



Lyis: Food Forestry, 2024 Season

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“The vision of the New Eden is food forest communities where all of our needs can be met on site.” – Age of Peace.

Ideally if one is to grow all their own food, fuel and clothing in Grey-Bruce one needs at least 1.2 hectares (3 acres) per person. Ideally have enough land for a whole community averaging 60 people. To produce enough food to feed a 75kg human for a year need to at least cover an area of 0.25 hectare with fruit production, that would be for example either 80 mature oak trees or 400 hazelnut shrubs. The permaculture vision is to grow in a series of concentric circles or rectangles based on adult height of the plants. For example near the community centre you have a meadow, then around it a vegetable garden, then herbacious perennials (up to 2m high), then berries, dwarf fruit and hazelnut shrubs (2-5m high), then a short rotation coppice of willow and alder (5-10m high), then standard fruit trees, pear, persimmon, mulberry (10-20m high), then a long rotation coppice of lumber trees such as ironwood, maple, beech (25-30m high), then the staple crops of acorns, walnuts, pecans (30-50m high), then to keep out predators and large herbivores the forest descends in height using various thorny border plants mixed with staples, such as thorny honey locust (25m high), korean pine nut (20m high), osage orange (15m high), seabuckthorn/hawthorn (5-7m high), raspberries (1-2m high).

While the larger staples are growing which start to yield after 10-20 years, can interplant with annuals, herbacious perennials and shrubs which will start to yield within 1-7 years.

1 Soil Type

The first step to planting a permaculture food forest is understanding your soil type. In Canada the most common type of soil is acidic sandy loam but in Grey-Bruce is alkaline heavy loam, usually either clay loam or silt loam. If your soil is black then it is loam loam, if it is brown then it is either sandy loam or heavy loam.

If your soil is yellow or white due to sand, then it is sandy soil. Once your sandy soil has enough organic matter that it turns brown, then it graduates to being sandy loam. Once it turns black then it becomes loam.

If your soil is red or grey and very hard to dig, then it is likely heavy clay. You can verify by taking a handful while it is wet and if you can make pottery out of it, then it is definitely heavy clay. If your soil has enough organic matter that it is brown and friable, meaning that it has a tendency to fall apart instead of stick together, then it is heavy loam. If it has turned black from the organic matter and drains well then it has graduated to loam.

2 Plant Anatomy

Relative to humans plants are somewhat upside down. Their arms and brains are actually in their root system, and they have all the same types of neuron receptors. With their forest communication and nutrient transport system happening through the mycorrhizal network. So when transplanting plants, do attempt to maintain as much of the root system and soil as feasible. The stem is their torso, and their branches are

their legs, with their genitals being their flowers and fruit.

3 Planting

Put your plants in a safe semi-shady location until you are ready to plant them, and make sure they have enough water. Ideally you would plant within a few days of receiving them.

Find a suitable location where you will be planting them, with appropriate light levels, typically either full sun (sun 8-12 hours a day), or partial shade (sun 4-8 hours a day). For plant spacing you can go by the height of the plant when it is mature or less, minimum spacing being 30cm. Though for hazelnuts recommendation is 4m spacing, and for most trees 5m spacing.

If you have some trees or shrubs you are planning on removing later, you can plant on the south, east or west side of them, and they will provide some support for your new plants until they get big enough. Seedlings like having a mother plant nearby, to protect them from winter winds, provide some shade thereby increasing soil moisture, and lowering the soil temperature.

Then dig a small pit the depths of your container, typically one trowel depth or 15cm, and one trowel width. If your soil is too thin can berm when you're planting. Clear around your pit roughly 15-30cm of any vegetation that may be there, and put it down as mulch.

Put the plant fabric pot in the pit, and make sure it fits easily. Then backfill around it with the soil you dug out. If your soil is not deep enough to fit the all of the pot up to the soil level, then berm around the pot, by getting some nearby topsoil and making it into a little hill going up to the soil level in the pot.

After it is all in, then water the plant near its roots and the surrounding soil. The soil may settle somewhat if there were air pockets in it, and so you may need to add a little more soil to get it right.

You can add some cardboard mulch around if your soil is sandy or liable to dry out.

3.1 Fertilizer

Do not use any strong fertilizers or manure when they are young, as it can burn them. At most can use ones with hydroponic dilution rates 1g of NPK per 4L of water for general growth (April-July), or can use 1g of PK per 4L of water to encourage root growth (August-September). Water the roots only not the leaves or stem, as fertilizer water can burn the above ground plant. You can also use a slow release fertilizer spread on the soil around it, to motivate the plant roots to spread into it, can reapply in spring. When planting out do not add more than 5% of different soil to the hole, as if you do, you will in effect be making a potted plant. Can find more fertilization tips on the website <https://lyis.ca/glok/?species=Fertilizer>

3.2 Pests

If you have herbivores such as rabbits or deer in the area. Then you will need to put up some fencing around your plant, secured by a pole to make sure the animals do not destroy the stem of the plant. When the plant is big enough, it will be able to fend for itself, but in the meantime it needs the protection. You can use a 1/4 inch plastic mesh or whatever you have on hand. For insect pests plant row of wildflowers nearby and do Not clean or mow the area, since beneficial insects hibernate above ground in stems, and pests below ground.

3.3 Potting

Potting up plants can be viable, both temporarily and for long term. At Lysis Forestry we've developed a mathematical formula for calculating optimal pot size, Eulers Numbers time the height in meters to the power of the golden ratio equals the minimum number of litres that one needs in their pot, and modifying the formula to be twice Euler's number gives you maximum needed size.

For example a hazelnut typically grows to 4m tall, so you'd need to have a 25 to 50 litre pot at full size. However if you want to make a dwarf growing no higher than 2m, then an 8 litre pot would suffice. A dwarf up to 3m tall would need 16 litre pot.

Note if you wish to grow a dwarf, then you need to avoid circular plastic/ceramic

pot, because if the roots circle in the pot, they could girdle the plant. Instead ideally have a fabric air pruning pot, or if you are planning on putting it in the ground, then it should be fabric pot that is square, star or wavy sides, yet still have sufficient soil within it.

Contact us by email (lyis@liberit.ca) if you want a custom air pruning pot, we make them to order.

Can check our section here:
<https://lyis.ca/glok/?species=Containers>
And pot size calculator here:
<https://lyis.ca/hpotglut/>

4 Plant Care

The main thing is to give your plants love. Walk about your food forest at least once a week or so, and let your mind be stilled by the beauty and the splendor of God's creation. Then notice any little voice of the plants, animals, or holy spirit calling out to you, where something may need some adjustment. Perhaps someone needs more water, or phosphorous, or someone needs to be bermed as they are inundated. Perhaps they are getting too much shade, or not enough, perhaps they need protection from deer. Perhaps they just need some loving radiance and a gentle stroking of their leaves. Let the plants speak to you, they know what they need. Even when you are away from your forest, once you've established a relationship with your plants, they may call out to you in your mind, for the loving hand of the gardener to come to their aid, go to them, be an actor of the love of God in their life.

Recommended reading: "Plant Intelligence and the Imaginal Realm" by Stephen Harrod Buhner

5 Plants

5.1 *Corylus Americana* Hazelnuts

(Zones 4-9) Hazelnut trees can grow up to 3-5 meters tall, live for 30-40 years, after which they can be coppiced and they'll regrow as new. They begin producing nuts within 3-6 years. They can tolerate partial shade.

Hardy to zones 3-9, Groundnut is a perennial vine reaching a mature height of 3-

4 meters. It takes about 2-3 years to produce tubers that are edible and taste like potatoes. It prefers slightly acidic soil (pH 6.1-6.5) and tolerates partial shade.

5.2 Honey Locust

(Zones 4-9) Honey locust trees can grow up to 20-30 meters tall, live for 30-70 years, and take 10-12 years to begin producing seed pods. They are adaptable to various sun exposures and soil conditions, and are generally low-maintenance. Prune to remove any unwanted thorns or lower branches, and maintain an open canopy.

5.3 Goji Berry

Goji berries are hardy in USDA zones 3-10, making them quite adaptable to various climates. These shrubs can grow up to 2-3 meters in height and produce fruit in 2-3 years. Prefer full sun but can tolerate partial shade, can do well in variety of soil types, prefer well drained slightly alkaline soil. The berries are nutritious and can be eaten fresh but are best dried, and used in cooking or for teas.

5.4 Northern Hardy Pecans

(Zones 5-9) Pecan trees can grow up to 20 meters tall, live for over 300 years, and start producing nuts within 10-15 years. They prefer full sun. Supplement with zinc sulfate in addition to the balanced fertilizer.

5.5 Heartnut (*Juglans ailantifolia* var. *cordiformis*)

The Heartnut is a large tree that can reach up to 20 meters in height. It is hardy to zone 5 and prefers full sun exposure. Plant heartnut trees about 9-12 meters apart to allow for their broad canopy. The trees will start bearing nuts after about 6-10 years.

5.6 Basket Willow (*Salix Viminalis*)

Fast growing hardy to zone 2, loves water, great for coppicing within 2-3 years. Mature height is 3-6 meters, prefers full sun, tolerates partial shade. Hyperaccumulators that clean soil of toxins. Bark can be chewed or

made into tea for pain relief similar to aspirin.

5.7 Runner Bean (*Phaseolus coccineus*)

Adaptable to zones 4-8, this annual plant can reach a mature height of 2-4 meters within the growing season. It generally begins to produce beans within 60-70 days of planting. Runner Bean prefers a slightly acidic to neutral soil pH (6.0-7.0). Note: It's a climbing plant, therefore provide a trellis or support for best growth.

5.8 Carragana Peashrubs

(Zones 2-7) These shrubs can grow up to 3-5 meters tall, live for 20-50 years, and start producing pea-like pods within 2-3 years. They can tolerate partial shade.

5.9 Korean Pine Nuts

(Zones 3-7) These trees can grow up to 25 meters tall, live for over 200 years, and take 10-12 years to begin producing nuts. They prefer full sun.

6 *Carya illinoensis* (Pecans)

Northern hardy pecan trees are suitable for hardiness zones 5-9. Choose a location with well-draining soil and full sun exposure. These trees can grow up to 20 meters tall and live for over 150 years. They generally start producing nuts within 6-10 years after planting. Plant saplings at least 10 meters apart to provide ample space for growth. Water young trees weekly, and increase the frequency during dry spells. Fertilizer regularly and supplement with zinc sulfate to support healthy growth. Monitor for common pests such as pecan weevils and aphids, and apply appropriate treatments when necessary.

7 *Castanea mollissima* (Sweet Chestnut)

Not to be confused with horse chestnut (*Aesculus hippocastanum*), which are not edible

but can be used for laundering white clothing. Sweet Chestnuts used to grow all over the area before the chestnut blight wiped most of them out. Though there are resistant varieties such as the Chinese Chestnut. These are the ones. Their parents are alive and well and continuing to produce in Ontario.

Hardy in zones 4-8, they grow up to 25m high, and can grow in full sun or partial shade on sandy, loamy and heavy soils, they prefer well drained soils, such as those on a slope or a hill. Fertilizing with calcium such as calcium nitrate reduces fungal issues such as blight.

They produce fruit within the first 5-10 years and are a delicious autumn/winter treat, they can be either roasted, steamed or boiled to get rid of the astringency.

8 *Maclura pomifera* (Osage Orange)

A deciduous tree that thrives in Zones 4-9. It can reach heights of 8-15 meters and has a lifespan of 50-100 years. Once mature, usually within 5-10 years, the tree produces unique, grapefruit-sized green fruit that resembles oranges. Osage orange trees prefer full sun and well-drained soil. They are dioecious, meaning they have separate male and female trees, so cross-pollination is required for fruit development. With their hardy nature and striking appearance, *Maclura pomifera* trees add a distinctive touch to landscapes while providing valuable wildlife habitat and erosion control benefits.

9 Contact

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Can find more food forest information on our website



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