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Updating Soil Fertility Recommendations for Commercial Vegetable Production in Ohio - *Dr. Matt Kleinhenz, Extension Vegetable Specialist*

A new study will catalogue the major characteristics of Ohio soils as a vital first step in updating research-based soil fertility management recommendations for commercial vegetable growers throughout the state.

The new effort is important for a number of reasons. For example, soil fertility significantly affects vegetable crop yield and quality. Second, Ohio vegetable growers use numerous crops, varieties, and soils and open fields and high tunnels in their operations – soil fertility plans should be calibrated for each set of production conditions. Third, fertilizers and soil amendments can be expensive, so applications should be guided by reliable evidence that they are likely to offer a solid return on investment. Also, fertilizer and amendment use are increasingly regulated. Going forward, the best regulations will be based on strong evidence that specific applications will help achieve farming and non-farming goals. Finally, research-based recommendations for vegetable soil fertility management must be updated to account for new production, market, regulatory and other conditions. In 2013, OARDC, OSU Extension, the Department of Horticulture and Crop Science and the Ohio Vegetable and Small Fruit Research and Development program of the OPGMA provided base support to initiate a process for updating these recommendations in Ohio.

The first step is to document the current condition of Ohio vegetable soils. The major characteristics of these soils (e.g., their pH, organic matter, salinity and macro- and micro-nutrient levels) must be clear to farmers and researchers as they target potential improvements in crop soil health management, particularly as it is influenced by applications of fertilizers and other materials.

A large inventory of data resulting from the analysis of many soil samples is required for this purpose. Ideally, to create the inventory, the project team would visit all Ohio vegetable farms, sample and analyze their soils and compile the results. However, circumstances require that we use a different lower-cost and time-saving approach.

Instead, we ask farmers to share information already in their files – copies of current soil test reports are requested. Information in these reports will comprise the inventory used to complete an initial summary of the current condition of Ohio vegetable soils. This summary will guide related, follow-up and farmer-driven research and extension activities.

Soil test reports can be sent by email, FAX or surface mail to Dr. Matt Kleinhenz, the project coordinator. All questions about the project can also be directed to Matt. Matt's contact information is at the end of this article.

Questions farmers may have about participating in this project:

1. Is participation free? Answer ... Yes.

2. Will information shared by farmers be given to anyone besides the project team? Answer ... No, absolutely not. All information that farmers share is strictly confidential and voluntary. Only the project team will have access to it.

3. What do farmers gain from sharing their soil test reports? Answer ... Sharing reports offers immediate and long-term benefits. For example, each cooperating farm will receive a customized master report listing results from the analysis of their soils compared to the remainder of a comparable test group – for example, other tomato growers, other sweet corn growers, other diversified organic vegetable growers, other high tunnel tomato growers, and so on. Again, individual farms will **NEVER** be identified in any report. With their customized master report, participating farmers will be able to compare soil test results from their farm to a much larger group of farms with similar cropping plans. Also, in the short-term, the project team will be able to identify irregularities in reports and troubleshoot privately with farmers. Longer term, participating farms will be among the first sites where follow-up research is conducted; this research will involve potentially superior fertility management strategies.

4. Is there a deadline for submission of soil test reports? Answer ... Yes, for Round 1 of the project, soil test information must be submitted by October 18, 2013.
5. Can reports from any lab be submitted? Answer ... Reports from all accredited labs will be accepted.
6. Can my soil testing service submit reports directly to the project team? Answer ... Yes, contact Matt Kleinhenz to arrange submission.
7. How current is current, that is, what is the oldest report that can be submitted? Answer ... Soil test reports dated 2013 are ideal but reports dated 2012 or 2011 will also be accepted.

Improving vegetable soil fertility management in Ohio is the goal. The OARDC/OSUE project team looks forward to partnering with you in that process.

For more information on this topic or other topics, contact Matt at:

phone: 330.263.3810 - FAX: 330.263.3887

Email: kleinhenz.1@osu.edu

Web: <http://hcs.osu.edu/vpslab/> and <http://www.facebook.com/osuvpslab/>

Southern Ohio Veg Net Report - *Brad Bergefurd, OSU Extension, South Centers at Piketon*

High tunnel tomato harvest continues strong with outstanding quality and size prices at wholesale auction prices and leveled out some but #1 quality large tomatoes are still exceeding \$3 a pound. Sweet corn harvest began in the area on June 19th. Harvest of snap and shell peas is begin to wind down. Harvest of lettuce, mustard greens, green onions, radishes, sweet onions, spinach, basil, arugula, chives, spring greens, peas, beans, broccoli, summer squash, cucumbers, pickles, zucchini and cabbage continues. Black raspberry harvest is in full swing and blackberry harvest on Rotatable trellis systems has begun.

Vegetable planting of most all crops continues on schedule with rainfall amounts ranging from ½ to 4 inches the past 7 days, with severe storm threats this afternoon and evening. Sweet corn planted the end of March under plastic is being harvested with great yields and prices. Pumpkin and winter squash planting is wrapping up. Cultivation and side dressing of Nitrogen continues on sweet corn. Seeding of Cauliflower, cabbage and broccoli plants continues in the greenhouse continues with the first cauliflower transplants going in the ground this week.

Production issues have included: herbicide drift injury continues from neighboring grain farms, thrips and aphids on high tunnel tomatoes, flooding in low lying fields under thunderstorms and downpours, White Mold / Timber rot is still causing extensive damage and plant loss in high tunnel tomatoes, cucumber beetles continue to cause feeding damage to newly transplanted and emerged cucumber, pumpkin and squash transplants; deer damage is causing extensive economic losses to many vegetable growers especially on cabbage with 90% crop loss being reported. *Rhizoctonia solani* was positively diagnosed on peppers by Sally Miller.

Southeast Ohio Veg Net Report - Hal Kneen, OSU Extension

Southeast Ohio vegetable growers are harvesting field grown tomatoes (red, yellow, heirloom), sweet corn, peppers -Hungarian & Banana, summer squash(yellow straight neck, zucchini, Pat a Pan), potatoes, beets, 1/2 runner green beans, lettuce, spinach.

Diseases seen this week include tomato early blight and bacteria spot on peppers. Have not trapped corn earworm in helio traps or Brown Marmorated stink bugs. Have seen Colorado Potato Beetles & larvae on tomatoes, eggplant and potatoes.

Diseases of Garlic - Sally Miller, Anna Testen, Delphina Mamiro, Mynul Islam and Nancy Taylor, Department of Plant Pathology

Last month we reported on our identification of a Potyvirus in garlic samples caused by Leek yellow stripe virus. Since then we have identified this virus in several other samples with similar symptoms. This virus is transmitted through the cloves and by aphids. Most garlic varieties have some amount of a Potyvirus or other viruses in them since they are vegetatively propagated and therefore pass the viruses on from one generation to the next. Also, in areas where aphids are abundant (like Ohio), the viruses are easily spread from plant to plant. The amount of viruses in garlic tends to build up over seasons, resulting in reductions in bulb size. For most garlic varieties, virus-free stock can produce up to two times larger bulbs than highly virus-infected cloves. Some varieties are not affected. Growers who save their own cloves for replanting should consider replenishing their planting stock with healthy, low-virus or virus-free planting stock every couple of years. Dr. Fred Crowe (fcrowe@sisna.com), Professor Emeritus of Botany & Plant Pathology at Oregon State University and a leading expert on diseases of onion and garlic, has been producing virus-free/low virus garlic in Oregon for several years through Deerfield Farm (deerfield@palmain.com; 541-325-1408; Bob Crocker). Deerfield Farm produces a number of hard-neck garlic types. They are currently sold out for 2013, although

requests for small amounts (in the hundreds of pounds) can probably be accommodated.



Leek yellow stripe disease of garlic

The OSU Plant and Pest Diagnostic Clinic received a garlic sample in June with white rot, a very dangerous disease of garlic caused by *Sclerotium cepivorum*. White rot is more damaging than virus diseases and also affects onions. The pathogen produces small round structures called sclerotia that can survive in soil for more than 20 years. Disease develops under cool moist conditions (soil temperatures of 50 – 75°F). White rot is best managed by prevention – only clean planting stock from areas without a history of white rot should be used. Hot water treatment (dipping in 115°F water) can help reduce the amount of the pathogen on garlic cloves. Once a field is infected, various chemical treatments are available but an integrated management approach is needed. See the University of California – Davis fact sheet on white rot at <http://www.ipm.ucdavis.edu/PMG/r584100511.html> for more information.



White rot of garlic; tiny black structures are sclerotia of *Sclerotium cepivorum*

No Reports of Cucurbit Downy Mildew in the Great Lakes Region - Sally Miller, *Department of Plant Pathology*

Despite the cool, rainy conditions the past several weeks, there have been no reports of cucurbit downy mildew in Ohio, our neighboring states or Ontario. The disease has been moving steadily up the east coast; the outbreak reported closest to us was in Delaware during the past week. However, the downy mildew pathogen population moving up the east coast of the US is probably different from the population that infects cucurbits in Ohio, at least early in the summer. We usually expect to see downy mildew around the July 4th holiday, although we have seen it earlier in some years and later in others. Please contact the OSU Vegetable Pathology Lab (miller.769@osu.edu or gurel.2@osu.edu) if you suspect downy mildew in your cucumber, melon or other cucurbit crops. We are continuing to monitor our sentinel plots in Wooster, Willard, Fremont and Piketon and will alert growers via VegNet and the Cucurbit Downy Mildew ipmPIPE website (<http://cdm.ipmpipe.org/>) should downy mildew be confirmed in Ohio.

Insect News – Celeste Welty, Dept. of Entomology

The key pests we are following in traps at this time of year are the corn earworm and European corn borer, which are a concern in sweet corn as well as peppers and tomatoes. Trends seen in the past week were similar to the previous week: pheromone traps are detecting activity of both pests, which means that crops should

be scouted for damage by larvae. Corn earworm traps caught 2 at Celeryville in Huron County (up from 0 the previous week), 6 in Ottawa County (up from 5 the previous week), 0 in Sandusky County (same as the previous week), 0 in Clark County (same as the previous week), and 1 in Franklin County (down from 4 the previous week) In cucurbit vine crops, we are seeing squash bug adults, squash bug eggs, and the adult feather-legged fly that is a parasitoid of adult squash bugs. Striped cucumber beetles remain active, as well as some spotted cucumber beetles, and western corn rootworm beetles are now being found. Pheromone traps for squash vine borer show increased activity of the adult moths, with egg laying likely reaching peak levels; trap catch was 14 near Springfield in Clark County (up from 5 the previous week) and a mean of 4 in Columbus in Franklin County (down from 6 the previous week).

Powdery Mildew Found on Squash – *Jim Jasinski, OSU Extension, IPM Program*

Although a bit earlier than usual, powdery mildew has been found on Lioness squash at two locations this past week; South Charleston and Columbus. While only a few colonies have been located to date, this signals the need to begin scouting any maturing cucurbit crop (pumpkin, squash, melons, cucumbers, zucchini) for this disease. Signs of this disease are fairly distinctive; look for small white “powdered sugar” looking colonies on the lower (where they will appear first) and upper leaf surface. Usually these are found on the older leaver in the mid-canopy first.

For crops such as zucchini and summer squash where they will only be harvested for another week or two, control is not critical. For any crop that has a longer developmental cycle like pumpkins, winter squash and gourds, control should begin at the onset of colony detection. Early control is recommended due to the high reproductive capacity of this pathogen and the nature of our fungicide management program, which is protective not eradivative. Fungicide sprays can be applied at a 7-14 day intervals depending on material selected, weather conditions, and any genetic resistance in the variety planted. Lastly, don't forget to rotate FRAC numbers on successive sprays to avoid accelerating disease resistance.

Fungicides to control powdery mildew and other cucurbit diseases can be found in the [Midwest Vegetable Production Guide](#).

The Honey Bee, Pesticides, and Cucurbit Puzzle: Second Call – *Reed Johnson, Dept. of Entomology*

Last week we ran an article informing you that some issues have emerged concerning honey bees, cucurbits, and pesticides. We asked for your assistance to help us identify

any pesticide use patterns in any cucurbit crop that might shine a light into the somewhat negative relationship between honey bees and this crop group. To date, 10 growers have responded to the survey, thanks! This is a good start, but we need to hear from more growers.

If you have not responded to the survey and have two minutes to spare on 7 questions about honey bees & pesticides, we would welcome your input. Any data collected in this survey will be anonymous, and the results will be posted in a later VegNet article.

<http://www.surveymonkey.com/s/beepuzzle>

DisclaimerInformation presented above and where trade names are used, they are supplied with the understanding that no discrimination is intended and no endorsement by Ohio State University Extension is implied. Although every attempt is made to produce information that is complete, timely, and accurate, the pesticide user bears responsibility of consulting the pesticide label and adhering to those directions. Ohio State University Extension embraces human diversity and is committed to ensuring that all research and related educational programs are available to clientele on a nondiscriminatory basis without regard to race, color, religion, sex, age, national origin, sexual orientation, gender identity or expression, disability, or veteran status. This statement is in accordance with United States Civil Rights Laws and the USDA. Keith L. Smith, Associate Vice President for Agricultural Administration; Associate Dean, College of Food, Agricultural, and Environmental Sciences; Director, Ohio State University Extension and Gist Chair in Extension Education and Leadership. TDD No. 800-589-8292 (Ohio only) or 614-292-1868.