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Tomato Pollination: To Bee or Not to Bee?

Judson Reid, Cornell Cooperative Extension, Cornell Vegetable Program By this week many growers have already transplanted early tomatoes under the protection of a greenhouse or high tunnel. One of the primary goals of indoor growing is early fruit, so it is good to bear in mind that tomatoes do indeed require pollination to set that fruit. In the open field this occurs from wind and natural pollinators. However, in tunnels for the months of April and May side walls and vents are closed much of the time, which keeps out both wind and native pollinators. In these months growers need to lend a helping hand. Flowers can be pollinated by movement from shaking or a mist blower, but bumble bees are the preferred choice. Bumble bees provide superior pollination due to their daily, close contact with the tomato flower, and the relatively short window available for pollination.

Tomato flowers will be open for business from 1-3 days. During this time the pollen is produced within the anthers and needs to find its way to the to the stigma and then down to the ovary of the flower. The complete pollination of this ovary produces larger, higher quality fruit. The pollen is my most viable for fertilization with environmental conditions of 50-85% relative humidity and temperatures from 60-85F.

Bumble bees fit this window of opportunity well. By having an active hive among the tomatoes, they will be flying and visiting flowers throughout the day. Their optimum flights activity occurs from 46-82 F; and 50-80% relative humidity, overlapping well with the desired conditions for tomato pollination.



Figure 1. Coming in for a landing. A bumble bee will grasp the flower and buzz then pollen about. *Photo by Judson Reid, CCE Cornell Vegetable Program*

About VegEdge

VegEdge newsletter is exclusively for enrollees in the Cornell Vegetable Program, a Cornell Cooperative Extension partnership between Cornell University and CCE Associations in 14 counties.



The newsletter is a service to our enrollees and is intended for educational purposes, strengthening the relationship between our enrollees, the Cornell Vegetable Program team, and Cornell University.

We're interested in your comments. Contact us at: CCE Cornell Vegetable Program 480 North Main Street, Canandaigua, NY 14224 Email: cce-cvp@cornell.edu Web address: cvp.cce.cornell.edu

Contributing Writers

Elizabeth Buck Robert Hadad Christy Hoepting Margie Lund Julie Kikkert Judson Reid

Publishing Specialist/Distribution/Sponsors Angela Ochterski

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Help us serve you better by telling us what you think. Email us at *cce-cvp@cornell.edu* or write to us at Cornell Vegetable Program, 480 North Main Street, Canandaigua, NY 14424.



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This next issue of VegEdge newsletter will be produced on May 13, 2020.



Making safe farm visits! Vegetable Specialist Judson Reid is wearing a COVID-19 face mask as required by by Executive Orders 202.17 and 202.18, April 17 2020, New York State.



Figure 2. A commercial hive of bumble bees in a greenhouse tomato crop. *Photo by Judson Reid, CCE Cornell Vegetable Program*



Figure 3. A bumble bee, from a commercial hive, 'buzz' pollinates a tomato flower in a high tunnel. *Photo by Caitlin Tucker, CCE Cornell Vegetable Program*



Figure 4. Additional flowering plants can attract and keep bumble bees healthy. *Photo by Judson Reid, CCE Cornell Vegetable Program*

Their unique behavior also helps with thorough pollination. Bees 'buzz' pollinate. When they land on a flower they grasp it with their claws and mandibles, then vibrate convincingly. This localized buzzing ensures a high number of pollen grains are released and make it onto the stigma, down the pollen tube and into the ovary. Weeks later this produces larger fruit than other forms of pollination. The bumble bees ends-up covered in pollen grains during this buzz fest and carry them from flower to flower. During the pollination window a tomato flower may be visited 1-5 times.

Bumble bees are available in commercial hives, which are cardboard boxes outfitted with entry and exit holes, sugar water and other necessities for a cozy bumblehome. Inside the box there will be workers, and possibly a queen or brood, depending on the type of hive purchased. Our experience is that growers must specify the size of their greenhouse when ordering hives, and single-bay structures will generally want the smallest hive possible. Too many bees, or too few flowers, can result in excessive visits and possible flower drop.

When to order? Once buds are visible it is time to contact a supplier, as shipping can create a delay. When the hive arrives, place within the crop, level, off the ground and with shade. Some growers find having additional flowering material in the greenhouse helps them manage the bees if tomato flowers are not quite ready or abundant.

As the season goes on, sidewalls and vents are open more often, allowing wind and native pollinators move in, and the crop is handled more often; all resulting in pollination and less need for bumble bees. These hives wind-down on their own.

Bumble bees are not as aggressive as other species, and do not interfere with human work inside the crop. Remember that pesticides can be harmful to bumblebees. For this reason, bumblebees often go hand-in-hand with biological pest control. Only a small handful of suppliers offer commercial hives.



Figure 5. Having more pollen move into the ovaries results in more seeds and larger fruit. Bumble bees help this happen. *Photo by Judson Reid, CCE Cornell Vegetable Program*

Onion Updates

Christy Hoepting, Cornell Cooperative Extension, Cornell Vegetable Program

Although it has been a cold spring, it sure is better than the last year's spring for planting onions. Onion planting began in Elba during the first week of April and got off to a great start. Since then, planting has been more interrupted by rain, snow and cold, but remains on schedule to finish in decent time. Planting in Wayne and Oswego is also now in full swing. With the cold, onions have been slow to emerge. Even the barley nurse crop has been slow to emerge. High winds have caused some issues in parts of Oswego.

MANCOZEB DRENCH WITH EVERGOL PRIME SEED TREATMENT

This year, the majority of direct seeded onion acreage is being planted with the new seed treatment for onion smut, EverGol Prime. The active ingredient in EverGol Prime is penflufen (FRAC 7), which has excellent activity against onion smut. Pro Gro seed treatment for onion smut control is mediocre to poor and necessitates mancozeb be used in-furrow to step up control to acceptable level. After decades of mancozeb in-furrow being vital to onion production, it seems "wrong" or extremely daring to leave it out. For onion smut, mancozeb in-furrow is not necessary when seed is treated with EverGol Prime. However, mancozeb also provides some protection against Phythium damping off. However, the FI500 seed treatment package contains the active ingredient, mefanoxam, which is the same active ingredient in Ridomil, and has activity

against Phythium damping off. Theoretically, mancozeb should not be needed to for damping off either when seed is treated with FI500. Since it has been so cold, I have not been discouraging use of mancozeb in-furrow for damping off, unless Ridomil is being used. When soils warm up and onions emerge in less than 14 days, additional protection against damping off in-furrow will likely not be needed, provided soil conditions are not too wet. For more information, the new <u>Cornell Cheat Sheet for seed treatments and in-furrow drenches in direct seeded</u> <u>onion</u> is available on the CVP website: cvp.cce.cornell.edu

INCREASED RISK OF HERBICIDE INJURY (MUCK)

Outlook

Outlook is a soil-applied shoot inhibitor and can cause improper unfurling of the leaves, which commonly results in "looping" injury, but it can also stunt onion growth. Actively growing onion seedlings protect themselves from Outlook injury by metabolizing it into inactive molecules. Therefore, onions are more prone to Outlook injury when soils are cold. Outlook injury also increases with shallow planting and when Outlook is co-applied with Prowl, which can also reduce stand – *see article on Outlook injury in the last issue of VegEdge*. To minimize Outlook injury, do not co-apply it with Prowl, and do not use more than 11 fl oz in the pre-emergent to onion timing.

Prowl

Prowl is a soil-applied root inhibitor that is effective against emerging weed seedling. It can cause stunting and reduced stand when soil conditions are cold and wet, and especially when Prowl is moved into the root zone with heavy rainfall or seeds are planted shallow (may be a result of wind erosion), and when it is co-applied with Outlook. To avoid excessive injury from Prowl, delay its application until post-onion emergence at barley-kill, or use a lower rate (e.g. 1 pt or less). Rate at barley kill can be adjusted according to risk of injury.

Buctril/Brox/Broclean (a.i. bromoxynil)

Bromoxynil is a photosynthetic inhibitor that controls emerged weeds. It can be used before onions emerge only on muck soil; reports from Michigan State suggest that the last stage to safely use this product is when a few onion loops are emerging from the soil surface. **If seed has been exposed due to wind erosion**, application of bromoxynil would be very risky because it could easily kill newly germinated tissue.

Cornell Recommendations for U-Pick Operational Changes Due to COVID-19

Esther Kibbe, Cornell Cooperative Extension, Harvest NY

Many growers who allow customers to come and pick their own vegetables and fruits have been concerned about how that will work in this time of social distancing and closed businesses. At this time, the state has not prohibited U-Pick or on-farm sales. Cornell has just released a document outlining best practices and ideas for growers who choose to allow the public on their farms:

- Alternatives to U-Pick
- Communicating with Customers
- Check-in Process and Picking Containers
- Planning for Physical Distancing while Picking
- Weighing Produce and Handling Payments
- Cleaning and Sanitizing Surfaces
- Protecting Employees and Family Members when Interacting with the Public

If you want to read the full document, it is available online: <u>https://bit.ly/3aOcNhk</u>. If you don't have internet access, please contact your local CCE office, or Esther Kibbe at 607-351-1991, and we will try to get you a printed version.





Late April Berry Observations and Recommendations

Esther Kibbe, Cornell Cooperative Extension, Harvest NY

STRAWBERRIES

With the cold weather, strawberries have not advanced much in the past 2 weeks. Leaves emerging from the crowns are still small. Some are showing leaf diseases already (leaf spot, scorch, blight). Fungicide sprays are recommended at this time if you have had serious leaf infections in past years. I am not seeing much pest pressure with this cold weather. Fields using row covers are more advanced in development, with flowers at or near bloom. Open flowers need to be protected against botrytis infection with fungicides, especially under warm and rainy conditions. As we approach bloom in the next few weeks, it is important to set up frost protection, whether you are using overhead sprinklers or row covers. This is also the time to talk to your beekeeper if you plan to bring in hives to help with pollination



Strawberries under row covers are starting to bloom, while open field still have no buds. *Photo by Esther Kibbe, CCE Harvest NY*



It is time to set up overhead irrigation for frost protection. *Photo by Esther Kibbe, CCE Harvest NY*

BLUEBERRIES

Slowly advancing to tight cluster in most areas. It is time to protect against mummyberry, especially if you have a history of it in your field. Serenade, Double Nickel and Indar are options, along with many others. We are seeing many fields with phomopsis canker issues (see photo). Fungicides such as Pristine, Quash, Cuprofix and others may help reduce the frequency and severity of infection.

May is the best time to fertilize blueberries. Use 15-20 lb actual N/ acre in very young plants, increasing with age up to 40-70 lb N/ac for full grown plants. Other elements should be supplied according to your fall leaf analysis (make a note now to remember to take those samples this fall!).



Cane infection probably caused by Phomopsis vaccinia. Photo by Esther Kibbe, CCE Harvest NY

BRAMBLES

Leaves and new canes are emerging, so it is too late for most herbicides. There is still time to apply fungicides against cane blights, such as Abound, Cuprofix, Badge, Kocide and others. Brambles are quite sensitive to root/ crown diseases and these are particularly common in heavy, poorly drained soils. It is best to AVOID these sites in the first place, but if you see plants dying during the season, or not making it through the winter (especially a mild winter), root diseases like *Phytophthora* are likely candidates. To protect against more plants dying from this, consider drenching the roots with Aliette, Phostrol, Phosphyte or Ridomil Gold. Some growers feel they have good results with annual applications of one or more of these products. This is also something to consider in strawberry plantings where otherwise healthy plants are collapsing.

Pruning – thin floricane raspberries to 4-6 canes per square foot, keeping rows to about 12 inches wide. Remove skinny canes that won't be productive. Black raspberries should have winter damage pruned off, and laterals trained to the trellis.

RIBES (CURRANTS AND GOOSEBERRIES)

Leaves are emerging well on most varieties. Old wood (over 4 years) should be pruned out. Ribes are susceptible to powdery mildew, preventative applications of sulfur, Actinovate, Rally, Cabrio or Rampart are recommended.

HASKAPS

Currently in full bloom in many areas, as well as reports of damage after recent frosts.

Optimizing Cole Crop Fertility Featuring Micronutrients

Steve Reiners, Horticulture/School of Integrative Plant Science, Cornell University, Cornell AgriTech; edited by Christy Hoepting, Cornell Cooperative Extension, Cornell Vegetable Program

COLE CROP FERTILITY CAN BE COMPLICATED

When it comes to a soil fertility plan for Cole crops, there are a few complicating factors. First, Cole crops include obvious commodities like cabbage, broccoli and kale but also radishes and turnips. They **range from long season, heavy feeders to short season, light feeders**. They respond to micronutrients like **boron** and **molybdenum** and are affected by drought induced deficiencies of **calcium**. They are also a group of crops in which **soil pH can have an impact on diseases** like Clubroot.

START WITH THE RIGHT PH

Like most vegetables, all the Cole crops do best with a pH around 6.5, just slightly acid. There's nothing magical about that pH, but it is the level where all the nutrients plants need have their maximum availability. In addition, microbes that feed on organic matter and make nitrogen available are happiest at that pH. Get the pH too low, close to 5.5, and calcium, magnesium, and molybdenum are less available. But some nutrients like manganese, iron and aluminum become to accessible and may become toxic. Get the pH above 7, and phosphorus, boron, zinc and manganese aren't available.

Of course, a **good soil fertility program starts with a soil test** and you should try to test your soils at least every three years. And because of the reasons I mention above, the pH may be the single most important thing to know about your soil. Generally, in the northeast, our soils get a bit more acidic over time and limestone is needed. The amount is dependent on your soil type and starting pH with greater amounts needed on heavier soils. If limestone is needed, check your soil test for the calcium and magnesium levels. If magnesium is needed, use a dolomitic lime. If magnesium levels are fine, use a calcitic one. Since lime reacts very slowly with soil, the ideal time to apply is in the fall. But if spring applied, try to spread prior to working the soil. This will ensure that spring plowing/disking mixes the lime into the soil and changes the pH throughout the acre furrow slice.

INCREASE PH TO MANAGE CLUBROOT, MAY NEED TO INCREASE P, B, ZN AND MN

Most conventional growers will use chemicals to manage Clubroot, a soilborne disease that can leave roots with large galls that eventually wilts and kills the plants. Organic growers can adjust the pH to 7 to 7.2 which will inhibit the disease. But if you do that, additional phosphorus, boron, zinc and manganese may be needed.

BORON VERY IMPORTANT IN COLE CROPS

Cole crops need higher amounts of boron than many other vegetables, usually benefitting from an additional 1 to 2 pounds of actual boron on heavier soils and 2 to 3 pounds on lighter, sandy soils. Boron deficiency symptoms include brown, hollow stems in broccoli and cauliflower along with callused stems (Fig. 1). Boron can be applied as a broadcast

application with other fertilizers in the spring or as a foliar application later in the spring. If using foliar applications, rates should be reduced significantly to reduce toxicities, with rates of only 0.1 to 0.3 pounds per acre of actual boron applied.

Fertilizer dealers and soil test labs often talk about the "actual pounds of an element per acre". That allows growers to adjust rates based on the fertilizer being used.

For example, if you want to add "1 pound of actual boron per acre" and you are using Borax that contains 11% B, you would need about 9 pounds of Borax ($1 \div 0.11 = 9.09$). If using Solubor at 20% B, you would need only 5 pounds of Solubor ($1 \div 0.2 = 5$).



Figure 1. Boron deficiency in broccoli is characterized by a brownish discolored hollow stem (left) or by brownish callusing along the stems (right). If the affected tissue is not dark and dead on the surface then it is not boron deficiency. Hollow stems could also be caused by rapid growth/over-maturity. *Photos by Thomas Bjorkman, Cornell*

DEFICIENCIES INDUCED BY DROUGHTY CONDITIONS

Droughty conditions may induce **boron deficiencies** but are more likely to induce **calcium deficiencies**, as indicated by tipburn - dried, brown, papery looking areas on leaf edges. Most of our soils in the northeast have lots of calcium so the problem comes about when water uptake is limited as calcium moves with the water in plants. Maintaining uniform soil moisture will be much more effective than adding additional calcium with foliar sprays.

LOW PH INDUCED MOLYBDENUM DEFICIENCY

Molybdenum deficiency may be seen on Cole crops on light soils where pH is low (perhaps in rotation with potatoes), resulting in a problem called "whiptail". The leaves are thin and strap like and yields are significantly reduced. Maintaining the proper pH is the best way to minimize the problem, but if that can't be done, a foliar application of only 2 to 3 ounces of sodium molybdate per acre is enough for most crops. **Swede midge feeding damage looks very similar to molybdenum deficiency** and has been misdiagnosed as such.

For information on swede midge diagnosis, see <u>http://web.</u> entomology.cornell.edu/shelton/swede-midge/damagecrops. <u>html and https://www.youtube.com/watch?v=b3_o3S-</u> <u>SPY90&t=2s</u>

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RETURN OF SULFUR DEFICIENCY THANKS TO CLEAN AIR ACT

Research is being conducted at Cornell on whether sulfur needs to be part of a fertility program in vegetable crops. For more than a century, high sulfur fuels were used in power plants in the Midwest, resulting in sulfur raining out of the sky in the northeast. The Clean Air Act has resulted in less sulfur deposition and we have seen some crops like alfalfa respond to additions of 30 to 40 pounds of sulfur per acre (often in the form of gypsum). Deficiencies would first be seen on lighter textured soils and fields with no manure history. If sidedressing nitrogen, use ammonium sulfate to provide both N and sulfur.

Power Washers and Farm Food Safety

Robert Hadad, Cornell Cooperative Extension, Cornell Vegetable Program
FARM FOOD SAFETY surfa

A power washer is a great tool to have on the farm, but like most tools, there are certain times and places where it makes sense to use one, and other times where you might be creating a bigger headache for yourself.

Crud and debris must be removed from equipment to keep pathogenic bacteria like E. coli or Listeria from becoming established. A power washer might be able to tackle removing dirt, vegetable matter, and stuck on crud, but when used inside of a building there is a real risk that the dirt, vegetable matter, and accompanying pathogens may actually be sprayed inadvertently onto walls, ceilings, and other areas that need to be kept clean.

CLEANING TOOLS AND HARVEST BINS

A power washer can do a great job with cleaning farm equipment, tools, and harvest bins/crates if done outside. By combining a power washer with a detergent dispensing accessory, harvest bins can be more easily and efficiently cleaned when compared to hand washing the crates.

If the bins or other containers have been neglected for long periods of time, scrubbing may still be needed. Long handled brushes with stiff bristles might be necessary. Wet down the containers with water and detergent. Let the water soften up the debris and scrub vigorously. The power washer can then be used to rinse.

USING A POWER WASHER

Use an electric power washer for smaller, light duty jobs. Electric power washers (EPW) are set up to deliver 1200-1400 PSI water (water per square inch pressure). This should be ample pressure. Always read the instruction manual that comes with the machine.

Most EPWs have a fair length of electrical cord; use a heavy-duty extension cord made for exterior use if more length is needed. Make sure the EPW is only plugged into a ground fault circuit interrupter (GFCI) to avoid a shock or accidental electrocution.

Many EPWs come with various types of nozzles. Some are color-coded but all are set up for spraying with different angles.

- Red 0-degree nozzle with directed stream for hard to clean areas of dirt, oil, or stains.
- Yellow 15-degree nozzle for paint/strain stripping
- Green 25-degree nozzle for cleaning rougher surfaces like pavement and concrete.
- White 40-degree nozzle for getting into areas where surfaces might dent or materials crack.
- Black 65-degree nozzle for spraying out detergent onto wide

BLACK PETIOLE IN CABBAGE

Low soil potassium with high soil phosphorus may result in black petiole on cabbage, especially storage cabbage.

N-P-K

Recommendations for nitrogen, phosphorous and potassium are available in the Cornell guidelines. Also, recent research highlights, <u>Understanding Nitrogen Use in Cabbage: New York Study</u> (Hoepting 2014-2016) is available on the CVP website cvp.cce.cornell.edu

surfaces. Use smaller degree nozzles for proper cleaning.

It is important to know the water pressure of the water source. Many EPW require 1-1 1/2 gallons per minute for the EPW to fill and work properly. This can be measured by timing how long it takes to fill a 2 gallon container. If it takes less than 2 minutes then the water source pressure is adequate.

SAFETY

For your safety, wear protective eye wear, gloves, and ear plugs. Some machines have higher pressure and when the handle is squeezed, you can experience an abrupt kickback. Do not spray windows or glass. Prior to spraying surfaces or floors, clean off all debris. The EPW can send materials flying and can cause injury. Keep other workers away while the EPW is in use. Avoid direct spraying onto power lines or outlets. Stand back at least 6ft.

A 25ft-50ft garden hose is needed to connect the water supply (first) to the machine (second). Longer lengths of hose can reduce water pressure. Before using, test the machine and water source connections for leaks. Turn on water and set the EPW to the lowest setting then turn on the machine. Squeeze handle and let the water go through the machine. Let the water push out the air through the nozzle. Once a steady stream of water is squirting out of the nozzle, it is ready for use. Adjust settings for the spray cleaning levels required.

When spraying surfaces, try to keep the wand/nozzle about 4ft away and at a 45-degree angle. Work in a back and forth motion rather than focusing on one spot. Start at one end and move to the other in order to direct dirt and debris off and away from the rest of the equipment. Avoid using an EPW while on a ladder due to the kickback.

When the job is finished, there are a few important steps for turning off the machine. Let go of the trigger and engage the safety lock. The water flow should stop. Set the wand on the ground. Turn off the water at the source. Do not detach garden hose yet. The machine still has built up pressure. Release lock. Squeeze the trigger several times to release the pressure. Repeat until there is no water coming out of the nozzle. Detach hose from machine first then if needed, remove hose from water source.

2020 Vegetable Pesticide Updates

Christy Hoepting and Sarah Vande Brake, CCE Cornell Vegetable Program

Changes in pesticide registrations occur constantly and human errors are possible. Read the label before applying any pesticide. No endorsement of companies is made or implied. Other pesticide updates that we missed are welcome. Information was last updated on April 29, 2020. Updates after this date will be posted in future issues of VegEdge.

NOTE: We only included the uses that pertain to vegetables. Several labels include uses in fruit and field crops as well.

NEW REGISTRATIONS (I.E. NEW EPA NO.)

- HARVANTA 50SL Insecticide: (IRAC 28; EPA No. 71512-26-88783; a.i. cyclaniliprole; Summit Agro USA). For control of worms, flea beetles, leafminers, and cotton aphid in leafy vegetables, brassica vegetables, fruiting vegetables (tomatoes, peppers), cucurbits, and tuberous and corm vegetables. Also controls Colorado potato beetle in potatoes and fruiting vegetables, striped cucumber beetle in cucurbits, and pepper weevil in fruiting vegetables. Restricted use in NYS.
- OSO 5%SC Fungicide: (FRAC 19; EPA Reg. No. 68173-4-70051; a.i. polyoxin D zinc salt; Certis USA). For control of fungal diseases in carrots, parsnips, potatoes, bulb vegetables, leafy vegetables (lettuce, spinach), brassica vegetables, succulent and dry legumes, fruiting vegetables (tomatoes, peppers), and cucurbits. This is now an OMRI-listed organic fungicide option (https://www.omri.org/mfg/ttc/certificate/13605)
- **MIRAVIS NEO Fungicide**: (FRAC 7 + 3 + 11; EPA No. 100-1605; a.i. pydiflumetofen, azoxystrobin, and propiconazole; Syngenta Crop Protection). For control of foliar diseases such as Alternaria, Anthracnose, and powdery mildew in sweet corn and specific dry and succulent beans. Restricted use in NYS.
- MIRAVIS PRIME Fungicide: (FRAC 7 + 12; EPA No. 100-1603; a.i. pydiflumetofen and fludioxonil; Syngenta Crop Protection). For control of foliar diseases such as Alternaria, Cercospora, Botrytis, and powdery mildew in brassica and stem vegetables (broccoli, Brussels sprouts, etc.), bulb crops (onion, garlic, etc.), carrot, cucurbits (cucumber, squash, etc.), fruiting vegetables (tomato, pepper, etc.), leaf petioles (celery), leafy greens (lettuce, spinach), mustard greens, root vegetables, tuberous and corm vegetables, and potato. Restricted use in NYS.
- MIRAVIS TOP Fungicide: (FRAC 3 + 7; EPA No. 100-1602; a.i. pydiflumetofen and difenoconazole; Syngenta Crop Protection). For control of foliar diseases such as Alternaria, Cercospora, and powdery mildew in dry beans and peas, and tuber and corm vegetables (excludes potato). Restricted use in NYS.
- SENSTAR Insecticide: (IRAC 23 + 7C; EPA No. 59639-243; a.i spirotetramat and pyriproxyfen; Valent). For control of aphids and whiteflies in brassicas, carrot, fruiting vegetables (tomato and pepper), leafy vegetables, tuberous and corm vegetables (potato), and watercress. Also for control of swede midge in brassicas, onion thrips (larvae) in onion, and psyllids in fruiting vegetables and tuberous and corm vegetables.
- SPEAR-LEP Biological Insecticide: (IRAC 32; EPA No. 88847-6; a.i. GS-omega/kappa-Hxtx-Hvla; Vestaron Corporation). For control of lepidopterans (caterpillars/worms) in root and tuber vegetables (beets, carrots, potatoes), bulb vegetables (onions, garlic, leek), leafy vegetables, brassica vegetables, dry and succulent beans, fruiting vegetables, cucurbits, asparagus, and sweet corn.

LABEL EXPANSIONS (NEW PESTS ADDED TO UPDATED VERSION OF LABEL)

- OMEGA 500F Fungicide: (FRAC 29; EPA No. 71512-1-100; a.i. fluazinam; Syngenta Crop Protection). Label expanded to include use on potatoes for suppression of powdery scab. Restricted use in NYS.
- VELUM PRIME Fungicide/Nematicide: (FRAC 7; EPA No. 264-1078; a.i. fluopyram; Bayer). For control of Alternaria, powdery mildew, white mold and nematodes. Added bulb vegetables, potatoes and sweet potatoes to the label. Restricted use in NYS.

FIFRA 2(EE) RECOMMENDATIONS (UNLISTED PEST FOR CROP ALREADY ON LABEL)

None

SPECIAL LOCAL NEEDS (SLN)

None

PRODUCTS BEING PHASED OUT

- GRAMOXONE SL 2.0 Herbicide: (WSSA 22; EPA No. 100-1431; a.i. paraquat dichloride; Syngenta). After November 2020, only packaging with closed systems will be allowed. Gramoxone SL 2.0 2.5 gal jugs are not a closed system. Gramoxone SL 3.0 2.5 gal jugs with closed system packaging will be introduced mid-2020. Gramoxone products currently in the marketplace include:
 - Gramoxone SL 2.0 2.5 gal jugs registration date 12/23/2019 (new product): Not a closed system. Label has requirements for 1) EPA paraquat training, and 2) Certified Applicator license for mixers, loaders, applicators and clean-out.
 - Gramoxone SL 2.0 2.5 gal jugs registration date 4/5/2017 (old product/label): Does not require additional training and licensing. Applicators can operate under supervision of a Certified Applicator. However, once you buy a new container, even if you still have old product, all applications are required to adhere to the standards of the newest label (EPA training and only Certified Applicators).

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CERTIFIED APPLICATOR TRAINING

Applicators must complete an EPA-approved paraquat training listed on the following website <u>https://www.epa.gov/pesticide-worker-safety/paraquat- dichloride-training-certified- applicators.</u> The training must be completed a minimum of every three years.

(Located on page 2 of label just above the Precautionary Statements)

• **Gramoxone 3.0 Bulk**. There are bulk tanks filled with the new 3.0 which has, 1) the higher a.i. load (3lbs vs 2lbs), and 2) does have the new language requiring online training and certified applicator licensing for a user.

Everyone is encouraged to complete the EPA paraquat required training now and to have appropriate personnel obtain the Certified Applicator license since there will be a mix of brands/labels in the market in 2020. *See article, Online Paraquat Dichloride Safety Training Now Available in Spanish and English, to the right.*

- LORSBAN Insecticide Ban. a.i. chlopyrifos. Late last year the governor vetoed legislation that passed the state assembly and senate that would have banned chlorpyrifos. In his veto message he directed the DEC to set up regulations that would ban all but apple tree trunk uses for Black Stem Borer (2(ee) label for Lorsban Advanced) of chlorpyrifos by the end of 2020 and to ban all uses by July 2021. Until the regulation banning chlorpyrifos becomes effective, registered products may be used in New York.
 - **Corteva, previously Dow AgroSciences**, has decided to end manufacturing and sales of chlorpyrifos by the end of 2020. This should not affect supply as there are other manufacturers of chlorpyrifos.
- **BELT Insecticide**: (IRAC 28; EPA No. 264-1025; a.i. flubendiamide; Bayer). Bayer stopped shipping and selling Belt as of 7/29/16. Applications and sales were allowed through 12/31/19, but the **product is now expired. No longer legal to use in New York.**

NOTE: Users must have a copy of both the approved SLN, 2(ee) or supplemental label, AND the primary label in their possession at the time of application. See How to Look Up Labels for Pesticides Registered in New York below.

How to Look Up Labels for Pesticides Registered in New York

You can find all the labelling information you need at the <u>New York State</u> <u>Pesticide Administration Database (NYSPAD)</u> portal. It is available at http://www.dec.ny.gov/nyspad/products.

On the top of your screen, you can search by EPA registration number, Product name, or Registrant. In the Advanced Search, there are also options to search by Pesticide Use/Type, Restriction, Formulation, Registration Status, etc.

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Enter the information that you are looking for and

click "Search". A list of products will come up with some basic information including full product name, EPA registration number, manufacturer and restrictions. For the product that you are interested in, click the "More" button to access a list of the active ingredient(s) and labels. All label types will be presented including primary, supplemental, 2(ee), and 24 (c) labels. The most recent label will be at the top of that list.

Online Paraquat Dichloride Safety Training Now Available in Spanish and English

Julie Kikkert, CCE Cornell Vegetable Program

How to Safely Use and Handle Paraquat-Containing Products is the EPA approved online course from eXtension, available at

http://www.usparaquattraining.com/ with the recently released Spanish version now available in addition to the English version. The training website address is available on all paraquat labels.

As required by EPA's Paraguat Dichloride Human Health Mitigation **Decision** and amended paraguat dichloride (a.k.a. paraquat) product labels, certified applicators must successfully complete an EPAapproved training program before mixing, loading, and/or applying paraquat. The training provides important information about paraquat's toxicity, new label requirements and restrictions, and the consequences of misuse. According to the eXtension site, you should expect to spend about 60 minutes on the course and the assessment quiz. You will need to create an account within eXtension, and when the training is completed, you can print off a certificate of completion.

Paycheck Protection Program (PPP) and Economic Injury Disaster Loan (EIDL) Fact Sheet #4

PPP has \$310 Billion More + Returned Funds from Large Companies; \$60 Billion More for EIDL is Now Available(ish) for Farms

Elizabeth Higgins, Eastern NY Commercial Horticulture Program, Nicole Tommell, Central NY Dairy, Livestock and Field Crops Program, and Myron Thurston, CCE Madison County; edited by Judson Reid, Cornell Cooperative Extension, Cornell Vegetable Program

PAYCHECK PROTECTION PROGRAM (PPP) UPDATE

The Paycheck Protection Program (PPP) and Health Care Enhancement Act was signed on April 24, 2020. A new interim final rule was issued by Small Business Administration (SBA)/Dept of Treasury on April 24: <u>https://home.treasury.gov/system/files/136/Interim-Final-Rule-on-Requirements-for-Prom-issory-Notes-Authorizations-Affiliation-and-Eligibility.pdf</u> and the Treasury Department also issued an updated FAQ as of April 26: <u>https://home.treasury.gov/system/files/136/Paycheck-Protection-Program-Frequent-ly-Asked-Questions.pdf</u>.

In summary, the Paycheck Protection Program (PPP) is a low interest (1%) loan authorized in the CARES Act designed to provide a direct incentive for small businesses to keep their workers on the payroll. The Small Business Administration (SBA) will forgive up to 100% of PPP loans if all employees are kept on the payroll for eight weeks and the money is used for payroll, rent, mortgage interest, or utilities. You can apply through any existing SBA 7(a) lender or through any federally insured depository institution, federally insured credit union, and Farm Credit System institution that is participating. The last day for SBA to approve a PPP loan is June 30, 2020.

Although the recent Act did not place additional explicit constraints on large businesses, the updated April 24th interim final rule and April 26th FAQ do make it clear that need for the loan matters. Congress is now making more effort to better target the PPP funding to small businesses. Some of the kinks of the first round are being addressed and an attempt is being made to better reach small businesses. If you have concerns about your markets and labor this season, you can apply for a PPP loan in good faith, even if you haven't experienced a significant loss in income yet. COVID-19 economic impacts are likely to be long lasting and should times get hard, accessing affordable credit could be a challenge for many small businesses.

It is not clear what additional requirements or restrictions there will be for PPP loan forgiveness. As the program unfolds, the program rules seem to be establishing the groundwork for SBA to hold businesses to a standard of suffering economic harm in order to receive loan forgiveness. There could be more documentation of economic harm required or more restrictions placed on forgivable uses of the funding. Right now, loan forgiveness in the PPP is based on hiring at the same level you had in 2019 and being able to pay out most of the grant in the first 8 weeks after you receive funding. Some businesses are having trouble meeting this standard because of worker shortages or changes in how they are operating right now. Our recommendation is if you are applying to the PPP because, like many farms you are <u>unsure</u> of how your season will unfold, be prepared to pay the loan back if your season goes well and consider your PPP funds as a low interest, safety net.

Neither the April 24th Interim Rule nor the April 26th FAQ included any new guidance to lenders about using the Schedule F or alternative sources of documentation for assessing owner income for the PPP. If you do not have paid employees and you reported net negative income on your 2019 Schedule F, it is possible you will not qualify for PPP funding. You should contact your lender to verify your eligibility prior to applying.

ECONOMIC INJURY DISASTER LOAN (EIDL) AND ADVANCE UPDATE

The Paycheck Protection Program and Health Care Enhancement Act made the SBA Economic Injury Disaster Loan (EIDL) available to farms for the first time. EIDL is the SBA's primary disaster assistance program to businesses. It provides low interest loans (3.75%) for working capital that are intended to help a business keep going during a period of business interruption due to a disaster. Businesses can apply for up to \$2 million. The terms for repayment of the loan can be quite long (up to 30 years) with the intention that the repayment costs are low enough to help the business stay economically viable after the disaster.

The CARES Act also added the ability for businesses applying for EIDL Loans to receive up to \$10,000 as an advance to "provide economic relief to business experiencing a temporary loss of revenue." The Advance does not have to be repaid and businesses that receive the advance, but ultimately are turned down for the loan, do not have to return or repay the advance if they were otherwise eligible to apply for EIDL and the purpose of the loan was eligible. Because of demand for EIDL, SBA had been limiting the Advance to the number of employees that the business had – so businesses with fewer than 10 employees were receiving less than \$10,000.

Unlike PPP, which you apply to through a commercial lender, you apply directly to SBA for the EIDL. SBA had closed their application portal for EIDL when funding was fully obligated on April 15th. They have not yet reopened the application portal because they had a backlog of applicants.

Small Business Development Center (SBDC) staff are a great resource to help guide you through this process as they are very experienced with EIDL loans. You can <u>find your local</u> <u>SBDC</u> at https://americassbdc.org/

continued on next page

continued from page 10

WHAT ARE THE DIFFERENCES BETWEEN THE TWO ASSISTANCE PROGRAMS?

Here is a table summarizing the differences between the two assistance programs:

	EIDL + Advance	PPP
Max Loan Amount	\$2 million	2.5 x average monthly payroll, up to \$10 million
Interest Rate	3.75% (2.75% for non profits)	1%
Maximum Forgivable Amount (aka Grant)	up to \$10,000 – even if EIDL loan is not approved	The first 8 weeks of payroll immediately after you receive PPP funds + (rent, utilities, mortgage interest) <u>BUT</u> the total amount forgiven for non-payroll expenses is capped at 25% of the total amount forgiven.
Repayment Period	up to 30 years	2 years
Allowable Uses	working capital	payroll, mortgage interest, rent, utilities
Who is the Lender?	Small Business Administration (SBA)	commercial banks

Read the <u>full version of Fact Sheet #4</u> at:

https://cornell.app.box.com/s/ogj9ghouausoly1ys1ne4u87btziw8k8 ●

COVID-19 Information Websites

Need information? View the following Cornell CALS and Cornell Cooperative Extension Resource Pages are updated regularly.

General Questions & Links https://eden.cce.cornell.edu/

Food Production, Processing & Safety Questions https://instituteforfoodsafety.cornell.edu/coronavirus-covid-19/

Employment & Agricultural Workforce Questions http://agworkforce.cals.cornell.edu/

Cornell Small Farms Resiliency Resources https://smallfarms.cornell.edu/resources/farm-resilience/

Financial & Mental Health Resources for Farmers https://www.nyfarmnet.org/

Cornell Farmworker Program www.farmworkers.cornell.edu

www.trabajadores.cornell.edu (en espanol)

If any ag business needs help accessing or printing online signage documents, please reach out to Judson Reid, CCE Cornell Vegetable Program, at 585-313-8912.

We are only a phone call away and happy to help!

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VegEdge is the highly regarded newsletter produced by the Cornell Vegetable Program. It provides readers with information on upcoming meetings, pesticide updates, pest management strategies, cultural practices, marketing ideas and research results from Cornell University and Cornell Cooperative Extension. VegEdge is produced every few weeks, with frequency increasing leading up to and during the growing season.

VEGETABLE SPECIALISTS

Elizabeth Buck | 585-406-3419 cell | emb273@cornell.edu fresh market vegetables, weed management, soil health

Robert Hadad | 585-739-4065 cell | rgh26@cornell.edu farm food safety, organic, business & marketing, fresh market vegetables

Christy Hoepting | 585-721-6953 cell | cah59@cornell.edu onions, cabbage, broccoli, garlic, pesticide management

Julie Kikkert, Team Leader | 585-313-8160 cell | jrk2@cornell.edu processing crops (table beets, carrots, peas, snap beans, sweet corn)

Margie Lund | 607-377-9109 cell | mel296@cornell.edu potatoes, dry beans, and post-harvest handling and storage

Judson Reid | 585-313-8912 cell | jer11@cornell.edu greenhouses/high tunnels, small farming operations, fresh market vegs

PRECISION AG SPECIALIST

Ali Nafchi | 585-313-6197 cell | anafchi@cornell.edu

PROGRAM ASSISTANTS

John Gibbons | jpg10@cornell.edu Angela Ochterski | 585-394-3977 x426 Caitlin Tucker | cv275@cornell.edu Sarah Vande Brake | sv483@cornell.edu Emma van der Heide | ev247@cornell.edu

ADMINISTRATION

Peter Landre | ptl2@cornell.edu Steve Reiners | sr43@cornell.edu

Cornell Cooperative Extension Cornell Vegetable Program

For more information about our program, email cce-cvp@cornell.edu or visit CVP.CCE.CORNELL.EDU

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