

FRUITS TALK

a brief history of fruits, by Françoise Sergy

The first treats

Sweet foods have a lot of power over us. As I explored in *The Sugar Spell*, we have an innate predisposition for sugar and its sweet taste. What we call a “treat” is often something sweet and I believe that in the mists of time, our first sweet treats were fruits. Our ancestors did have access to sugar, they ate root vegetables which contain sugars, sweet plant sap like maple and agave syrup, the nectar of flowers, and honey which is practically pure sugar. But sweet fruits were special. They had evolved over millions of years to be eaten by animals with a sweet palate, such as bears, primates and humans, in order for their seeds to be dispersed far and wide. The fleshy parts of these fruits are rich in sugars (not starch), they taste very sweet and their seeds are usually designed to pass through the gut mostly intact. When eaten by an animal, the seeds are deposited in a new location, packaged together with poo, a useful, nitrogen rich, fertiliser.

In their effort to make fruits irresistible to us, plants have not stopped at sweetness - sugar is not their only asset. A fruit has beautiful colours and is hard to miss hanging on a tree. Its lovely shape and soft skin makes us want to pick and hold it. Its aroma is enticing and once in the mouth, it has a rich, satisfying taste. Finding a cache of ripened fruits must have been a real reason to celebrate, all those millennia ago, when our ancestors didn't always know if and where the next meal would be found. Recent studies have shown that the fruits eaten by primates (who often have a well-developed sense of smell), change their aroma when ripe. By doing this, the plant is telling the animal that the fruit is now sweet and ready to eat, at the same time as its seeds are ready for dispersal. In contrast, fruits eaten mainly by birds (who rely on vision rather than smell), do not change their aroma to advertise their ripeness and sweetness.

Fruits are rich in sugars: simple sugars (monosaccharides) such as glucose and fructose, and double sugars (disaccharides) such as sucrose (one glucose and one fructose bound together). Sugars are carbohydrates, like starches and fibres, but they are the only carbohydrates that taste sweet and fructose is the sweetest of them all. Fruits are rich in fructose, so they taste very sweet but their sugar content is relatively low (they contain a high proportion of water). For example, an apple is 12% sugar, whilst a Mars bar is 60%. Eating fruits can be pure pleasure but they also offer another bounty: fresh fruits are rich in fibres, vitamins, micronutrients and other bioactive compounds which are essential to our health and wellbeing. Most importantly they are low in calories and very low in fat. On top of this, their high fibre content helps us to feel satiated for longer and slows down the digestion of sugars in our gut, thus avoiding unhealthy sugar spikes in the blood. What more could we want?

But we do want more! We now add pure, processed sugar to a myriad of our foods. For many people, a fresh fruit is no longer special, it's just a (boring) fruit. To qualify, treats must be sweeter, fattier, richer, almost as if the worse they are for our health, the more pleasurable they are. To cap it all, many snacks and treats are now cheaper to buy than a pound of fresh fruits...

Many of our desserts do include real fruits. Their wonderful flavour, colour and texture are essential qualities and their natural taste is even enhanced by the addition of free sugar. Fruit jams are a traditional example but the choice is huge nowadays, with fruits in yoghurts, fresh cheese and cream desserts, fruit juices, fruity bars and granolas, puddings, tarts, pies and cakes, all containing fruits in various guises, either dried, chopped, pureed, sieved, cooked or processed in some other way. And if the real fruit itself is no longer wanted or deemed necessary, its aroma, flavour and colour have all been recreated artificially to give a fruity illusion to factory made cakes and energy bars. By including fruits in their recipes, some of these products may claim to be healthy, but their high sugar and fat content says otherwise. Sure, we all need treats, including unhealthy ones! However, replacing a few of these with fresh fruits wouldn't do us any harm...

How could we make fresh fruits more attractive? They are at their best when fully ripe but this does not work well with our food production and distribution methods. Many fruits are picked unripe or chosen for their naturally long shelf life, always at the detriment of their taste. Also, in my view, fruits and vegetables should be much more affordable - call it a government subsidy - but not at the detriment of farmers. In themselves, they are not expensive to buy but because they are low in calories, they cannot compete with rich processed foods to provide a cheap and filling meal. At the risk of sounding like a real killjoy, I think that the snacks richest in sugar and fat should be rationed. A tax on sugar alone will not help people on a limited budget being able to afford fruits, vegetables and other healthy foods, when they have hungry mouths to feed.

Early agriculture and horticulture

In our human history, the development of agriculture started about 10 to 12 thousand years ago. The process was quite rapid and is sometimes described as the Neolithic Revolution. From gatherers and hunters, we became farmers, first with the domestication of animals and a nomadic lifestyle, followed by village settlements and the first plant crops. The earliest archeological evidence of agriculture has been found in Mesopotamia, a region between modern Turkey and Saudi Arabia which includes Iraq, where the Tigris and Euphrates create a major river system. This was followed by developments in the valleys of the Nile (Egypt) and Indus (Pakistan). Later developments took place in China, Central America and Africa.

The first domesticated crops were cereals (starches), pulses and vegetables, with different starches being grown in separate parts of the world: predominantly wheat in the Middle-East, sorghum in Africa, rice in Asia and maize in America. Ancient Neolithic trade (such as the trade in flint) and the learning and diffusion of agricultural and other technologies (for example irrigation methods and silk production) are likely to have spread knowledge across the regions. With agriculture came the practice of plant breeding, where specimens are selected for their useful characteristics and interbred with each other or crossed with wild species, in order to improve the crop quality or resistance to diseases, for example. This breeding has also occurred naturally, not just through human intervention. The early crops were mostly annual or biennial plants, with a new generation grown from seeds every year or two. Over millennia and thousands of generations later, their breeding has led to huge genetic differences in the modern cultivars compared to the original species. Cultivated cereals are now very different from their wild ancestors, as are vegetables such as cabbages, with broccoli, Brussels sprouts, red cabbage, cauliflower, etc, all coming from one wild species.

Some archeologists think that a second Neolithic Revolution took place during the Bronze Age, between 6000 and 3000 BC, with the evolution of urban centres. This coincided with the beginning of fruit cultivation. Many fruits grow on trees. These trees take a long time to mature and produce their first fruits, and they are often long lived, some cropping well for over a hundred years. Their successful cultivation requires a long-term commitment to one piece of land. By transforming that land into an orchard, a strong bond is created between the farmer, the land and its locality. It has been argued by some archeologists that the development of fruit culture has led to humans embracing the concept of territoriality for the first time. We may have orchards to thank for the creation of the first towns. Early village settlements gradually evolved into larger urban centres, followed by the creation of city-states and later the beginning of nation states.

As mentioned above, many fruits grow on trees (the main exceptions are grapes, pineapples, kiwis, melons and soft fruits: raspberries, strawberries, blueberries, currants, etc). A fruit tree orchard is a long-term investment, requiring complex horticultural skills and year-round caring for the trees. Irrigation in dry climates is necessary, as is regular pruning, training, pollination and looking after the soil. Pests and diseases must be controlled and the fruits harvested, stored and processed. This horticultural know-how would have been gradually developed through the learning of "craft secrets", specific for each fruit, and passed down the generations. The making of alcoholic drinks from plants was also a Neolithic discovery, alongside bread making, with brewing beer probably predating wine making.

The early fruit cultivation in Mesopotamia included dates, olives, grapes, figs and pomegranates, each one originating from that region. They were later followed by apples, pears, quinces and medlars which came from Central Asia and Persia. Trade across the regions enabled seed exchanges and fruits to be cultivated in new areas. Lemons, from Asia, had become commonly grown in the Mediterranean basin by the time of the Greeks and Romans, together with stone fruits (almonds, apricots, cherries, peaches and plums) which originate from the continents of Europe and Asia, as well as North America. Later on, in the 15th and 16th centuries, American fruits such as the pineapple, cacao, papaya, tomato, pepper and strawberries, all reached Europe, Asia and Africa, whilst the East Asian banana and mango started being grown in America.

For a fruit cultivar to remain "true to type", its propagation must be done through grafting or other vegetative propagation methods. However, creating a new cultivar involves breeding from seeds over a series of generations. Several years must pass before each of the tree seedlings will produce its first fruits. Breeding these is therefore a slow, long-term activity. This means that many of our modern-day fruit cultivars are the result of far fewer sexual cycles compared to cereals and vegetables. Some of the fruits we eat today may be only a few generations removed from the species growing wild. Also, it has been argued that we may not have been the only ones breeding fruits and that other animals were involved. For example, some archeologists think that the local population of bears in Kazakhstan, where apples originally come from, may have been responsible for the breeding of larger sized apples, by selecting and eating only the biggest fruits. The resulting seedlings then cross-fertilised each other, the cycle repeating itself over thousands of years.