The Produce Pages

Serving the fruit and vegetable growers of Eastern New York

Managing pH and Alkalinity

March 2016

Tips for Greenhouse Transplants, Container Production, & High Tunnel Crops

TERESA RUSINEK

Seeding time is here! Test your irrigation water and soil now and avoid heartache and frustration later in the season when deficiencies show up. If you're growing in high tunnels hopefully you tested the soil at the end of last season, if not, do it now before adding amendments. If you plan on adding compost to your soil you should ask your source for an analysis or send it off to a lab such as University of Mass. Amherst (*https://soiltest.umass.edu/services*) or Rutgers (*https://njaes.rutgers.edu/soiltestinglab/services.asp*). The pH and other components of the compost can range widely.

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Cornell University
Cooperative Extension
Eastern New York Commercial Horticulture

The Produce Pages

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Contents

Serving the Educational and Research Needs of the Commercial Small Fruit, Vegetable and Tree Fruit Industries in Albany, Clinton, Columbia, Dutchess, Essex, Fulton, Greene, Montgomery, Orange, Putnam, Rensselaer, Saratoga, Schoharie, Schenectady, Ulster, Warren and Washington Counties

The pH of media/soil effects plant vigor, growth, health and ultimately profitability. Managing pH in container media can be a frustrating task, particularly when you are dealing with vegetable transplants in small volumes of media. When transplants are grown in potting media, pH can change quickly—much more quickly than outside soil pH changes. This is because potting mixes don't have the "buffering capacity" of field soil. Buffering capacity is the ability of soil to resist change in pH. In the field soil, less lime is needed to change a sandy (lighter) soil's pH than to change pH on a heavy clay. In this respect, you can think of potting media as a very sandy soil.

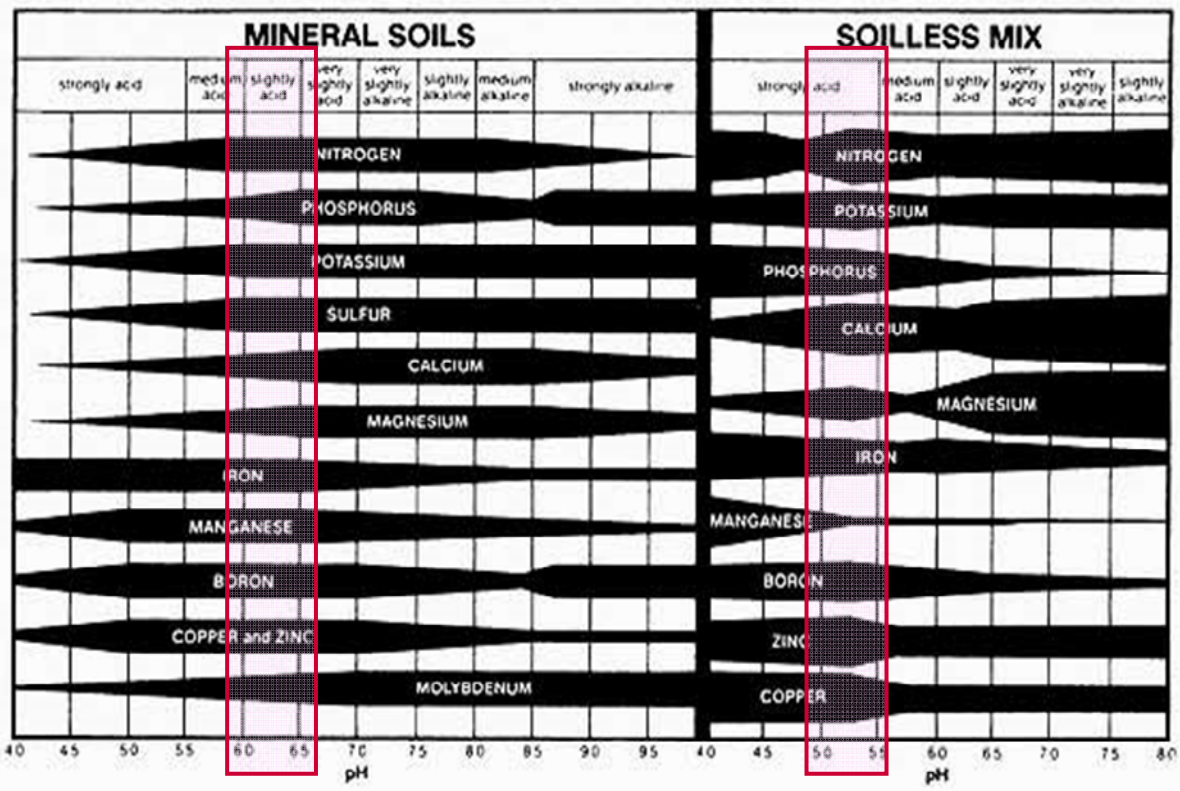
Management begins with an understanding of the relationship of media components, water alkalinity and fertilizer to pH. Followed up with monitoring and adjustments, pH can be successfully managed.

pH is a measure of how acidic or basic a solution is. Positive charged molecules such as H^+ will make solutions acidic (lower pH) and the negatively charged OH^- molecules are basic (raise pH). pH becomes an important part of managing a plant nutrient program. For many plants, nutrients are available for plant roots to absorb when they are soluble at optimal pH levels of 5.5 to 6.5

High pH issues - When root zone solutions have a high pH (basic) of 7.0 and above, micronutrients like iron, manganese, zinc and boron are insoluble and unavailable for roots to absorb, resulting in nutrient deficiencies. Although your inclination may be to supplement the plants with the missing nutrient, your real long term solution is to lower the pH thus allowing these nutrients to become available.

Low pH issues – The same micronutrients that are insoluble under high pH conditions are very soluble and available to the plant under low pH (under 4.0) conditions. Nutrient toxicity can readily occur under these conditions. The long term solution is to keep the media pH in the proper range of 5.5 to 6.5.

Correcting pH problems- Start with the media – Acidic media like sphagnum peat, coir, pine bark and composts are usually acidic. Alkaline media includes items like hardwood bark, vermiculite, rock wool and rice hulls and the neutrals like perlite, sand and polystyrene. Depending on your



The optimal pH range for plants grown in soilless mixes is around 1.0 to 1.5 pH units lower than the pH range for plants grown in mineral soils due to differences in nutrient availability

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ingredient preference, the media may be acidic. Limestone is often added to adjust the pH to a more desirable level. Make sure the limestone is thoroughly dispersed within the mix. It is common to find large variations in the pH of the media due solely to poor mixing. Even commercially purchased mixes can have significant pH variations from bag to bag and lot to lot.

Water and pH- The Alkalinity level of your water may need to be adjusted to properly manage your container pH. Alkalinity is the ability of water to neutralize acids due to the dissolved alkalis (bicarbonates) in the water. The greater the amount of dissolved alkalis in the water, the more acid will be needed to neutralize it. Think of alkalinity as "liquid limestone". The primary source of alkalinity in ground water aquifers, rivers, ponds and lakes are limestone deposits that have reacted with water over time. Throughout the seasons, water levels within aquifers can change. High water levels can dilute alkalinity levels just as low water levels can concentrate them. Sample your water 2 or 3 times during the year as you notice conditions change. If your samples show significant change, then you know that regular sampling is necessary.

Alkalinity is measured in ppm of $CaCO_3$. For greenhouse use, water that is moderately alkaline (80-120 ppm) is considered ideal. With low alkalinity levels, pH fluctuation can occur very rapidly. Moderately alkaline water will provide a slight buffering effect to help moderate wide pH fluctuations. If your water alkalinity is high (over 200 ppm), it can be lowered by injecting acid into your irrigation system using a proportioner. Citric acid can be used in organic production, sulfuric acid is commonly used in conventional production. If the alkalinity is slighty high, between 100-200ppm, using an acidifying fertilizer alone can often alleviate the problem.

High alkalinity water will tend to raise the pH of media over time. Yellowing on the upper leaves of pepper and tomato transplants can be an indication of iron deficiency brought on by high media pH. This is seen fairly often and can result in poor transplants. The more you water, the more liquid limestone is delivered, the more pH rises.

Photo T. Rusinek

You should test all your water sources on the farm before considering adding acid. Your alkalinity reading will determine the amount of acid to be injected into the system. High alkalinity water can also degrade the active ingredient and effectiveness of certain pesticides. In the lower Hudson Valley, water from many wells regularly tests high in alkalinity, 200 ppm or higher.

Fertilizer and pH -How does the fertilizer affect the pH of the media? Ammonium and urea are acid forms of nitrogen and tend to lower the media pH. Nitrates are basic forms of Nitrogen and tend to raise the pH. Many commercial fertilizers are combinations of all the nitrogen types.

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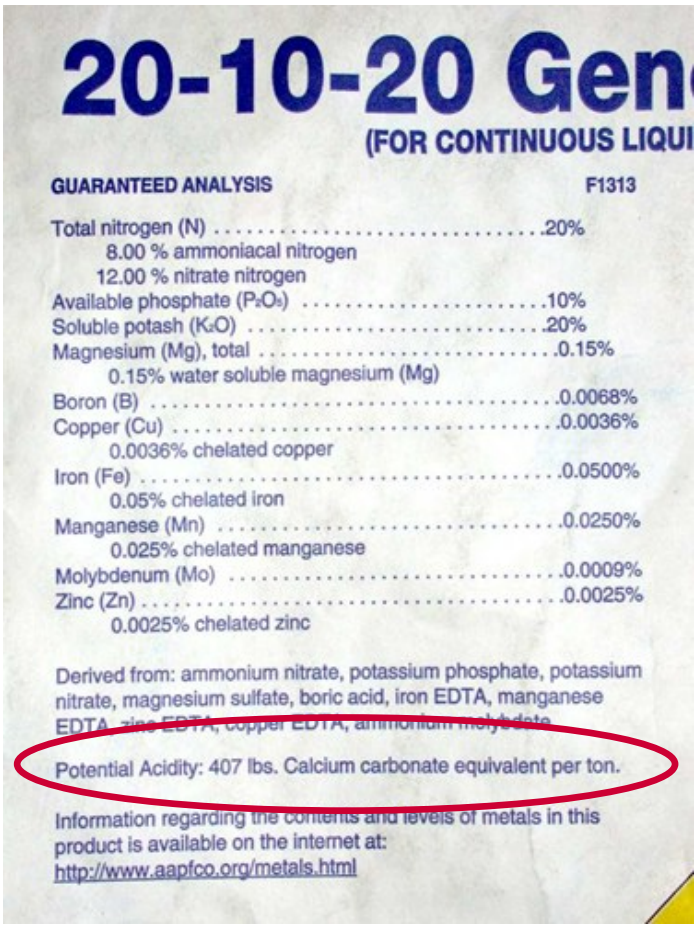

20-10-20 Gen

(FOR CONTINUOUS LIQUI

GUARANTEED ANALYSIS F1313

Total nitrogen (N) 20%
8.00 % ammoniacal nitrogen
12.00 % nitrate nitrogen
Available phosphate (P_2O_5) 10%
Soluble potash (K_2O) 20%
Magnesium (Mg), total 0.15%
0.15% water soluble magnesium (Mg)
Boron (B) 0.0068%
Copper (Cu) 0.0036%
0.0036% chelated copper
Iron (Fe) 0.0500%
0.05% chelated iron
Manganese (Mn) 0.0250%
0.025% chelated manganese
Molybdenum (Mo) 0.0009%
Zinc (Zn) 0.0025%
0.0025% chelated zinc

Derived from: ammonium nitrate, potassium phosphate, potassium nitrate, magnesium sulfate, boric acid, iron EDTA, manganese EDTA, zinc EDTA, copper EDTA, ammonium molybdate

Potential Acidity: 407 lbs. Calcium carbonate equivalent per ton.

Information regarding the contents and levels of metals in this product is available on the internet at:
http://www.aapfco.org/metals.html

The fertilizer bag label should indicate how acid or basic the fertilizer is. As an example, a 20-10-20 fertilizer has a potential acidity of 407. This means the pH effect of an application of one ton of 20-10-20 would be neutralized by 407 pounds of calcium carbonate limestone.

Photo T. Rusinek

Regular monitoring of the pH in your container media or in the high tunnel is not complicated and should prove worthwhile. There are a number of pH meters that you can purchase that are easy to use. If you should have any questions on testing pH or alkalinity, please feel free to email them to me at tr28@cornell.edu

Source: Lessons Learned from On-Farm Trials with Organic Mixes - Alkalinity and pH *Molly Shaw, Cornell Cooperative Extension of Tioga County, Stephanie Beeks, Dept. of Horticulture, & Neil Mattson Dept. of Horticulture*

Adjuvants to Improve Disease Control in Apples

JANNA BECKERMAN,BOTANY AND PATHOLOGY, PURDUE UNIVERSITY

The management of common apple diseases relies heavily on effective fungicide applications. However, the evolution of fungicide resistance by many pathogens has resulted in management failures and significant economic losses. With time and the increasing development of fungicide resistance in apple scab, and possibly bitter rot, more and more apple growers rely on Captan, an older fungicide, because it has a multisite mode of action, and little risk of resistance. Label restrictions limit growers to 40 lbs of Captan per season that may not provide sufficient control of both apple scab and bitter rot in unusually wet years. As a result, apple growers are faced with two equally difficult scenarios: inadequate management of diseases due to resistant pathogens from the use of newer fungicides or insufficient management due to restrictions on Captan. The goal of this research was to identify new approaches to reduce the amount of Captan needed throughout the growing season without decreasing disease control. These studies were begun with a goal of identifying ways to improve fungicide efficacy through the use of adjuvants.

Adjuvants are tank additives that increase the coverage and retention of sprays and correct issues with the tank water by affecting the pH. The incorporation of adjuvants into current apple disease management strategies has the potential to improve disease control by increasing the efficacy of Captan sprays at reduced rates. To assess the improvement of Captan sprays, adjuvants were combined with the lowest rate of Captan and applied to apple trees every 10-14 days from bloom to harvest. Disease and phytotoxicity incidence and severity were observed on apple fruit to measure the effectiveness of the treatments. Results showed that Li700 plus Captan and Bond Max plus Captan consistently reduced disease incidence in high-pressure years by

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increasing the coverage and retention of Captan and lowering the pH of the tank water.

Directly improving fungicide efficacy is one approach to improve disease management. Another, less direct approach, is to reduce the amount of overwintering inoculum. In order to examine if adjuvants improved urea-driven decomposition of scab infected leaves, adjuvants were combined with urea and applied to infected leaves. These leaves were then left to overwinter on the orchard floor. Leaf area decomposition and pseudothecia and ascospore reduction were observed to measure the effectiveness of the treatments. Results showed that Li700 plus urea and Wet Betty plus urea improved ureadriven leaf decomposition, reducing pseudothecia development and ascospore release. Based on this study, the addition of these adjuvants to urea could delay an apple scab epidemic 3-8 days, saving one fungicide application and postponing initial infection past the point when apples are most susceptible infection by the apple scab pathogen.

Our last study examined the use of the non-ionic wetting agent, PentraBark, in combination with the fungicides Agri-Fos and Ridomil Gold 4EC for the control of Phytophthora collar rot. This w s an on-farm trial working with a grower with a history of root and collar rot on trees in their orchard. Trees were approximately eight inches in diameter, and at the quarter-inch green stage of development. For the bark treatments, the main trunk of the tree and the first 1 to 2 feet on the main scaffold limbs were sprayed until bark was wet, but stopped just before run-off to avoid drenching the surrounding soil. Approximately 1 pint of liquid was applied per tree depending upon treatment. The Ridomil Gold 4EC soil drench treatment was applied at the same time as the other five treatments. Treatments were applied once per year. Mean canker size was measured and evaluated on the basis of lesion to stem ration. Fungicide treatments differed in their ability to reduce canker size. All treatments significantly inhibited canker development. However, a combination of Pentra-bark and Ridomil Gold 4EC gave consistently better results, even with a reduced rate of fungicide.

The addition of adjuvants to Captan, Ridomil, phosphorous acid or urea has the potential to improve disease management by reducing fungicide rates and reducing overwintering inoculum. Together these factors may reduce the number and dose of fungicide sprays required for apple scab and bitter rot management throughout the growing season and ultimately increase a grower's net return in apple production.

Source: NYS Producers Expo Proceedings

Visit the ENYCHP Website

For online class registrations, announcements, previous issues of our newsletters, and more, visit the ENYCHP website at

http://enych.cce.cornell.edu/

Email or call any of the educators with questions or comments on the website – we want to make it work for YOU!

Nutrient Management for Potato Production

CARL J. ROSEN, DEPARTMENT OF SOIL, WATER, AND CLIMATE, UNIVERSITY OF MINNESOTA

Optimum potato growth and profitable production depend on many management factors, one of which is ensuring a sufficient supply of nutrients. There are 14 soil-derived elements or nutrients considered to be essential for growth of plants. When the supply of nutrients from the soil is not adequate to meet the demands for growth, fertilizer application becomes necessary. Potatoes have a shallow root system and a relatively high demand for many nutrients. Therefore, a comprehensive nutrient management program is essential for maintaining a healthy potato crop, optimizing tuber yield and quality, and minimizing undesirable impacts on the environment.

The goal of this presentation is cover nutrient management tools and options to help improve potato nutrition. While it is recognized that specific nutrient demands and responses will often differ with variety and growing conditions, the general approach for determining nutrient needs will be the same. The topics addressed include soil testing, tissue analysis, and nutrient management strategies.

Soil Testing

Fundamental to any effective nutrient management program is a reliable soil analysis and soil test interpretation. Samples should be representative of the area to be fertilized and generally should be taken in the top 6-8 inches. The soil test will help to determine whether lime or nutrients are needed and if so, what rate should be applied. A typical soil analysis for potatoes should include pH, organic matter, P, K, Ca, Mg, Zn, and B. Soil nitrate tests can be done but are generally most accurate when used in dry climates on finer-textured soils and when taken to a depth of 2 feet. Other nutrients such as S, Mn, Fe, and Cu can be determined if a problem is suspected. While the actual soil test results should be fairly similar from one lab to the next, extractants may differ and interpretations may vary widely. For most accurate fertilizer recommendations, soil test interpretations should be based on local or regional research.

Soil pH: One of the more important chemical properties affecting nutrient use is soil pH. Optimal soil pH for nutrient availability is between 6 to 7. Many soils used for potato production have become increasingly more acid over time due to use of ammonium containing fertilizers and leaching of cations from the rootzone. Acid conditions are generally favored for potatoes in order to minimize the incidence of common scab (Strepotmyces scabies), which is most widespread when soil pH is above 5.5. Use of liming amendments is often avoided to minimize scab. Controlling scab in this manner, however, can result in a soil pH that will cause nutrient imbalances. Once soil pH drops below 4.9, nutrient deficiencies and toxicities become more common. In particular, Mn and Al toxicity and P, K, Ca, and Mg deficiencies may occur in these low pH soils. The problem may not be prevalent through the entire field, but may occur in smaller areas where the soil consists of higher sand or lower organic matter content. In some cases, grid sampling a field for pH may be useful to identify areas that need correction. If corrective measures need to be taken, lime the soil to a pH of 5.5 during the years when potatoes are not grown. Use of scab resistant varieties is also recommended so that pH can be maintained in a more optimal range.

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Tissue Analysis

Tissue analysis has been used for many years as an additional nutrient management tool to: 1) diagnose a nutrient deficiency or toxicity, 2) to help predict the need for additional nutrients (primarily nitrogen), and 3) monitor the effectiveness of a fertilizer program. The basis behind tissue analysis is that maximum yield and quality are associated with an optimum range of nutrient in the tissue sampled. If the level of nutrient falls outside this range then, then corrective measures should be taken. The most common tissue used for nutrient analysis in potato is the petiole (leaf stem and midrib) of the fourth leaf from the shoot tip. It is critical that this tissue stage is collected because younger or older tissue will have different nutrient concentrations and can lead to erroneous interpretations. For sampling, approximately 30 to 40 leaves should be collected and the leaflets stripped off and discarded. Petioles are then sent to a laboratory for analysis. Most diagnostic criteria for tissue analysis are based on a sample taken during the tuber bulking stage. Samples taken too early in the season or soon after a fertilizer application may not accurately reflect the true nutritional status of the plant if uptake of applied fertilizer by roots has not occurred. For irrigated potatoes, tissue analysis should begin about one week after final hilling and at least four days after a fertigation.

Iron Deficiency in Potato

Photo University of Idaho Extension

Nutrient Management Strategies

Nitrogen (N): Of all the essential elements, N is the one most often limiting for potato growth. Application of fertilizer N is usually necessary to ensure profitable potato production because soil N is largely tied up in organic matter and not readily available for uptake. Both N rate and timing can have important impacts on yield and quality.

Factors to consider when deciding on the rate of N to apply include: variety, yield potential or goal, growing season, soil organic matter content, and previous crop. If manure is used, then an estimate of N availability from the manure should be incorporated into the overall N applied. In general, early maturing varieties and those grown for early markets require less N than late maturing varieties. Too high a rate of N will delay tuber initiation and maturity leading to excessive vine growth at the expense of tuber growth. Delayed maturity can result in tubers with lower specific gravity. High N will induce vigorous foliage, which can lead to an increase in vine rot diseases. On the other hand, lack of N can increase the early blight infestations. Controlling early blight with proper use of fungicides will, in some years, reduce the N requirement. In other years, use of fungicides increases yield potential and hence N requirement is the same or higher when early blight is controlled. Generalizations on foliar disease incidence and N requirement are difficult to make.

In general, split applications of N are recommended for potatoes from both a production and an environmental standpoint. A portion of the N should be applied preplant or planting and the remainder at emergence and hilling. Nitrogen uptake by the potato plant is highest during the tuber bulking stage. Split applications will generally improve N use efficiency by reducing leaching losses due to excessive rainfall and providing available N when it is needed for tuber growth. Applications of N after hilling should be based on petiole nitrate analysis.

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Many studies have been conducted to identify what source of N is best for potato production; however, interactions with variety, application method, and growing conditions make it difficult to draw a general recommendation on N source. Common N sources used with success include ammoniated phosphorus sources as starter fertilizer followed by sidedress applications of urea, ammonium nitrate, urea-ammonium nitrate solutions, or ammonium sulfate. Care should be taken not to band high amounts of ammonium containing fertilizer close to the seed piece as ammonia toxicity may result, especially on high pH soils. Ammonium nitrate is a quickly available N source and used frequently on early maturing varieties. It is also the most susceptible to leaching. Urea needs to be incorporated or irrigated in, otherwise N loss due to ammonia volatilization may result. Ammonium sulfate also provides sulfur and is the most acidifying N fertilizer. On a nitrogen basis, the cost of ammonium sulfate is double that of urea. However, if sulfur is also needed, then ammonium sulfate is an economical source to use. Specialty N sources such as calcium nitrate can be effective, but are many times the cost of urea.

Phosphorus (P): Phosphorus is important in enhancing early crop growth and tuber set and promoting tuber maturity. Experiments conducted over a 6-year period in Minnesota revealed a consistent response to banded P fertilizer applied at rates of 100 to 150 lb P2O5/A in lower P testing soils (Bray P less than 25 ppm). Inconsistent response to P fertilizer was found in high P testing soils (Bray P greater than 25 ppm). In about 50% of the studies, a positive response to P was found on high testing soils. In some cases, the positive response may have been due to low pH (5.3 or less), which tends to tie up P. In the other 50%, the response was not significant. On average, some P fertilizer appears to be necessary for potatoes to reach maximum yields in sandy soils of central Minnesota. It is recommended that studies need to be conducted on a local basis to determine potato response to P fertilizer.

Potassium (K): Potatoes take up significant quantities of K and this nutrient plays important roles in tuber yield and quality. Soils tests have been found to be very useful in predicting K responsive soils. On low K testing soils, which require high K fertilizer application rates, both broadcast and banded applications can be used. Potassium chloride (0-0-60) is the most economical K source, but it has a high salt index and may cause salt problems if banded at rates higher than 200 lb K2O/A. Low K is associated with an increased incidence of internal black spot bruising. Specific gravity may be reduced with high rates of potassium chloride, while potassium sulfate (0-0-50) at equivalent K rates has less of an effect on specific gravity. In season applications of K fertilizer tend to increase bulking, but will usually lower specific gravity.

Calcium (Ca), magnesium (Mg), and sulfur (S): In general, most soils contain sufficient amounts of secondary nutrients for potato production. However, acid sandy soils low in organic matter may require addition of one or more of these nutrients. Use of dolomitic lime as the liming source for acid soils will provide both calcium and magnesium.

Calcium plays an important role in maintaining tuber quality in storage and reducing internal tuber disorders due to water or temperature stress. Addition of Ca to soils having less than 400 ppm extractable Ca may improve tuber yield and quality. In some situations, localized Ca deficiency may occur on high testing Ca soils and can result in tuber storage and internal breakdown problems. These problems are the result of inadequate transport of Ca in the

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tuber caused by water or temperature stress. Addition of calcium on high testing soils is recommended only if the potatoes are to be stored and storage problems have been encountered. Calcium sulfate (gypsum) and calcium nitrate are two Ca sources that can be used to increase tuber calcium concentrations. Gypsum can be applied at or before planting. Calcium nitrate should be incorporated into the hill as a sidedress application after emergence.

Magnesium deficiency can be a problem in soils where high rates of potassium fertilizer have been used. Response is likely if soil test Mg is less than 50 ppm. Magnesium sulfate or potassium-magnesium sulfate are the most common Mg sources available.

Sulfur requirements can often be met from soil organic matter breakdown. Rainwater and irrigation water contain some sulfate and can also provide a significant proportion of the sulfur needed for growth. Ammonium sulfate and potassium sulfate are common sources used to supply sulfur when a need is indicated from soil or tissue tests. Elemental sulfur is not an immediately available form and must be oxidized by soil bacteria to sulfate before it is can be used by the plant. The oxidation of sulfate forms sulfuric acid and will have an acidifying effect on the soil.

Micronutrients – zinc (Zn), boron (B), copper (Cu), manganese (Mn), nickel (Ni), iron Fe) chlorine (Cl), molybdenum (Mo): Micronutrients are needed in much lower quantities than the nutrients discussed above. In general, most soils contain sufficient amounts of micronutrients to meet plant needs; however, a deficiency can cause serious reduction in yields. Application of micronutrients is recommended only if a need is indicated by soil and/or tissue tests. High pH soils can limit availability of Fe, Zn and Mn. In organic soils, Cu and Mn may be limiting. Foliar application is the recommended method to correct deficiencies of these micronutrients. In many cases, pesticide sprays contain enough Cu and Zn to meet plant demands of these nutrients. Boron may be limiting in sandy soils; however, potatoes have a low demand for B and responses to applied B are not common. In addition, excessive B applications can be toxic. If B is needed, soil application is recommended because B applied to the foliage is not readily transported to the tuber. Potato responses to Ni, Cl, and Mo are not well documented.

Source: NYS Producers Expo Proceedings

Update on Hemp

MAIRE ULLRICH

NYS has passed law to allow experimental agricultural production of hemp (less than .03% THC, by dry weight varieties) for textile, food and other products. Only 10 sites are allowed by law, right now. Sites will be approved through an application process. Only colleges/universities are eligible to apply. Cornell is investigating an application and funding to do trials on Cornell-owned research farms for 2017. The limitations to trials on other farms are related to the security and liability requirements. Locally, there is interest amongst some farmers, and inquiries from investors, to experiment . Maire & Erik are working with Cornell faculty, NYS AG & Markets, growers and investors to work through the process together. If you have questions, please call Maire or Erik at 845-344-1234

SPRING 2016

Unwanted Pesticide / Chemical Disposal Program Scheduled

CLINTON, ESSEX, FRANKLIN, FULTON, HAMILTON, SARATOGA, WARREN AND WASHINGTON COUNTIES

CLEANSWEEPNY is a NYSDEC environmental benefit project that provides for the environmentally safe and economic collection and disposal of unwanted or unusable pesticides, school chemicals, golf course chemicals, and elemental mercury and mercury-containing devices (e.g. manometers and thermometers), as well as other waste chemicals. CleanSweepNY also collects and recycles triple-rinsed HDPE plastic containers from agricultural and certain non-agricultural entities. The NYS Department of Environmental Conservation administers the CleanSweepNY project through its Central Office Pesticides Program in Albany. Funding for this environmental benefit project is administered by the Natural Heritage Trust.
To date, CleanSweepNY has collected and disposed of over 1,479,800 pounds of chemical wastes, more than 855 pounds of elemental mercury, and over 4,250 plastic containers that could have been disposed of in landfills across New York State. CleanSweepNY results in enhanced stewardship of the environment through improved management of those materials which can pose human health risks upon exposure and a significant hazard to the environment such as water resources.

A SPRING 2016 CLEANSWEEPNY collection will target . Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington Counties.

Holders of pesticides and chemical materials who are located in other counties may also participate but onsite services cannot be provided.
The collection dates and locations are as follows:

Wednesday May 4th, Plattsburgh, NY

Thursday May 5th, Hudson Falls, NY

Specific collection locations will be available upon registration or by contacting CleanSweepNY staff by phone at 877-793-3769 or by e-mail at info@cleansweepny.org

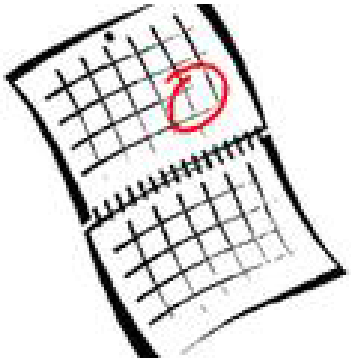
ACCEPTED FREE OF CHARGE

CleanSweepNY funding is intended to benefit New York agricultural pesticides from farms, farms no longer in production, NYS certified pesticide applicators, greenhouses, nurseries, some small businesses, NYS schools, commercial or home & garden pesticide holders, golf courses, schools, marinas, cemeteries and others. Participants can bring unwanted pesticides to CleanSweepNY collection events at no charge and with no quantity limit. Some exceptions must be made for municipalities and government agencies so please call to discuss.

CleanSweepNY Services are NOT Available to Homeowners

PRE-REGISTRATION IS REQUIRED TO PARTICIPATE IN CLEANSWEEPNY.

Requesting a registration packet is easy and can be done by calling 1-877-793-3769 or by e-mail to info@cleansweepny.org NOTE: Information received by CleanSweepNY is kept confidential and the registration deadline is April 15, 2016.
There is **NO** enforcement potential for any product turned in as part of this collection project. **NO** enforcement has been taken on any of the 2,524 registered participants in 19 CleanSweepNY events.
Please participate and help us to properly manage unwanted pesticides and chemicals in NY State!



March: Annual Thirty Day Period for Agriculture District Inclusion

TERESA RUSINEK

In September of 2003 the Agriculture and Markets Law (AML) was amended by section 303-b allowing for parcels to be added into Agriculture (Ag) Districts on an annual basis. Before the amendment, landowners had to wait until an Ag District "opened up" for review to request inclusion into an agricultural district. Ag Districts are reviewed every eight years from the date they are created. With the addition of Section 303-b to the AML, every county *that contains a certified agricultural district is required* to establish an annual thirty day period for landowners to submit requests for inclusion of agricultural land into an agricultural district.

The formation of ag districts is intended to counteract the impact which non farm development can have upon the continuation of farm businesses. Briefly, ag districts provide the framework to limit unreasonable local regulation on farm practices, to modify public agencies' ability to acquire eminent domain, and to modify the right to advance public funds to construct facilities that encourage development. Also, benefit assessments, special *ad valorem* levies, or other rates and fees for the finance of improvements such as water, sewer or non- farm drainage may not be imposed upon land used in agricultural production and within an agricultural district.

Do not assume that you are included in and ag district. **Inclusion in an ag district is different than having an agricultural assessment or agricultural zoning.** If you are not sure, contact your county planning department and ask, you will need to provide the section , lot, block number of the parcels in question. If you know of a neighbor who is new in farming, tell them about ag district and to contact Cornell Cooperative Extension or your counties Planning Department or Ag & Farmland Protection Board for more information on where to access an application.

CSF
Climate Smart Farming
A project of Cornell University

Being Prepared Makes Good Business Sense:

Climate Smart Farming Tools from Cornell

JESSE STRZOK, ENYCHP & JONATHAN LAMBERT, CORNELL CLIMATE SMART FARMING PROGRAM

You may have heard about Cornell's new Climate Smart Farming (CSF) Program (http://climatesmartfarming.org) at Empire Farm Days, the NYS Ag Society Forum, Empire State Producers Expo, or the NOFA-NY Winter Conference. CSF is a new initiative to help farmers in New York and the Northeast to:

- Sustainably increase agriculture productivity, incomes, and food security
- Increase energy efficiency and renewable energy capacity to reduce operation costs and GHG emissions
- Increase farm resiliency to extreme weather and climate variability

New online tools are being developed which will help with timing decisions, decrease inputs, increase productivity and mitigate risk on farms. They include:

⇒ CSF Growing Degree Day Calculator: measures heat accumulation to predict plant development and pest/disease outbreaks

⇒ CSF Freeze Risk Tool: graphs hardiness vs. observed temperature for several crop varieties

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over a specific date range to determine freeze risk

⇒ CSF Irrigation Scheduler: monitors current and forecasted soil water deficit at your location to allow smart scheduling of irrigation

The CSF program has worked closely with the Northeast Regional Climate Center (*http://www.nrcc.cornell.edu*) to develop the new website and decision tools. The website is unique because it presents one-of-a-kind agricultural decision tools and incorporates weather and climate with agricultural models. The tools incorporate new data on a daily basis to create accurate short-term forecasts for farmers. New resources and tools will be continually developed to provide information for the major agricultural production sectors in the Northeast.

The CSF tools are also being developed based on the information that farmers need most. Cornell has formed a new farmer advisory group to provide input on usability and usefulness of tools, and help guide the development of future tools. The CSF Program also has a statewide team of six Cornell Extension agriculture specialists in NY who cover a range of commodities and production issues – the CSF team is available to help train producers or other extension specialists to use the tools and resources on the site.

The CSF tools are currently viewable on the site, but are still in testing/demo mode until the current seasonal data is available. In addition to tools and resources, videos on the website provide farmer success stories with renewable energy, energy management, and best management practices to reduce risks. Whether looking at flooding, freezes, drought, heat stress, disease, pests or weeds, the bottom line is being prepared and using the most current data to mitigate risk makes good business sense!

Visit http://climatesmartfarming.org or for more information contact:

Cornell Climate Smart Farming Program
Cornell College of Agriculture and Life Sciences
102-105 Rice Hall, Ithaca, NY 14853
Tel: 607.254.4942, Fax: 607.255.3891

School CSA Opportunity

MAIRE ULLRICH

As part of a project with the NYS & Orange County Departments of Health, CCE Orange is looking for CSAs who would be looking to do outreach to the **Newburgh School System**. Our objective is to help school staff and families access CSAs by coordinating with school administration to establish drop-off sites that coincide with school schedules, making pick-up easy for parents. If you are interested in participating in this project, let Maire know (845-344-1234 or mru2@cornell.edu). Because this is a new venture, we have not worked out all of the details so your input on how this might run smoothly will be appreciated.

Late February Through Early March

High Density Apple Orchard Pruning Demonstrations

Dr. Gemma Reig and Dan Donahue are available to meet with growers and staff, on the farm, to demonstrate proper pruning techniques for high density apple orchards. Please call Dan at (518) 322-7812 so schedule a visit. In the interest of reaching as many orchards as possible, dates and locations will be publicized via E-Alert on short notice. If you see that we are in your area, call us to add your orchard to the list for that day.

Observations on High Density Pruning in the Hudson Valley this Winter

DAN DONAHUE

Here are some of my observations after a few grower hi-density pruning sessions conducted before Fruit School, and again on February 22nd:

- Tall Spindle laterals are not meant to be permanent, therefore, no stubbing back. If the limb is that bad, take a deep breath, grit your teeth, and remove it back to the trunk, leaving a 1.5" beveled stub.
- Lower scaffolds of a Vertical Axe are meant to be "permanent", and should be pruned in accordance with the 5-6' in-row spacing of this system.
- Yes, return bloom this year may well be significantly lighter than last year. However, if you feel the need to "conserve" potential fruit buds, reduce columnarization cuts but **still make those limb renewal cuts.**
- Young tree with a weak central leader? Ultimately the tree needs to reach beyond the top wire for these systems to be profitable:
    - Remove any shoots that directly compete with the leader
    - Remove laterals at the top that appear to be sapping energy from the leader, especially if they are large diameter relative to the leader.
    - If a young Tall Spindle tree (2-3 leaf) appears out of balance, stunted in height, weak top but with substantial lower scaffolds, renewal prune those vigorous scaffolds back to 1.5" stubs. This will tip the scion/root ratio towards boosting vigor into the top. If the tree does not make its design height, overly vigorous lower scaffolds won't make up for the lost profitability of a reduced bearing surface.
    - Do not head the leader of a young Tall Spindle tree.
- Dr. Robinson has recommended that the final tree height in a Tall Spindle planting be maintained at 90% of the orchard's between-row spacing, **if the spacing is 11'**. This would be a height of approximately 10', no issue there. I have yet to see a Hudson Valley TS orchard at 11'. I've seen plenty at 15'. 90% of 15' is 13.5'. Is 5.5' of canopy above an 8' trellis too much of a challenge to the laws of physics? I think it is. 11-12' is a more reasonable compromise.
- When leaders start to reach the design height for the orchard spacing, start to zig-zag the leader by cutting back to a weak lateral, and continuing this into the future. Do not "head" the leader to reduce its height. A series of crooks in the leader will help reduce vigor in the lop. If the tree is especially vigorous, stat this process a little sooner.

Cornell Berry Production Workshop

Thursday, March 24th

CCE Saratoga County
50 West High Street, Ballston Spa, NY 12020

Agenda

9:00 – 9:15 Welcome, NYSBGA intro

9:15 Using Soil Health Information as a Tool to Address Berry Nutrition - Dr. Marvin Pritts, Professor, Horticulture Section, School of Integrative Plant Science, Cornell University

10:00 Using low tunnels for fall production of strawberries - Dr. Marvin Pritts, Professor, Horticulture Section, School of Integrative Plant Science, Cornell University

10:30-Identifying Disease in Berry Crops - Dr. Kerik Cox, Assoc. Professor, Dept. of Plant Pathology and Plant-Microbe Biology, Cornell University

11:05 Strawberry Varieties - Dr. Courtney Weber, Associate Professor, Horticulture Section, School of Integrative Plant Science, Cornell University

11:30 Top Three Insect Pests for Strawberry, Raspberry and Blueberries: and how to identify them - Dr. Greg Loeb, Professor, Dept. of Entomology, Cornell University

11:55 Raspberry Varieties - Dr. Courtney Weber, Associate Professor, Horticulture Section, School of Integrative Plant Science, Cornell University

1:00 Managing Diseases in Small Fruit Plantings - Dr. Kerik Cox, Assoc. Professor, Plant Pathology and Plant-Microbe Biology Section, School of Integrative Plant Science, Cornell University

1:25 Managing Insects in Small Fruit Plantings - Dr. Greg Loeb, Professor, Dept. of Entomology, Cornell University

1:50 Berry pruning: an effective way to control pests and promote productivity – Laura McDermott, CCE ENYCHP

2:20 Adjourn formal DEC portion of meeting
2:20 – 2:45 – Travel to Optional Pruning Demo*
2:45 – 3:30 – Pruning Demo
3:30 Depart for home

- timing contingent on finding a grower agreeable to host within a 15 minute drive. I have one in mind that would be on the way home for faculty, but it isn't mandatory that they attend.

To register:
https://enych.cce.cornell.edu/event.php?id=508

Calendar of Events

March 2-4, 2016. ***North American Raspberry and Blackberry Conference***, Colonial Williamsburg in Williamsburg, VA.
http://www.raspberryblackberry.com/

March 8, 2016. ***Onion School***, CCE Orange County, 18 Seward Ave. Middletown, NY.
https://enych.cce.cornell.edu/event_preregistration.php?event=495

March 15, 2016. ***Effective Orchard Spraying with Dr. Andrew Landers.*** Hudson Valley Lab, 3357 US Highway 9W, Highland, NY $15pp.
http://enych.cce.cornell.edu/event.php?id=507

March 17, 2016. ***Northeastern NY & VT Winter Grape School,*** Holiday Inn, Lake George, NY
http://enych.cce.cornell.edu/event.php?id=486

March 24, 2016. ***Cornell Berry Production Workshop,*** CCE Saratoga County, 50 West High Street, Ballston Spa, NY 12020
http://enych.cce.cornell.edu/event.php?id=486

March 31, 2016. ***Navigating NEWA in the Champlain Valley with Dr. Juliet Carroll,*** Miner Institute , 1034 Miner Farm Rd. Chazy, NY $10pp
http://enych.cce.cornell.edu/event.php?id=509

April 1, 2016. ***Navigating NEWA in the Capital Region with Dr. Juliet Carroll,*** Saratoga CCE, 50 W. High St. Ballston Spa, NY $10pp
http://enych.cce.cornell.edu/event.php?id=510

April 7, 2016. ***Effective Orchard Spraying with Dr. Andrew Landers.*** Champlain Valley, Forrence Orchards, 86 River Rd. , Peru. NY $15pp.
http://enych.cce.cornell.edu/event.php?id=506

Special Permit Training
First Week of April (tentative)

RESPIRATOR FIT TEST WORKSHOP

Monday March 14, 2016
Hudson Valley Research Lab
3357 US 9W Highland, NY

$25 fee per person
Limited number of spots available, pre-registration is required
Requirements for test:

- clean shaven
- no eating, drinking, smoking, or chewing gum 15 minutes before the test

Contact Jim O'Connell at 845-943-9814 or jmo98@cornell.edu for more information

New Technology in Apple Scab and Fire Blight Management Workshop

Monday, March 14th, 2016

10:00 am to 3:00 pm

Henry A. Wallace Center at the FDR Memorial Library in Hyde Park, NY

Special discount for Red Tomato Eco Growers

Join us for a special session on New Technology in Apple Scab and Fire Blight Management in the Northeast. Invited guests include Marc Trapman (RIMpro Cloud Service) and Vincent Philion (IRDA, Quebec, Canada) will introduce Rimpro Cloud Service, an interactive Decision Support System for precision disease management in apples. Invited local guest speakers include David Rosenberger, Daniel Cooley, Kerik Cox, and Jon Clements.

Link to the details:

http://www.redtomato.org/summit/

Sponsored by:

CLEAN SWEEP NY

Northern NY Vegetable School

Tuesday, March 15 9:00-3:00

Ausable Valley Grange, Keeseville NY

Speakers: Crystal Stewart, Chuck Bornt, Amy Ivy from the Eastern NY Commercial Horticulture Program

Special Guest Speaker: Paul Arnold from Pleasant Valley Farm in Argyle, NY will speak on: *Growing Salad Greens Spring through Fall at Pleasant Valley Farm*.

- Cost of $25 includes lunch and resource materials.
- DEC pesticide recertification credits will be available for morning session and afternoon session separately.
- Register and pay online at: http://enych.cce.cornell.edu/event.php?id=514
- Or call the Troy office at 518-272-4210
- Questions? Contact Amy Ivy at adi2@cornell.edu or 581-570-5991

Grower host: Matthew Spaccarelli, winemaker and general manager of Benmarl Winery.

Jim O'Connell, Grape and Berry Educator for Cornell Cooperative Extension of Eastern NY will lead a discussion on bud mortality and the season ahead (what percent mortality are growers seeing, what strategies are they employing in their vineyards to compensate for bud loss, etc.).

This event is free, but please pre-register by March 15 with Jim O'Connell (P) 845-943-99814 or (EM) jmo98@cornell.edu and let him know what dish you will bring.

Agenda

9:00 AM Registration, DEC credit sign-in, coffee
9:25 Welcome & Announcements
9:30 GAPs/FSMA Update - Erik Schellenberg, CCE Eastern NY Commercial Horticulture Program
10:00 New Proposed Standards for Pesticide Applicator Certification - Cathy Ahlers, New York State Department of Environmental Conservation
10:15 Coffee Break
10:30 Bacterial Diseases of Onions - Dr. Steven Beer, Cornell University, Dept. of Plant Pathology
11:15 Update on Fungal Diseases and 2015 Herbicide Trial Results - Christy Hoepting, Cornell Vegetable Program
12:00 PM Lunch
1:00 Onion Breeding/Variety Trial Updates - Dr. Martha Mutschler-Chu, Cornell University, Dept. Plant Breeding and Genetics
1:45 Insect Pests and Management Update - Brian Nault, Cornell University, Dept. of Entomology
2:30 Onion Weed Control - Bernard H. Zandstra, Michigan State University, Dept. of Horticulture
3:30 Wrap Up and Adjourn

3.25 NYSDEC Recert. credits approved

Location:

Cornell Cooperative Extension Orange County
18 Seward Ave., Suite 300
Middletown, NY 10940-1919

Cost (pre-registered)

$50.00 ENYCHP/CCE Orange Enrollee
$65.00 Non-ENYCHP Enrollee

At the Door
$80.00 ENYCHP/CCE Orange Enrollee
$95.00 Non-ENYCHP Enrollee

Register on line at:
https://enych.cce.cornell.edu/event_preregistration.php?event=495
Or call 518-272-4210