Executive Summary

Lynn Hoag Garden; Year 1, 64 Square Feet
Lab Test # 280 – February 28th 2018

Lynn thank you for the trust you have placed in us. I look at this trust very similar to the client relationship many people have with their family doctor or lawyer. You would expect your doctor or lawyer to be looking out for your best interest. The client relationship with a lawyer connotates the idea of coming under the protection of the lawyer.

By placing your garden under my expertise, I promise to look out for your best interest. This is done by managing the environment and fertility of your soil. The right environment will produce the highest possible quality of food with the greatest flavor and nutritional impact for you and your family.

This process is a multi-year project with cumulative benefits that keep on accruing.

An Overview of Your Soil

Overall your soil shows no significant problems to overcome. The most difficult soils to improve are those with extremely high phosphorous and potassium. They take longer because the excess nutrients interfere with the function of calcium and need to be cropped out in the form of food. Thankfully your soil does not have this problem.

That means the time it will take to achieve high quality food is shortened. While your soil does not have any excesses, it has a number of deficiencies and a few key ratios that are off kilter. This is normal and generally simple to fix. The current issues the soil test shows are…

- ✓ **Extremely Low Phosphorous**
- ✓ **Very Low Calcium**
- ✓ Low Magnesium
- ✓ Very Low Energy (Conductivity)
- ✓ A Slightly Anaerobic Soil Environment
- ✓ Low Carbon
- ✓ Low Copper
- ✓ Low Iron
- ✓ Low Zinc
- ✓ Low Manganese
- ✓ Low Boron
- ✓ Imbalanced Ratios with Phosphorous

Don't let this long list intimidate the prospect of growing high-quality food. These are all easy to fix and have been addressed by the broadcast of minerals that will be described later.

The most critical problems to address are the low phosphorous and low calcium. Both will take several years to build up. On the positive side your soil is well supplied with potassium. Consequently, no more should be added because you already have plenty. This means you should avoid all compost and manure. A mulch of wood chips is fine.

I Have 3 Goals for Your Garden

My first goal is to change the pattern of your soil. I want to see your soil transformed from where it is now into the ideal pattern for mixed vegetables. The ideal pattern for most gardens is given on the soil test under the Desired Level column.

During this phase of building toward an ideal pattern you will taste in the food the improvements we are making in the soil. This phase takes between 3-5 years, but you will see considerable progress before that time. You will also see a dramatic increase in the yield of your garden. Be prepared for an abundant harvest. For long-range planning I suggest keeping your garden size on the smaller side because your yield will be plentiful.

My next goal is to help you hold or maintain the ideal pattern in your soil. This is not as easy as it sounds and here's why. When soil is properly mineralized with full-spectrum nutrition it creates synergy with interactions between soil microbes, plant roots, and the thin layer of soil around plant roots.

In other words, the minerals in the soil are supporting a very large microbial population. The minerals also support a massive root structure which are in fact microbial feeding stations.

This large population of microbes are continuously living and dying. While living they digest soil particles and rock powders for the minerals they need to reproduce. When they die these nutrients are returned to the soil solution as ready-to-use plant nutrients.

The net effect of this is prolific yield from your garden…and considerable nutrient depletion from the soil. Of course, this is exactly what we want to happen. The goal is to keep the soil well supplied with the right level and ratio of available minerals so that the soil stays in the ideal pattern—without deficiencies or excesses.

Besides crop removal there is one other factor which depletes nutrients in soil, and that is rainfall. As moisture moves through the soil profile and into the subsoil it carries a small amount of calcium and other minerals with it. Over the course of a year rainfall can remove 100-400 lbs. of calcium per acre. This is a significant depletion in high rainfall areas and is not a factor in desert climates.

My ultimate goal with Grow Your Own Nutrition is that the first two goals are accomplished in your garden in the easiest way possible. That is why I have simplified the purchasing process to just one purchase per year. I have also simplified the fertility program to just two main actions; broadcast dry minerals (and carbons) once a year, and drench liquid nutrients every 3 weeks during the growing season.

What's in the Broadcast?

Your broadcast of minerals is a custom blend of soil amendments, rock powders, fertilizers, carbons, and trace minerals. Its composition is entirely matched to the exact needs of your soil based off the soil test.

No other garden program in the world does this with such customized precision. Let's explore what's in your mix.

To address your low calcium level, I used multiple forms of calcium derived from various rock powders. The most important is the carbonate form as limestone. Also included are rock powders where calcium is combined with sulfates, silicates, and phosphates. Multiple forms of the same element create a network effect to raise plant-available calcium quicker.

The phosphate requirement was addressed by the use of soft rock phosphate for long-term soil building. As I mention earlier, this will take several years to build up. That is why I also added a small amount of soluble phosphate fertilizer for the immediate needs this growing season. The Drenches I selected for your garden offer a small but on-going supply of plant available phosphorous throughout the growing season.

Magnesium is furnished by Epsom Salts in the broadcast and the magnesium in the nutrient drenches. Trace minerals are supplied by using specific trace mineral sulfates such as copper sulfate and manganese sulfate, along with 4 broad-spectrum trace mineral rock powders and 2 ocean products including finely powdered kelp meal.

To supply carbons, I have included powdered humates and a fast-acting reed sedge peat. Both carbon sources contain humic and fulvic acids which stimulate plants, roots, and microbes. The humates have another function in soil. They bind to the soluble nutrients. The nutrients remain plant available without damaging soil biology.

Because your soil is so mineral deficient it was necessary to supply the bulk of the custom blend as minerals rather than additional carbons. The ratio between minerals and carbons will change as the soil pattern changes. When the soil shows more mineral availability the custom blend will favor high rates of carbons. You soil blend provides enough carbons to jumpstart the microbial environment in your soil.

One word of caution. Most people apply compost or manure to their garden to supply carbons and organic matter. In reality this dramatically increases available potassium and disrupts the ideal pattern in the soil. This imbalance is easily seen in the calcium to potassium ratio. In your soil it is 2:1 when it should be 15:1. Since carbon is already addressed in your broadcast and since you presently have a full supply of potassium I strongly recommend that you avoid adding any compost or manure to your garden beds.

In addition to full-spectrum minerals your broadcast mix also includes live soil microbes. These are needed to digest the minerals and start that large microbial community which will feed your plants a steady diet of ready-to-use minerals. We have included 2 bacterial packages, and mycorrhizae, and primitive archaea microbes for better digestion of rock powders. Once they all get active around your plants you will be amazed at how well your garden does even with such depleted soil.

What are Drenches and Why are they Needed?

Drenches are liquid nutrient solutions. They also contain carbohydrates and biostimulants that feed soil microbes. Biostimulants dramatically speed up microbial activity. Drenches are needed to keep plants in their optimal level of performance. Drenches provide an instant infusion of ready-to-use nutrients very

similar to what microbes provide when they die and release their nutrients back into the soil solution. If microbes are already doing this why are drenches needed?

The answer is simple. In a garden we space plants with high efficiency. They are intensively planted close to each other to maximize yields from smaller areas. This is completely acceptable. Nature generally follows a pattern of extensive planting with a wide variety of plants all spread out. People garden intensively with less diversity and closer spacing. **There is nothing wrong with this; but intensive planting requires intensive management.**

Imagine two large tomato plants spaced 3 feet apart. Each plant has numerous tomato clusters and blossoms all requiring nutrients to finish developing. Each plant could have hundreds of tomatoes and blossoms at any point in time. The roots under the plants are all spread out looking for moisture and nutrients.

The microbes are busy living, digesting minerals, reproducing, dying, and releasing minerals. Plant roots are busy feeding microbes sugars and picking up moisture and nutrients. Each plant has a heavy demand for the nutrients it needs to remain productive.

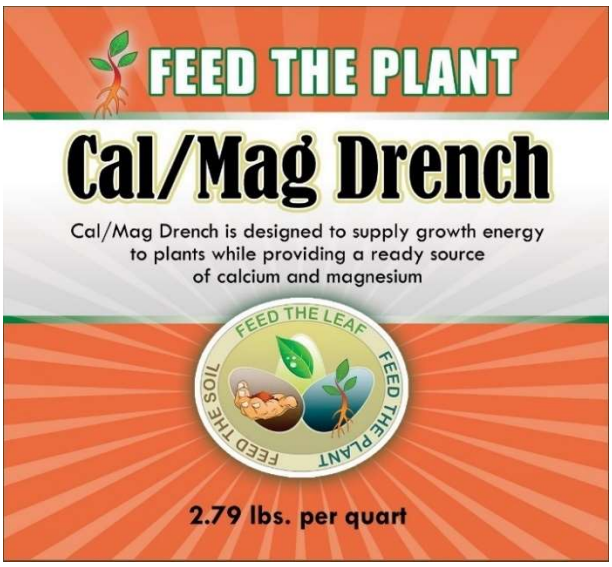
Both sets of roots are aggressively picking up nutrients when something bad happens. The supply of ready-to-use nutrients is exhausted. The microbes are no longer able to support the heavy demands of both tomato plants. What happens? Plants go from thriving to surviving. Blossoms drop off, quality goes down, and plants become susceptible to insect and disease attack—especially fungal attacks such as blight.

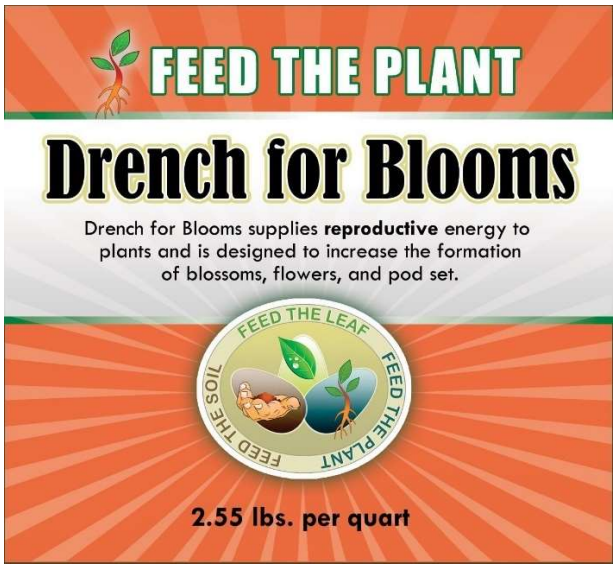
The solution is to replenish the supply of ready-to-use minerals with a nutrient drench. The drench is diluted in water and applied at the root zone just like watering plants. The carbohydrates in the drench give an immediate boost to soil microbes. Almost immediately the microbes begin releasing more ready-to-use nutrients back to the plants. The soluble nutrients in the drench are instantly available for plant uptake. With one action we have dramatically boosted the microbes with carbohydrates and the plants with soluble nutrients. This helps each of them help the other. Parity is restored as the microbes are back to supplying soluble minerals to plants and the plants are busy making sugars and supplying carbohydrates to the microbes.

Now those tomatoes have their insect and disease shields back up and are once again growing tomatoes like mad. Drenches in the Grow Your Own Nutrition program are designed to simultaneously provide carbohydrates for microbes and nutrients for plants.

Nutrient Drenches have another function. They are also be used to direct crop physiology. In other words, nutrient drenches can be used to direct a plant toward growth / vegetative energy or towards fruiting / reproductive energy. Growth energy causes plants to produce stalks, stems, and leaves. It is also needed to bulk up or size produce. Reproductive energy causes plants to produce more blossoms, flowers, and pod set.

The best strategy for growing mixed vegetables in a garden is to alternate back and forth between drenches that promote growth and drenches that promote blooming.





The growth energy nutrient drench selected for your garden is Cal/Mag Drench. It contains nitrogen in the nitrate form. This is the same form that rainfall picks up as it falls through the atmosphere. It also contains calcium and magnesium. Cal/Mag Drench has a Growth vs. Fruiting ratio of 67% Growth Energy and 33% Reproductive Energy.

The reproductive drench is called Drench for Blooms. It is derived from soluble nutrients and molasses. It contains a higher amount of phosphorous which is needed due to the very low level in your soil. Drench for Blooms has a Growth vs. Fruiting ratio of 16% Growth Energy and 84% Reproductive Energy. If you look on your soil test you will see that your soils Growth vs. Fruiting Ratio is 1.7:1. The desired ratio should be 1:1. You soil is skewed very high to growth energy because of the almost complete lack of available phosphorous. The broadcast of minerals and the stronger reproductive energy of the drenches should change this ratio closer to 1:1 by the next time you send in your soil test.

By alternating nutrient drenches every 3 weeks you will keep your plants in tip top shape and highly productive. I suggest putting each upcoming drench on your calendar or as a reminder on your phone. Feel free to move the date of drenching a few days forward or later to fit it into your life and the vagaries of the weather. Close enough is good enough. The main thing is to just get it done roughly every 3 weeks.

This concludes your Executive Summary. Please see Garden Fertility Instructions for specific details on how to apply the custom mix and the nutrient drenches.

I wish you well in your garden this year Lynn and look forward to hearing good reports.

With Respect,

Jon C. Frank

Founder – Grow Your Own Nutrition