December 2019

The Produce Pages

Serving the fruit and vegetable growers of Eastern New York

Aerial depiction of Amy's plant in Goshen, NY. Photo: Orange County Partnership.

Feature Farm Story

Amy's Kitchen Coming to the Hudson Valley

Maire Ullrich, CCE ENYCHP

Those of you farming in the lower Hudson Valley have likely heard that Amy's Kitchen, the national canned and frozen vegetarian brand, is putting a processing plant in Goshen. The groundbreaking for their plant was held in June 2019 with a plan to have production rolling out in 2021. In mid-November, Senator Jen Metzger held a meeting at CCE Orange to connect executives and potential producers (individuals and representatives from hubs/cooperatives) to share information about both sides of the industry.

With current plants in northern California, Idaho, and Oregon, this will be their eastern seaboard outpost. During the meeting, they informed the group that 60% of their product is consumed east of the Mississippi. Having a 389,000 sq.ft. production facility in the Northeast is critical to the expansion of the brand. The plant is expected to have 600 employees and provide those employees with "extras" such as a healthcare facility for workers and their families.

Many folks are aware of Amy's brand, but to discuss how to become part of their supply chain develops a whole new level of awareness. Amy's produces more than 250 individual items, all vegetarian and

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Cornell Cooperative Extension
Eastern NY Commercial Horticulture Program

The Produce Pages

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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

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mostly organic, some vegan, and some of almost every other special diet most would consider. They have frozen and canned products that are mostly savory lunch and dinner options but there are a few frozen breakfast options and "sweet treats" in the mix that are shelf-stable packaged. Several of the frozen meals also come in family-size. Their foods range from typical comforts such as variations on macaroni and cheese and a wide selection of soups to the more adventurous collection of Indian and other Asian cuisine offerings.

The exact collection of which foods will be rolling off the Goshen lines has not quite been decided yet and even the highest Executives don't know exactly what the supply needs of the plant will be. This is because they will be adding some new menu options in 2020, some of which have not finished their lengthy development and testing process yet. However, there are some products that are in high use amongst many of the products that will surely, regardless of final selection, be needed in high quantity. All produce and dry beans, and some of the dairy, are required to be certified organic. Some of the produce that will arrive at the plant will be fresh while the largest portions will be IQF (individually quick frozen) for addition into the dishes in that form. The fresh products that would most likely be needed locally are: carrots, garlic, onions (red & yellow), potatoes and roma tomatoes. IQF items most needed would likely be: bell peppers, broccoli, butternut squash, carrots, cauliflower, greens like spinach and kale, and zucchini, and a variety of dry beans are also desirable. Prices demonstrated in the presentation appear to be reasonable for organic product but, as they hear from some farmers in the room, they will be competing against retail prices for some products.

Dairy, with its range of needs poses what I think is the greatest opportunity for local (NY) supply and that will be worked on amongst farmers, processors, and Amy's.

If you are a producer that thinks you may be interested in developing a relationship with Amy's, please contact me so I can share more of the information I gleaned from the meeting: mru2@cornell.edu.

Amy's groundbreaking ceremony took place in June of 2019. Photo: Orange County Partnership

How Grapevine Roots Grow

Tim Martinson, Cornell Agritech

Compared to the above-ground portions of a grapevine, root structure and function is more of a mystery to most growers. Roots extract nutrients and water from the soil, and are also the dominant storage organ for carbohydrates and nutrients (vine reserves) in the dormant season. They also provide physical support for the vine and produce hormones that regulate vine growth and the vine's response to environmental conditions.

But roots are hidden below ground – so their seasonal growth pattern and functions can't be directly observed. Grapevine growth and development above-ground passes through predictable phases – bud burst, bloom, veraison, harvest, and leaf fall. But the below-ground seasonal root growth cycle is less obvious

Concord vine above ground and below ground. Photo: Terry Bates

The Big Picture

Researchers estimate that vines allocate 30 to 60% of photosynthate to root growth. On a mature vine, the surface area of roots is estimated to be somewhere around 100 m^2 – compared to 10 m^2 of above-ground leaf area. While most 'fine roots' that absorb water and nutrients are concentrated in the top meter of soil, a portion of the roots can grow to great depths (up to 30 m), and extend out several meters from the base of the vine.

Vines attempt to maintain a root:shoot ratio within a reasonable range, and vine size is highly correlated with the size of the root system.

Root Structure

Commercial vines are propagated vegetatively, and roots initially form as outgrowths of the cutting's cambium layer under conditions of high humidity. On rooted cuttings, they generally form near a shoot node. These become the main structural roots, which branch off into lateral (secondary and tertiary) roots.

Lateral branches can form at any location along the root system, and their formation depends upon the vine's ability to detect environmental cues (water, nutrient availability) and extend to those regions. Unlike shoots and leaves, which have a pre-programmed and predictable arrangement, the growth and branching patterns of roots are highly flexible – and very responsive to local soil conditions.

Growth originates at the meristem of the root tip, where cell division occurs, which is covered by a slimy 'root cap' that protects the shoot from abrasion by soil particles. Behind this zone, there is a cell 'elongation zone', where the cells begin to form two layers. The outer layer is the cortex, where nutrient uptake and storage occurs. The inner 'stele' differentiates into the xylem and phloem, responsible for transporting water and nutrients up and down the plant.

Maximum uptake occurs several millimeters behind the root tip, where numerous root hairs are formed that greatly increase surface area for absorption. Further away from the root tip, these outer layers and root hairs are worn away, leaving the central stele and its vascular system for transport to the trunk, shoots, and other vine parts. A layer of cells outside the xylem develops into the cambium, which increases the diameter of the roots and can initiate new lateral root meristems. An exterior 'cork cambium' forms, and develops the outer hardened cell layers that contain subarin – a waxy, water-resistant substance that forms a barrier between the root's conducting tissues and the soil.

Fine roots form associations with mycorrhyzal fungi – a symbiotic relationship where the fungus enhances uptake of nutrients from the soil – and in turn get supplied with carbohydrates from the vine's photosynthesizing leaves to support their growth and development.

Seasonal Root Development

In dormancy, cells surrounding xylem vessels in the roots are stuffed with starch and nitrogen, which is deposited starting around veraison but also mobilized from leaves as they senesce in the fall. These reserves are what fuels early canopy development in the spring.

Root distribution on the Riparia Gloire rootstock, which tends to grow laterally near the soil surface. Other rootstocks such as 3309C tend to have a more downward growth habit. Photo: Terry Bates

The first visible sign of the vine's transition from dormancy to active growth is often sap flow or 'bleeding' of xylem sap from pruning wounds. The driving force behind this sap flow is metabolic activity in root tissues as the soil warms up in the spring. As stored starch and proteins are converted into sugars and amino acids, they are released into the xylem. The resulting osmotic pressure (from the high concentration of sugars in xylem sap) draws water into the roots, and is enough to lift water (and nutrients) to the shoot tips – where it rehydrates buds, beginning the process of bud swell.

As buds start to swell, shoot tips produce auxins that are eventually transported (through the phloem) down to the roots to stimulate root growth. These interact with giberellins produced at the root tips (promoting cell elongation). This process takes time, because the dormant buds are isolated from the vine's vascular system, and need to reconnect– a process that is thought to be completed around bloom (see *How Grapevines Reconnect in the Spring*).

So root growth lags behind shoot growth in the spring – and the dry weight of roots actually declines between bud burst and bloom, as stored reserves are mobilized to support early season shoot growth. As the canopy emerges, root growth speeds up, reaching a peak between bloom and early fruit development, then declining gradually during fruit ripening.

Although root biomass increases from its low point around bloom until leaf fall, much of the biomass is concentrated in larger, permanent structural roots. Fine roots are where the uptake of nutrients and water occur. They are short-lived (<5 wk) and frequently replaced – quite likely because they exhaust local nutrient and water supply. As the grapevine canopy becomes well-established after bloom, a portion of the photosynthate returns to the roots and replenishes vine reserves – a process that accelerates as fruit ripens, periderm forms and canopy growth ceases.

Response to Environmental Stresses and Management

- *Canopy manipulation*. Root growth is responsive to auxin flow from buds and new shoots. Light pruning and high early leaf area will stimulate root growth. Severe pruning or winter injury that limits early season shoot growth will also limit root growth. Hedging that removes shoot tips will temporarily result in a pause in root growth.

- *Water Stress*. During the growing season, transpiration of water vapor through leaf stomates drives most uptake of water from the soil (see *How grapevines respond to water stress*). As soil water gets depleted, transpiration demand exceeds uptake by the roots. As soils dry out, root tissues increase production of abscissic acid (ABA), which is transported to the leaves and signals the stomates to close, reducing water loss but also reducing CO_2 exchange needed for photosynthesis. Shoot growth slows, but ABA may induce the opposite effect in roots. It seems to block transport of K+ (Potassium ions) into the xylem, inducing import of water to growing root tissues. Under mild water stress, roots can therefore maintain growth and exploit new (less depleted) soil.

- *Excess water*: It's a truism that vines 'don't like wet feet' – and do better in coarse-textured soils than in fine-textured soils. Root respiration requires the uptake of soil dissolved oxygen, which is rapidly depleted in water logged soils. Over an extended period of waterlogging, the lack of respiration limits cell function and nutrient and water uptake by the roots.

- *Nutrient excess*: Vine demand generally drives nutrient uptake – and feedback mechanisms can 'shut off' nutrient uptake. But uptake can exceed vine growth requirements and the excess supply can accumulate in the vine – often within vacuoles in cells, where they provide insurance against nutrient depletion.

- *Nutrient shortage*: When nutrients are deficient, shoot growth slows, due to growth-limiting supplies in the cells. Roots take up and deplete nutrients in the surrounding root zone. Local depletion can shift uptake to other roots exploring more nutrient-rich areas. If the overall vine supply is deficient in macronutrients (N, P, K), root cells reduce production of cytokinins, which when transported to growing shoot tips

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stimulate cell growth and division. But lower levels of cytokinins in roots in response to N deficiency can increase the rate of root growth – presumably so that roots can improve nutrient uptake by exploiting new soil that has not been depleted of nutrients.

The vine's root system is hidden underground, but its growth and overall 'share' of the photosynthates assimilated by the vine is critically important to the health and development of the above-ground shoots, leaves, and fruit. Roots take up nutrients, supply water, provide support, and produce hormones that regulate overall vine growth. They form a symbiotic relationship with mycorrhizal fungi – which enhances nutrient and water absorption beyond what the roots themselves could supply. They have a flexible growth habit that is responsive to variable soil conditions. They are the most important storage organs that provide the sugars and nitrogen that fuels early-season vine growth. Although we can't often directly observe them, their functions are equally as important as the canopy and fruit that producers intensively manage. And they do it mostly without interference from us.

Reference: Keller, M. 2010. The science of grapevines; anatomy and physiology. Academic Press. First edition.

Tim Martinson is a senior extension associate in the Section of Horticulture, based at Cornell Agritech in Geneva, NY.

Using Sous Vide Machines for Hot Water Seed Treatment

Elisabeth Hodgdon, CCE ENYCHP

Figure 1: Sous vide machine heating water for spinach seeds enclosed in a cheesecloth bag. Photo: E. Hodgdon

Hot water seed treatment is a task that often falls on the list of "should do's" in the winter and early spring, but sometimes falls by the wayside. Treating seeds in a hot water baths can help prevent serious bacterial, fungal, and viral diseases by killing pathogens harbored within the seed. The practice is recommended for both seed collected on the farm and purchased from commercial sources. However, it's sometimes difficult to know which seeds to invest in treating, and whether it's worth the time or cost. In the past, hot water seed treatment at home meant investing in rather costly laboratory hot water baths or taking a chance on less reliable stovetop methods. With the recent popularity and increased availability of "sous vide" machines, hot water seed treatment at home is now easier than ever.

What is a sous vide machine?

Sous vide, pronounced *soo veed* means "under vacuum" in French. Sous vide machines are cylindrical kitchen gadgets that circulate and heat water to create a hot water bath (Fig. 1). The device can be clipped to the side of a large saucepan or other container that holds water. Because the device circulates the water as it heats, the water bath retains a very consistent temperature. Its typical use is for cooking. Meat, vegetables, or other foods can be sealed in a plastic bag, placed in the water, and cooked to a particular temperature without burning. After the food has been steamed and cooked within the bag, it can be taken out of the plastic and seared in a pan or in the oven to finish before eating. What makes the sous vide machine great for cooking also makes it ideal for treating seeds. Water baths with steady temperatures help make sure that seeds are treated at the precise temperature needed to kill pathogens without harming the seed embryo.

There are various types of sous vide machines. Some are more sophisticated and costly than others (~$200 each), and are controlled via phone app. Other simpler models, many less than $100, are programmable by controls on the device itself and are quite easy to use.

Which seeds should you treat?

Hot water treatment has varying degrees of efficacy depending on the size and structure of the seed and the characteristics of the pathogen. Tomato, pepper, brassica, and spinach seeds are a few of the top crops that are recommended for treating in our region. Some important and common diseases are successfully killed by hot water treatment in these species. For example, heat treating tomato seeds can prevent serious bacterial infections (such as bacterial spot, speck, and canker) that can be very difficult to manage once they are established on the farm. For a list of crops, pathogens, and seed treatment protocols, see Cornell Universities' Dr. Meg McGrath's useful reference table online, listed below. Before treating any seeds, be sure to check with the seed supplier to make sure that the seed hasn't

already been treated. Double heat treating seeds can reduce germination. Also be aware that old seeds and coated seeds should not be treated. Hot water can harm older seeds and reduce germination, and seed treatments can be washed off in a water bath.

How do you use the sous vide machine to treat the seeds?

Many excellent sources are available with detailed procedures on how to use hot water treatments for seeds (see references below). Instead of using two hot water baths, you will need two sous vide machines. One will be for pre-warming the seed (usually to around 100 degrees F) to reduce shock to the embryo from the hot water bath using the second sous vide. Because sous vide machines circulate water on their own, there is no need to stir the water manually, as you would need to do if using a stovetop burner and saucepan. Be aware that sometimes the water circulation can cause mesh seed bags and string to get sucked into the circulator. You can prevent this by securing the bag to the pot or container in some fashion. Although plastic vacuum bags are used when cooking food with the sous vide machine, it's recommended to adhere with typical seed treatment protocols and use mesh bags (Fig. 1). Hot water treatment procedures were developed based on porous bags, and the efficacy of seed treatments in plastic bags is not known.

Allow the device a few minutes to bring the water up to temperature before starting your treatment process. I recommend checking the temperature of the water using a handheld thermometer as well to be sure that the device is functioning correctly. Once both baths are at the desired temperature, you are ready to go. Former ENYCHP vegetable specialist Amy Ivy has an excellent instructional video on the sous vide seed treatment process (see reference below).

Although the hot water seed treatment process can seem like a burdensome extra task before the growing season starts, it's well worth the time to prevent serious disease problems in the future.

References and suggested viewing:

Details on hot water seed treatment protocols, including table with procedures for crops and pathogens: Managing pathogens inside seed with hot water, by Meg McGrath, Andy Wyenandt, and Kris Holmstrom. http://vegetablemdonline.ppath.cornell.edu/NewsArticles/HotWaterSeedTreatment.html

How-to video: Hot water seed treatment using a sous-vide device, by Amy Ivy and Andy Galimberti: https://www.youtube.com/watch?v=tLalwbUigsk&feature=youtu.be

Changes in the H2A program for 2020

Elizabeth Higgins, Ag Business Management

One recent rule change to the H2A program, which is a benefit for farmers, is that farmers are no longer required to advertise locally in print newspapers for workers. Prior to the change, farmers who wanted to access the H2A program first had to prove that they could not find enough domestic workers by taking out help wanted ads. Although farmers are still required to hire qualified domestic workers who apply for the position and document all applicants for positions, they are not required to take on the responsibility for advertising the job – that will be done through a US DOL on-line job registry seasonaljobs.dol.gov. This should save growers hundreds of dollars and reduces their documentation burden for the program.

Also, the H-2A program is switching over to the FLAG system (https://flag.dol.gov/), a new online portal for filing the H-2A application. Employers and agents must create an account to access the system.

- Beginning on October 1, 2019 employers should use the new forms within the FLAG system to submit their H-2A applications.
    - **Under this new system, users will submit their ETA 790s directly through the FLAG system, not to the SWA.**
    - Our office will get a notification from the FLAG system that your application has been submitted for review.
    - Our correspondence with you regarding the ETA 790 application will still take place via email or telephone. Therefore, it is crucial that the employer/agent provide good contact information for the SWA to use for questions and additional correspondence.
- Job orders that have already been submitted directly to the SWA, with a start date on or before December 14th, 2019, can continue their filing in the iCert system.

For more details regarding the roll-out of the FLAG system, as well as other information, please see the OFLC announcement related to the change (scroll down to the H-2A-specific announcement, posted 8/27): https://www.foreignlaborcert.doleta.gov/

We also encourage you to reach out to the USDOL with any technical questions that you may have related to the system and the filing timelines. Technical resources from the USDOL are located on the FLAG system page at https://flag.dol.gov/programs/H-2A.

The Effect of ProVide® on Scarf Skin in NY-1 Apples: Results from a 2019 Research and Demonstration Trial

Sarah Elone, Sarah Tobin, & Daniel Donahue, CCE ENYCHP
Joel Crist, Crist Brothers Inc.

Introduction

Scarf skin is a physiological disorder of apple that results in a dull, cloudy appearance of the skin (Figure 1). The condition has been observed in NY-1 ('Snapdragon') apples at an increasing frequency, with growers becoming increasingly concerned. Fruit that has this disorder is rejected by retailers because consumers do not understand the reason for the cloudy appearance. This can result in significant economic losses for growers, as affected fruit must be marketed at a much lower price for juice.

The plant growth regulator (PGR) ProVide® (Valent BioSciences) is commonly used to improve fruit finish by reducing russeting and other physiological skin disorders such as flecking and scarf skin. According to the manufacturer, **ProVide®** is a mixture of two gibberellic acids (GA); GA_4 and GA_7. **ProVide®** conditions epidermal cells in apples, making them more elastic and able to withstand extremes in moisture and relative humidity without breaking during the cell expansion phase of fruitlet growth. A commercial-scale airblast demonstration trial was established in a commercial NY-1 orchard to evaluate the efficacy of **Provide®** for the reduction on scarfskin in NY-1.

Methods and Materials

The study was conducted in a (6^{th} leaf) tall spindle commercial block of NY-1 in Orange County where the trees had filled their allotted trellis space. A split-plot experimental design was implemented where half of the block had been sprayed with **ProVide®** and half left as an untreated control. The treatments were separated by a wide drive row in the orchard. During the 2019 season, 4 sprays of Provide were applied to the treated half of the block. The dates of application were 5/11, 5/22, 6/1, and 6/14 at a rate of 3.5 oz per acre in 100 gallons of spray solution per acre applied by every row middle in order to ensure thorough coverage of fruit and foliage.

Three Hundred and twenty (320) apples were selected from each of the treated and untreated (control) plots. Two rows were randomly chosen in the block. Within each row four trees were selected, skipping 3 trees in between each. In total, 16 trees (8 per treatment) were selected. The trees had approximately 125 fruit, from which 40 apples were picked sequentially starting at the bottom of the tree and proceeding upward.

Apples were assessed post-harvest immediately in the field. The desired appearance of an apple was a red blush cheek that appears bright and non-cloudy (Figure 2). The standards of the rating were based on a marketer-defined commercial packing house standard of minimum 50% clear red cheek. The degree of scarfskin was not considered, only the quality and coverage of the red cheek, considered by the marketer to be the most significant factor ensuring customer satisfaction. The apples either passed or failed this standard, and the ratings were recorded.

Figure 1: NY-1 apple with Scarf Skin. Photo: S. Tobin

Figure 2: NY-1 apple without Scarf Skin. Photo: S. Tobin

Results

Three-hundred and twenty (320) apples each were rated in the treatment and control. In the control we found 264 apples (82.5% incidence) with a commercially unacceptable degree of scarfskin (Table 1). Scarfskin incidence in the **ProVide®** treatment was identical at 82.5%, indicating that there was no treatment effect (Figure 3). Since mean incidence ratings were identical in the treatment and control, statistical analysis was deemed unnecessary.

Discussion

The high rate of incidence of scarf skin (82.5%) may be attributed to several factors in this study. Our sampling method of selecting apples in the lower third of the tree was designed to maximize scarfskin potential. Scarf skin symptom expression is influenced by the weather conditions during and following the bloom period, specifically precipitation, humidity and temperature. Apples were chosen from the lower 1/3 of the tree. This is also the area that receives the least sunlight and airflow. Any moisture in the environment will remain on this part of the tree longer than the areas with better light penetration and airflow. Therefore, the apples sampled for evaluation in this study may have been more prone to scarfskin than if a whole tree sample had been evaluated.

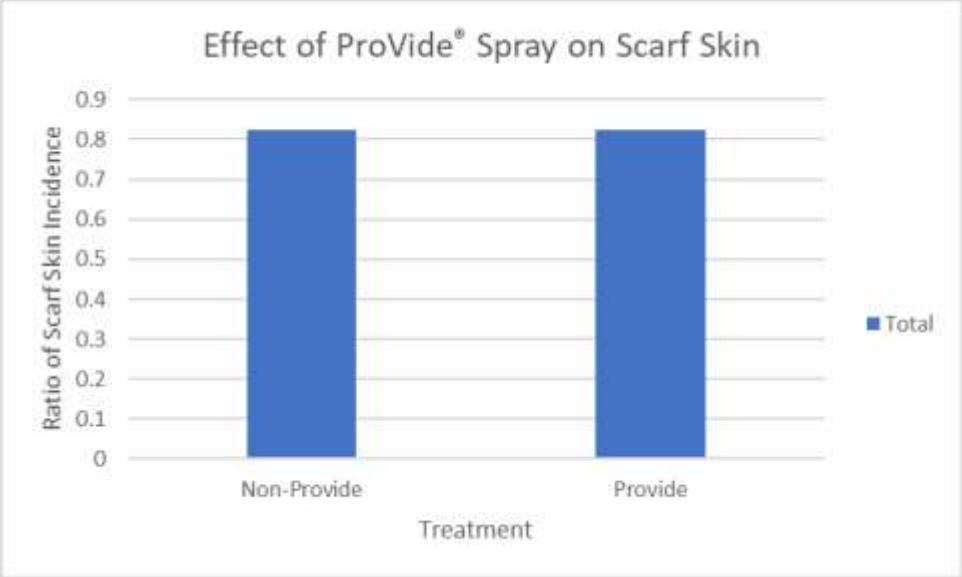

Figure 3: Ratio of scarf skin incidence in each treatment.

ProVide			Non-ProVide Control		
Treatment #	Scarf Skin Incidence	Total # of fruit	Treatment #	Scarf Skin Incidence	Total # of fruit
1	26	40	9	33	40
2	38	40	10	32	40
3	35	40	11	33	40
4	30	40	12	36	40
5	32	40	13	27	40
6	30	40	14	33	40
7	35	40	15	36	40
8	38	40	16	34	40
Total	**264**	**320**	**Total**	**264**	**320**

Table 1: Incidence of Scarf Skin for each tree replication and totals within the two treatments. Variation appeared between each tree replication, but overall incidence was equal between the two treatments.

The lower Hudson Valley experienced a period of wet and cool weather during the bloom and post-bloom period, conditions conducive for scarfskin development. Total rainfall for this location during the month of May was 6.21", with only 7 dry days, higher than the historical expectation. Rainfall during the month of June was more normal at 2.07", delivered in frequent small doses with only 15 of 30 days being dry. The initial application of Provide, timed for king bloom petal fall, was followed by 2.15" of rain over three days. The second application was applied on 05/22 and followed by cool and damp conditions. The third application was applied on 06/01 and followed by dry conditions, with the fourth and final application applied on 06/22 and followed by a week of rain totaling 0.93". Provide applications started reasonably early in the fruitlet development process, application timings were according to label recommendations and appear to have been well-timed to match rain events through the course of the susceptibility period. Frost injury during and shortly after bloom can also result in scarfskin development. A light frost during this period in 2019 in the Hudson Valley is thought by some to be responsible for a significant degree of surface russeting observed at harvest, particularly in the 'Empire' variety. However, on-farm weather records indicate that the lowest temperature experienced during this period at the trial location was 39.4^{0}F which discounts the possibility that frost injury was responsible for the high degree of scarfskin incidence observed.

In summary, we observed a commercially unacceptable incidence of scarfskin in this trial and Provide was not effective in reducing losses. Sampling method and weather conditions likely contributed to the high scarfskin incidence observed. The orchard location was one of the oldest commercial NY-1 plantings in the Hudson Valley, well-pruned with 100% of the trellis filled. As such, it may be representative of what NY-1 producers can expect as young plantings reach maturity and experience seasons with weather conditions similar to those experienced in the Hudson Valley (HV) of New York State in 2019. Maintaining excellent sunlight penetration and air circulation in the lower canopy of mature tall-spindle plantings may be critical with NY-1. Another consideration is the suitability of the 50% clear red cheek grade standard as it may result in excessive cullage in some situations. It may be necessary to find a balance between the desire to market as attractive an apple as possible versus what may be the horticultural reality of this variety. Anecdotal observations suggest there is some variation in the expression of scarfskin symptoms between the warmer lower HV and the slightly cooler upper HV, suggesting that heat unit accumulation during certain periods of fruitlet development may be a consideration, meriting further investigation.

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Basics of Pesticide Application

Maire Ullrich, CCE ENYCHP

New producers and those who do not have a pesticide applicators license might find it useful to know how a pesticide is defined by the law and when one would require a applicator's license.

What is a Pesticide?

Simply speaking, it is any compound that is designed and applied to control a pest. The law states:

1) *any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any insects, rodents, fungi, weeds, or other forms of plant or animal life or viruses, except viruses on or in living humans/or other animals, which the department shall declare to be a pest; and*

2) *any substance or mixture of substances intended as a plant regulator, defoliant or desiccant.*

When is a Pesticide in Use?

1) *Pesticide use means performance of the following pesticide-related activities: application; mixing; loading; transport, storage or handling after manufacturer's seal is broken; cleaning of pesticide application equipment; and any required preparation for container disposal*

2) *Private application of pesticides means the application of a restricted use pesticide for the purpose of producing an agricultural commodity:*

   i. *on property owned or rented by the applicator or the applicator's employer; or*

   ii. *if applied without compensation other than the barter of personal services between producers of agricultural commodities, on property owned or rented by a party to such a barter transaction.*

What is an Agricultural Commodity?

Agricultural commodity means any plant or part thereof, or animal, or animal product, produced by an individual (including farmers, ranchers, vineyardists, plant propagators, Christmas tree growers, aquaculturists, floriculturists, orchardists, foresters, or other comparable individuals) primarily for sale, consumption, propagation or other use by humans or animals. Hemp is considered an agricultural commodity.

What is a Restricted Use Pesticide?

Some pesticides, due to their environmental risk or risk to handler must only be applied by a licensed professional/certified applicator or under their supervision. Read more about those here: https://www.dec.ny.gov/docs/materials_minerals_pdf/nysactiveingredrev.pdf

How Do I Become a Licensed Professional?

Even if you do not apply, or intend to apply restricted use pesticides, it is a best practice to become a private applicator for your agricultural business. The process of becoming a certified applicator provides training and testing that is foundational to best application practices that are critical to understanding safety and efficacy. Certification also allows to to perform Worker Protection Training (see below).

What is a 25(b) Exempt (Minimum Risk) Product?

Currently, the DEC does not require registration of Minimum Risk Pesticide products, which are also sometimes referred to as 25(b)'s. However, products must conform to the USEPA exemption guidelines. These products have labels but not EPA registration numbers and have been approved to be exempt from registration due to their minimal risk to applicators and the environment. These are commercially available though and only the specific formulation that has been granted a 25(b) is a legal application under the exemption.

What Should I Know About Minimum Risk Pesticides?

- Products must only contain permitted active and inert ingredients, and they must appear on the label as listed in the USEPA guidance. For example, garlic must appear as "garlic" and not "*Allium sativum*", the scientific name for garlic.
- The percent (%) by weight of each active ingredient and name of each inert ingredient must be listed on the label.
- Labels must contain adequate use directions and cannot contain any false and/or misleading statements.

- Products cannot be used on food and/or feed crops unless there is an appropriate tolerance or exemption from tolerance in accordance with FIFRA. The USEPA denotes which active ingredients are allowed for use on food and/or feed crops.
- Active ingredients and inert ingredients are not interchangeable on the pesticide label. An active ingredient cannot be listed as an inert ingredient in order for the product to be considered exempt from registration. For example, diatomaceous earth, acetic acid, and wintergreen oil are not exempt active ingredients and must not be listed as an inert ingredient if that is not their actual purpose in the product.
- Products not conforming to all exemption guidelines would not be considered a Minimum Risk Pesticide exempt from registration and would require USEPA registration as well as subsequent NY state registration.

Sometimes farmers ask if they can formulate their own pesticides from ingredients that might be are the ingredients in labeled product, often ingredients in 25(b) products. This is not permitted. Gardeners may utilize substances like baking soda, dish sops and other household botanical extracts etc. Commercial producers may not. Pesticides applied to commercial fields need to be commercial products that have labels that have been approved or specifically exempted under 25(b).

All other NYS pesticide Use Regulations Still Apply to Minimum Risk Pesticides Such as:

- Minimum Risk Pesticides applied commercially or for hire still require application by a NYS Certified Applicator.
- Certified applicators must maintain adequate daily use records for all pesticides used, including Minimum Risk Pesticides. However, use of Minimum Risk Pesticides are not required to be reported to the DEC as outlined in the Pesticide Reporting Law.
- Please be aware that due to the various NYS requirements for aquatic pesticides, aquatic use of Minimum Risk Pesticides is not allowed.

What are the Requirements for Use of a Pesticide?

1) *Pesticides must be used in such a manner and under such wind and other conditions as to prevent contamination of people, pets, fish, wildlife, crops, property, structures, lands, pasturage or waters adjacent to the area of use.*
2) *Pesticides are to be used only in accordance with label and labeling directions or as modified or expanded and approved by the department.*
3) *All equipment containing pesticides and drawing water from any water source shall have an effective anti-siphon device to prevent backflow.*
4) *During pesticide use, the certified applicator, certified technician or commercial pesticide apprentice must have in their custody a copy of the label for each pesticide being used. The certified applicator, certified technician or commercial pesticide apprentice must make each label available for inspection upon request of the department.*

All pesticide applications to agricultural commodities must conform to EPA Worker Protection Standard Regulations unless specifically exempted. https://www.epa.gov/pesticide-worker-safety/agricultural-worker-protection-standard-wps

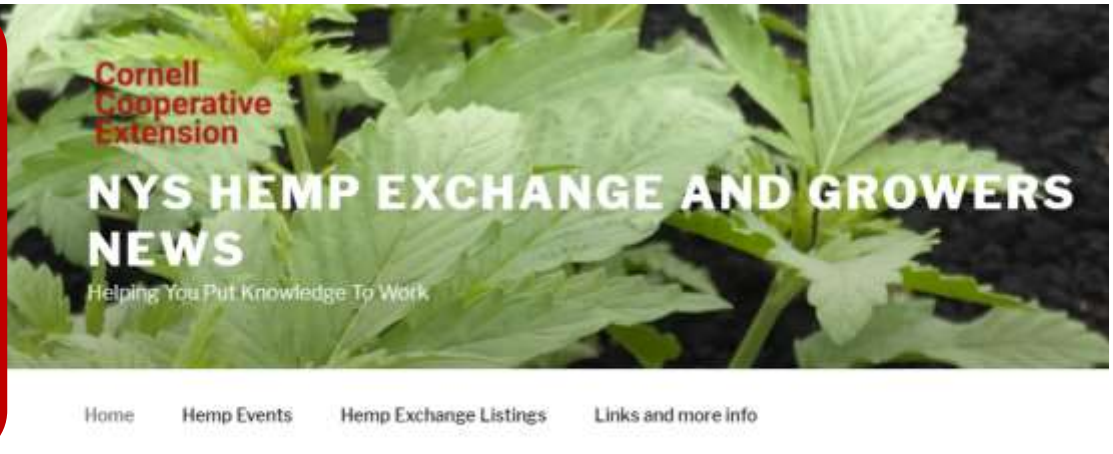
Source: https://www.dec.ny.gov/chemical/8528.html

All Italics are selections from Part 325 however, not in the order presented: https://www.dec.ny.gov/regulations/8527.html

Visit the new Hemp Blog!

Sing up for updates and access to the NY Hemp Exchange; a buy/sell board for hemp products and services. Information and events for the prospective and present grower.

www.nyhempexchange.org



Upcoming Events

Produce Safety Alliance Grower Training
December 9, 2019—8:00am-5:00pm
Manchester, NH
This training satisfies the FSMA Produce Safety Rule requirement for covered farms that 'at least one supervisor or responsible party' completes food safety training recognized as adequate by the FDA. Register here: https://us-elevate.elluciancloud.com/app/uvm/f?p=WEB_CATALOGUE:HOME::::RP,1:P1_SEARCH_VALUE:07-08

New England Fruit & Vegetable Conference
December 10-12, 2019
Manchester, NH
This 3-day meeting has become a major event for diversified growers. Check out the conference program and register here: https://newenglandvfc.org/registration

Great Lakes EXPO
December 10-12, 2019
Grand Rapids, MI
Another great conference! Register and review program at glexpo.com

2020 Tri-State Greenhouse IPM Workshop
January 7, 2020—Longfellows Greenhouses in Manchester, ME
January 8, 202—UNH in Durham, NH
January 9, 2020—Gardeners Supply in Burlington, VT
This year's workshop program on greenhouse and high tunnel IPM is multi-faceted, with presentations on biological control, disease management and sprayer calibration. Featured speaker is Brian Spender, Biocontrol Specialist from Applied Bio-nomics, Victoria BC Canada. Registration: https://www.uvm.edu/~entlab/Greenhouse%20IPM/Workshops/2020/IPMWorkshop2020.html

Apple IPM: Basics for Orchard Employees
January 10, 2020
Ballston, Spa, NY
Covering the basics of integrated pest management, including how to monitor traps, evaluate insect threshholds, and use prediction models to manage common orchard pests. Registration: https://enych.cce.cornell.edu/event.php?id=1294

2020 Empire State Producers Expo
Jan 13, 2020 Becker Forum, Jan 14-16 2020 Empire State Producers Expo
Oncenter, Syracuse, NY http://nysvga.org/expo/information/

2020 Eastern NY Fruit and Vegetable Conference at the Desmond in Albany, NY
February 25—26, 2020—Save the Date!!

Are You Reading Smart Marketing?

Smart Marketing is a publication of the faculty at the Dyson School at Cornell. The topics do deep research on issues that are of concern to agricultural producers and marketers.

Recent topics/issues are:

- November: Are U.S. Riesling Wines Correctly Priced Given Their Tasting Scores Fried and Tauer
- September: Location, Location, Location- How do Competition and Local Market Conditions Influence Food Hub Viability? Cleary, Thilmany, Goetz, and Ge
- June: Climate Change and Increasing Risks to the Global Food Supply Chain Eiseman, Hoffmann
- March: Comparing the Costs and Environmental Impacts of Conventional and Controlled Environment Agriculture Leaf Lettuce Supply Chains Nicholson, Gómez, Harbick, Mattson