Capital Area Ag Report
November 2014

“Everyone thinks of changing the world but no one thinks of changing himself.” —Leo Tolstoy

Announcements
Welcome to Sara LaFountain, our new Senior Administrative Assistant for the Capital Area Agriculture and Horticulture Program. Sara is housed in the CCE-Albany office in Voorheesville.

Sandy Buxton and I are planning more Dairy Discussion Group meetings for this winter, to include a tile drainage field day or two. Stay tuned.

Dec. 2 Tax Planning and Financial Strategies—presentations from Jill Robinson of Farm Credit East on impacting your tax liability, Breanna Fulper Lundy of Edward Jonas Investments on Retirement and Investment opportunities and Cornell Cooperative Extension educators talking about Management and Financial Decisions to make in High Cycles.

It is crucial to remember that just because the farm can afford to do something right now, it does not mean that is the right decision. Having a strategy and keeping the long term goal in mind will help every farm thrive through the next low price cycle.

The class is at CCE-Saratoga County, 50 West High St, Ballston Spa, NY from 10 am-3 pm. Registration including lunch is $20 with an early registration of $15 by November 25. Make checks out to CCE-Rensselaer County. Please contact Marcie Vohnoutka at 518-272-4210 for more information.
FYI

Tile Drainage Resources are available (soon) on our blog at http://blogs.cornell.edu/capitalareaagandhortprogram/. Find manuals, factsheets, articles, FSA forms, and our Nov 12th meeting presentations.

Need to buy or sell something for your farm business? Check out the “Ag Exchange” at http://agexchange.cce.cornell.edu/

CAAHP Web Survey is now Live

Please take a minute to tell us how our workshops, newsletters, farm visits and other educational programs have impacted you and your business. Showing our impact is crucial for continued support from our local governments and funders. Please go to the survey website: https://cornell.qualtrics.com/SE/?SID=SV_eXOHmhQwiQQlyf

We appreciate really appreciate your input and feedback to help us put on programs.

Last Minute Thoughts About The Margin Protection Program for Dairy Producers for Program Year 2015, by Andy Novakovic, plus other dairy markets and policy information at http://dairy.wisc.edu/pubPod/

The “Field Crop Dealer Meeting” notes and video can be found at http://blogs.cornell.edu/ccefieldcropnews/2014/11/14/field-crop-dealer-meeting-recap/. Presentations include:

- Western Bean Cutworm in NY: Update on Status and Implications of a new corn and dry bean pest - Keith Waldron
- New Developments in Field Crop Disease Detection and Management – Gary Bergstrom
- Alfalfa Fields Revisited; Soil pH, sulfur and cation exchange capacity- Quirine Ketterings
- Neonics in groundwater, bee decline and BT-CRW resistance: The double whammy for corn production - Elson Shields
- What’s the Status of Technologies Being Developed for Herbicide Resistance Management? - Russ Hahn
- Who put those genes in my food?? Facts and myths about genetically engineered crops – Margaret Smith

The Cornell ProDairy website, http://ansci.cornell.edu/prodairy/index.html has many resources and meeting announcements including:

- Snow Removal Do’s and Don'ts
- Operations Managers Conference, Jan 20—21, 2015
- Dairy Environmental Systems & Climate Adaptation Conference and Tours July 29-31, 2015

If you are a producer of grain, malt, or beverage in New York, contact Bill Verbeten (wdv6@cornell.edu), CCE, to be added to the Malting Barley and Distilling Grains in the Northeast Google Map
Improving Crop Land with Tile Drainage
By: Laura McDermott, CCE Eastern NY Commercial Horticulture Program
This article is a summary of highlighted points made at a November 12 workshop sponsored by Cornell Cooperative Extension’s Capital Area Agriculture and Horticulture Program, CCE Rensselaer County and CCE’s Central NY Dairy and Field Crops Program.

Why should farmers install tile drainage?
Yield improvement is one of the primary reason to tile land. This has been confirmed by many studies, just recently in a study from The Ohio State University, where drainage improvements on poorly drained soils were shown to result in substantially higher corn yields. These long-term experiments on Toledo silty clay, a very poorly drained soil, compared surface drainage only, tile drainage only, and a combination of surface and tile drainage on replicated plots. Average yields over 13 years were 92, 116 and 121 bushels per acre for the surface only, tile only and surface plus tile drainage systems, respectively, versus 60 bushels per acre on the undrained plots. This increase in yield makes it easy to see that it would only take a few years to pay off a 30’ on center pattern drainage system which averages about $1000/acre.(1).

Tiling not only removes yield limiting water from the soil, but it can also reduce compaction—a huge problem on many marginal soils and sometimes even on excellent soils. The water holding capacity of soil improves once it is drained and improved drainage allows more flexibility for alternative crop rotations and increased cover cropping. Better timeliness of planting, harvesting, and cultivating, is another great benefit realized by tile drainage.

Why don’t more farmers install tile drainage?
One of the primary reasons farms don’t install tile drainage is initial cost. The cost of an average drainage tile installation usually ranges between $1000-1500/acre. A brief review of the information about improved yield should help convince growers that tiling can be very worthwhile.

A second obstacle to installation is a fear of regulatory issues. Wetland determination is often seen as a complicated and highly regulated process. This unfortunately does not have to be true—but the best way to avoid problems is be pro-active. It is VERY important to visit with the USDA-NRCS staff PRIOR to digging. The staff there will help you determine the historical use of the ground as well as review the soil types of the land involved. Soil survey information can be found in printed soil surveys or on the web at: http://websoilsurvey.nrcs.usda.gov/app/. Farmers must file Form AD 1026 prior to digging. http://forms.sc.egov.usda.gov/efcommon/eFileServices/eForms/AD1026.PDF. It is important to remember that the land determination is good forever and the determination stays with the land—not the farmer. Turn-around time for the AD-1026 is supposed to be 30 days but can often take longer. You need to ask this question at the beginning of the process.

A third significant obstacle is finding a drainage specialist that can design an efficient system and then finding installation specialists that can accomplish the job in a timely manner. Many farmers will install tiling themselves, which is an excellent idea if the job is uncomplicated.

Good reasons to install your own drainage include:
- Timeliness
- Quality control
- Straightforward job on small acreage

Good reasons to NOT install tile drainage:
- No spare time
Steep learning curve required – especially for larger jobs.
Availability of manpower. It is very likely that a large job will require 3-4 men devoted to the job.

Construction equipment is necessary. Farms may have some of this equipment but likely not all. Equipment required includes a drain plow and stringer plus tractor; a bulldozer with a winch; a dumptruck; a jackhammer on an excavator and a rock rake on a payloader. All of these may be necessary for correct and efficient installation.

**Considerations when Installing Tile Drainage**

Design specialist Steve Mahoney, owner of River Bend Farm Agricultural and Environmental Services discussed design requirements for successful drainage systems. Tiling is obviously not “tile” anymore but in fact is corrugated plastic tubing and pipe. There are 2 sources of agricultural drainage tile in the northeast: Soleno Textiles in Quebec, [http://www.solenotextiles.com/en](http://www.solenotextiles.com/en) and Advanced Drainage Systems in Ludlow, Mass. [http://www.ads-pipe.com/en/](http://www.ads-pipe.com/en/). Because these materials are so bulky it doesn’t make a lot of sense to order from outside of the region – if you do be sure to check shipping prices.

There are four types of drainage pipe:
- **Standard** – can be used on every soil type with the exception of “quick sand”
- **Sand slot** – excellent choice for almost every soil type. Slots are difficult to see but these pipes have been shown to drain well.
- **Wrapped pipe** – wrapped with a 20% fine type of fabric – some farms have had problems using this pipe on fine clay – but wrapped pipe works extremely well with sand and loam soils.
- **Non-perforated tiling** – This smooth walled pipe eliminates the threat of root penetration. It is often used near hedgerows and outlets.

Main line tiling is usually larger, 10”, 8” or 6” in diameter, and lateral pipes are all usually 4” in diameter.

Drainage pipe (tile) needs to be buried 4’ down in order to spread the lateral tile pattern apart. If the tile is shallow – 3-3.5’ depth - the pattern will close to 20-25’ apart. That increases the cost of the job. However, depending upon the soil type, the tile used and the value of the crop being grown, the farmer may decide to close up that lateral pattern and still have the tile buried deeply. It is common for high value vegetable crop land to have a lateral tile pattern of 20’. Tile should be installed using laser or GPS guidance. Laser guidance needs to be moved more frequently, especially when contours are involved, but it’s often the guidance of choice for main lines. GPS guidance does a great job and is often considered to be the ‘cadillac’ guidance system.

Tile fittings are important and farmers should consult the supply company when placing the order, especially if they are doing the job themselves. One important tip given was that an animal guard should DEFINITELY be installed at the outlets. These are very low cost and can prevent a lot of damage by encroaching critters. Fixing the damage is very difficult and expensive. Still – outlets need to be checked annually. It would also be helpful if outlets were permanently located on a map or spreadsheet using GPS coordinates so that future generations can find them. You might also consider locating and tabulating existing drainage that may be known by the older generation but not necessarily the younger crew. Another consideration in design is the question of allowing tiles to drain into the irrigation pond. Vegetable farmers that have fields infested with Phytophthora capsici should not allow drainage tiles to flow into the irrigation pond as that would result in all of the irrigated farm being infested by this extremely dam-
aging vegetable crop disease. Dr. Larry Geohring of the Biological and Environmental Engineering Dept at Cornell University shared some of the remediation research that is being conducted by the Soil and Water Lab in that Department, http://soilandwater.bee.cornell.edu/index.htm. Farmers are encouraged to contact their local extension office if they have questions that go beyond normal installation problems. Tile drainage water can be a source of dissolved phosphorus and nitrates that pollute our waters. Properly managing fertilizers and manure will prevent pollution. Applying manure to fields that are not saturated with water (frozen or not) and incorporating it are the key to stopping it from reaching tile lines.

For more help with tile drainage questions, visit your local Soil and Water Conservation District office and ask for the SWCD Drainage Guide or download one at this link: http://www.waynecountynysoilandwater.org/wp-content/uploads/drainage_guide_ny.pdf.


Poorly drained soil that would benefit from tile drainage. Photo source: Soil and water lab, Cornell BEE Dept. index.htm

Corrugated tile drainage options from left to right: standard tiling used in many situations, sand slot used in sand or loam soils and wrapped tiles used in many soil situations to minimize clogging.
CCE / High School Research Partnership
By: Aaron Gabriel
CCE, Capital Area Agriculture & Horticulture Program

Over the last three years, I have been developing a partnership with high schools to have their students participate in my research projects. It started out with my interest in black cutworm. As I scouted corn fields, many of the skips were not due to rocks or soil conditions, as farmers often assume. Black cutworm frequently was the culprit (as well as birds). To collect enough data to support my observation, would take a lot of time for one person. So, I developed a protocol for determining the cause of skips in corn and contacted several high schools to see if they wanted their students to participate in field research. I found interest at Berne/Knox/Westerlo (BKW), Greenwich, Salem, New Lebanon, and Taconic Hills High Schools. I also found interest from a 4-H club in Columbia County and one Master Gardener.

It just so happens that there is a nation-wide effort to engage students in STEM (science, technology, engineering, and math). The desire to engage students in a research experience and the need for Cooperative Extensions to do research is coming together into a successful partnership. To obtain financial support, grant writing has taken a new perspective. I received two small grants from regional foundations, not to study the pedestrian black cutworm, or nematodes (which have been studied for many years), but to give students a research experience by involving them in relevant local Cooperative Extension research. The program objectives focus on the students and on helping the local agricultural community, not on solving a specific agricultural problem.

Program Objectives:
- Develop a 4-session high school curriculum to give students a real-world research experience that will:
  - Teach students how to conduct and interpret research.
  - Help students recognize their interest and potential in pursuing careers in science and research.
  - Teach students how to critically evaluate research that is broadcast through news media.
  - Conduct agricultural research that will:
    - Provide useful information that CUCE can extend to farmers for positive impacts.
    - Give students an experience to help them better understand agriculture.
Teach students the impact that research has on the community.

My first collaboration was with a class of BKW Advanced Placement Biology students in late May, 2012. Having taken their last exam in mid-May, like all AP Biology students in New York, they needed some projects until the end of the year in mid-June. First, I gave them a presentation in class to explain the dilemma of missing corn plants and my interest in the black cutworm (BKW). I armed them with a data collection sheet, tools, and pictures of the insects, bugs, and diseases they might find digging in a corn field looking for the culprits that cause skips in corn. The first field we sampled was an early-planted corn following sod. The seed had a low dose of seed-applied insecticide. The sod and weeds had not yet been sprayed with herbicide. There were many missing corn plants. To my surprise, at most of the skips they were finding seedcorn maggot pupae. We learned that at high pressure, the low-dose of seed-
applied insecticide did not provide protection. The corn population was reduced by 23% to 21,017 plants/acre, with 30% of the skips due to seedcorn maggot. Seedcorn maggot was not as severe in other fields.

Currently, I am doing research to learn how to use beneficial nematodes to control insect pests in corn (grubs, black cutworm, and corn rootworm). Two students helped me by doing a bioassay in the lab to confirm that our nematodes would infect BCW. They entitled their project, “The Farmer, the Field, and the Nematode”, entered it into the Greater Capital Region Science and Engineering Fair and won the environmental award.

With confidence that these nematodes (from the lab of Dr. Eslon Shields, Cornell Univ.) will infect black cutworm, plots were set up to evaluate their effectiveness on BCW in the field. Plots 5’ X 7” were treated with either nematodes or water, as a control, and then infested with purchased BCW. Fields were located in Salem and Berne. AP Biology students from the local schools helped infest the plots and collect data to compare the damage from the two treatments. Nematodes did kill some of the BKW, but damage between the two treatments was similar.

As I was trying to figure a new way to get the nematodes established in a field before the corn crop, Donna McGovern, BKW teacher, asked if I had a project for her entire class of ninth-grade biology students. We developed a plan to apply the nematodes to a white grub-infested hay field before it would be planted to corn. So, 52 biology students sampled 160 locations and collected and tallied up the white grubs in two fields. On my own, I could never sample the grub population like that. Nematodes were applied and corn will be planted in the spring. This time, some plots will be infested with BKW, and others with corn rootworm. The students will be there to collect the data on BKW damage. Since rootworm damage is evaluated in July, I will need to find a 4-H club to help, or students that want an education outside of the school year.
Students have also performed lab bioassay experiments and determined that nematodes will not survive in pop-up fertilizer, unless it is diluted with 50% water. The purpose is to evaluate other methods of applying nematodes (which are suspended in water). New Lebanon students determined that our nematodes do not infect fly larvae, like the seedcorn maggot. These fairly simple experiments give students a real research experience and help me generate the information I need as a CCE educator to help local farmers.

The next step of the CCE / School Research Partnership is to complete development of a 4-session curriculum that can be used by any pair of Extension Educator and school teacher. This is currently underway where students will learn how to research a topic, formulate a hypothesis, design an experiment, do the experiment, analyze the data and make conclusions. The finale of the curriculum will be to visit a local farm and learn how research has shaped agriculture and how it impacts farmers.