

September/October 2004

# Environmental Update



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## Soil Sampling: Have you done yours?

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It is highly recommended that homeowners take soil samples prior to fertilizing lawns and gardens, and also before making landscape changes. The good news is that this is a free service of the NC Department of Agriculture & Consumers Services.

The bad news is that if you wait until January or February to take the samples, there is a much longer turnaround time on the results: everyone else waited too! So, beat the rush and get yours in early!!



Samples should be collected from each use area: lawn, flower beds, gardens, problem areas. **Do not** use galvanized tools or buckets to collect the samples, as this can severely influence the metals results! Plastic or stainless steel are recommended. You can either pick up some NCDA soil sample boxes from the Extension office, or you can collect the samples (approximately 1 pint), put them in plastic bags, and transfer them to the boxes when you take them to the Extension office for shipment to Raleigh. The results will be mailed directly to you with information about nutrient requirements, liming recommendations, and other conditions noted.

If you have a problem area soil sample, tell the Cooperative Extension staff when you see them. It will be sent as a “problem sample” (separate form!) and will receive special attention. If plants are doing poorly in that area, also bring in tissue samples from those plants. They will be sent to NCDA along with the soil.

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## Pond Problems?

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This has been a year of extremes when it comes to pond questions! Several people have brought in pond samples that were crystal clear and looked like drinking water....but they couldn't get fish to stay alive. The samples were sent to NCDA for a “Solution Analysis” (\$4.00 per sample...and LOTS of information in return!). Typically, these samples had low pH (3.5-5.0) and low alkalinity, were fairly recently dug, and were mainly ground water fed. To make these ponds a happier place for fish and plants, liming was recommended. The amount of lime ultimately needed will depend a lot on the pond's soil, so a soil sample is also recommended. The sample will need to dry before it is boxed and sent to NCDA.

At the other end of the scale, numerous pond samples were brought in that had a variety of algae problems. In these cases, the pH was higher (6.0-7.5) and had higher alkalinity. These ponds also received more surface runoff than the ponds previously mentioned, and had little to no buffer area around the ponds. Not unexpectedly, the NCDA results showed higher nitrogen and phosphorus concentrations in the water.

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## What's been in the water?:

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The following are some of the plants and algae observed in pond samples collected this summer:

**Duckweed:** Duckweed is a small plant (1/16-1/8 inch) with a couple of leaves and a single root hanging underneath.



**Watermeal:** Watermeal is even smaller than duckweed (1-1.5 millimeters) and resembles light green cornmeal. It feels hard and gritty.

Duckweed and Watermeal can occur together. Both like very still water. Although small, the plants can occur in large numbers and can completely cover a pond. When that happens, algae and submerged plants are shaded out (which can be a good thing) and oxygen transfer to the water is reduced (which is a bad thing). Because of the shading effect, the water in a duckweed covered pond is usually very transparent...once you brush the duckweed aside to see the water.

**Spirogyra:** Spirogyra is a filamentous green alga that has its chloroplasts arranged in a spiral pattern. In a pond, it appears as long, slick, stringy green "hairs". It can form large mats that make a home for other algae and microorganisms.



**Anabaena:** Anabaena is a filamentous blue-green alga. Some species cause taste and odor problems in water; others can be toxic to animals. The various members of this genus have three cell types: vegetative, heterocysts, and akinetes. The heterocysts enable this alga to use nitrogen gas (N<sub>2</sub>) for cell growth when other forms (nitrate-N or ammonia-N) are scarce. This gives it a competitive edge over other algae. The akinete is a "spore" cell that looks like a bean. When adverse conditions occur, more akinetes will form. When conditions

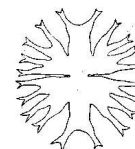


improve, the akinetes turn into vegetative cells and start a new population. The three cell types are strung together like beads on a string. Identifying an exact species depends on the size and shape of each cell type.

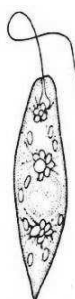
**Closterium and Micrasterias:** Closterium and Micrasterias are Desmids, which is a member of the green algae. There are roughly 140 different types of closterium worldwide. More than 80 species occur in the United States; each with a different size, shape, or other feature.



Micrasterias comes in a wide variety of shapes, all of which are lobed or incised to some degree. Both Closterium and Micrasterias consist of two identical "half cells" joined at the middle.



**Euglena:** If you have ever wondered "Why is my pond red?", it is likely due to a protozoa called Euglena. Some species of Euglena produce hematochrome pigments. They produce more of the red pigment during times of warm water and high light intensity. The water can have a red sheen or haze, or a reddish slime can accumulated on the water surface. These organisms like nutrient rich conditions, so they are an indicator of runoff pollution.



Sincerely,

*Diana M.C. Rashash*

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