GROW IT YOURSELF

GROW AT SCHOOL

YEAR ONE:
RESOURCE GUIDE

CONTENTS

SCHOOL GARDEN SITE SELECTION

WHERE TO PUT YOUR SCHOOL GARDEN

There are many things to consider when choosing a site for a school garden:

- The garden needs to be accessible for pupils and staff
- Visible from classroom and playground so that pupils and staff can keep an eye on progress
- An area of an appropriate size needs to be chosen, ideally in the "Goldilocks" range, i.e. not too small, with an inadequate area to grow what you want but equally not too large for easy management in the time available
- Your vegetable plants shouldn't be competing with other plant's roots; so, you need to site it a good distance from trees and shrubs
- And if your school vegetable and fruit garden is to be successful you need to consider the three s's; namely **soil, sun & shelter**.

PLANTS NEED SUNLIGHT AND SHELTER

Put simply plants need sunlight to grow, some ornamental plants can grow well in partial shade, but vegetables need good sunlight. A shady veg patch is usually quite a miserable unproductive area. Shade can be year-round, e.g. that cast by a building or more seasonal such as that cast by deciduous trees. Obviously as the sun's position in the sky is dependent on the time of day and the time of the year then the area shaded and the duration of the shade will also alter.
If you have a garden which is seasonally shaded (only in the shade for a month or two in mid-winter) then it would be possible to plant summer crops, avoiding any over-wintering crops. If, however, the garden is shaded for more than a month or two then it would not be a good place to grow vegetables. Also, if a garden is shaded for an hour or two at the beginning or end of the day in the summer, it should be possible to have a successful school garden but any more than this, particularly if the shade is in the middle of the day, then choose somewhere else for your veg.

On our windy island plants also benefit from shelter, both from the gales that usually come from the south west and the cold easterly winds that so often hinder the growth of young plants in the early spring. Though it is obviously important that any windbreak doesn't also cast shade (or in the case of a hedge, compete with the roots of your vegetables). It is much easier to choose a naturally sheltered spot for your school garden, if this is not possible then a hedge can be planted or a "porous" (i.e. one that filters, rather than blocks the wind) fence erected.

SUGGESTED PRACTICAL CLASS ACTIVITY:
ASSESSING YOUR SITE FOR SUNLIGHT & SHELTER

Relevance to the Curriculum

- The Geography Curriculum for all classes encourages the development of the 'cognitive mapping abilities in the immediate environment' and for the older pupils to 'establish and use the cardinal compass mapping points in the locality'.

- The Science Curriculum emphasises the need for pupils to understand the conditions required for plant growth.

When preparing a plan of the area intended for a school garden, it is important to make note of:

- Compass points
- Trees and shrubs in the garden
- Shade cast at different times of the year
- Direction of potentially damaging winds

MATERIALS NEEDED:

- A compass
- Notebook and pen
- Measuring wheel

METHOD:

- Walk around the school grounds, taking approximate measurements and orientate with a compass reading
- Note position of buildings, trees and shrubs
- Prepare a sketch plan of the school grounds
- Examine the site for sheltered and exposed areas
- On sunny days check for areas shaded (in a perfect world this should be repeated at different times of the day and in summer and winter.)
- Once you have identified sunny and sheltered areas on the school grounds, time to move onto the other criteria. Check the position of trees and shrubs, accessibility, visibility and security.
- Ideally the site chosen has good deep soil- if it doesn't then I suppose you need to take a look at the soil management worksheet!

NOTES

SOIL SCIENCE

INTRODUCTION

Maintaining a healthy, fertile soil is the starting point for successful veg growing. There are three aspects to soil fertility:

- **Biological Fertility**: this refers to having a healthy number and balance of the billions of bacteria, fungi, and nematodes that live in just a handful of soil.
- **Chemical Fertility**: this means having the right quantities of plant nutrients available in the soil (nitrogen, phosphorous, potassium and other minor nutrients). All of these nutrients are vital to plant growth and the pH of the soil.
- **Structural Fertility**: Much like cake, soil should have a nice crumb structure. A well- structured soil has lots of pores, big ones for drainage and medium sized ones for water storage.

A good grower should make sure all aspects of fertility are looked after.

Biological Fertility is maintained by trying to manage the soil in a way that mimics a natural, woodland soil. It is essential to add lots of organic matter (compost or manure), and to keep something growing in the soil whenever possible and not leaving the soil exposed to the elements.

Chemical Fertility is maintained by adding appropriate amounts of fertiliser and lime. This can be a general – one or two handfuls of fertilisers per metre squared (seaweed dust is a brilliant fertiliser for your garden).

Structural fertility: If you already have nicely structured soil then all you have to do to keep it that way is keep your feet off it and maintain the organic matter levels of the soil. A badly compacted soil needs to be broken up before use.

ASSESSING THE SOIL

It is very important to have a good look at the soil you are intending to use for your vegetable growing area. Remember vegetable plants like 60cm (or more) of soil to grow in. So try to have a look down to this depth. If roots and worms are finding their way down into the soil you should be ok. If you have a hard layer that roots and worms aren't finding their way through, then you need to break this up.

This unfortunately is hard work and involves digging the soil with a spade and breaking up the bottom of your trench with a pick axe (this is known as double digging). This probably isn't a suitable class activity for primary schools! If you are intending to break up this sort of soil, then community assistance could be useful (or just cancel your gym membership). Alternatively, if your soil has these sorts of structural problems you might decide to make raised beds. These are basically an ingenious cheat – creating the 60cm of soil-depth that you need

on the surface of the soil, instead of digging down. Little wonder they are so popular.

GROWING IN RAISED BEDS

Raised beds are useful if you have very poor soil (or none at all). They should allow for at least 60cm of rooting depth, so if you have no soil, they should be 60cm high. If you are placing them on poor soil then ideally this is broken up and a bed of at least 30 cm placed on top.

GROWING 'ON THE FLAT'

Growing on beds (not raised): Beds can be made on the flat if your soil is good enough, this is much cheaper and less effort. Widths of beds are the same as raised beds.

LOOKING AFTER YOUR SOIL

If your soil is well structured and you don't walk on it then you don't need to dig it up again. A quick "tickling" of the soil with a hoe, rake or cultivator should be enough to get it ready for sowing seeds or transplanting plants each year.

Hoe

Cultivator

Rake

KEEPING YOUR SOIL FERTILE

It is very important to maintain the **Chemical Fertility** of the soil. A bucket of compost and one handful of a general fertiliser (like poultry manure pellets or seaweed dust) per m2 will keep most crops happy. Make sure you don't put out too much fertiliser as over-feeding (particularly with nitrogen) can lead to problems with some vegetables.

Making Compost

The need for organic matter to keep the soil fertile can be met by composting waste plant material. A simple compost heap can be made using pallets held together with string. Suitable waste material can be added, ideally a mixture of easily decomposed material, like grass cuttings, and tougher material, like straw or cardboard.

The best compost is made when all the material is added at the same time but normally it's more convenient for schools to add material as you are going along. If you have two heaps then you can fill one then leave it for a few months to decompose, while you fill up the second. It is important not to add things to the heap which can attract rats, so no food waste or root vegetable peelings.

Worm composting is an interesting activity for a school. The plant material is fed to a type of waste eating worm (not a common earthworm). This is best done in a purpose made worm composting unit (widely available on-line). They can be kept in a classroom and organic waste (and even some paper) can be fed to the worms. They are secure against vermin, so a wider range of organic matter can be used compared to an open compost heap. They leave behind them worm digested plant waste (or worm poo!) that makes excellent garden compost.

Notes

SUGGESTED PRACTICAL ACTIVITIES (ALL CLASSES)

COUNTING EARTHWORKS TO ASSESS FERTILITY

The numbers of earthworms in a soil give a good indication of the Biological Health of the soil. This assessment should take place when the soil is warm and moist, May, October and November are usually good times.

The areas of soil sampled should be typical of the garden soil. Raised beds, on a soil base, often have fewer earthworms than open soil but should still have some earthworms. Raised beds on a hard base will obviously have very few earthworms.

Relevance to the Curriculum-

- A repeated theme in the "caring for the environment" section of the curriculum is an appreciation of soil as an essential resource and as an ecosystem.
- Infants are required to "observe and identify a variety of plants and animals in (a variety of environments including) soil".

MATERIALS NEEDED:
Spade, large bucket or plastic sheet

METHOD

- Dig out a block of soil 30cm x 30cm x 30cm
- Place the soil on a plastic sheet or in a large container & gently break up the clods
- Count the earthworms
- Repeat four or five time over your garden
- An average of:
  - 0-5 worms indicate a soil with low biological activity
  - 5-10 reasonable biological activity
  - 10+ good biological activity
- Put the soil and worms back in the hole

If the soil has a low number of earthworms in it then soil improvement is needed. A healthy soil needs organic matter, so add some compost or fertiliser and make sure the soil is free draining.

NOTES

WATERING GUIDE

SCIENCE OF WATERING

Plants require water from the soil largely to replace water lost from the leaves from transpiration (this is water that evaporates from the pores in plant leaves).

The water held in well- structured soil (with lots of pores) can be up to 70 litres per m2 of soil. This is enough water to keep mature plants happy for around 2- 3 weeks of dry sunny weather. Two weeks of dry sunny weather is not very common in Ireland, so our plants' needs are largely met by rainfall.

WHEN TO WATER

There are some occasions when watering is useful however:

- **Seeds & Seedlings**: if plants are in seed trays then they usually need watering daily (it doesn't usually rain in a classroom). Keep the compost moist, not wet. If seeds are sown outside then watering is needed if the soil is dry. Light watering (about 5 litres per m2) is required every few days of dry weather, to keep the top 4 or 5cm of soil moist.
- **Plants in containers**: any plant grown in a container (unless the container is very large) need watering most days in the summer, even if left outside (unless it rains heavily).
- **In Tunnels or Greenhouses**: obviously it doesn't rain in tunnels so it is up to the grower to supply all the water the plants need. For mature crops of tomatoes a heavy watering of around 30 litres every week is ideal.
- **Transplanting:** when plants are transplanted they have a very limited root system so only a small area of root for them to extract water from the soil. They need a small amount of water for each plant (200ml) on transplanting and every few days for the first 2 weeks after transplanting, if there is no rainfall. After this the roots will be established in the soil and watering can stop.
- **Flowering & Fruiting**: many crops cease root growth when flowering and exhaust water supplies in the existing root area quickly. A good watering, 10 – 20 litres per m2, given to peas and beans at flowering in dry weather can really increase yields.
- **Growing Crops:** Watering is only necessary if the soil gets dry, i.e. the pores in the soil have been largely emptied of water. This would be after 2 weeks of dry weather for a mature crop. If you are going all out, you can check the Department of Agriculture website and check the soil moisture deficit (SMD) figures. The SMD is the quantity required to fill up all the pores in the soil with water.

If you follow the school garden calendar then there should be no need for any watering in July or August!

Suggested Practical Class Activity:
Calculate Water Requirements

Method:
Using the measurements explained above, water applied can obviously be measured using a marked container such as a watering can. If a hose is used to apply water a flow rate can be calculated measuring the time taken to fill a 10litre container.

Relevance to the Curriculum
The calculation of water requirements and the subsequent measuring out of water could be used as part of the "capacity" unit in the mathematics curriculum.

Notes

Pest & Disease Control

Pest and disease control in a garden should rely on the management of pest and diseases rather than their total eradication. This involves working with natural cycles as much as possible and only using a limited range of chemicals available to domestic gardeners as a last resort.

A wide variety of techniques are available to the grower to manage pests and diseases in the garden:

- **Crop Rotation**: this is making sure that plants in the same family are not grown in the same area of land more than once every three years, and allows you to stay ahead of pests and diseases.
- **Correct Levels of Fertility**: ensure healthy growth but not excessive growth that can lead to attacks by fungi and insects
- **Barrier Methods**: such as fleece or fine mesh net on carrots to keep out root fly
- **Resistant Varieties**: sarpo varieties of potatoes have good resistance to potato blight
- **Plant Spacing**: sow at the best spacing for growth & to allow air circulation to control leaf fungi
- **Encourage Natural Predators**: natural vegetation around the edge of gardens gives a home for predatory insects
- **Cultivation**: rotavating in dry weather can kill slugs
- **Introduction of Predators**: release of nematodes to kill slugs

And finally, if all else fails.....
Use appropriate organic chemicals, as per instructions on the container

Notes

PRACTICAL EXAMPLES OF PEST CONTROL

CARROTS: The main problems are slugs on germinating seedlings and carrot fly. Control slugs by keeping the area clear of weeds and debris and use organic slug pellets (iron phosphate pellets are not harmful to the environment). Control carrot fly by using a fine mesh net to stop the flies from laying eggs

POTATOES: The main problem is blight, this is best managed by growing a blight resistant variety.

PEAS: Peas are fairly trouble free when up and growing, however slugs can eat emerging shoots (control as above) and pigeons can eat young plants, cover with a net.

BROAD BEANS: These are usually trouble free in their early stages but blackfly can be a problem during flowering. If you remove the growing tips just after the lower flowers have set then this stops the flies having an easy entry point.

GARLIC, ONIONS AND LEEKS: Normally trouble free; mildew can make the tips of the leaves go brown but they usually grow through it.

BEETROOT AND CHARD: Usually trouble free.

PARSNIPS: Normally no real problems

TURNIP (SWEDE): Mildew and flea beetle can be a problem when at the seedling stage, these can be managed by watering the seedlings in dry weather.

PUMPKIN: Slugs can be a problem eating young plants (control as above) after that they usually look after themselves

LETTUCE : Slugs can again be a problem on young plants.....

SALAD LEAVES: Main problem is flea beetle leaving holes in the leaves, keeping plants moist with regular watering discourages (or drowns!) them

NOTES

SUGGESTED PRACTICAL CLASS ACTIVITY:
PEST & DISEASE CONTROL

The control of pests and diseases in the garden should be largely proactive. This probably means the onus is on the teacher to explain why things are being done as the pests or diseases being controlled might not ever be apparent.

MATERIALS NEEDED:

An appropriate area of fine mesh net should be available and some iron phosphate slug pellets.

Relevance to the Curriculum

- "Environmental Awareness & Care" & cross curricular opportunities with history and geography
- 5th & 6th (& possibly 3rd & 4th) Class- Pest control in the garden could be used as an example of environmental management, comparisons could be made of the environmental impact of different control strategies.
- The impact of crop diseases and food security provides opportunities for students to look at the historical context (e.g. potato blight) and geographical context (e.g. food security in different countries).

NOTES

WEED SCIENCE

A weed is a plant growing in the wrong place. Weeds can include cultivated plants growing at the wrong time in the wrong place (like if you leave some potatoes in the soil when harvesting them then they will come up as weeds in the next crop the following year).

Weeds are either:

- Annual Weeds which come up from seeds every year, in nature they are colonisers of bare ground
- Perennial Weeds which, after initially germinating from seeds, grow from roots left in the ground

Weed Impact

- Compete with crop plant for resources (light, water & nutrients)
- Create an environment favouring pests or diseases (e.g. slugs or fungi)
- Allelopathy: the production of chemicals that inhibit crop growth (scutch grass appears to do this)

Weed Seed Banks

Weed seeds in the soil are known as the seed bank and there can be up to 100,000 seeds in 1m² of soil. Most annual weeds produce a huge numbers of seeds (up to 100,000 from 1 plant!). Make sure you pull up weeds before they set seeds.

There is an old gardener's saying "one year's weeding = seven years' weeds". This is an interesting observation because science has shown us that around 50% of the weed seeds in the soil die every year so, if no new weed seeds are deposited, then we have less than 1% remaining after seven years.

Perennial weeds

These grow from roots left in the soil, it is important to make sure that you dig out all roots of plants like scutch grass, docks and dandelions before growing crops.

NOTES

SUGGESTED PRACTICAL CLASS ACTIVITY:
WEED IDENTIFICATION

Relevance to the Curriculum

"Living Things" section and observational skills

- Infants, 1st & 2nd & 3rd & 4th Class: "using senses to observe plants in the immediate environment"
- 5th & 6th Class: "use simple keys to identify common species of plants and animals"

MATERIALS NEEDED:

- plant identification key
- a hoe

METHOD:

• Identify weeds and crop plants. When rows of seedlings have emerged this should be straightforward

• Carefully hoe between rows. This should be shallow to sever seedling weeds, and be sure to avoid hoeing too closely to the rows of seedlings. An oscillating hoe is much easier to use

• Remove weed seedlings in crop row by hand being careful not to pull up the crop seedlings.

NOTES

BIODIVERSITY

The protection and encouragement of biodiversity is a central theme in the Environmental Awareness and Care strand in the Primary Curriculum. Pupils are encouraged to "develop and apply knowledge in protecting, conserving and improving their environment" where "the locality will provide the starting point for environmental education".
The School garden can be managed to feed and provide a home for native fauna and flora and consequently provide a useful resource for developing the environmental awareness of pupils.

MANAGING THE GARDEN FOR BIODIVERSITY

The standard manicured and sprayed garden is not a very inviting place for most bugs and beasts, because it provides little in the way of food or places to make a home. The job of the gardener wishing to enhance biodiversity is to provide them with both (something to eat and somewhere to live).

GARDENING TO FEED BUGS AND BEASTS

We need to grow plants that are good sources of pollen and nectar for the pollinating insects, mainly bees and butterflies. These can be plants which we also grow for food such as peas & beans, edible flowers, herbs and fruit trees or ornamental plants such as catmint or buddleia (a bush which is very easy to grow & is irresistible to butterflies).
Short mown grass doesn't do much for biodiversity, if however, you leave it to grow long, untidy and full of "weeds" then it becomes a lot more useful; both as a source of food and as a home. Wild flower meadows are probably the ideal grassland habitat, they do however require good management and some expertise so possibly might be difficult to manage in a school garden.
Not spraying the vegetable garden (even with "organic" sprays) and allowing small numbers of pests, like aphids, to develop helps feed predatory insects like ladybirds. Even slugs, the Irish gardener's main foe, provide food for frogs and hedgehogs. Maybe we have to lose a bit of our produce as our "biodiversity tax".

PROVIDING SOMEWHERE TO LIVE

Suitable homes for insects and other small animals can often be created just by leaving an area of land to "go wild". Simple measures like leaving grass unmown (as mentioned above) or leaving "weeds" to grow at the base of a hedge can help provide places for small creatures to live and hibernate. A well- managed hedge also provides nesting sites for garden birds.
Homes for wildlife can also be made. Nest boxes can be erected for birds and "bug" hotels can be made for bees and other insects. These can be particularly useful for urban schools where space restrictions might not permit leaving areas to go wild.

Suggested Practical Class Activity (All Classes)

Growing Edible Flowers for Pollinators

A very simple way of using the vegetable garden to feed pollinators is to grow edible flowers. Borage, nasturtiums and pot marigolds are all annual flowers that can be sown in the veg patch to provide flowers we can eat and that are also irresistible to pollinating insects.
They can all be sown direct into the soil in April and flower through the summer into the Autumn. They will all readily produce seeds that will germinate next year, so in subsequent years the flower bed looks after itself, though this obviously means a lot of weeding if you decide to grow something else there next year!

Materials Needed:

- A packet of each type of seed (quantity depends on area to be sown) 30 seeds per m2 should be enough
- Rake

Method

- Prepare an area of soil in April (needs to be reasonably level and finely raked)
- Using your finger (or a stick) take out drills about 2cm deep and about 30 cm apart and drop a seed in about every 10cm and cover over with soil
- You can put the seeds in separate rows or mix them up all together.
- The rows can be long, straight, parallel rows or a series of short rows at different angles to each other to give a more informal appearance.
- Removing the dead flowers (dead-heading) over the late summer encourages more flowers to grow into the Autumn. Theoretically if you remove all the dead flowers you won't have any seeds dropped for next year (if you achieve this please let us know at GIY how you managed it!)
- Next year you should have a mass of seedlings grow from the dropped seed which you can leave to get on with it.

Notes

Growing a "Wild" Lawn

The simplest way to achieve this is just to leave an area uncut; most lawns have “weeds” like clover, dandelions and daisies in them which will relish the chance to grow uncut. It is possible to add plants and flower seeds to the lawn, but this requires careful management to succeed. Don’t fertilise the “wild” lawn area as flowering plants generally do better than grass when fertility is low. The lawn will need cutting a few times a year to stop it turning into scrubland.

Method

- Leave an area of lawn uncut through the spring and summer
- To show that it is “deliberate” (and not merely neglect) and to allow access, mow a path through the area
- Cut the grass down at the end of the summer term with a strimmer and remove the grass cuttings.
- The lawn can be cut again in the autumn and left to grow again every spring

Making a "Bug House" or "Bee Hotel"

A bug house or bee hotel is a way of creating somewhere for insects to live in a more “tidy” garden where natural hiding areas are not available.

Method

- **Bug House**: The classic design of bug house is six or seven pallets stacked on top of each other with a variety of materials, such as wood, stones, plant stalks, grass, bark etc. filling the gaps
- **Bee Hotel**: A bee hotel is made up of a material like canes, reeds or drilled wood providing clean holes for bees to live in. This should be enclosed in a reasonably waterproof container, like a piece of pipe or a log.

Notes

HERB SCIENCE

Herbs can be divided into three distinct groups

- Perennial Herbs that like it dry and sunny, e.g. rosemary, marjoram, thyme, sage
- Perennial herbs that like moist, richer soil, e.g. mint, chives, lemon balm, sorrel
- Annual herbs that need to be sown every year and can conveniently go into the vegetable garden, e.g. parsley, coriander, basil, dill

This means that you shouldn't really have only one spot for your herb garden, conditions that suit the marjoram aren't going to be ideal for mint or lemon balm. The herbs that like dry sunny conditions need to be in free draining soil in a sunny spot and the other herbs need to be in reasonably fertile garden soil.

The perennial herbs can be propagated from seeds, but this takes time and it is probably easier for a school to buy young plants. Obviously, the annual herbs are sown every year.

Many herb plants are loved by bees if they are left to flower, so leaving coriander or basil to flower before pulling them up can be great for biodiversity.

SUGGESTED PRACTICAL CLASS ACTIVITY (ALL CLASSES)

PLANTING HERB GARDENS

- Decide what herbs you would like to grow.
- Research growing conditions required by the plant and group them into one of the three groups above.
- If you want to plant the herbs that like dry sunny conditions in the garden, then it is essential to prepare the soil well. This means if you have a wet cold soil then digging the soil and putting a 15cm layer of gravel in the soil about 20cm deep should help persuade your herbs that they are in the Mediterranean.
- You can also plant these damp hating herbs in containers (plant them in a reasonable sized container ensuring very good drainage).
- The perennial herbs that are happy in ordinary garden conditions can be planted anywhere that is convenient. However, mint and lemon balm can be quite vigorous and spread rapidly. To prevent this, you can plant them into plant pots which are buried in the soil (leaving a little bit of pot showing) with the base cut out.
- Annual herbs vary widely in the conditions required for growth. Parsley and coriander will germinate at low temperatures and can be sown directly into the garden soil in Spring. However, parsley is a slow germinator and you can sow in pots indoors and then transplant later if

you wish. Basil likes warm conditions for germination and growth, you need to start these indoors and only put them outside in late May when the danger of frost is past. Basil can be transplanted into good garden soil or can be left in pots.

- Coriander is an interesting herb for the children to grow as it has nice big seeds for little fingers to handle and it grows rapidly from seed to give a crop of leaves. It "bolts" (i.e. flowers and seeds) readily and the flowers are loved by bees. The seeds can be dried and saved for sowing or ground to use as a spice.

Relevance to the Curriculum

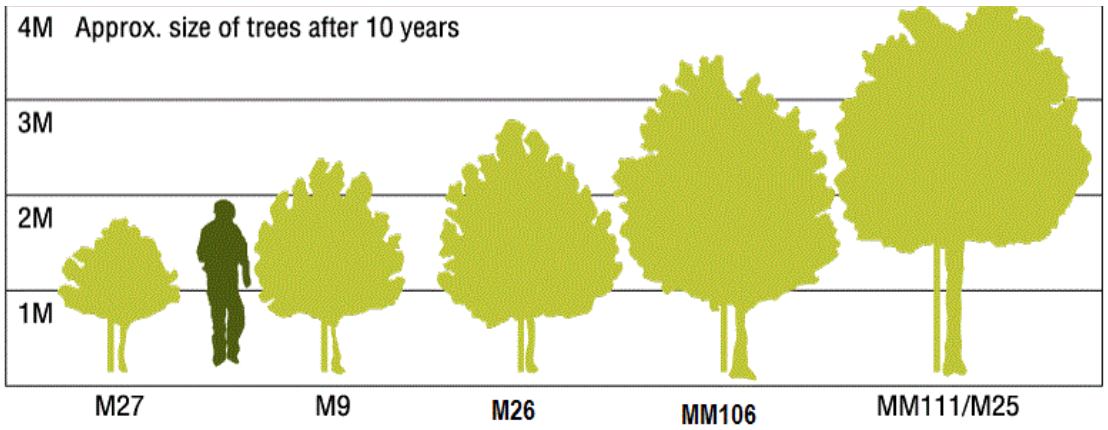
- A major theme in the "Human Life" strand of the Science Curriculum is human nutrition, herbs providing interest and trace nutrients to the human diet.
- The Geography Curriculum encourages the development of an understanding of how the physical conditions of soil, water and sun influence plant growth; the varying requirements of the different groups of herbs can be used to illustrate this and be related to the food cultures of people who come from the different climatic zones.
- The "Plants and Animals" strand of the Science Curriculum encourages pupils to develop an awareness of the life cycle of plants. Growing coriander and collecting seeds for re-sowing provides an easy opportunity to demonstrate this.

NOTES

APPLE GROWING

APPLE TREE SCIENCE

Apples are the ideal type of fruit for a school garden as they crop in the Autumn when everyone is back at school. Most other types of fruit need harvesting over the summer months when everyone is on holiday.
Here's the science bit: an apple tree is two trees grafted into one; the top part of the tree is your apple variety and the bottom part is the rootstock.
The rootstock controls how big the tree is, for apples they are all named M with a number, for example a common dwarf rootstock is M9, and a moderately vigorous rootstock is MM106. The fruit of any particular variety tastes the same whatever the rootstock.



A good choice of rootstock for a school or domestic garden is MM106, this gives a healthy tree which is able to grow in less than perfect conditions but doesn't grow too big.

APPLE VARIETIES AND POLLINATION

There is a huge choice of apple varieties; cookers, eaters, new varieties, traditional Irish varieties , the list is very long. For a school garden a reliably cropping eating apple (that crops in September) is ideal. Two varieties that are easy to manage and crop well are "Katy" and "James Grieve".
Apple trees usually need a different variety of apple to ensure pollination. This means that you need 2 varieties of apples to ensure you get fruit. The two varieties mentioned above flower at the same time and will happily pollinate each other. Many others would fit the bill as well but get advice on whether they tick all the boxes i.e.:

- Fruit at the right time
- Pollinate each other
- They are "easy care" and disease resistant– see below

Pruning & Managing Apple Trees

This can either be very complicated or simple:

- If you want a perfect shaped tree then you need to prune it carefully every year to train the tree shape you want.
- Alternately if you want a "tree shaped" tree then you can leave your tree to grow and then tidy it up after 3 or 4 years. (This gives you 3 years to find some Pruning shears!)

The second technique works better for some varieties than others, choose an "easy-care" variety. The same goes for disease control, some varieties are naturally disease resistant. The two varieties recommended – "James Grieve" & "Katy" are both "easy care" with good disease resistance.

Relevance to the Curriculum

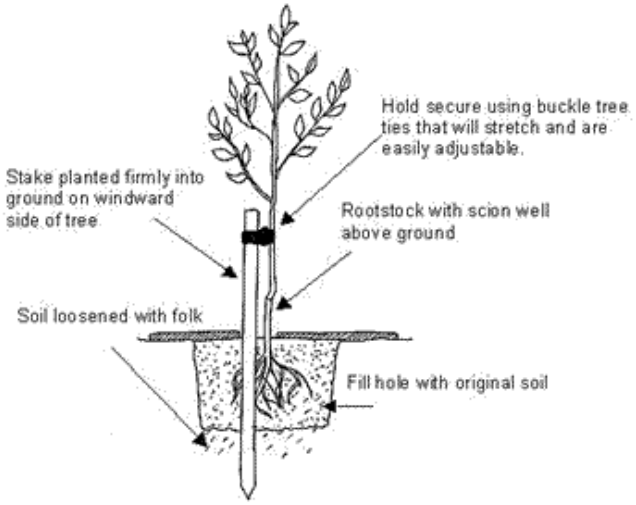
- Apple trees can be used for the younger classes to observe the "seasonal changes in appearance" of a flowering deciduous tree.
- For 5th & 6th classes the trees can be used to help develop an understanding of how plants reproduce.
- In addition, the practical activity of planting the trees can be used as a group activity in which they can "understand and apply a safety code in scientific activities"

Notes

SUGGESTED PRACTICAL CLASS ACTIVITY (ALL CLASSES)

PLANTING APPLE TREES

- Buy trees "bareroot" : this is trees grown in the soil and dug up when they are dormant in the winter. They establish much better than trees grown in pots.
- Plant them in good, deep, free draining soil. If you don't have this then dig a big hole, 1m deep & wide, and fill it with nice soil.
- Fruit trees like a spot in full sun with some shelter from winds
- Plant trees in the winter (December to March)
- Plant the tree with a stake attached on the south western (windward) side, so that it isn't blown over. The stake should be around 10- 15cm from the tree, attach the tree to the stake with a tree tie and nail the tie to the stake to stop it moving up and down.
- Mix a handful of general fertiliser or some compost into the soil before putting it back around the roots.
- Covering the soil with a mulch of compost or perorated plastic film will keep the tree's roots happy whilst the tree establishes itself.



MATERIALS NEEDED

- Apple tree
- hammer
- 1.5m post
- spade
- tree tie
- nail
- post driver (or if not available a sledge hammer- but this is less safe)

Post driver

Tree tie

METHOD

- Take the tree out into the garden in a plastic bag (don't expose the roots to dry air for longer than necessary)
- Dig out a hole a little bigger than the roots. Make sure not to plant the tree too deep, you mustn't bury the graft (the "nobble" on the stem where the rootstock and tree were joined together)
- Place the tree in the hole and put the post between the roots on the south west side of the trunk
- Remove the tree and bang in the post until it is firm
- Replace the tree in the hole
- If the soil is poor you can mix a handful of fertiliser or a spade full of compost with the heap of excavated soil
- Gently shovel the soil back over the roots, when around half the soil is replaced gently tread down the soil. Replace the remainder and tread in firmly
- The soil surface can be covered in a compost mulch or a perforated plastic cover to help the tree get established
- Put a tree tie around the tree below the branches – generally 50cm to 1m up the stem- put a nail through the tree tie into the post.
- Stand back and admire a job well done!

NOTES