

Cobnuts

The nut of the hazel tree is known as a hazelnut. Cobnuts and filberts come from different species of hazel. A cobnut is the cultivated form of our native wild hazel (*Corylus avellana*) always called cobnut in Kent the name seems interchangeable with hazel elsewhere. Filberts come from a south-eastern European species called *Corylus maxima* and the nuts are longer with a pointed top.

Hazel & cob both have open bracks whereas the brack of a filbert covers the nut. For the purpose of this paper we are looking at cultivated wild hazel which is a cobnut.

Cobnuts will grow in most soils but will not flourish if the soil is waterlogged. They are self-sterile which means that the pollen from the male of one variety cannot pollinate a female of the same variety, but cobnuts can be pollinated by wild hazels. If there are no wild hazels nearby then you need to ensure you have compatible varieties.

Where to plant cobnut trees

A cobnut tree would be easy to grow in a variety of urban environments, garden, allotment or community orchard.

Recognising the benefits of growing trees there are a number of organisations that offer support in addition there are also some grant giving bodies.

Trees can also be grown in conjunction with other crops on farms in a system known as silvopasture or intercropping.



Cobnut tree on allotment



trees on rooftop garden



cobnut platt

To plant one acre of trees around 350 trees are required planted in rows 4m – 5m apart. 10% or more of at least one other variety is recommended, evenly distributed amongst the rows. Advice about cultivars can be obtained from the Kentish Cobnuts Association or from The Agroforestry Research Trust.

Cultivars best suited to nut production include Corabel, Gustav's Zeller, Mortarella, Pautet, and Willamette but it is really worth seeking advice before purchasing and planting.

Trees cost about £6.00 so expenditure on trees would be in the region of £2,100 per acre.

Cobnuts begin producing fruit about 3 years after planting. Once established, if correctly managed and maintained, a cob nut orchard can remain productive for around 100 years. An acre could potentially produce a tonne of nuts.

Squirrels

The biggest challenge to growing cobnuts is squirrels. Nuts are best harvested ripe having fallen on the ground unfortunately squirrels will strip a tree bare of nuts before this happens. Baiting and trapping squirrels is a strategy recommended by many growers including Martin Crawford, if you do this, legally you have to kill them.



Ready to harvest



unless the squirrels got there first



Cobnut harvest

Harvesting & processing

Cobnuts can be harvested in two stages, fresh and green in August, then about four weeks later the mature nut. Weather will obviously affect when to harvest, the activity of squirrels (as well badgers and woodpeckers) will also determine just when you harvest. Martin Crawford from the Agroforestry Research Trust always gauges harvesting according to the activity of the squirrels even with careful observation you can potentially lose a lot of nuts. Karen Craddock from Farnell Farm in the High Weald of Kent estimates they lose 25% of their crop to squirrels along with other nut loving creatures. Whilst you can eat fresh green nuts most processes, like flour & oil will require well-ripened nuts, squirrels on the other hand will go for them much earlier, even before they are fully formed within the shell.

The nuts from the first harvest will not keep and have to be eaten fresh.

The nuts from the second harvest are for storing.

If the second harvest needs further drying, which is likely, then you can put them in a warm airy (animal free) place or in a solar dryer which is relatively easy to make and there are plenty of instructions to be found on the internet. Generally you are looking at a 20% reduction in weight from a fresh nut but this is dependent on what you intend to do with your nuts, store, flour, oil or other products.

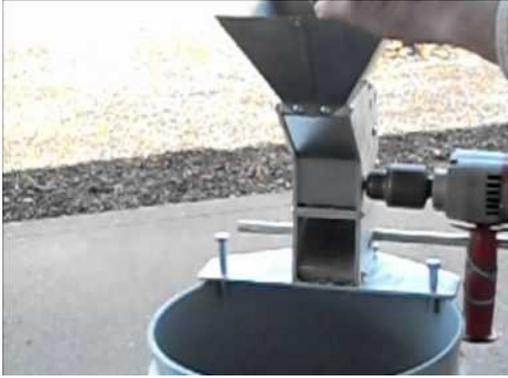
After drying the nuts can be stored in a cool dry place and will be fine for at least a year. Further processing requires the nuts to be cracked and the nuts and shells separated. Richard Dain of Hurstwood Farm in Kent who makes an award winning hazelnut oil & Martin Crawford who processes the nuts grown in his forest garden have both made their own drying and nut cracking machines and developed systems to separate out the nuts from the shells. They both say that anyone with basic engineering skills could easily make these machines. If you prefer to buy the necessary equipment small commercial nut cracking machines and separators can be found on the internet.



Cobnut



Solar food dryer



drill powered nutcracker



electric nutcracker



wondermill flour and butter

Cobnut nutrition

Cobnuts are very high in energy and loaded with numerous nutrients that are essential for optimum health.

Cobnuts contain approximately per 100g

17 g carbohydrate

61 g fat

15g protein

10.g fibre

vitamins – in particular folate)

minerals – in particular copper and manganese

phytonutrients

source US Department of Agriculture – nutrient data base

Cobnuts are high in **oleic acid**, a mono-unsaturated fatty acid.

Research shows that a diet rich in monounsaturated fatty acids help to prevent coronary artery disease, and strokes by favoring healthy blood lipid profile.

They contain **linoleic acid** (LA) an essentially fatty acid but unlike some other nuts are deficient in ALA (alpha linolenic acid)

Cobnuts are a good source of **folate**, which is a unique feature amongst nuts. 100 g of cob nuts provides about 25% of the recommended daily intake of this vitamin. Folate is a B vitamin necessary for normal cellular function and homocysteine conversion.

The amino acid homocysteine is made in the body from the amino acid methionine. Homocysteine is then converted in the blood to SAME (S adenosyl methionine) & glutathione. SAME helps prevent depression, liver damage and arthritis & glutathione is a powerful anti-oxidant. Poor conversion can result in elevated levels of homocysteine which is a risk factor for heart attack, stroke, diabetes, neurological conditions and depression. Elevated levels of homocysteine are a risk factor for heart attack, stroke, diabetes, neurological conditions and depression. Besides folate, cobnuts contain other important B vitamins such as **riboflavin, niacin & thiamin**, all essential for energy production.

Cobnuts are an excellent source of **vitamin E**; 100 g can provide a 100% of RDA. Vitamin E prevents oxidation of the heat, light and air sensitive poly unsaturated LA

Not all nuts contain **vitamin A** but cobnuts are one of them, but not in very high amount powerful anti-oxidant

Cobnuts are a good source of minerals including

magnesium and phosphorus, which are important components of bone metabolism.

copper, which regulates blood pressure and heart rate, relieves aching muscles and reduces cramp.

manganese, important for healthy bones and cartilage.

iron, essential for healthy blood.

calcium, for strong bones.

zinc, important for healing and a component of many enzymes.

selenium, an important anti-oxidant.

In addition cobnuts contain potent phytochemicals including proanthocyanidins & quercetin.

Proanthocyanidins are very strong anti-oxidants studies have shown that they play an important

role in decreasing the risk of heart diseases, cancer and other chronic diseases

Quercetin is another antioxidant protecting the body against free radicals. Quercetin can lessen allergic symptoms by stabilising mast cells and preventing them from releasing histamine.

Phytic acid

Phytic acid is the principal storage form of phosphorus in many plants and found in all nuts, seeds and grains. The bound phosphorus is not readily bioavailable and in addition to the unavailability of phosphorous phytic acid readily binds with other minerals, such as calcium, magnesium, iron and zinc, making them unavailable as well. In this form, the compound is referred to as phytate.

The amount of phytic acid in any food is highly variable; the levels that researchers find when they analyse a specific food probably depends on growing conditions, harvesting techniques, processing methods, testing methods and even the age of the food being tested. Phytic acid will be much higher in foods grown using modern high-phosphate fertilizers than those grown in natural compost. Some nuts are particularly high in phytic acid like almonds where as some are relatively low like cobnuts.

Some people seem to be affected by phytic acid more than others. It is the enzyme phytase that neutralizes phytic acid and liberates the phosphorus. Research has shown that whilst some people have an intestinal microbiota able to degrade phytate thus releasing nutrients that the body needs others do not. Without enough phytase digestive disturbance can occur

Enzyme inhibitors

Nuts also contain enzyme inhibitors which can stop digestive enzymes working. If we don't have enough digestive enzymes, we can't break down our food—which means even if we're eating well, we do not absorb all the nutrition.

Whilst phytates and enzyme inhibitors perform important tasks for the plant they can be detrimental to us so it helps to prepare our food in a way that limits potential problems to humans.

Soaking

The phytic acid and enzyme inhibitors that can make nuts difficult to digest are neutralised by soaking in salt water and low temperature dehydrating.

Soaking in a salt solution and low-temperature dehydrating will break down most of the phytic acid. Soaking will neutralise many of the enzyme inhibitors and also increase the bioavailability of many nutrients, especially B-vitamins.

Many traditional cultures intuitively practiced preparations that deactivated anti nutrients and increased the bio-availibility of nutrients. Sally Fallon Morell from the Weston-Price Foundation in her book *Nourishing Traditions* is one of many people who advocate soaking nuts. According to her many traditional cultures used salty sea water to soak nuts and the sun to dry them. We can adapt this and use a good quality sea salt and water to soak the nuts, and an oven or a dehydrator at 120F/50C to dry them. The process of soaking and drying has disappeared in our modern food production systems but it is easy to incorporate in both family and larger scale production.

How to soak and dry cobnuts

Cover 600g of shelled cobnuts with water and stir in one tablespoon of sea salt

Leave to soak at room temperature for 7 – 12 hours

Drain & rinse

You can use the nuts as they are – perfect for nut milks or salads.

If you want to keep them they will need drying.

Spread the nuts out on a baking tray.

Dry in a dehydrator or oven at 120 F/50C for 12+hrs or until crisp and dry.

You could also build a solar dehydrator to dry nuts.

Or you could build a drying shelf above a wood burner.

Soaking and drying nuts is known as activating. It is a method used by the Aborigines for 1000's of years.

Acrylamide

Acrylamide is a chemical formed in foods during high temperature cooking like roasting and frying. Acrylamide has been found to have carcinogenic effects in animals and potentially could have harmful human effects. Cooking at high temperatures causes a chemical reaction between certain sugars and an amino acid (asparagine) in the food, which forms acrylamide.

Swiss scientists tested for levels of acrylamide in roasted nuts such as almonds and hazelnuts. The research results showed that those nuts containing high levels of asparagine released the potentially cancerous chemical compound more than those lacking the amino acid. In this study, roasted hazelnuts contained low levels of acrylamides, but roasted American almonds contained high levels.

An interesting study reported in the December 2009 issue of the journal 'Food Biophysics' compared the digestion of raw and roasted almonds. Raw almonds are digested more slowly than roasted almonds, and they swell more from stomach fluids, creating a greater feeling of stomach fullness and satisfying hunger longer. Roasting causes almonds to become more easily and effectively digested, which satisfies hunger more quickly, but for a shorter period of time. Potentially this would be the same for cobnuts. A sustained feeling of fullness would mean we ate less which could be seen as beneficial.

Light, air and heat will oxidise the fats in nuts and turn them rancid this is especially true for the nuts high in PUFA's like walnuts; nuts like cobnuts are higher in MUFA's and more stable.

Food allergy concerns

It does appear that the prevalence of allergy to a variety of foods is increasing, there are now 14 foods that legally have to be clearly listed as a potential allergen on all packeted foods and in catering outlets.

Nut allergies are very common and an allergic reaction to nuts can be severe and even life threatening. Most people who are allergic to one or more nut can safely tolerate others. In severe cases, all nuts need to be avoided.

It seems unlikely that food allergy concerns would severely hinder growing a market for nut products simply because there are so many foods now that cause an allergy from celery to gluten and soya to fish.

Products

Cobnut flour

Cobnut flour is easy to make using either a mill or a blender, the flour has a short shelf life and it would be preferable to store the flour in the fridge. To maintain the best quality nutrition it is best to process the nuts into flour just before use. An easy rule of thumb is the more the nuts are processed, the shorter the shelf life they will have. If you have a deep freeze you could bulk process and freeze; the flour is quickly thawed and ready to use. Kept in the fridge the flour is good for up to 3 months, in the deepfreeze up to a year. Flours are easily made in a hand food mill or processor.

Research has shown that the mono-unsaturated fats in cobnut flour, which are the greater proportion of the fat content seem to be reasonably stable.

Cobnut flour is free from gluten, and therefore, a safe alternative for gluten-sensitive & wheat allergic individuals as well as those with coeliac disease. The flour can be used in both sweet and savoury, raw or baked foods.

Whilst the flour can be used to replace grain flours it is very energy dense and should be used in moderation.

Cold pressed cobnut oil

This is another product that is better processed to order so as to preserve nutritional integrity. The oil is rich in vitamin E and a good source of MUFA's. By definition a cold pressed oil is extracted below 40C. Artisan producers of cold pressed oils often do not go above 24C. You can not cook with cobnut oil instead the oil can be used as a dressing, on porridge, in smoothies making your own oil is not difficult there is a brilliant wind powered oil pressing machine on

The leftover meal from making oil is high in protein and can be turned into a number of different dishes including soups, smoothies & pates

Recipes

Cobnut butter

Cobnut butters are nutrient dense and will keep well in the fridge for up to six weeks
When making homemade nut butter you can either do so with the raw soaked then dehydrated nuts or following dehydration, you can very lightly roast the nuts to bring out a deeper, nutty flavor.

300g dried cobnuts
1 tablespoons of hemp oil
pinch salt

Tip the nuts into a food processor
Grind to a fine powder.
Continue processing to release the nut oils.
Add the hemp oil and salt and process until light and creamy.
Pack into jars, fix a lid and store in the fridge.
Alternatively use a nut hand mill to make the butter

Cobnut milk

250 g green or dried cobnuts
750 ml spring water

Process the cobnuts and water in a processor until the mixture is smooth.

Either strain or use as it is.

Will keep in a fridge for 2 days.

Cobnut kefir

Fermented cobnut milk has all the nutrients of cobnuts with the addition of beneficial lacto bacteria
These beneficial bacteria colonise the gut helping to maintain a healthy microbiota. The beneficial bacteria in our gut perform a mind boggling array of tasks including, synthesizing the B group of vitamins as well as vitamin K, promoting the absorption of minerals, ensuring proper digestion and helping to develop and regulate the immune system. Evidence suggests that that the composition of the bacteria in our gut affects obesity, diabetes, eczema and rheumatoid arthritis.

1 litre cobnut milk (see above)
1 teaspoon date paste
1 tablespoon milk kefir grains

Mix the date paste and nut milk together and pour into a clean glass jar add the kefir grains.

Loosely cover the jar and leave at room temperature for 12-24 hours, stirring the mixture from time to time with a wooden spoon so that the grains are well distributed. Taste from time to time you are aiming for a sour tasting drink.

Cobnut cinnamon-honey-cacao drink

400ml cold water
175g green or dried cobnuts
1/4 tsp ground cinnamon
2 teaspoons raw honey
1 teaspoon raw cacao
crushed ice

Process the cobnuts, cinnamon and honey with the water until smooth, pour over crushed ice and serve. If you prefer a very smooth drink make the cobnut milk with the nuts and water and strain, before proceeding. Use the nut meal in savoury bakes, biscuits or cakes

Apple & cobnut salad

1 bunch of watercress
1 small head of radicchio
1 handful of purslane
2 medium sized eating apples
2 handfuls green or dried cobnuts
4 tablespoons cobnut oil
1 tablespoon apple cider vinegar
1 shallot, peeled and finely chopped

Pick over the watercress and purslane, separate the radicchio leaves breaking into smaller pieces as necessary.

Make the dressing by combining the hazelnut oil, cider vinegar and shallot.

Quarter and core the apples and cut into fine slices. Put into a bowl with the salad leaves and cobnuts and gently toss with the dressing. Divide between 4 bowls.

Cobnut dukka

2 tablespoons dried cobnuts
2 tablespoons sesame
1 tablespoon coriander seeds
1 teaspoon cumin seeds
sea salt & freshly ground black pepper

oven 190C/375F/gas mark 5

Lightly toast the cobnuts in the oven until golden brown about 10 minutes. Wrap the nuts in a tea towel and let steam 1 minute. Rub the nuts in the towel to remove loose skins but don't worry about any skins that don't come off leave to cool completely.

In a fry pan over a medium heat lightly toast the sesame, coriander and cumin seeds. Grind altogether in a pestle and mortar, season with salt & pepper.

Cobnut gremolata

large handful of flat-leaf parsley leaves
1 large clove garlic
handful of green or dried cobnuts (about 20)
1/4 teaspoon fine sea salt
freshly ground black pepper
zest of 1 large lemon

Place the parsley, garlic and cobnuts in the bowl of a food processor and process in short pulses until finely chopped, but not puréed. Add the salt, pepper and lemon zest. Keeps well in a jar in the fridge for up to 2 days.

Cob - carrot bread

250 g golden flax seed roughly ground
280g cobnut flour
300g carrots grated
100g soaked figs
1 teaspoon cinnamon
¼ teaspoon cardamom
¼ teaspoon nutmeg
½ teaspoon Himalayan pink salt

Process carrots and figs in a blender until smooth adding soak water if necessary. Mix all the ingredients together and form into a round loaf shape. Dehydrate until desired moisture is reached.

Nut - carrot cake

150g cobnut flour
150g chestnut flour
350g finely grated carrots
2 teaspoons vanilla essence
1 heaped teaspoon baking powder
1 heaped teaspoon ground cinnamon
200g sugar
3 eggs
110m olive oil
110g soaked prunes

Oven 180C/350F/gas no 4
8" cake tin lightly oiled and lined with parchment paper

Mix the carrots and nut flours together along with the vanilla essence, cinnamon and baking powder.

Whisk the eggs together with the sugar until the mixture turns pale and becomes thick.

Process the prunes with the olive oil until you have a thick purée.

Stir the prune purée into the carrot and almond mixture and finally fold in the eggs and sugar.

Pour into the prepared tin and bake in the oven for about an hour lowering to 160C/325F/gas mark 3 after 15 minutes.

When the cake is firm to the touch, remove from the oven, allow to cool for 5 minutes then turn out onto a cooling tray.

Cobnut biscuits

100g dried cobnuts
1 large egg white
pinch of salt
75g sugar

Preheat oven to 180C/350F./gas mark 4

Lightly toast the cobnuts in the oven until golden brown about 10 minutes. Wrap the nuts in a tea towel and let steam 1 minute. Rub the nuts in the towel to remove loose skins but don't worry about any skins that don't come off leave to cool completely. Pulse in a food processor until finely chopped.

Reduce oven temperature to 150C/300F/gas mark 3. Either using an electric mixer or a whisk, beat egg white and salt in a medium bowl until stiff peaks form. Gently fold in sugar and chopped hazelnuts until well combined.

Spoon tablespoons of this mixture batter onto a parchment lined baking sheet, spacing about 2" apart. Bake for about 15 minutes or until golden brown. Transfer to a wire rack to cool. Store in an airtight tin.

Cobnut cake

350g dried cobnuts
75g spelt flour
6 eggs separated
175g rapadura sugar

Oven to 325 F/170 C/gas mark 3

Butter and line with baking parchment a 9-inch springform pan

Grind cobnuts until very fine add flour and set aside

Whisk the egg whites until stiff and remove to a clean bowl

Now, using the same bowl as you whipped the egg whites, whip the egg yolks with the sugar until pale yellow in color. Stir in the cobnut mixture, add half the egg whites and mix well, then gently fold in the remaining egg whites.

Pour into the prepared tin. Bake in preheated oven for about 45 minutes or until firm, remove from oven and allow to cool in tin for 5 minutes before turning out and cooling on wire rack.



References

Fraser G.E., Sabaté J., Beeson W.L., Strahan T.M. *A possible protective effect of nut consumption on risk of coronary heart disease*. The Adventist Health Study. Arch. Intern. Med. 1992

Gonzalez C.A., Salas-Salvadó J. *The potential of nuts in the prevention of cancer*. Br. J. Nutr. 2006

Sabate J., Ang Y. *Nuts and health outcomes: new epidemiologic evidence*. Am J Clin Nutr 2009

Srivastava BN & others. *Influence of Fertilizers and Manures on the Content of Phytin and Other Forms of Phosphorus in Wheat & Their Relation to Soil Phosphorus*. Journal of Indian Society of Soil Science. 1955

Famularo G and others. *Probiotic lactobacilli: an innovative tool to correct the malabsorption syndrome of vegetarians?* Medical Hypotheses 2005

Ryszard Amarowicz¹, Ronald B. Pegg. *Content of proanthocyanidins in selected plant extracts as determined via n-butanol/hcl hydrolysis and a colorimetric assay*. Pol J Food Nutri sci 2006 vol 15/56

Ying Bao, M.D., Sc.D., Jiali Han, Ph.D., Frank B. Hu, M.D., Ph.D., Edward L. Giovannucci, M.D., Sc.D., Meir J. Stampfer, M.D., Dr.P.H., Walter C. Willett, M.D., Dr.P.H., and Charles S. Fuchs, M.D., M.P.H. *Association of Nut Consumption with Total and Cause-Specific Mortality*
N Engl J Med 2013; 369:2001-2011 November 21, 2013 DOI: 10.1056/NEJMoa1307352

Bibliography

The community orchards handbook - Sue Clifford & Angela King Pub – Green Books

Hazelnut production & culture - Martin Crawford Pub – Agroforestry Research Trust

Nourishing Traditions - Sally Fallon with Mary G Enig Pub New Trends

How to grow your own nuts – Martin Crawford. Pub Green Books

Six Steps back to the Land – Colin Tudge Pub UIT Cambridge 2016

Resources

<https://www.agroforestry.co.uk/>

non profit making charity researching into temperate agroforestry and all aspects of plant cropping and uses

<https://www.permaculture.org.uk/>

helping to design thriving communities

<https://www.woodlandtrust.org.uk/plant-trees/large-scale-planting/>

grants, funding, tree pack give aways

<https://www.treecouncil.org.uk/>

grants, education, projects, campaigns

<https://www.nationalforest.org/get-involved>

grants for communities

<https://www.tree-shop.co.uk/>

online native nursery downloadable brochure

<https://www.kentishcobnuts.com>

online shop for trees and nuts + advisory service

<https://www.commonground.org.uk>

engaging people with their environment

Oil extraction

Make your own oil press

https://www.davehakkens.nl/work/wind_oil/

Alternatively it is possible to buy machines and you can find a good one on

www.nutoilpress.com

more about oil extraction

https://www.youtube.com/watch?v=4bfkb_FOn3w

Dehydrator

Excalibur <https://excaliburdehydrator.com/>

<https://www.ukjuicers.com/excalibur>

https://vegetarian.lovetoknow.com/Build_Your_Own_Food_Dehydrator

a great resource for building your own dehydrator

Solar dehydration

<https://www.youtube.com/watch?v=oVTcnCuX2Qc>

Nut harvesting equipment

www.baganut.com/

www.facma.it/

Nurseries

Agroforestry Research Trust, 46 Hunters Moon, Dartington, Totnes, Devon, TQ9 6JT

+44 (0) 1803 840776 www.agroforestry.co.uk/

Fruit & nut

The Sustainability Institute, Cooloughra, Ballinrobe Rd, Westport, Co Mayo Ireland

www.fruitandnut.ie/ +353 (0) 87 6714075

Tree Shop Ltd., Harts Barn, Monmouth Road, Longhope, GL17 0QD, UK

+44 (0)1452 832 100

www.tree-shop.co.uk/

Advise on buying & growing cobnuts

Martin Crawford, The Agroforestry Research Trust 01803 840776

Alexander Hunt, Potash Farm, Kent 01732 882734