

notes from the Flax Presentation by Bruce Engeberson
April 29, 2017

Bruce began spinning wool at age 10, despite the fact that no one in his immediate family had any background in spinning. A chance referral led him to Ester Kromaki about 25 years ago, and she taught him the traditional Finnish techniques for growing, processing, spinning, and weaving flax. He says his linen knowledge is firmly based in the Finnish traditions and that "he doesn't know a variety of methods but the ones he knows, he knows well."

The flax plant is an annual that dies in the winter. It is a "greedy" plant which will take lots of nutrients, so it's best not to plant it in soil that has been exhausted by other crops like corn. Flax is best in full sun and protected from the wind. It is relatively free from insect pests and will even keep potato bugs away (so plant near potatoes!). Prepare the seed bed by spading up the area to be seeded (in our case, approximately 3 ft by 3 ft) and adding in some cow manure or other fertilizer. Make sure the area is free of weeds when you seed. Seed flax when the lilacs just begin blooming.

The seed should be spread thickly -- about 5 to 7 seeds for a thumbprint (of course, this depends on the size of your -- hopefully green -- thumb). Do not plant in rows. Divide the seeds in half and sow half in one direction and the other half if the other direction. If the soil is the same color as the seeds, you can add sand to the mix so you'll have an idea of how the seeds are being spread out. A suggestion was made to use a pizza cheese shaker. Once the seeds have been spread, cover the entire bed with approximately 1/4 inch of dirt and roll it down (or use planks and step on them). This will (we hope) deter the birds from eating the seeds. If there is a frost warning, it's a good idea to cover the seed bed with a sheet -- the young plants can withstand a light frost but not a major one. Do not mulch the seed bed.

When the plants are about 3 to 4 inches tall, weed the bed. At this stage, the flax plants are strong enough to withstand being stepped on -- they'll just bounce back (younger plants aren't as resilient). Weed thoroughly at this stage. As the flax grows, it will crowd out any additional weeds. Also, dense seeding discourages branching so the stems are straight and tall. If the stems start falling over (which is more likely in smallish plots such as we are doing), it's a good idea to stake a wire or a string around the patch to keep the plants upright (when flax plants get tangled together, it's called lodging. It is not a good thing.)

(These directions apply to growing flax for fiber. The seeds from the fiber plant can be eaten or pressed for oil, but they will not be mature enough to use as a seed source for future crops. If you are planting for a seed crop, plant less densely so that the individual plants can spread out and have room to grow and mature.)

After 60 days, the flax will flower -- ethereal blue blossoms that lasts only a few hours. This is the time to take photos!! Other than that, you can pretty much leave the plot alone for another 30 days or so. For fiber, flax is best harvested when the tops of the plants are light brown, the base of the plant is waxy yellow, and the leaves have fallen off 1/2 to 2/3 of the way up the stem.

Harvest during dry weather -- the plants will need 2 or 3 days to cure in the field so you don't want them to be rained on. Harvest by pulling the entire plant up by the roots (which are shallow and weak) -- do not cut the stem as this can cause rotting. The heads will have seeds in them at this point -- this is not a problem. Keep all of the harvested stalks orientated the same way (root ends together) and bundle with a rag. From a 3 by 3 plot, you can hope to get a shock

of flax stems about 4 inches in diameter. Let the shock dry completely in the field (or in a garage if the weather's not good).

Once the plants are dry, you can put them on a cloth or newspaper and whack the tops a few times to release the seeds, for oil or eating. (If you are growing the plants for next year's seed crop, leave them rooted in the field for at least 3 more weeks. The fiber from these plants will be coarser, but the seeds will be fully mature.)

The next step is retting -- which is basically the same as rotting! Since we will have numerous growers, we can also experiment with different ways of retting. Bruce uses dew retting: the flax stems are spread thinly (you should be able to see the ground beneath) on a lawn (slightly off the ground but not too elevated) for several weeks (3 is a good number to plan on). If the weather is drier than normal, you might have to water the flax occasionally. The plants have to be flipped every few days: to do this, take a long stick and thread in under the tops of the dried flax plants (which are all still oriented in the same direction) and lift the mass so that the root end remains on the ground but the tips make a complete arc -- so now the opposite side of the plant stem is in contact with the ground. Dew retting is slow but sure.

If the season is advanced or you get behind, you can also do snow retting, which is usually even slower. Rate of retting depends on many factors including weather (moisture and heat) and soil composition. Be patient.

Ester, Bruce's teacher, preferred water retting in a clay pit. For water retting, you want standing water (not running water) and it should be fairly warm (no icy springs!). Retting will deplete oxygen in the water so be aware of pollution potential! Retting will also smell very bad -- it generate butyric acid, which is a component of dog poop! Water retting is much faster than dew retting -- it may only take a handful of days.

The flax is properly retted when you can see the fibers loosening up -- the plant will start to look shaggy at the ends. If you break the stem in the middle, the fibers should separate easily from the central core of the stem (the fibers are like the bark of the stem). In order to determine if the flax is in this state, you will have to dry the stems you are testing, preferably heated. Again, be patient. Well retted fiber yields softer fiber.

Once the flax has been fully retting, it must be dried again. This is very important -- if not dried properly, the fibers will rot. Can be dried with heat but be very aware that the flax at this stage is extremely flammable!!!! Once dried, the flax straw can be stored for several months before processing.

Now comes the time to process the flax straw into spinnable fiber. These steps are best accomplished with warm stems -- use a space heater, the sauna, a very hot, sunny day (but always be aware of the potential for fire). The first step is braking. This is basically just breaking up the non-fiber part of the stem into pieces that will (mostly) fall away from the fibers. It can be accomplished using a tool called a brake (which we will hopefully have available at our processing parties!) or the brake of your car -- you can put the plants in your driveway and back over them several times (this works better on a gravel drive). Make sure the plants are kept in alignment at all times -- root ends still together!

Next step is scutching -- basically the same thing, only this piece of equipment has metal bars that further break up and separate the remaining chaff from the fiber. In both braking and scutching, shorter fibers will also come free from the longer mass of fibers -- the short fibers are

the tow, which can be quite coarse but also can produce very nice fiber. Save these for later!

You should now have a handful of longer fibers that is nearly clean of chaff and a beautiful golden blond. This is line flax. This handful of line flax is now taken to the hackle, which is basically just a bunch of spikes that you touch the flax to -- you don't draw the mass through the hackle but just kind of bounce it off. Don't start at the middle! Think of combing your hair -- always start at the ends and try to waste as little as possible. You'll be getting out more tow during this process (and this tow will probably be much finer than the tow from the first two steps). Hackle until you have a fine, soft, beautiful mass of fibers -- it'll look and feel like hair!

Now comes the spinning! All traditional flax spinning is done with a distaff. There are many forms of distaff and many ways of dressing a distaff. What you want is for the fibers to remain in their original orientation (you will begin spinning at the top end of the plant) and to get as much separation between the individual fibers as possible. Think light and airy. If you have long (over 2 1/2 foot) line fibers, the distaff is best dressed with the fibers vertical, root ends at the top of the distaff. For shorter fibers, Bruce had this incredibly cool "Christmas tree" distaff that is dressed horizontally by loosely wrapping the fibers in a cone (the flare at the bottom of the Christmas tree keep them from falling off the distaff). This distaff rotates as the fibers are drafted. For tow, the fluffed and separated fibers are put in an open mouthed cage (or claw) that holds the mass in place but allow the fibers to be drafted out. Once the distaff is dressed, if you will not be using it for a while, wrap it in newspaper (Finnish tip!).

Flax can be spun either S twist or Z twist. It is usually spun damp (wet your fingers, run the fibers through your mouth, spit on the fibers, or find some other creative way to wet them). Because the fibers are quite long, it can be spun with loose twist (Ester said that all American yarn is overspun). It is quite strong as a single ply. If the yarn is plied or overspun, it will not be as lustrous. When spinning, your fingers will be constantly twisting and untwisting -- Bruce uses both hands and spins directly from the distaff. His advice is to find a wheel with a low ratio and always keep the twist from going into the undrafted fiber. Pull sideways, don't push up!

When skeining, if you group your yarn in bouts of 20, you will be able to easily estimate how much yarn you'll need for warping. Many old reeds had groups of 10 dents marked with yarn: one group of ten would hold 20 bouts of yarn (best to put 2 thread in each dent to prevent wear).

The linen yarn can be woven as it comes off the wheel, or it can be sized. Sizing can be ordinary library paste (flour and water), or Bruce's special recipe, which is to boil 1 tsp flax seed in one cup water for about 10 minutes, then strain. The resulting linseed oil will make a jelly that looks about the consistency of half and half (not heavy cream)(add more water to adjust consistency).. Squeeze this through the yarn, shake it out and let it dry (outside!)(shake a few times while it's drying to separate the threads or it will dry in a solid mass). Although he didn't say, I assume this will wash out of the finished weaving, probably with hot water. We'll try it first to make sure.

Final words of wisdom: don't confuse process with substance -- do what works for you!!!