The Agrower

Volume 10, Issue 2 March 8, 2002

Agro Engineering, Inc.

Spring Soil Sampling Underway

The time has arrived for spring soil sampling. Many of you may recall seeing your friendly agronomists (Francisco and Bill) soil sampling fields during the fall. Fields which will be planted to potatoes the following spring are typically soil sampled in the fall. There are two primary reasons for sampling in the fall. First, this allows the agronomist to work on the fertilizer recommendations during the off-season, and allows for earlier spreading of fertilizer (especially Potash). Also, potatoes are a relatively inefficient scavenger of residual soil nitrogen, and the amount of residual soil nitrogen we credit is very small. Whenever a potato crop follows a grain crop, residual nitrogen found in the soil is usually fairly low. Grain crops use up almost all of the nitrogen available in the root zone. Typically, there is little correlation with high soil nitrate levels in the fall and lower nitrogen fertilizer requirement in the spring time.

With respect to grain fertilizer recommendations, typically soil samples are taken in the spring, as close to planting as possible. The soil sample taken in the spring will demonstrate a more definitive status of soil residual nitrogen in the soil. If the samples were taken in the fall, the residual soil nitrogen in the recommendation would be overestimated. This is primarily due to the highly mobile nature of soil nitrates and winter precipitation. Since grain crops are fairly deep-rooted, it is imperative to see how much early-season, as well as late-season, soil nitrates are available to the crop. For this reason, we sample grain fields at three different depths. The first sample is from 0 to 3 inches. This is used to determine if any nitrogen will be required early season before the roots are well established. The next sample is 3 to 12 inches, which is used to determine the nitrogen available during the early development of the plants, as well as all other nutrient needs. The final sample is from the 12 to 20 inch range. This sample is used to determine the nitrogen available later in the season.

So next time you're visiting with your Agro Engineering crop consultant, ask him or her about the benefits of soil sampling. There is still plenty of time to get your fields sampled before planting.

What's in Your Compost?

Have you ever really wondered what exactly is in compost? Compost can be made from a wide variety of materials and in a variety of ways. The most common method used in the Valley is large-scale windrow composting. The materials are mixed together, placed in windrows and allowed to heat up. This stimulates the microbial activity and quickly turns the raw material into finished compost.

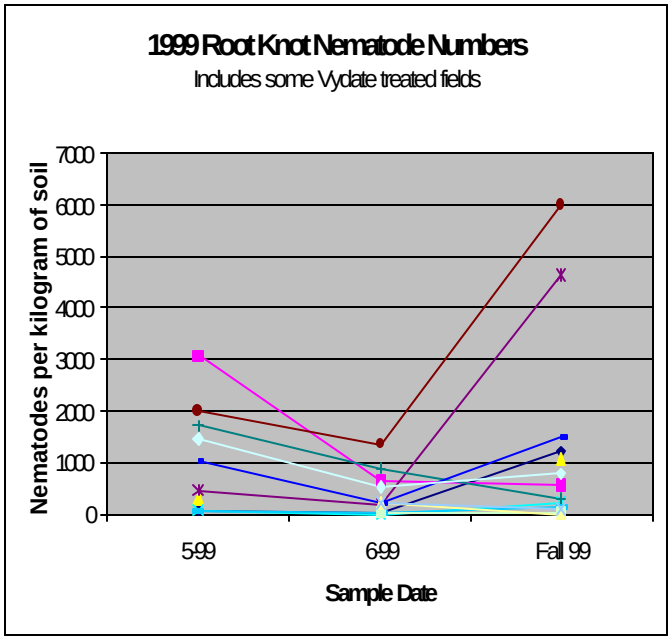
Most people know about the nutrient benefits of compost. Depending on the starting material, compost can contain high amounts of phosphorous, potassium, and several micronutrients, including iron. Many of the Valley soils are deficient in at least one nutrient, and usually two or three. There are other benefits from the application of compost.

Microbes play a vital part in compost. Along with breaking down the materials into useful organic matter, microbes are beneficial in our soils. The two major benefits of adding microbial live to your soil include: Increase nutrient availability for the plant, and disease suppression. Microbes help speed up the nutrient cycling process, turning organic nutrients that are not available to the plants into forms that can be taken up. For example, organic nitrogen is eventually changed into NO_3, or nitrate, which then is easily taken up for use by the crop. Microbes can also help fight diseases and pests. Some fungi can actually set traps for nematodes and then feed on them.

We at Agro have seen that fields with repeated compost applications have not had any dramatic increases in nematode populations. This may be a result of adding beneficial fungi and bacteria to the soil. It's a good idea to have your compost tested to determine what you are actually getting.

Nematode News 2002

Levels of root knot nematodes in the soil change during the growing season based on their life cycle. These nematodes over winter in the egg stage or as second stage juveniles. The eggs are very well suited to survival through the winter, but even the juveniles can survive both desiccation and freezing. As the potato roots begin to grow, the juveniles enter the root systems, and as the eggs hatch, those juveniles also enter the potato roots. There is a time period, usually in June (depending on temperatures), when very few root knot nematodes are found in the soil because they have invaded the roots. They complete their first generation around 1700 to 1750 Growing Degree Days F, then emerge from the roots and search for other roots or tubers to infect. The second generation is the first to cause tuber damage and if the season is very warm, additional generations can occur. In the soil, the highest numbers of root knot nematodes are found at the end of the growing season, or in early fall.



Conversely, the stubby root nematodes are ecto-parasites, so they feed on the roots without ever entering the root systems of the plants. Stubby root nematode levels tend to be higher in the fall following a grain crop and into the spring, and numbers tend to decline during the potato growing season, as potatoes are not a very good host of these nematodes. However, the damage that they cause also occurs fairly early in the season, and tobacco rattle virus is spread into the tubers from the time the stolons first begin to swell.

Agro prefers to sample ground that will go into potatoes after the previous fall crop, preferably in August or September, so that treatment decisions can be made in the fall, when more options are available to the grower. Potato fields can also be sampled in the spring, but control options are more limited. Because nematode infestations tend to be very patchy within the field, most researchers recommend sampling no more than 5-10 acres per sample. However, through experience, Agro has found that results from quarter circle samples are generally quite representative and results can be fairly replicated as long as about 30 cores are taken per sample. Full fields can also be sampled to get a general idea of which nematodes are present in a field and relative levels, but with a full field sample, it is more likely that a nematode patch could be missed.

Agro Engineering, Inc.
0210 Road 2 South
Alamosa, CO 81101

Tel: (719) 852-4957
Fax: (719) 852-5146
E-mail: agro@agro.com