

PLANET FOOD

June 2001

STRAWBERRY FIELDS FOREVER

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I have always associated strawberries with sunny summer picnics, mown grass and events like Wimbledon, village fetes and barbecues. The season was short – starting in June and ending in July.

Now, however, most of us find strawberries slipped into fruit bowls and on the menu, all year round. In winter these strawberries are not the same. As you bite into them, it is more like crunching into an apple, you have to cut the stalk off rather than pull it and they taste like... well, like nothing.

English strawberries, grown outside and eaten fresh are hard to beat, particularly if you are lucky enough to grow them yourself. Picking strawberries is a bit more strenuous than picking raspberries because you have to bend down, but I find the children love an expedition to the Pick Your Own. They come back with red stains around their mouths and down their t-shirts - very happy and full!

I remember being allowed to cycle off from school on sunny summer weekends to the local Pick Your Own. I would then gorge on the tasty fruit to such an extent that I had to lie in the middle of the strawberry patch groaning. Clearly I was not the sort of customer that most Pick Your Own enterprises are very keen on, but I am sure I have subsequently made up for it – I buy large boxes fully laden with produce to offer at parties and whizz up into strawberry mush for the freezer.

This month I am going to look at how strawberries can be grown organically, what chemicals are used on conventional crops and what makes the difference between strawberries imported all year round and locally grown crops in season.

STRAWBERRY VARIETIES

Modern day strawberries can be traced back to hybrids between two wild American species, that were developed in Europe in the late 18th century. But most of the strawberries that were grown in the UK at the beginning of the 20th century are no longer available. There are probably only four varieties over 40 years old that are available to gardeners today.

The older varieties are considered to be too soft for modern day needs. Most strawberries nowadays are bought through supermarkets and their priorities are for fruit that lasts. It is now unusual to be able to remove the calyx (the core attached to the stem) because firmer strawberries tend to last longer. The really crunchy strawberries imported from Spain are generally a variety called *Camarosa* and if eaten early in the year they may be firmer still because of having been grown in cooler weather.

If strawberries are picked white they will not go red later on. Fruit imported over long distances, such as that sold through supermarkets, is likely to be picked when less ripe – at the point that it is reddening. This may affect not only their texture but also their flavour.

Since 1984 *Elsanta* strawberries have dominated the UK market, accounting for up to 75% in volume of all strawberries sold. The reason for this dominance is the quality of the fruit and the versatility of the plant to different growing conditions. However the downside of this variety is that it is susceptible to all the common diseases and has a tendency to produce a proportion – sometimes as much as 25% - of misshapen fruit, which is unmarketable.

New strawberry varieties are developed from seed but if you are buying strawberries you will be buying plants propagated from runners. If you buy from a nursery these plants will be certified as healthy. And because this certification scheme costs money, the number of different varieties available is restricted – the nurseries are reluctant to propagate unusual varieties that they might find hard to market.

GM STRAWBERRIES

If you go back several years scientists were working on GM for a whole range of things, such as genetically modified strawberries resistant to fungal diseases or with a longer shelf life.

However, research in the UK today is all focused on conventional breeding techniques. It is currently recognised that the public are not going to accept GM produce and research priorities have been revised accordingly.

PESTS AND PESTICIDES

Methyl bromide

One of the most controversial chemicals used in strawberry production has been methyl bromide. It is a powerful ozone depleter and is being phased out by law. Surprisingly it is still in use in UK strawberry production, although it is on the decline as both growers and researchers are looking at alternatives.

Methyl bromide is used as fumigant for soil sterilisation, killing off soil borne diseases such as wilt, crown rot and red core. These diseases reduce yield and at worst can kill off the plants. There are alternative chemicals but they are less effective. The best alternative is a good system of crop rotation, although this is not fool-proof, as some diseases will survive in the soil for many years.

One approach that is still in an experimental stage is bio-fumigation. This basically means that during rotation a crop is planted that is grown for a few months and then ploughed into the soil. As the plant material decomposes it releases natural chemicals that have the effect of reducing fungal diseases present in the soil.

The organic approach promoted by the **Soil Association** aims to suppress soil borne diseases by optimising the health of the soil, by using good compost, sensitive cultivation and avoiding inputs that kill the soil, such as pesticides and artificial fertilisers. Healthy soil, they point out, can contain over 25,000 species and up to 1 billion organisms in every gram. These organisms are effective at eliminating most of the pathogens that cause the fungal diseases. The Soil Association say that “we must get away from a mentality of looking for ways to kill things off in favour of a better understanding of developing a biological balance”.

Mildew & botrytis

The main air-borne fungal problems for strawberry growers are mildew, a leaf fungus that affects the plant and botrytis, which rots the fruit. Conventional strawberry growers may spray up to twelve times to control these fungi, depending on the variety grown and the weather conditions.

There are some varieties that have a strong resistance to powdery mildew but it is less easy to breed for resistance to botrytis, which is more effectively prevented by keeping the plants dry.

The most common reason strawberries go off is botrytis. If a chemical fungicide is used during flowering, it stops the flower becoming infected and subsequently the fruit. However because modern growers often have a long season they may well spray when the fruit is on the plant. Although there are legal restrictions on the period they must leave between spraying and picking, this may account for the pesticide residues that are commonly found on conventionally grown strawberries. A MAFF survey carried out in 1999 showed 80% of their strawberry sample contained residues and 42% had multiple residues¹.

Because botrytis is generally responsible for fruit rotting, it is interesting that spraying the plant against the disease, at flowering time, will extend the shelf life of the strawberries. Also if the crop have been grown in more predictable weather, they are less vulnerable, which is why the Spanish have an easier time of it and many English strawberries are grown under polytunnels. Strawberries are not sprayed to preserve them after they have been picked.

¹ *Annual Report of the Working Party on Pesticide Residues, 1999, page 22.*

Other pests

One of the most damaging strawberry pests is red spider mites. The most effective way of controlling these is through introducing predators and the majority of growers now use this method.

Other pests which are prevented by chemicals include aphids and vine weevils as well as slugs although these are not such a big problem for most strawberry growers. The vine weevil larvae feed on the roots and crowns of the plants and thrive under polythene mulch, which makes them difficult to control. Organophosphate insecticides have been the most common method of control but thankfully most of the industry are moving away from them now.

Weeds

Strawberries do not compete well with weeds. Traditionally straw is used as a mulch but now it is much more common to use opaque polythene, that blocks the light and stops the weeds from growing.

LONG DISTANCE TRAVELLERS

The amount of strawberries imported into the UK between 1989 and 1999 nearly doubled from about 20,000 to 40,000 tonnes, amounting to nearly 50% of strawberries sold. Even at the height of the British summer – peak season – tonnes of strawberries are imported from Northern Europe and even California.

Most of the strawberry imports into the UK between February and May come from the Huelva region in Southern Spain, which means an average punnet of strawberries has travelled over 1,000 miles by lorry to the UK. When coming from the US, they will have been flown over 3,000 miles.

The environmental impact of all this travel is considerable and shockingly it is not reflected in the retail price of the strawberries. They are often actually cheaper than locally grown crops because the favourable weather conditions enable them to get higher yields. And this encourages shoppers to choose the imported varieties.

Clearly, buying strawberries from local producers is the best option. Failing that if you are buying strawberries from supermarkets, choose English ones and buy in season.

STRAWBERRY FIELDS

Interview with Simon Shuldham, Shuldham Fruit Farm

“English strawberries are much better than ones imported from Europe”

“My family have been in it for generations” says Simon Shuldham, speaking from his home, under the shadow of Ham Hill in South Somerset.

Simon is a close neighbour of mine. He has 2 hectares of strawberries, half of which are Pick your Own (PYO) and half sold locally. He says that selling to the supermarkets is too much hassle and wonders if anyone makes any money out of it. Although there would be no problem with the quality, they have complicated requirements in relation to packaging and grading.

Simon also says that his strawberries get to the shops quicker. Usually they are picked at 6.00am and on sale by 9.00am, on the same day. This is important because, he points out, that for every minute the strawberry is in the sun – as opposed to in a chiller - it takes 1 hour off its shelf life. Supermarket strawberries will, at best, have been picked the day before and sometimes longer than that.

At the Shuldham’s farm there are no cloches, polytunnels or irrigation. Simon is clear that he does not want to get into intensive strawberry growing. Although it is possible to get up to 140 flowers on a plant, producing up to 1.5kgs of fruit (the average is between 600-800 grammes) he feels it is not worth it.

His strawberries are grown in an open field on raised beds, rather like asparagus. This gives the roots twice the depth, means they don't get drenched by water and allows the strawberries to spread like little hedges, by sending out masses of runners.

Birds are not a significant problem because there are so many strawberries. Blackbirds and thrushes, apparently take the most, but they do at least eat the whole berry. The rooks and crows tend to take a peck and leave the rest, so they are more of a nuisance.

Simon says that the most important thing for him is the taste. He grows 6 different varieties, in the two month growing season starting from *Honeoye*, then *Elsanta*, *Hapil*, *Pegasus*, *Symphony* and finally *Sophie*. He thinks that the *Honeoye* taste best but only specialist retailers will take them because they have a dark fruit. *Elsanta* is often the supermarket choice because of its consistency and because it tends to have a longer shelf-life.



But it is not just the variety of strawberry that affects the taste. The difference in earth between fields also makes a difference. Given that most Spanish strawberries are grown in sand, almost hydroponically, this might be why many people feel they are tasteless.

The Shuldham strawberries are rotated every 3-4 years. The first year the plants are de-flowered so they put all their energy into the roots and plant rather than the fruit. They are cropped in the following years. People who come to pick the strawberries like a straw mulch – Simon uses wheat straw because it has less dust than barley straw. The mulch also protects the roots from the sun helps the weeds and keeps the strawberries cleaner in wet weather.

Weeds are mostly removed by hand which is cheaper than using sprays and at some times in the year there is no other option. But Simon does use a small amount of weed killer – *Symazine* - and to date has not felt able to make a complete switch to organic. This may be something for the future. The only other chemicals used are one spray a year of *Elvaron* and *Sisthane* against mildew. Other conventional growers will spray 4-5 times as often.

Natural predators are used against red spiders and aphids – no chemical pesticides. These predators can be bought and distributed on the fields. They then need vegetation to burrow in during the winter. Simon leaves half of his verges or headlands uncut so they have somewhere to hibernate.

Strawberries don't freeze very well, except when made into ice-cream or strawberry mush. The Shuldhams make lots into jam, which can be sold throughout the year. But if we want to eat locally grown, delicious, English strawberries, we have to eat them in season. That means we need to really get into strawberry mode during June and July!

ORGANIC POLYTUNNELS

Interview with Angus Dayton of Haygrove Fruit Farm

"Farming organically has been frightening on occasions as we have lost entire crops to disease"

Angus Davison, owner of Haygrove Fruit, readily admits that he would not be able to do organic strawberries, if he did not also produce conventional crops. He says that he needs to balance the risk of the two enterprises.

Haygrove have about 60 hectares of soft fruit, 25% of which is organic. Angus points out that soft fruit is a high value and high risk crop, so it is important to minimise any outside threats. He says that there are three key reasons why he feels able to produce organic strawberries. First the site is at high altitude (on the Welsh border), second it is at least 10 miles from any other soft fruit and third he uses polytunnels. In fact, polytunnels are very important to him – a sister business to Haygrove Fruit manufactures them and supplies 70-80% of the UK market.

Angus' interest in organic agriculture started when he did a Nuffield Scholarship Project in 1991. However, it was a Christmas conversation with his near neighbour, John Davenport – who sits on the Soil Association's Horticulture Standards Committee - that precipitated the move to organic production. He says that he has a great respect for the important principles of organic growing, the highest of which is soil management. A good indication is that there are significantly more worms in land that has been farmed organically for a number of years.

The problem with organic growing is that there is very little you can do if pest or mildew takes hold. Conventionally we would spray on a weekly programme, because many of the varieties grown are susceptible to the fungus – even those that are supposed to be mildew resistant. The biggest problems are slugs and botrytis (when the fruit rots) and last year Angus lost over one third of his organic crop to those two risks.

The solution for dealing with slugs put Haygrove on the front page of the *Times*. Lots of hedgehogs were brought in to eat them up. Stoats are also good for this but they are harder to come by – the hedgehogs came from animal sanctuaries, where people had taken them, having collected them off the roads.

Botrytis is more difficult. Angus tries to tackle this by maintaining as good an environment as possible under the tunnels. He is experimenting with removing the light wave lengths, which they like for growing. The trouble is that the bees use these wave lengths to navigate so the polytunnels lose their pollinators.

The farm uses a massive amount of predators – microscopic bugs - which get into real combat warfare, once the hot spots start developing. The area has many natural hedges and woodland – it is rich in flora and fauna, which is important for achieving a balance. And Angus says that he would be surprised if he saw this sort of diversity on the crops he grows conventionally.

The soft fruit season at Haygrove Farm is from the end of April to early December. The polytunnels do not need heating, but do use energy for irrigation. The water comes from a nearby river.

The produce is sold in most UK supermarkets. Angus says that it normally arrives within 24 hours of being picked. But what is really exciting him at the moment is the imminent launch of *Haygrove Fresh English Organic Strawberry Juice*. It needs to be drunk within 2 weeks but can also be frozen.

ONE FAMILY RECIPE

Strawberry, raspberry & orange

My grandmother apparently got this simple recipe from the Berkeley Hotel:

- ½ kilo strawberries
- ½ kilo raspberries
- 5 freshly oranges
- grand marnier or brandy

Put the fruit into a bowl. Squeeze the oranges and pour the juice mixed with the alcohol (to taste) over the fruit. If you need extra sweetness you can rub some sugar lumps over the oranges before they are squeezed, to get the zest out. Dissolve the lumps in a small amount of water and pour over the fruit. Serve with cream.

STRAWBERRY CONTACTS

Henry Doubleday Research Association (HDRA) have just produced a booklet (June 2001) entitled '*Organic Strawberry Production – a growers guide*'. They say that 'although the supply of home grown organic strawberries has been very limited so far, a keen interest is now beginning to emerge from the growers – many established organic producers are looking to introduce strawberries to their systems and an increasing number of conventional growers are considering converting their land.' But that 'a common obstacle is the lack of published information and advice for producers, on the strategies appropriate for the cultivation of organic strawberries'.

Tel: 024 7630 3517 / www.hdra.org.uk

Horticultural Research International (HRI) have a research programme on strawberry production and also breed new varieties for the UK. Tel: 01732 843 833 / www.hri.ac.uk

Shuldhams Soft Fruit Farm,

East Stoke House, Stoke-sub-Hamdon, Somerset TA14 6UF / Tel: 01935 822300

Soil Association set organic standards for strawberry growers and provide technical support and representation for organic farmers and growers.

Tel: 0117 914 2402 / www.soilassociation.org

Sustain – the alliance for better food and farming published booklet in 1997 entitled 'How Green Are Our Strawberries'. Some of the issues included are: varieties, food miles, pesticide residues and methyl bromide. Tel: 0207 837 1228