

September 2018 Newsletter

Sorrow and scarlet leaf,
Sad thoughts and sunny weather.
Ah me, this glory and this grief
Agree not well together!

- Thomas Parsons, 1880, *A Song For September*



Upcoming:

October 9: Preparing Gardens for Winter. Speaker: Mary Reid, Green Thumb Garden Centre

Crop Rotation: Do Legumes Really Add Nitrogen To Soil?

By Larry Hodgson

If you follow the basic rules on crop rotation, you know that the premise is that you use a four-year plan in the following order: leafy vegetables in year one, fruiting vegetables in year two and root vegetables in year three, each with decreasing needs in nitrogen, then you grow legumes for year four to reintroduce nitrogen into the garden and the cycle begins again.

Except that legumes don't really add much nitrogen to the garden and in fact, probably use more than they add, at least when you grow them the way the average gardener does.

No Symbiosis, No Nitrogen

Let me explain. Most legumes (peas, beans and broad beans are the best know leguminous vegetables while clover, vetch and sweet clover are common wild ones) live in symbiosis with bacteria (rhizo-

bia) that absorb atmospheric nitrogen and convert it into plant-usable nitrogen compounds such as ammonia and nitrate. They inhabit nodules on the plant's root system. When the legume dies, this nitrogen is slowly released in a form other plants can absorb. Great! All the plants benefit! Except...

Were the legumes you grow ever inoculated with right bacteria to start with? There are special strains of inoculant for beans, peas, soybeans, etc., or you can use a multipurpose one that treats most leguminous vegetables. You need to apply them when you sow your legumes. Once in the ground, the bacteria can remain alive but dormant for years, so a few years without a leguminous partner won't kill them. Thus, when you sow legumes again in the fourth year, they're still there. And, true enough, sometimes they do find your garden on their own, but without the right rhizobia, your legumes simply aren't fixing nitrogen!

To check, dig up a legume (pea, bean, etc.) just as it's beginning to bloom. That's when the nodules are most visible. If there are no nodules (lumpy growths of varying sizes and numbers, depending on the species) on the roots, the case in most gardens, your legumes are going to be net users of nitrogen, not suppliers. You'll



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need to inoculate them the following year.

However ... legumes are lazy. If you heavily enriched the soil with a goodly share of nitrogen just before you added legumes (by adding quality compost, for example), they won't bother setting up a symbiotic relationship with rhizobia bacteria and will simply use the soil nitrogen that is available. Inoculation will work best when no nitrogen source has been added to the soil for the last two years.

I don't understand why seed companies don't simply add a spoonful of the appropriate inoculant to each pack of legume seed they sell. It would seem to me this would give gardeners the best possible results, as few gardeners know to add inoculant. And no harm comes from adding a bit more inoculant if the garden is already "rhizobiumized". However, as far as I know, such a service is never offered.

Let Them Rot

Let's assume things are going well and you do have nodulation occurring on the roots. Great! Now, don't go and spoil things by pulling up your leguminous vegetables at the end of the season. Here's why:

The most efficient way of fertilizing soil with legumes is by using them as a green manure. Just as legumes start to bloom, which is when they'll be richest in nitrogen, work them into the soil where they'll decompose and release the nitrogen they stored. Don't let them flower fully and go to seed, as the nitrogen will largely migrate into the seeds. (That's why legume seeds are high in protein, of which nitrogen is a prime component.) So, with the green manure method, you don't get to eat your beans and peas or whatever else you sowed: you have to turn the mother plants under.

However, you can have your nitrogen and eat it too, to a certain degree. Grow your peas, beans, broad beans, etc. the way you usually do, harvesting (and eating) their seeds, but don't pull the plants out in the fall. Instead, cut off the leaves and stems if you want to (although you could work them into the soil as well), but leave the roots in the ground to decompose. Not all the nitrogen moves to the seeds, so the rotting roots still contain a decent share of nitrogen that future vegetables will be able to harvest.

Practical Matters

The average gardener can continue crop rotation: it's a great technique for all sorts of reasons. But next time you sow legumes, add the right in-

oculum (available in garden centers, feed stores and online) and thereafter, when you harvest your crop, leave the legume's roots in the soil. It's not that complicated, is it?

October Flower Show

Section I: Horticultural Specimen

- Class 1** Last rose of summer – single boom
- Class 2** Any perennial – 3 stems
- Class 3** Any annual – 3 stems
- Class 4** A collection of gourds – minimum 3
- Class 5** Squash – 2 – same or 2 different cultivars – named if possible
- Class 6** Pumpkin – 1

Section II: Design

- Class 7** Thanksgiving – a design using flowers, vegetables and/or fruits in a cornucopia
- Class 8** Halloween – an interpretative design
- Class 9** Pik'n Plunk – an arrangement using fall flowers & ornamental grasses

Goji Berries (AKA Wolfberries)

Edythe Falconer

Master Gardener of Ottawa Carleton

Many years ago when we were living out in the country – the country now being a part of rural Ottawa – I was invited to attend a one-of-a-kind meeting in order to learn about the wonderful curative powers of the goji berry. Although I wasn't particularly interested in yet another miracle cure I was interested in how such a meeting would be conducted.

The event took place in a residence – a beautifully designed bungalow of the 50's era – albeit a bit dark in its décor. Reasonably comfortable seating had been provided and refreshments were in the form of goji products. What I learned from my companion was that many people in the audience had serious and even life threatening illnesses and that many were hoping for salvation of some kind in the form of this little oval shiny red berry.

I never dreamed that several years later I would grow a goji tree/vine in my backyard, and that not only is it easy to grow, it is hard to stop once it gets going! All of which is fine with me because I love the look of it and the beauty of the

berries as they ripen and dangle like chains of rubies on narrow silvery leaves. Occasionally I'll have a bite and the berries are fine raw – a wee bit tart but an acceptable nibble as I make my rounds.

In the late 90's and early 2000's I wasn't doing internet research. I do now. This is what I've found out about goji berry – *Lycium barbarum* or *chinense*:

- NATURAL HABITAT – They are native to China and are a member of the nightshade family.
- AVAILABILITY - I purchased mine at a local garden centre. Berries can be purchased at some health food stores.
- PLANT MANAGEMENT – I transplanted mine into fertile soil but it did not do well in the first year. In the second year it thrived and now requires regular pruning.
- PROCESSING GOJIS - They can be dried or cooked. The Chinese still use them in tonic soups, herbal tea and wines.
- PROPAGATION – I plan on trying cuttings this summer.
- TOUGHNESS – I have found them to be drought resistant and fine with Ottawa winters.
- NUTRITION - Have they lived up to the claims made at that meeting so many years ago? Apparently their medical benefits are still not clear. However they do contain an impressive list of vitamins and minerals – Vitamins A and C, Iron, Zinc, Antioxidants, eight essential amino acids, and surprisingly, 4 oz of these shiny red berries can provide 10% of our daily protein needs.

Caution – When we try something new it's best to taste just a little at first. The goji berry is, after all, a member of the nightshade family, but then so are some of our favorite foods – the humble potato for example. And some of us are allergic to potatoes. I grow my gojis mostly for their beauty as demonstrated by my reluctance to strip them from their gracefully arched branches

Watering Trees And Shrubs

*Dr. Leonard Perry, Horticulture Professor Emeritus
University of Vermont*

Trees and shrubs need moist, but not thoroughly wet, soil in order to grow well, resist insects and winter injury, and, in some cases, to produce flowers and fruit. If fruiting plants fail to fruit, or produce few fruit, it may be due to

drought during flowering or fruit production.

From early spring until about September 1, apply water adequately to all woody plants. Keep in mind that some trees, including beeches, cottonwoods, larches, poplars, aspens, willows, maples, birch, spruce, mountain ash, will need more water than others. Hydrangeas and magnolias are shrubs sensitive to drought, and so needing more water than most shrubs.

Newly planted trees and shrubs—ones planted this season— will need more water, too, the first year. Except for evergreens, it is not advisable to wet the leaves, because this can encourage rust, blight, and mildew diseases.

After that, water less to allow the plant to harden off. This will reduce chances of damage to wood by early snowstorms and freezing temperatures. Then, in mid-October when leaves have fallen, or prior to a ground freeze, apply water liberally several times to avoid winter drought. If fall, though, is abnormally dry, you may need to keep sufficient water on evergreen plants and newly planted trees and shrubs of any sort.

Late season watering is important particularly for broadleaf evergreens, such as rhododendrons, since their broad leaf surfaces are exposed to winter cold and winds, which dry leaves out (“desiccation”). With frozen ground and the inability to take up replacement water until spring thaw, this results in leaves browning or even dying.

During hot, dry periods, water your plants every six to 10 days. If the soil is very rocky, gravelly, sandy, or has poor water-holding capacity, water once every five to seven days putting on about an inch of water each time. For clay-loam soils, apply water every 10 days to two weeks, but put on about two inches of water per watering. Newly planted trees and shrubs need watering every five to seven days, if not provided by rain. If plants are in containers, and yet to be planted, keep them watered very often, perhaps daily with a good soaking.

To gauge how much water is applied, or how much rain plants actually received (and so how much you need to supply), use a commonly available rain gauge. You can find them at most hardware and home stores, or more professional and accurate models (even wireless remote ones) online from weather supply firms.

Be careful not to overwater (this, too is a leading cause of plant death, mainly in poorly drained soils), but be sure to put on enough to

wet the ground to a depth of approximately 24 to 30 inches deep for mature plants. This is the zone which contains most the water-absorbing roots. (Tap and anchor roots are deeper.) You should wet the entire root area, which extends out at least as much as the limb spread—the “drip line”.

Water well or not at all.

Shallow watering will “starve” the deeper roots, causing more growth of the surface roots. In causing more root formation near the surface and less deeper down, you will predispose those roots to freezing conditions. Roots near the surface are not protected as well from the cold as are deeper roots. Also, they will dry out sooner and won’t be able to draw water from deeper soil levels.

If you have groundcovers or mulch under trees and shrubs, a soaker hose which slowly emits water along its length would be a good choice. Otherwise, move a hose at medium water pressure gradually around under the drip line of a tree (unless the ground slopes, in which case water may run off the desired area). If using an overhead sprinkler under a tree or on shrubs, place a rain gauge underneath to measure water applied. Up to half the water from an overhead sprinkler may evaporate in hot, dry weather. Or, you can use a straight-sided small container. One to two inches collected in such a container means the water should reach the roots within the top six inches of soil.

Another watering option for trees is watering bags. You can buy these online or at full-service garden stores and nurseries. You place them around the tree base, fill them with water, and they release this water slowly. There are several brands, either upright or in doughnut shapes, which you see commonly in new plantings in commercial areas.

Mulch placed around trees and under shrubs will help lessen soil temperature fluctuations, and conserve water. Don’t apply more than three to four inches of an organic mulch such as shredded bark or leaves, and keep mulch away from tree trunks and shrub stems.

Keep watering in fall as long as you can, until the ground freezes. Newly planted trees may need supplemental watering for the first two to three years until their roots get established. Water according to how much a plant may be getting naturally, or need, and don’t wait to see signs of stress such as wilting and yellowing leaves. For newly planted trees and shrubs, proper watering

is the single most important maintenance activity to help ensure their survival and long life.

Too Much Zucchini?

One never seems to have the right amount of zucchini...usually so much arrives at once that you're racking your brains trying to find ways to process it all. Here's a delicious way to use some of it up:

CHOCOLATE ZUCCHINI CAKE

½ c soft margarine	2½ c flour
½ c vegetable oil	½ tsp baking powder
1¾ c white sugar	½ tsp cinnamon
2 eggs	4 tbsp cocoa
1 tsp vanilla	½ tsp cloves
½ c sour milk	1 tsp baking soda
2 c grated zucchini	1 c chipits FOR THE TOP

Mix ingredients together in order given. Pour into large GREASED 9 x 13 pan. Sprinkle chipits on top and don’t stir through. Bake 25 to 30 mins at 350°F. Cut in pieces and leave in pan to serve. (*An oldie but goodie from Margo Fulford*)

LEMONY ZUCCHINI BREAD

4 cups all-purpose flour
 1½ cups sugar
 1 pkg (3.4 ounces) instant lemon pudding mix
 1½ teaspoons baking soda
 1 tsp baking powder
 1 tsp salt
 4 eggs
 1¼ cups milk
 1 cup canola oil
 3 tbsp lemon juice
 1 tsp lemon extract
 2 cups shredded zucchini
 ¼ cup poppy seeds (optional)
 2 tsp grated lemon peel

Directions: In a large bowl, combine the flour, sugar, pudding mix, baking soda, baking powder and salt. In another bowl, whisk the eggs, milk, oil, lemon juice and extract. Stir into dry ingredients just until moistened. Fold in the zucchini, poppy seeds and lemon peel. Pour into two greased 9x5 inch loaf pans. Bake at 350°F for 50-55 minutes or until a toothpick inserted near the center comes out clean. Cool for 10 minutes before removing from pans to wire racks to cool completely. Yield: 2 loaves. (*Editor's favourite*)