Fertility to Pest Management – How We Grow Leafy Greens on Long Island

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I'm a 4th generation farmer from Long Island. I have a 30 acre vegetable farm where I grow lettuce, spinach and cabbage. I'd like to talk today about my fertility program and then outline my pest management program.

The first step in a good fertility program is a soil test. I take soil tests every year in November. I also have a complete soil analysis done every year. In addition, I have records dating back thirty years. This comes in very handy as I can keep track of developing trends over time. Using my soil test results, I develop an appropriate liming and fertilization program. I apply lime every spring, usually in March. The next step is fertilization. I use a specially tailored excel spread sheet to calculate my needs. For the past several years, I have used a custom fertilizer blend with pelletized limestone. The latter is to offset the acidity of the fertilizer. We also spread leaves and horse manure to increase our organic matter content. On our sandy soils, this is especially important. Organic matter increases the cation exchange capacity (CEC) which improves nutrient retention and minimizes leaching.

Preplant operations include primary and secondary tillage with a moldboard plow, disk, and wheel harrow. I then broadcast the custom blend fertilizer. I also broadcast pulverized gypsum at a rate of 1000 lbs. /acre and incorporate it before seeding. Gypsum adds two crucial nutrients: sulfur, which is often times low or deficient on sandy soils, and calcium, which helps to prevent tipburn in lettuce and internal burn in cabbage. It has worked very well for us over the last several years. We also add molybdenum at 1 lb. /acre, preplant incorporated. Many vegetable crops require this trace element for optimal growth. We transplant lettuce early in the spring and then seed weekly the rest of the year. My observations indicate that seeding is superior to transplanting. Bolting incidence also seems to be reduced. All of our cabbage is transplanted. I seed spinach in the spring and fall.

For weed management in lettuce, I use Kerb banded and/or Balan incorporated. Rates are dependent on soil type, so be careful when first applying herbicide. It is better to experiment at the lowest labeled rate and scale up as necessary to ensure that no injury occurs. It may be necessary to increase to the full labeled rate to get the desired effect. In cabbage, we use the herbicide Goal preplant. This has worked very well for us. You have to be mindful of drift because I've noticed it can burn the lettuce leaves in adjacent fields.

Since we grow lettuce on the same ground every year, pest and disease management is a challenge. We don't have the luxury of rotating or fallowing because land is scarce. If at all possible, I would highly recommend rotating land as a first step in reducing disease pressure. We do rotate cabbage on a 2 year basis to reduce clubroot. The next step in developing a disease management program is to select high quality seed. In cabbage, select a black rot resistant or tolerant variety and a yellows resistant variety. In lettuce, ensure that the seed is MTO (Mosaic) certified. Lettuce Mosaic Virus is a potentially devastating disease transmitted by aphids.

Since crop rotation is not an option for lettuce production, I have to judiciously apply pesticides to manage disease and pests. On lettuce, I use insecticides to manage aphids, leafminers and worms. Some of the insecticides I have used include Avaunt, Proclaim and Warrior for worms, Assail and Provado for aphids, and Spintor or Radiant for leafminers. I apply Rovral fungicide to manage bottom rot and Endura fungicide to prevent sclerotinia (drop). Drop is a cool weather disease so I use Endura early in the season. Bottom rot favors warmer weather so I switch to Rovral mid-season. I come back with Endura late in the season to manage drop in the fall. It is very important to make the first application when the plants are small, either before or right after thinning. An early application ensures the plant base gets adequate coverage to prevent disease. To maximize the efficacy of the products, I schedule 2 further applications a week apart. Based on my observations, 3 applications are necessary because of the high disease pressure. I do believe that 2 applications will suffice if you can rotate land. In late summer and fall, downy mildew and anthracnose can become problematic foliar diseases in lettuce. Previcur Flex (downy mildew) and Cabrio (anthracnose) have worked exceptionally well.

Price is an important factor when selecting a pesticide, but it is not the only consideration. Some pesticides need to be applied in combination with another pesticide from another group or FRAC code to slow the development of resistance. It is very important to read the label and follow the instructions. When selecting a chemical to use, pay close attention to the FRAC Code or group of each product. Rotating chemicals between different groups is another way to slow (but not prevent) the development of resistance. However, repeated use of one chemical will result in the rapid development of resistant populations.

In cabbage, I use Blocker fungicide (incorporated pre-plant) to prevent clubroot. Wetter years typically mean a greater likelihood of club root. For maggot management, the insecticide Lorsban appears to be the only labeled material. Using the appropriate rate is crucial. A light dose will not do the job. When spraying cabbage for insects, avoid emulsions and gravitate toward powder or granular formulations. I believe that the emulsions have a tendency to remove the protective waxy coating from the cabbage leaves. This acts as a built-in defense against diseases and should be preserved. To date, I have never needed to develop a fungicide program against foliar diseases in cabbage.

With regards to spraying and spraying techniques: I use a high pressure sprayer set at 450 psi. It has worked well. I feel that the turbulence it creates provides good coverage for the leafy green crops I grow. It is also important to use high gallonage. I have settled on 125 gallons/acre. The sprayer has a hydraulic boom that I can raise and lower to achieve the optimal spray height. This is very important to get optimal coverage and to prevent drift.