

THE FRUIT AND NUT CASE

Growing fruit and nut trees for food crops

-Paul McCormick and Jacinta French

Imagine a forest, canopy trees interspersed with lower growing shrubs. It looks like any other, yet this forest grows not only timber, it grows food. This could be part of the future landscape of Ireland. In these times when more of us are facing up to the reality of climate change and seeking solutions to life after peak oil, the important role of trees and their crops in providing for our diet in a post fossil fuel society has yet to be recognised.

Tree crops are good for our health and good for the health of the Earth. Fruit and nuts contain proteins, carbohydrates, vitamins, minerals and sugars - in fact, most of the necessary components of a balanced diet. Together with meat and/or fish, fruit and nuts form the basis of the 'hunter-gatherer' diet to which the human body has evolved. It is now thought we may be less well adapted to the grain/flour based diet - a diet that stems from a 10,000 year experiment with grain agriculture.

Food forests have multiple advantages over annual agricultural crops. A perennial food supply that sequesters carbon and requires less labour and energy inputs can help to reduce the negative impact of both climate change and oil depletion. The role of trees in sequestering carbon is often underestimated because the carbon sink in forest soils is overlooked. Consider soil build-up by trees, (via leaf mould and fallen branches), the root masses, and the fungal web, all of which are carbon-based and can be stable for centuries. This carbon sink is relatively permanent in contrast to industrial forest plantations which the forestry industry claims sequester carbon but which in fact release most of their carbon during clear felling.



On-going Research

For the past ten years we have been producing and growing a wide range of fruit and nut tree species at our tree nursery and woodland farm on the banks of the River Ilen in West Cork. We are engaged in a long term, small scale research project, trialling a variety of species, and collating information to

determine what fruit and nut tree species are productive in our conditions.

Apples

Apples prefer a fertile, well drained soil but will grow under most conditions. When grown in poorer soils, however, apples can fail to thrive. The method we use to compensate for poor soils is to grow trees on their own roots by planting the tree deeper than usual so that the graft is buried thus allowing scion roots to form. This contrasts to the general practice and gardening advice of leaving the graft above the soil (grafting is a process whereby the fruiting part of the tree are joined to a different rootstock). Our method can produce trees that are larger than usual but given poor soils and sometimes difficult growing conditions extra tree vigour is not usually a problem. Vigour can be controlled by tying down new shoots to the horizontal and by summer pruning. The main diseases of apples are canker and scab, which can be controlled by selecting less susceptible varieties and cutting out the diseased branches.

Most apple varieties are not self-fertile and require pollination by a different variety of the same flowering group or one group either side. The groups are categorised according to the time of spring the trees flower: early, mid season or late.

Most Successful Apple Varieties

Allen's Everlasting: Latest keeping eater, ripening off the tree, some canker
Annie Elizabeth: Latest keeping cooker
Ardcairn Russet: A sweet apple
Chiloe Apple/ Fillingham Pippin: A South American variety, a small tree with sweet apples, and very hardy
Cornish Aromatic: A late eater, sweet and sharp
Golden Delicious: Surprisingly this commercial variety grows well, ripening well off the tree late in the season
Grenadier: An early cooker, juicy, no disease noted



Irish Peach: Early eater, some scab, still worth growing

Irish Russet/ Sam Young: Our favourite, a small, flavoursome apple, no diseases

Katy: Early eater, probably the most disease-resistant variety

Nuts

Many people are surprised that nut producing trees grow thrive and crop in Ireland. To date we have collected crops of Cobnuts (large hazelnuts), Sweet Chestnuts, Common Walnuts, American Black Walnuts, Japanese Walnuts, and Monkey Puzzle nuts in County Cork, and Pine nuts in County Wexford. Most of these are cropping by pure chance having being planted for reasons other than food production. This shows the potential for production if locally-proven varieties are selected.

When growing nut trees it is important to be aware of the difference between seedlings and varieties of trees propagated clonally. Cloned trees are produced by either grafting, layering or stooling techniques and are genetically identical to the mother tree. This means that their characteristics and production potential are more predictable. Because they are more difficult to propagate than seedlings they are more expensive to buy. Seedlings are trees grown from nuts and are more variable in size, vigour, and cropping. Results can depend on the provenance of the seed used (provenance refers to the source location of the seed). Although carefully selected seedlings have the potential to crop well it is generally more advisable to use them in larger scale plantings where poor performers can be thinned out.

Cobnuts

Cobnuts are a cultivated form of hazel. They are medium-sized, short stemmed shrubs which grow up to 25ft in height. Cobnuts prefer some shelter and a neutral soil but can grow in almost all conditions other than peat bog. Cropping begins within four to five years and production increases rapidly. Cobnuts are not self fertile so pollination requires either more than one species to be planted or the presence of indigenous hazel trees nearby. Trials at *Woodkerne Nurseries* suggest the most productive varieties are

Webb's Prize, *Pearson's Prolific* and *Longue d'Espagne*, whilst the largest nuts come from a variety called *Ennis*. Cobnuts contain approximately 14 percent protein, 12 percent carbohydrate, 60 percent fats and are a good source of calcium and iron. The fats are high in Omega 3.

Sweet Chestnuts

Some varieties of Sweet Chestnut also show promise. A number of varieties, mainly French in origin, are doing well at the Woodkerne site. Three varieties, namely *Bouche de Betizac*, *Bournette* and *Marron de Lyon* are already cropping well. The trees have shown growth rates of up to 1.5 meters per annum and cropping began after about seven years. Trials are also been carried out with seedlings grown from sweet chestnuts collected from local trees and from hybrids grown in Western USA. The Sweet Chestnut is a large tree, growing up to 30 meters. It requires a well-drained, acid soil and cannot tolerate water logging. The trees are reasonably wind resistant, but cropping is reduced if there is too much exposure. Pollination is mainly by wind, although insects play a part too. A minimum of two trees is required, because they are not self-fertile. The best pollinating varieties are *Belle Epine*, *Marigoule* and *Verdale*. The nuts of the Sweet Chestnut are high in carbohydrate (42 percent) and are suitable for flour. Protein and fat content are both about six percent.

Walnuts

Common Walnut

There are at least four species of walnut suitable for the Irish climate. The most well-known is the Common Walnut *Juglans regia*. Trials of cultivars of the Common Walnut are still in the early stages at Woodkerne but reports from different parts of Ireland suggest the some cultivars have the potential to produce regular crops of nuts. The Common Walnut prefers a neutral soil of good fertility but will grow well in

most soils if fertility is enhanced. Trees can grow to 30 meters and are reasonably wind hardy. Frost damage can damage new growth and flowers so avoid frost pockets when planting.

Black Walnut

The Black Walnut *Juglans nigra* is a magnificent tree from North America, growing to 35 meters and highly valued for its timber. A mature specimen in a public park in Cork city produced a crop of strong, oil-rich, tasty nuts in 2006. The 'heat island' effect of the city may have contributed to successful fruiting but the planting the species is still worthwhile given predictions for temperature increases due to climate change.

Heartnuts and Butternuts

Possibly the most promising walnut



species is the Heartnut (*Juglans ailantifolia 'cordiformis'*), a 'seed sport' of the Japanese Walnut (*Juglans ailantifolia*). The Heartnut is renowned for cropping early and produces the most beautiful heart-shaped seed. It also has the most spectacular foliage of any walnut. Japanese Walnuts have been gathered from trees on Fota Island in Cork, suggesting the tree can do well in Ireland. The species has cropped at seven years in south west England. There is a trial plot of Heartnut trees at the Woodkerne Nursery. Another American species is the Butternut (*Juglans cinerea*) which shows good potential, especially as it seems to cope with wetter soils better than the other walnut species. All walnuts and sub species are rich in protein (15 percent -25 percent) and fat (55 percent -65 percent). The Omega 3 content is high. Carbohydrate content is low at 9-14 percent.

Pine Nuts

Nut bearing pine trees are definitely worth planting where space permits. The Stone Pine (*Pinus pinea*) should grow well in a coastal location as it seems to withstand some salt and sandy soils. Two other pines worth growing are the Korean pine (*Pinus koraiensis*) and the Siberian Pine (*Pinus sibirica*). The latter tree seems very adaptable and grows on peat bogs in its native habitat. All three species produce the familiar pine nuts containing 53-68 percent fat (again high in Omega 3) and 14-35 percents protein. All pines are self-fertile.

Another "pine" tree that definitely grows well here is the Monkey Puzzle tree (*Araucaria araucana*). It is not actually a true pine but comes from a much more ancient lineage. The huge pineapple shaped cones break up on the tree releasing the large oily almond shaped seeds. Individual trees are either male or female and unfortunately the only way to determine the sex of a Monkey Puzzle tree is to wait until it flowers after 30-40years. However, when both male and female trees are together the trees pollinate well and fruit profusely.

If you have land, think about growing some fruit and/or nut trees. If not, talk to a friendly farmer, or lobby the local council to plant food-producing trees in parks, residential areas, hedgerows and roadside plantings. In order to achieve a greater degree of food security in the future, it is very important that breeding programs are established now throughout the country, aimed at identifying and improving the most viable varieties and cultivars of both fruits and nuts. Ireland has the best tree growing climate in Western Europe and we should take advantage of this to grow multi purpose forests of food, fuel and timber.

Paul McCormick and Jacinta French run a specialist fruit and nut nursery in Co. Cork. For further details see www.woodkerne.net

A limited range of 2 and 3 year old bare rooted cob nut varieties is also available mail order from the Sustainability Institute.

