Rolleston on Dove Jubilee Orchard.

How do the trees produce fruit?

In our Jubilee Orchard we have 43 trees that produce Plums, Cherries, Pears and three species of Apples.

The trees produce flowers in the spring, but these flowers must be pollinated if they are going to turn in to fruit.

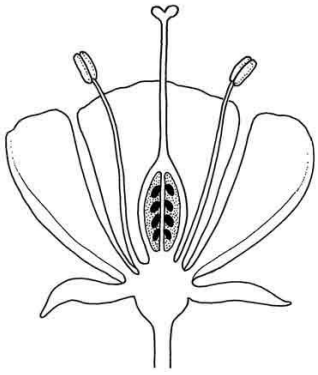
Pollination of fruit trees entails the transfer of pollen from the male part of the flower, the stamens, to the female part, the stigma and then to the ovule where the two parts fuse and fertilisation takes place. This happens naturally by bees and other pollinating insects such as hoverflies.

However we can give nature a helping hand by considering a couple of things.

- Some fruit trees are **self fertile** – this means they can pollinate themselves and includes some plums, some cherries, but very few apples. However they will always pollinate better if grown with other fruit trees where **cross pollination** can take place.
- Bear in mind that apples pollinate apples and not other fruit tree species such as pears. The same goes for plums, etc. So for successful cross pollination other fruit trees of the same type must be growing nearby and the flowers need to be flowering at the same time.

Each fertilised ovule becomes a seed and the rest of the flower develops in to a fruit.

If the flower is not pollinated it dies and no fruit will develop.



On this diagram can you label the

stamen

stigma

ovule

Research, then label the petal, sepal, style and ovary.

What is a pollen tube?

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Are new apple trees grown from seed?

Apple trees do NOT produce "true to seed" That is, if you plant a seed from a Braeburn apple, you will NOT get a tree that produces Braeburn apples. It is generally understood that the chances of getting a "delicious" apple from seed are approximately one in ten thousand (1:10,000).

Apples, like most things, are genetically diverse. Pollen from one plant fertilised the ovule from another plant, so the seed will grow into a plant that is a mixture of both. In the same way as you are not identical to your father or your mother but you have characteristics from both of them.

If you want to grow Braeburn apples (or conference pear, sunburst cherry, etc) you have to find someone with a Braeburn apple tree, get some '**scion wood'** from that tree and '**graft**' it onto your seedling. This is the only way to get the variety of fruit you prefer.

The purpose of grafting is to combine one plant's qualities of fruiting with the roots of another that offers vigour and resilience. This is a difficult task and requires lots of skill and practice.

In most cases, fruit trees bought already grafted onto a rootstock.

Look carefully at some of the trees in our Orchard. On the trunk of the tree, just above the ground you may still be able to see the 'scar' where the graft was made. When planting fruit trees it is important that this scar is above the ground or the scion wood might form its own roots, which will not be as good as the selected rootstock.

Did you realise that every braeburn apple or conference pear tree in the world is actually formed from cuttings taken originally from just one tree. This is called 'propagation'

Granny Smith apples

Maria Ann "Granny" Smith (1799–1870)

The 'Granny Smith' apple originated in Sydney, Australia in 1868. Its discoverer, Maria Ann Smith, had emigrated from England in 1839 with her husband Thomas. They purchased a small orchard cultivating fruit. Smith had numerous children and was a prominent figure in the district, earning the nickname "Granny" Smith in her advanced years.

The first description of the origin of the 'Granny Smith' apple was not published until 1924. Smith had been testing French crab-apples for cooking, and throwing the apple cores out her window as she worked; found that new seedlings sprung up underneath her kitchen windowsill. Smith took it upon herself to propagate the best of these and described the apples they produced as "all the appearances of a cooking apple", they were not tart but instead were "sweet and crisp to eat". She also noticed that the apples stored "exceptionally well and became popular" and "once a week sold her produce at the local market"

Smith died only a couple of years after her discovery (in 1870), but her work had been noticed by other local planters. Edward Gallard was successful in marketing the apple locally, but it did not receive widespread attention until 1890. In that year, it was exhibited as "Smith's Seedling" at a Agricultural and Horticultural Show, and the following year it won the prize for cooking apples under the name "Granny Smith's Seedling". The apple was successful and the following year many were exhibiting 'Granny Smith' apples at horticultural shows.

Over the following years the Australian government actively promoted the apple, leading to its widespread adoption. Its worldwide fame grew from the fact that it could be picked from March and stored until November. Enterprising fruit merchants in 1890s and 1900s experimented with methods to transport the apples overseas in cold storage. Because of its excellent shelf life the 'Granny Smith' could be exported long distances and most times of the year, at a time when Australian food exports were growing dramatically on the back of international demand. 'Granny Smith's were exported in enormous quantities after the First World War, and by 1975, 40 percent of Australia's apple crop was 'Granny Smith'.

Look out for Granny Smiths apples the next time you go to a supermarket.

Research the history of your favourite fruit.