spray weeds to get rid of them, using special sprays. When he does this job, the cattle must be kept off the sprayed fields for fourteen days before eating the grass again.

Mr Brown is a very busy man!

# Resource 1

## A Busy Man!

Mr Brown cuts grass  
to make silage.

The crops are stored  
indoors.

The cattle eat grass  
in the field.

The cattle stay inside  
the cattle house  
because it is cold  
outside!

The cattle eat silage,  
wheat, rolled barley  
and maize.

It is harvest time!  
Mr Brown harvests  
barley, maize and  
wheat.



## Resource J

# Life on a Dairy Farm

Dairy cows are usually black and white Holstein or Friesian breeds.

Cows cannot produce milk until they have a calf. A cow has one calf per year. A cow can be milked for ten months of that year. A boy calf is called a bull and a girl calf is called a heifer.

Bulls are usually sold and heifers are usually kept and reared on the farm.

The cows are fed concentrates (meal) all year round. They also eat grass in the spring, summer and autumn. In winter they are kept indoors all the time and fed silage. Silage is cut grass which is partly fermented and stored in a silo.

The cows are fed small amounts over a 24-hour period. This helps digestion and keeps them healthy. They are tested every year for TB (a type of disease).

In the dairy parlour each cow has a collar which is connected to a computer system. Each cow is monitored to see the amount of milk produced, the amount of food it needs and to check if it is healthy or sick.

A cow produces the most milk for about 35 to 40 days after calving. The milk is poured automatically into a tank which is emptied every other day by a lorry.

# Resource K

## Milking Numbers

### Number Bank 1

Cow number	AM Milk (litres)	PM Milk (litres)	Total (litres)
674	15.98	12.92	
20	14.92		28.3
648		12.01	26.7
79	20.53	14.13	
656		15.43	39.15

### Number Bank 2

A cow is fed **3.5kg** of concentrates while being milked **each day**.

A newly calved cow (one that has just had a calf) is fed **5.5kg** of concentrates. Over the next fourteen days, this is gradually increased to **14kg**.

This newly calved cow will be fed **14kg** of concentrates for up to 28 days. After that, the amount of food may be adjusted according to the amount of milk produced by the cow.

If the cow is producing more than 6 litres of milk while eating only silage, it will also be fed **0.4kg** of concentrates for each litre after six that it produces.

# Resource L

## Photo Pack

A Farming Photo Pack is available at [www.nicurriculum.org.uk](http://www.nicurriculum.org.uk). Follow the links to 'Key Stages 1 & 2' and 'Thematic units'. The table below and on the next page, list the images available.

Order	Image Title
1	A tractor. (1)
2	A tractor. (2)
3	A Farm Shovel collecting silage.
4	Silage harvester.
5	Three point linkage system.
6	Hedge cutter.
7	A mixer feeder.
8	An orchard. (1)
9	An orchard. (2)
10	Apple bins. (1)
11	Apple bins. (2)
12	Stacking the apple bins.
13	A controlled environment.
14	An apple processing factory.
15	Putting the apples into the juicer.
16	Sorting and grading the apples.
17	The apple juicer machine.
18	Apple juice!
19	Lorry dumping the carrots into the water for washing.
20	Muddy carrots!
21	Vegetable washing. (1)
22	Vegetable washing. (2)
23	The carrots are taken out of the water on a conveyer belt. (1)
24	The carrots are taken out of the water on a conveyer belt. (2)
25	The mud left behind after the carrots are washed.
26	The carrots are moved to another part of the factory to be sorted and graded. (1)
27	The carrots are moved to another part of the factory to be sorted and graded. (2)
28	The carrots are moved to another part of the factory to be sorted and graded. (3)

# Resource L

## Photo Pack (continued)

Order	Image Title
29	Sorting and grading. (1)
30	Sorting and grading. (2)
31	Sorting and grading. (3)
32	Packaging by hand.
33	Loading the machine with rolls of plastic for the packaging.
34	Packaging the carrots.
35	Using a fork-lift to take some carrots to be stored.
36	Storing the carrots to keep them fresh.
37	Vegetables that don't make it to the supermarket will be sold to other farmers to feed their animals with.
38	Charolais cattle.
39	Limousin cattle.
40	Aberdeen Angus cattle.
41	Charolais cattle eating hay.
42	Cattle shed.
43	Hay shed.
44	Cattle trailer.
45	Grain store.
46	Slurry spreader.
47	Fresian cows. (1)
48	Fresian cows. (2)
49	A calf being fed. (1)
50	A calf being fed. (2)
51	A milking parlour. (1)
52	A milking parlour. (2)
53	Digital measuring system.
54	Tag collars on the Fresian cows which send information to the digital measuring system.
55	Clusters.
56	Refrigerated milk tank.
57	Temperature gauge on the milk tank.

# Suggested Additional Resources

## Useful Resources

**Look around you – Farm,**  
Wayland  
ISBN – 978-0-7502-5971-2

**Machines at Work on the Farm,** Ian Graham  
Franklin Watts, 2001  
ISBN – 978-1-84538-469-2

**On the Farm (Machines Rule),** Steve Parker  
Franklin Watts, 2008  
ISBN – 978-0-7496-7926-2

**From Farm to Table (Food and Farming),** Richard & Louise Spilsbury  
Wayland, 2009  
ISBN – 978-0-7502-5697-1

**Feeding the World (Food and Farming),** Richard & Louise Spilsbury  
Wayland, 2009  
ISBN – 978-0-7502-5696-4

**Sustaining the Environment (Working For Our Future),** Judith Anderson  
Franklin Watts, 2007  
ISBN – 978-0-7496-7350-5

## Useful websites

**UK Agriculture**  
[www.ukagriculture.com](http://www.ukagriculture.com)

**Northern Ireland Good Food**  
[www.nigoodfood.com](http://www.nigoodfood.com)

**Streamvale Farm**  
[www.streamvale.com](http://www.streamvale.com)

**The DairyCo: School Milk Project**  
[www.dairyco.net/school-milk.aspx](http://www.dairyco.net/school-milk.aspx)

**Farms for Schools**  
[www.farmsforschools.org.uk](http://www.farmsforschools.org.uk)

**Think Food and Farming**  
[www.thinkfoodandfarming.org.uk](http://www.thinkfoodandfarming.org.uk)

**Dairy Council**  
[www.dairycouncil.co.uk](http://www.dairycouncil.co.uk)

**National Farmers' Union: Why Farming Matters**  
[www.whyfarmingmatters.co.uk](http://www.whyfarmingmatters.co.uk)

**Farm and Countryside Education**  
[www.face-online.org.uk](http://www.face-online.org.uk)

**Department for Children, Schools and Families:  
Growing Schools**  
[www.growingschools.org.uk](http://www.growingschools.org.uk)

**Ulster History Circle: Harry Ferguson**  
[www.ulsterhistory.co.uk/harryferguson.htm](http://www.ulsterhistory.co.uk/harryferguson.htm)

**Ferguson Family Museum**  
[www.ferguson-museum.co.uk](http://www.ferguson-museum.co.uk)

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