DECEMBER 2021

THE PRODUCE PAGES

Serving the fruit and vegetable growers of Eastern New York

Feature Story

Herbicide Shortage
How to Plan for the 2022 Growing Season

Bill Johnson, Marcelo Zimmer, and Bryan Young

Article originally appeared in the 10/8/21 issue of the Purdue University Extension Pest and Crop Newsletter (2021.27); Edited by Ethan Grundberg

Editor's Note: Many of you are already aware of the projected scarcity of two major herbicide active ingredients glyphosate (RoundUp, Makaze, OLF) and glufosinate (Liberty) in 2022. Industry sources are suggesting that glyphosate and glufosinate stocks will both be reduced by at least 20% in 2022 compared to 2021 and, at least in the case of glyphosate, may not be available until July. Supply challenges and price increases are also anticipated for other inputs, especially phosphorous fertilizers, for next season and will be addressed in future Produce Pages articles. The following article is focused on field crops, especially no-till corn and soy, but the strategies to adapt to scarcer and more expensive glyphosate may be helpful to growers in the Eastern New York region as well.

There is a lot of speculation about an herbicide shortage for the 2022 growing season, which will impact weed management decisions starting with fall applications. The two main active ingredients that we're hearing about right now are glyphosate (Roundup, others) and glufosinate (Liberty, others), both associated with an increase in cost. There will likely be limited supplies of other pesticide active ingredients as well, but in the short term, a shortage of these two active ingredients poses some major challenges for

(Continued on page 3)

Herbicide mixtures and application parameters will become even more important when dealing with shortages of our most popular herbicides. Photo: Fred Whitford

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The Produce Pages

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In this Issue:

The *Produce Pages* is a monthly publication of the Eastern New York Commercial Horticulture Program. For more information about the program, please visit our website at http://enych.cce.cornell.edu/.

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(Continued from cover)

corn and soybean production. The purpose of this article is to discuss ways to minimize the impact of herbicide shortage on corn and soybean production in the Midwest. As you search for alternatives to these two herbicides you may have already determined that weed control guides produced by University Extension and Industry will become your most important tool for planning your herbicide purchases for many years to come.

First, what is causing the shortage? There are several different factors which are impacting this issue. In no particular order, the reasons for the herbicide shortage include a decline in number of laborers to unload tanker ships at gulf ports, lack of truck transportation from the ports to get the ingredients to U.S. formulation plants or formulated products to the retailers, reduced supplies of some of the inert ingredients of the formulation, shortages of materials to make containers and packaging, and Hurricane Ida that damaged a glyphosate production plant in Luling, LA.

Regardless of the cause, it is also important to consider herbicide costs. We are hearing that glyphosate prices will be in excess of $80/gallon. So, even if there is not a shortage, you should plan your weed control strategies for the next growing season to accommodate a limited availability because of supply or price of these two active ingredients.

It is important to point out that the demand for glyphosate will be considerably less in a conventional till system then in a no-till system. Glyphosate is arguably the most important herbicide that facilitates no-till crop production. It's even more important in systems where cover crops are used and need to be terminated before corn or soybean planting. Therefore, one simple way to reduce reliance on glyphosate is to simply go back to using tillage for fall and early spring weed control. This practice will be very effective for controlling the weeds emerged at the time of tillage, but some farm operations may not be set up for the extra equipment, labor, and fuel needed to do this on a widespread basis. In addition, replacing burndown herbicides with tillage threatens soil conservation practices. Glufosinate demand, on the other hand, will not be impacted as much by choice of tillage system since we don't use glufosinate in our fall or spring burndown application, and not much is used in corn. There is some glufosinate used in delayed burndown situations. However, we mostly use glufosinate postemergence in soybeans after the crop and summer annual weeds have emerged.

If you're not interested in returning to widespread use of tillage, keep in mind that you are looking for ways to control winter annual weeds before planting and control grass weeds with other herbicides to decrease reliance on glyphosate for postemergence grass weed control. Secondly, regardless of tillage system, you want to build a solid residual program as the backbone of your weed control strategy to reduce reliance on using glyphosate postemergence in the crops. In the next section of this article, we will outline some weed control considerations based on the type of tillage system you are in and the weeds to be controlled at different times of the year.

Fall Applied Herbicides for Winter Annuals on No-Till Ground

If you are a cover crop user, plant high biomass producing covers that include cereal rye for horseweed suppression. *(EDITOR'S NOTE: Horseweed is commonly called mare's tail in much of the region).* Suppression of winter annuals other than horseweed can be somewhat variable, but we usually have better results if biomass production is high in the fall. If legumes are not planted with the cereal rye, we can also use 2,4-D or dicamba in the fall to control winter annual broadleaf weeds that emerge before winter freeze up. Weed control benefits from high biomass cover crops can also be realized for the 2022 growing season as well. We occasionally see some suppression of waterhemp and annual grasses as well with high biomass cover crops. *(EDITOR'S NOTE: Waterhemp has not been found in the ENY region yet)*.

If you are not a cover crop user and you use fall applied herbicides for winter annuals, consider taking out glyphosate and just using 2,4-D + dicamba mixtures this fall ***IF*** you only have broadleaf weeds [chickweed, henbit/deadnettle, shepherd's purse, field pennycress, mustard species, cressleaf groundsel, dandelion (which is a perennial), poison hemlock (a biennial), etc.] in your fields. If you have grass weeds (annual bluegrass, Carolina foxtail, false timothy, others), and they are small and actively growing, you can use reduced rates of glyphosate to control the grasses and rely on 2,4-D + dicamba mixtures to control the broadleaf weeds. Keep in mind that if you mix reduced rates of glyphosate with 2,4-D, dicamba or both, grass control can be compromised (herbicide antagonism). So, make those applications on a warm day and be sure to add AMS to the mix to minimize the risk of herbicide antagonism. In addition, we have observed that the addition of saflufenacil (Sharpen, others), can help speed the activity of glyphosate on some annual grass species. Again, if you are reducing the rate of glyphosate to conserve your supply, adding a saflufenacil product might improve the activity of glyphosate. Remember to use MSO and a nitrogen source with saflufenacil for optimum foliar activity.

There are other active ingredients that provide some control or suppression of winter annual grass weeds and can be used in the fall, such as paraquat, clethodim (Select, others) and rimsulfuron (Resolve, Basis, Crusher, Matrix, others). These herbicides will be a bit more limited in the spectrum of weeds controlled compared to glyphosate. Therefore, make sure to properly identify the weeds present in the field and check if the weed species found are listed on labels of these products. Paraquat is commonly used with metribuzin (Sencor, TriCor, others) and 2,4-D or dicamba for fields going to soybean. For fields going to corn paraquat + simazine (Princep, others) + 2,4-D or dicamba would be an effective broadspectrum treatment. If you are using a clethodim or rimsulfuron product instead of paraquat, add 2,4-D or dicamba to help with broadleaf weeds.

Spring Applied Herbicides for Winter Annuals and Early Emerging Summer Annuals on No-Till Ground

For no-till corn acres, we have to design a program to 1) control the winter annual and early spring summer annual weeds that have

(Continued on page 4)

(Continued from page 3)
emerged, 2) fit the crop being grown that summer, and 3) factor in the fairly long list of residual premixes that might have some combination of atrazine, isoxaflutole, mesotrione, rimsulfuron or thiencarbazone, metribuzin, or saflufenacil in them. All these herbicides have some foliar activity on early spring weeds and fit into a no-till burndown scenario. Isoxaflutole, rimsulfuron, and thiencarbazone have foliar and residual activity on grasses and will control a few selected broadleaf weeds. Metribuzin, saflufenacil, and mesotrione have foliar and residual activity on a key no-till weed, horseweed (aka mare's tail), and can also help with waterhemp and Palmer amaranth control. A group 15 herbicide (metolachlor, dimethenamid, pyroxasulfone, acetochlor) is also needed to form the backbone of the soil residual grass and small seeded broadleaf weed control program for the season.

As we get closer to the 2022 growing season and start planning for control of summer annual weeds it will be important to assess your supply of these active ingredients and build the backbone of your weed control program around full rates of residual herbicides so you can minimize reliance on postemergence herbicides. As mentioned in the introduction, there are many good references available to help you determine which residual herbicides best fit the weed species you are battling. Consult the weed response table such as these to choose the best product for each specific field. If you can build a weed control program that only requires one postemergence treatment of glyphosate or glufosinate, and possibly at a rate less than the maximum labeled rate, that will allow you to stretch glyphosate and glufosinate supplies over more acres. However, don't fall into the trap of thinking you only get one application of these herbicides so you should wait for the last weed flush before you spray. With limited supply and increased costs, the best route is to use a reasonable rate on small weeds with the best adjuvant system and application method possible. Use residual herbicides to manage other weed flushes.

Here are a few scenarios to consider based on the problematic weeds in a specific field. Keep in mind we do not endorse any specific product or company. We are simply pointing out which products, based on the active ingredients they contain, would be a good fit with the weed pressure we have mentioned. All the University Extension weed control guides and most of the guides written by the crop protection industry have weed efficacy tables in them to help the user determine which products provide acceptable control of the most common weeds in the specific geographical area covered by the guide. Of course, these guides assume all herbicide label recommendations are followed for the application and herbicide resistance in the weed population has been considered.

Example 1. A no-till corn field with lots of annual bluegrass or Carolina foxtail, and summer annual grass pressure. If the grasses are 3 inches or less in height, and you have a limited supply of glyphosate, consider using this combination for your burndown treatment – Corvus or Revulin Q at a full labeled rate. The thiencarbazone + isoxaflutole in Corvus or the rimsulfuron + mesotrione in Revulin Q will control small annual grasses. *(EDITOR'S NOTE: Corvus is not labeled for use in New York)*. Add atrazine (1 to 1.5 lb ai/A) and possibly a group 15 herbicide to boost residual broadleaf and grass weed control. If you have some emerged broadleaf weeds present when the burndown treatment is made, add saflufenacil, 2,4-D or dicamba to the mixture. For weeds that break through the residual treatment, use a postemergence treatment of glufosinate + dicamba or glyphosate + dicamba and add a 1/3 to ½ label rate of the atrazine premix products that contains a group 15 herbicide to lengthen the window of residual weed control in the crop. We know many growers won't use glufosinate in corn since it isn't always clear what hybrids are Liberty Link and they want to save the glufosinate for soybeans. You can also use Revulin Q, Realm Q, Armezon, Armezon PRO, Impact or Laudis for postemergence grass control if glyphosate or glufosinate is not available.

Example 2. What if the field in example 1 will be planted to soybean, rather than corn and is also infested with horseweed and waterhemp? The good news here is that there are several premixes available that have metribuzin in them. We have always observed better activity out of paraquat by adding a triazine herbicide to it and by simply adding paraquat and 2,4-D to a premix that has metribuzin in it, you have a ready-made, broadspectrum burndown and residual herbicide. The soybean premixed products that would fit this scenario include Authority MTZ, Canopy, Dimetric Charged, Intimidator, Matador, Boundary/Moccasin MTZ. *(EDITOR'S NOTE: Authority MTZ is not labeled for use in New York.)* The second choice would be to use clethodim for grasses + other herbicides to control broadleaf weeds. Clethodim can be used for emerged grasses, but activity will be slower in cool weather conditions and can also be antagonized by other components of the mixture (2,4-D, dicamba, acetochlor). Rimsulfuron can be used 30 days or more before planting soybean and may help with winter annual grasses, providing some residual control of summer annual grasses as well. Use of rimsulfuron would be best suited to STS or Bolt soybeans since they will be more tolerant to rimsulfuron. The postemergence weed control program will be based on the soybean trait planted and the weeds that break through the residual herbicide. Adding a group #15 residual herbicide (metolachlor, dimethenamid, pyroxasulfone, acetochlor) to the postemergence application will be the backbone of your small seeded broadleaf and grass control program, and reduce the need for a second postemergence application later in the growing season.

Example 3. A no-till corn field with no winter annual grasses, but lots of horseweed (mare's tail), giant ragweed, and lambsquarters have started to emerge. The field has a history of having some foxtail, fall panicum and waterhemp, but the summer annual grasses and waterhemp don't emerge as early as the ragweed and lambsquarters. Use Acuron, Lumax/Lexar, Resicore, or Verdict. Add saflufenacil (not needed with Verdict since it contains saflufenacil), 2,4-D or dicamba to each of them for additional foliar activity on broadleaf weeds. Add atrazine to Resicore or Verdict for additional residual control of broadleaf weeds. If summer annual grass weeds have emerged, add paraquat or a pint/A of glyphosate to the mixture. If saflufenacil is added to one of the premixes that doesn't contain saflufenacil, add 20-30 gallons of UAN (if corn has not emerged) and MSO for burndown of small grasses and broadleaves.

For weeds that break through the residual treatment, use glufosinate + dicamba or glyphosate + dicamba and add a 1/3 to ½ label rate of the atrazine premix product that contains a group 15 herbicide to lengthen the window of residual weed control in the crop. You can also use Revulin Q, Realm Q, Armezon, Armezon PRO, Impact or Laudis for postemergence grass control if glyphosate or glufosinate is not available.

Example 4. What if the field in Example 3 will be planted to soybean, rather than corn? In this field, broadleaf weeds (winter and summer annuals) and horseweed are the target with the burndown treatment. So, start of by determining which soybean trait will be planted. If it is non-GMO or straight Roundup Ready or Liberty Link, remember that there will be a preplant interval for 2,4 -D or dicamba. The interval for 2,4-D will be shorter for these soybean traits. So, a mixture of 2,4-D + saflufenacil or metribuzin for broadleaf weeds will be the backbone of the burndown program and all that is likely needed for burndown if no grass weeds are present. As mentioned above, we will want to build the weed control program around a broadspectrum residual herbicide, so simply adding 2,4-D to premixes that contain saflufenacil (Verdict, Zidua Pro) or metribuzin (Authority MTZ, Canopy Blend, Intimidator, Kyber, Matador, Boundary/Moccasin MTZ, Trivence, or Panther Pro) makes the most sense and would require a 7 to 30 day preplant interval depending on the 2,4-D formulation and rate used. If you planted Enlist beans, you would use the same strategy, but no preplant interval is required if you use the 2,4-D choline (Enlist One) product from Corteva. If you plant Xtend soybeans, simply replace 2,4-D with an approved dicamba product (Engenia, Xtendimax, or Tavium) and no preplant interval is required for that trait. The postemergence weed control program will be based on the soybean trait planted and the weeds that break through the residual herbicide. Adding a group #15 residual herbicide to the postemergence application will be the backbone of your small seeded broadleaf and grass control program and reduce the need for a second postemergence application later in the growing season.

These are just a few examples of some different scenarios to consider when building a weed control program. Keep in mind that the concern isn't just the limited supply of glyphosate and glufosinate, but the increase in cost, especially glyphosate which may be 4X the cost just a few years ago, which makes other herbicide options much more feasible that you didn't consider previously.

Other Tips:

- Target using "regular" rates of glyphosate to stretch supply. Instead of using 32 or 44 oz/acre of a Roundup brand product, consider using the standard rate on the label such as 22 oz/acre for Roundup PowerMax (Note – Roundup PowerMax3 will be launched in 2022 and the standard rate is 20 oz/acre; equivalent to 22 oz/acre of the old R. PowerMax formulation).

- Identify glyphosate or glufosinate premixes that may be in greater supply or at lower relative costs compared to solo glyphosate and glufosinate products.

- Failure is not an option for herbicide applications. Make sure you optimize your herbicide applications using the best methods (GPA, spray nozzles, etc.), adjuvants, and minimal weed size for foliar applications.

- Substitute alternative corn post herbicides that control grasses and broadleaves, if they don't include a residual group 15 herbicide, add one to the postemergence mixture.

- Cultivate if needed and/or possible.

  Hand weed escapes prior to the weeds setting seed.

Foliar Diseases in Winter Greens

Meg McGrath, Cornell University

Several diseases affecting leaves of winter greens have been occurring in the Northeast. Recently, symptoms were seen of powdery mildew on lettuce (Salanova), Cladosporium leaf spot on spinach, and downy mildew on spinach. Other diseases are powdery mildew of brassicas, downy mildew of lettuce, and downy mildew of brassicas.

Managing these diseases successfully can be challenging because there is a very low tolerance for disease symptoms on fresh greens. Thus preventive practices are especially important. With crops already planted this year, the following full management list includes a few practices to implement next season. The key now is to be checking crops for symptoms and reducing humidity and leaf wetness because moisture is favorable for disease development.

- Select spinach varieties with resistance to as many races as possible, in particular 12, 14, and 15 which have been detected in the region in the past. 19 races have been identified to date. Varieties do not have resistance to all races, so select multiple varieties to obtain complete resistance for the planting and ensure some spinach remains healthy. Race-specific resistance is highly effective but only to the specified races. Please report when you see spinach downy mildew and the varieties affected to an extension specialist. We are keeping track of races occurring to be able to keep growers informed of what varieties to grow.
- Treat spinach seed with hot-water or bleach for Cladosporium leaf spot. This is not effective for downy mildew pathogens because their oospores are resilient.
- Rotate where crops are grown.

(Continued on page 6)

(Continued from page 5)

- Use drip irrigation if possible.
- With overhead irrigation, wait until foliage has dried before putting row covers back on.
- Use ventilation and heat to reduce moisture.
- Control weeds which can add to humidity. Some could be harboring powdery mildew fungi.
- Routinely inspect crops thoroughly for symptoms.
- When symptoms are found at a low level, especially when in one area or variety, consider removing plants and marketing leaves that are symptomless to minimize spread and also loss. Pathogen spores are dispersed in air currents, therefore turn off fans and minimally disturb plants while removing them to minimize dislodging spores, and put plants in a bag rather than a box to take out of the tunnel. Note that there is at least a week from infection until symptoms appear, likely much longer under cool temperatures, so the amount of diseased tissue is greater than is visible.
- Note that the mildew pathogens (downy and powdery) are specific to these crops, so for example, seeing powdery mildew on lettuce in a tunnel is not a potential source of the pathogen for kale being grown there; however, it is an indication that conditions are favorable generally for powdery mildew fungi.
- There are biopesticides and other organic fungicides labeled for most of these diseases. They may contribute to control when applied preventively (so best used on a farm where the disease has occurred in the past), on a regular basis (every 7-14 days), and in a way to maximize spray coverage on both leaf surfaces.
- Promptly destroy crops as soon as they are deemed too affected by disease to be salvageable. Best to physically remove affected plants from tunnel to minimize crop debris and pathogen left there.

Much has been learned from growers who have had foliar diseases develop on their winter greens. For example, these diseases have not been occurring on all farms and they tend to re-occur on farms suggesting local sources of pathogen inoculum (see the posting about results from a recent survey posted at the webpage cited below). But much remains to be learned, in particular about conditions (temperature and moisture) favorable for development of these diseases so that we can fine-tune management guidelines. Please tell us about occurrences on your farm to help us to be better able to help you!

Powdery mildew in winter lettuce. Photo: Amy Ivy, formerly ENYCHP

Images plus additional information about these and other diseases including their management in winter greens are posted at:

https://www.vegetables.cornell.edu/pest-management/disease-factsheets/diseases-occurring-in-winter-greens-and-their-management/

2021 Leek Variety Trial: Beyond Megaton

Crystal Stewart Courtens and Natasha Field, CCE Eastern NY Commercial Horticulture Program

Summary: Year two of the leek variety trial brought completely different weather and challenges, and brought forth some different high performing varieties. However, 'Chinook', 'Lancia' and 'Defender' proved to be top performers in both years, demonstrating disease resistance, vigor, and high uniformity. This year we replicated the varieties, allowing for statistical analysis, but the tremendously different growing seasons lead us to recommend looking at results from both years as worth considering. The notable challenges from this season were very regular rains during July and parts of August, and subsequent very high disease pressure. The previous season was much drier and disease pressure was negligible.

Introduction to growing leeks

Leeks are generally grown on-farm as a transplant, though some farmers buy in transplants. For the trial we took the extra step of starting our seed in strip trays which were germinated in a germination chamber at 75°F. The strip trays allowed us to keep varieties separate while maximizing space, since many varieties did not fill a tray. This step is probably not economically prudent but did lead to excellent germination rates and a perfect stand within the open trays. Seedlings were transferred to open flats as soon as they could be handled at a density of about one seedling per inch, spacing

(Continued on page 7)

(Continued from page 6)

that could definitely be tightened to around one seedling per centimeter if direct seeding into trays.

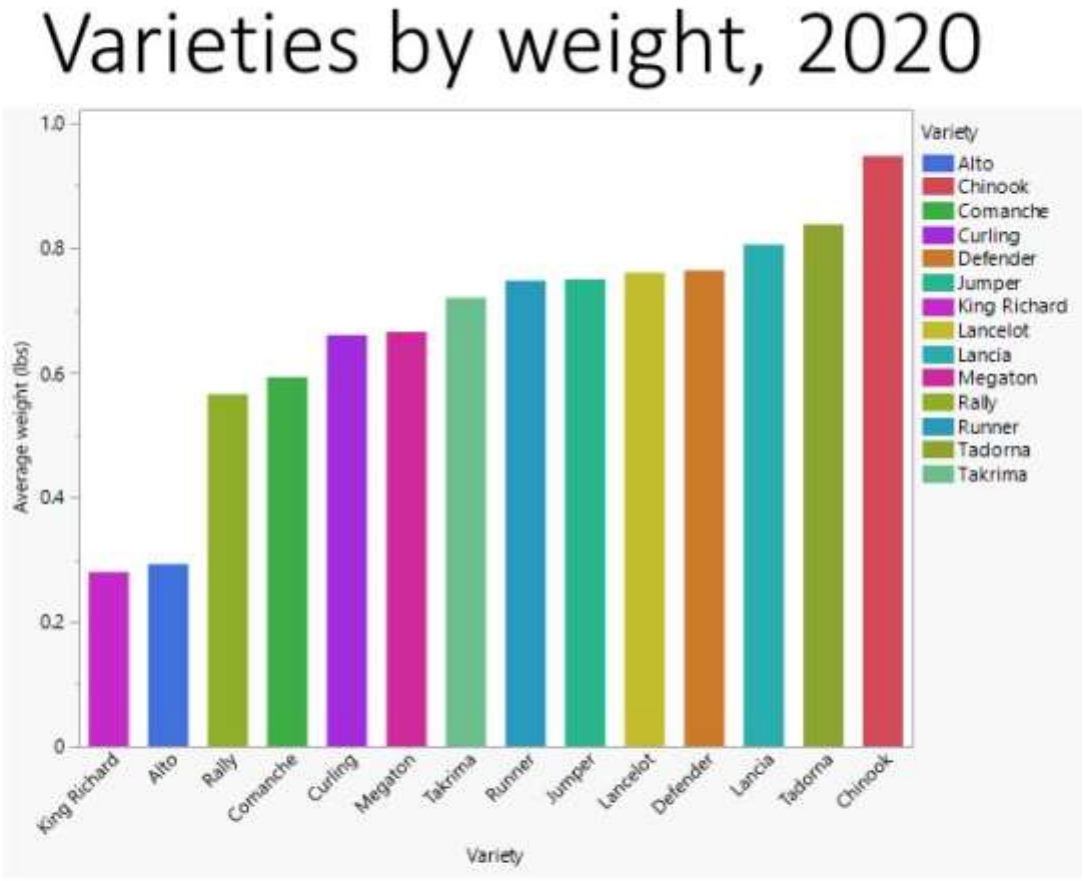
When seedlings were 10 weeks old they were transplanted into raised beds at an in-row spacing of six inches and 18 inches between rows. Prior to transplanting we trimmed roots to an inch long and tops to eight inches long. We found in the second year that allowing plants to get larger than they were at 8 weeks (8-week seedlings are pictured above) resulted in significant transplant shock despite immediate overhead irrigation after planting, so recommend not allowing plants to become too large, particularly during a hot, dry spring like we experienced this year.

Plants were planted with about 2 inches of the shank (stem) buried, and were cultivated and hilled twice. No fungicide applications were made in either season in order to assess varietal disease tolerance. When growing leeks for commercial production, we recommend use of fungicides for Purple Blotch and Stemphyllium Leaf Blight at first signs of disease. Additionally, we recommend that growers who farm in areas where allium leaf miner (ALM) is present protect leeks through the use of either row covers/ insect nets or with insecticides, since larval feeding can dramatically reduce marketability of leeks. We were surprised to discover that first flight ALM found our leek transplants in the greenhouse, which we will be investigating further as an issue in the coming years.

ALM pupa (red circle) on a leek transplant
Photo: Crystal Stewart Courtens

Results/Discussion

Overall yields in 2021 were significantly lower than in 2020 due to transplant shock and high disease pressure. Below is a comparison of the overlapping varieties from the two years. 2020 included many more varieties (see 2020 report for complete information) but no replications. The narrower field of 2021 varieties were selected based on performance in 2020 and feedback from seed companies.



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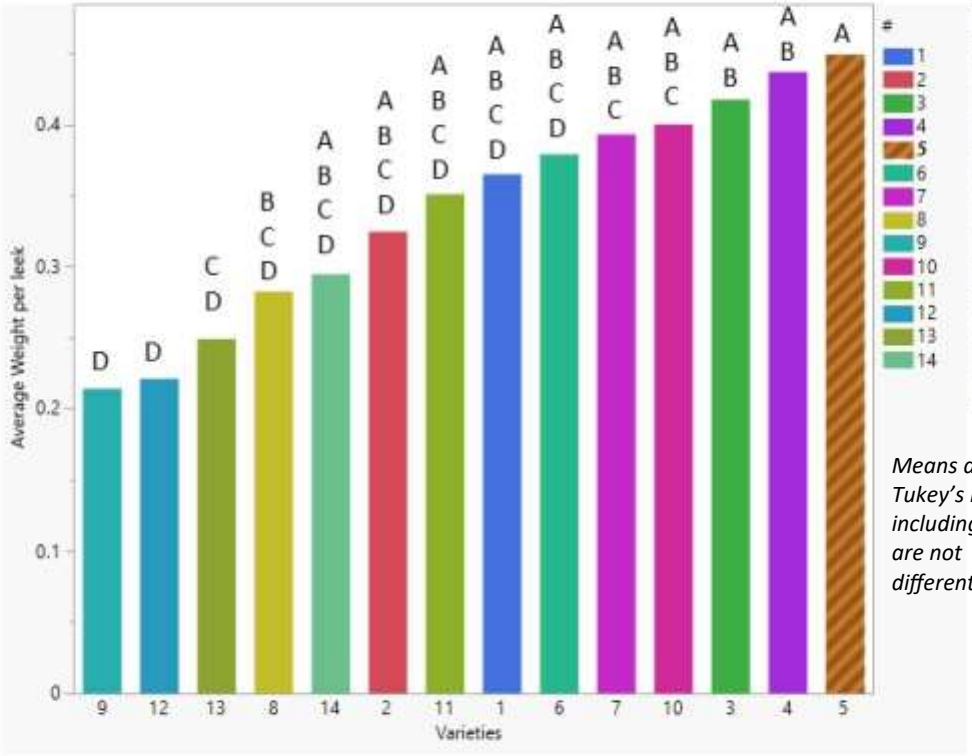
Varieties by weight, 2021



1	Alto
2	King Richard
3	Lancia
4	Chinook
5	Comanche
6	Curling
7	Defender
8	Jumper
9	Lancelot
10	Oslo
11	Rally
12	Runner
13	Tadorna
14	Takrima

Means are separated by Tukey's HSD. Columns including the same letter(s) are not significantly different from each other.

We did not conduct a formal disease assessment on the varieties for this trial, but did multiple informal assessments through the season and saw clear separations in varietal susceptibility. Three of the varieties with the highest disease severity were 'Jumper', 'Lancelot', and 'Alto.' Notably, 'Comanche' had fairly high disease severity despite also having the highest marketable yield in 2021. Our other top two yielding varieties, 'Chinook' and 'Lancia,' both had low disease ratings.

A few varieties had lower yields but also had lower disease ratings, such as 'Tadorna,' a favorite from 2020. 'Rally' and 'King Richard' also had lower disease ratings and lower yield in 2021.

Conclusions

There are numerous promising varieties available for growers looking to grow a high quality Northeast leek. As with all trials, we recommend testing a few of the recommended varieties on your farm to determine their performance in your unique environment. Our current recommendations for an alternative summer leek to 'King Richard' is 'Lancia,' which more closely resembles a fall leek in growth and has excellent vigor. However, if you like the lighter stature of 'King Richard' for the earlier markets, this variety fared well from a disease standpoint.

Our recommendations for fall leeks are 'Chinook', 'Comanche', and 'Tadorna'. 'Chinook' performs best of the three from a combination of disease resistance and stress resistance. 'Comanche' and 'Tadorna' were both more variable performers, though 'Comanche' did show disease susceptibility in both seasons and 'Tadorna' was disease tolerant in both.

For more information, please contact Crystal at cls263@cornell.edu. Many thanks to Bejo Seeds, High Mowing Organic Seeds, Johnny's Selected Seeds, and Harris Seeds for their support of our trial work. View the full variety trial report here: https://rvpadmin.cce.cornell.edu/uploads/doc_1004.pdf

2021 EMR Model Hudson Valley Honeycrisp Bitter Pit Prediction Post-Storage Report

Daniel J. Donahue, CCE Eastern NY Commercial Horticulture Program

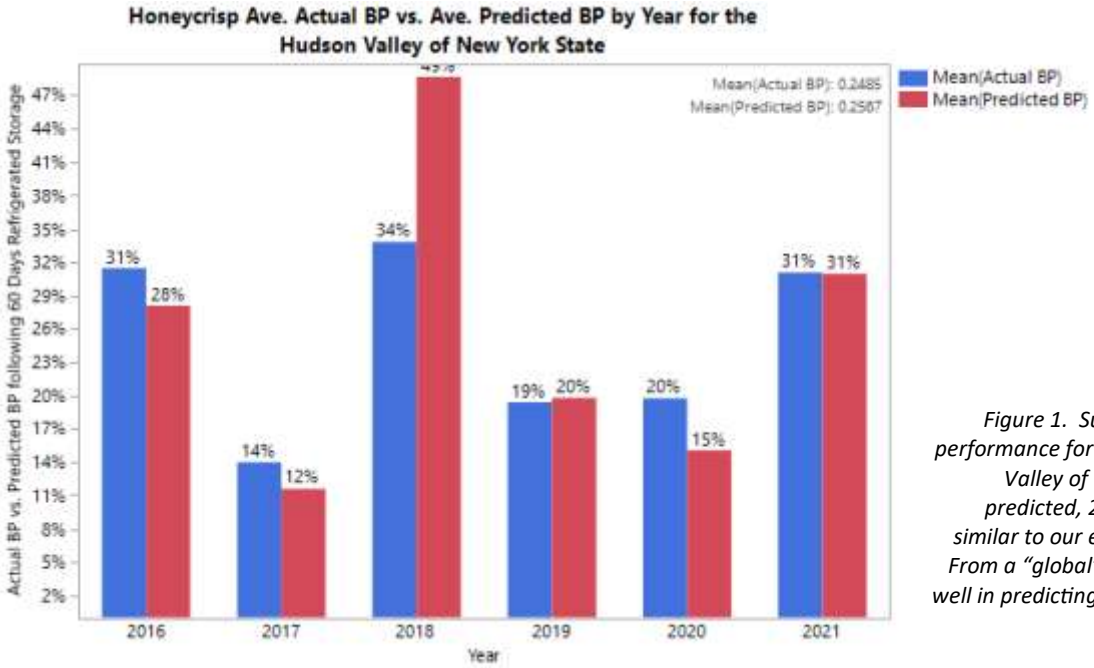


Figure 1. Summary EMR model bitter pit (BP) prediction performance for nineteen Honeycrisp orchards in the Hudson Valley of New York State from 2016 through 2021. As predicted, 2021 was a troublesome year for Honeycrisp, similar to our experience in 2016, not quite as bad as 2018. From a "global" perspective, the EMR model has performed well in predicting BP for the Hudson Valley region as a whole.

The data presented in Figure 1 is from 19 Hudson Valley (HV) M.9 clone, M.26 and Bud.9 blocks that have been monitored annually since 2016. Blue bars represent observed bitter pit (BP), red bars represent EMR (Environment, Mineral profile, and Rootstock model) predicted values. In this "view from 10,000 feet", the EMR model has been reasonably accurate in predicting the HV BP trend in five of the six seasons, while over-predicting BP in 2018. As a practical matter, for a prediction model to be useful it must emphasize accuracy in the range of 0-20% BP incidence. Once BP levels are predicted to be high, say over 20%, the difference between 34% and a predicted 48% as observed in 2018 is interesting, but academic as levels this high are simply trouble all around. The EMR model predicted a troublesome BP storage season for the HV crop in 2021, and this turned out to be correct with average BP incidence observed in our long-term commercial orchards of 31%. Unfortunately this season, BP wasn't our only problem as defects such as skin cracking, black rot, bitter rot, and russeting combined with BP to push many packouts below 50%.

While this data provides a general overview of what we are facing, actual BP incidence in a specific HV orchard depends on rootstock and crop load (very light vs over-set) followed by your orchard management decisions. According to our historical published data, Honeycrisp produced on the Bud.9 rootstock express significantly less BP. However, only one of the four Hudson Valley Bud.9 blocks in our 2021 monitoring program produced a typical prediction for low BP incidence.

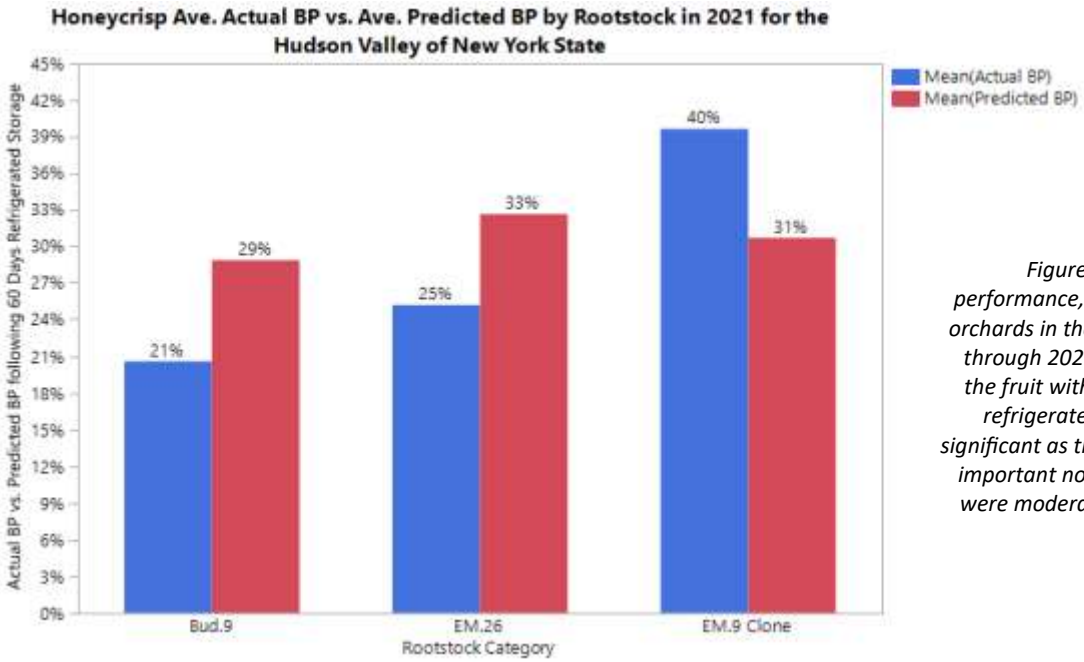


Figure 2. Summary EMR model bitter pit prediction performance, by rootstock in 2021 for nineteen Honeycrisp orchards in the Hudson Valley of New York State from 2016 through 2021. While once again Bud.9 orchards produced the fruit with the least bitter pit incidence after 60 days of refrigerated storage (38F), the improvement was not as significant as that observed over the previous 5 seasons. An important note is that 3 of the 4 Bud.9 orchards evaluated were moderately lightly cropped, in contrast to the well to over-cropped M.26 orchards in this sample.

(Continued on page 10)

(Continued from page 7)

The data presented in Figure 2 suggests that while once again Bud.9 orchards outperformed EM.9 and EM.26, the margin was relatively less in 2021. One possible explanation was the influence of crop load and sample size. Of the four Bud.9 orchards sampled, three experienced moderately-light crop loads. EM.26 orchards did surprisingly well in 2021, however several orchards experienced moderately-heavy crop loads with one being severely over-cropped. The EM.9 orchards in this sample for the most part experienced acceptable and sustainable commercial crop loads. The data in Table 1 provides additional detail at the orchard level.

Honeycrisp EMR Model BP Prediction Performance by Hudson Valley Orchard in 2021

Block Code	Rootstock Category	Predicted % BP Inc.	Actual % BP Inc.	EMR Model Performance	Observations
1	EM.9 Clone	17.6%	6.1%	Missed Storage Opportunity	Overcropped, expect poor return bloom
2	EM.9 Clone	10.8%	11.5%	Correct - Good for Long-Term Storage	Overcropped, expect poor return bloom
3	EM.9 Clone	41.5%	74.0%	Correct - High Risk for Long-Term Storage	
4	EM.9 Clone	20.1%	36.0%	Correct - High Risk for Long-Term Storage	
5	EM.9 Clone	28.6%	28.0%	Correct - High Risk for Long-Term Storage	
6	EM.26	20.3%	20.4%	Correct - High Risk for Long-Term Storage	
7	Bud.9	7.4%	4.0%	Correct - Good for Long-Term Storage	Always historically acceptable, but significantly improved this season
8	EM.26	14.5%	11.5%	Correct - Acceptable for Long-Term Storage	A real surprise, heavy crop but this doesn't fully explain the low BP, best results observed over 6 seasons, was it the grower's spray, fertilizer, and thinning program?
9	Bud.9	27.7%	20.0%	Correct - High Risk for Long-Term Storage	Moderately light crop. I was sceptical of the original prediction but it turned out to be correct.
10.5	Bud.9	39.9%	18.0%	Correct - High Risk for Long-Term Storage	Moderately light crop. I was sceptical of the original prediction but it turned out to be correct.
11	EM.26	41.6%	38.0%	Correct - High Risk for Long-Term Storage	
12	EM.9 Clone	58.4%	54.0%	Correct - High Risk for Long-Term Storage	
13	Bud.9	40.5%	40.4%	Correct - High Risk for Long-Term Storage	Moderately light crop. I didn't trust the original prediction but it turned out to be correct.
14	EM.9 Clone	35.6%	45.1%	Correct - High Risk for Long-Term Storage	
15	EM.26	34.9%	42.0%	Correct - High Risk for Long-Term Storage	
16	EM.9 Clone	15.2%	30.0%	Correct - High Risk for Long-Term Storage	
17	EM.9 Clone	48.6%	72.0%	Correct - High Risk for Long-Term Storage	
18	EM.26	57.2%	27.5%	Correct - High Risk for Long-Term Storage	
19	EM.26	27.5%	11.8%	Missed Storage Opportunity	Overcropped, expect poor return bloom
62	EM.9 Clone	48.0%	16.0%	Correct - High Risk for Long-Term Storage	
202	EM.9 Clone	37.2%	62.0%	Correct - High Risk for Long-Term Storage	Lightly cropped trees in a test block. BP performance was much worse than the historical record. No pink Apogee (Kudos) or foliar calcium applications.
204	G.41	81.2%	100.0%	Correct - High Risk for Long-Term Storage	Lightly cropped trees in a test block. BP performance was much worse than the historical record. No pink Apogee (Kudos) or foliar calcium applications.
206	EM.9 Clone	54.3%	100.0%	Correct - High Risk for Long-Term Storage	Almost-blank trees in a test block. BP performance was worse than the historical record. No pink Apogee (Kudos) or foliar calcium applications.
203	G.41	85.5%	100.0%	Correct - High Risk for Long-Term Storage	Almost-blank trees in a test block. BP performance was worse than the historical record. 100% BP was observed at harvest. No pink Apogee (Kudos) or foliar calcium applications.

Table 1 (left). Bitter pit performance for 24 Hudson Valley orchards in 2021. Ten percent BP incidence was considered to be the acceptable threshold for long-term storage. 10-15% was considered to be tolerable. The fruit from over-cropped trees routinely express less BP, while the fruit from lightly-cropped trees express high levels. Within the "good crop" range, rootstock choice is the most important variable. The EMR model loses precision as BP becomes more severe. From a storage management and marketing point of view, there is no practical difference between excessive BP and really excessive BP. Green highlighting indicates an accurate EMR recommendation, yellow indicates a missed storage opportunity. Overall, only 5 of the 24 orchards evaluated would have been suitable for long-term storage in 2021.

The EMR model performed well in 2021. Most importantly, the model did not make the major mistake of recommending long-term storage when the actual result was bitte pit above 15% or higher with the ensuing financial loss. The model also had exhibited a degree of sensitivity to crop load in the Bud.9 orchards, but less so for the EM.26. Samples (Block Codes 202, 203, 204, 206) taken from a commercial orchard that has hosted multiple research trials since 2016 once again reinforce the poor BP performance of the G.41 rootstock. The crop here ranged from light to non-existent, and prohexadione calcium (Apogee or Kudos) was not applied at pink stage, nor were any foliar calcium sprays applied. Tough conditions for any rootstock and the EM.9-337 performed poorly as well. In contrast, in a 2020 trial with trees managed to a standard commercial crop load, EM.9 fruit expressed 10% BP while the G.41 fruit expressed 22%.

Using digestive tissue analysis (no sap), fruit peel mineral content at the end of July in the HV was found to be as follows:

- Manganese was 45% below the previous 5-year average
- Calcium, Potassium, Magnesium, and Boron were 35-36% below the 5-year average.
- Copper, Iron, and Zinc were close to average.

Peel samples were taken on July 30. The current version of the EMR model uses the magnesium/calcium ratio as one of the variables considered for the M.9 and M.26 rootstocks (calcium only for the Bud.9). The Hudson Valley experience above average rainfall this season, especially heavy in July. The pattern of frequent rains continued through August and into the September harvest window. Fruit size this season is estimated to be larger than average. All the above factors appear to have contributed to the high BP levels observed this season. This has been an initial report for the 2021 season and there will be more analysis to come through the winter with specific management recommendations as we approach the 2022 growing season.

Chapter 12 Bankruptcy—A Tool for Farm Businesses with High Debt Levels

Elizabeth Higgins, CCE Eastern NY Commercial Horticulture Program

A Chapter 12 Bankruptcy is a process, where a farmer, or farm family, under the protection of the U.S. Bankruptcy Court, proposes a plan for treatment of the farm's creditors which achieves the goals of the farmer, which may include:

1. the continuation of the farming operation;
2. modification or re-scaling of the farm operation;
3. a transition to new products or operations;
4. passing the farming operation to the next generation; or
5. retention of the farm homestead or
6. sale of some or all of the farming operation.

Chapter 12 is a program that was developed in response to the farm crisis of the late 1980s. Chapter 12 provides flexibility and benefits to farmers that are unavailable to other individuals or businesses including favorable tax treatment of asset sales and more flexibility in payment schedules. Chapter 12 also allows debtors to pay the current market value of a property instead of the whole debt on almost all secured debt. Chapter 12 offers a quick, affordable, and predictable process for farmers and fishermen to reorganize their debts.

There are approximately 2 million farms in the U.S., yet in 2019 there were only 595 Chapter 12 cases filed. Why? According to the University of Vermont Law School, many farmers and fisherman don't know Chapter 12 exists. Many attorneys are unaware of the potential for Chapter 12 reorganizations. And many people assume that a farm bankruptcy case means the end of the farm, rather than a useful tool for preserving, reorganizing, and even transferring a farm.

If debt on your farm business is preventing you from achieving financial viability or you are looking to make a significant change to your farm, including exit or transition, but you are carrying high levels of debt, a Chapter 12 reorganization may be a tool that can improve your situation.

Learn more about Chapter 12 as well as other resources for farms that are going through challenging financial issues in our 3-part fall business webinar series ***Farm Financial Management Tuesdays - Planning for a Change or Exiting Your Farm Business*** starting on November 30.

ENYCHP has launched a new peer development and risk management program for next generation growers. The program is targeted to farmers in multi-generational farm operations looking to move into a leadership or ownership position on the family or other farm. The program offers opportunities to gain production and business skills while networking with peers in the region.

There will be monthly training and networking programs from November 2021 through March 2022 on management topics ranging from production skills to applying for loans. Participants are encouraged to guide future training programs and networking opportunities to better support them as they advance in their profession.

The first program, in November at Samascott Orchards in Kinderhook, included a tour of post-harvest and storage facilities with next gen farmers Jake and Brian Samascott. Chris Callahan, Extension Ag Engineer at UVM, and ENYCHP production and business management specialists were on hand to answer questions and facilitate discussion of enterprise diversification, risk management and approaches to build sustainability within multi-generational farm families.

In addition to meetings, a Slack group has been set up where participants can interact directly with peers and receive direct assistance from ENYCHP veg production and business specialists. Slack is a messaging app meant for teams and workplaces where participants can upload and share files, chat one-on-one, or in groups. This Slack channel is to facilitate discussions between participants about farm production, business, farm transition, and other topics. Tutorials are available to get participants familiar with the with app.

If you are a next-gener interested in this program or have questions, please contact the program leaders, Teresa Rusinek tr28@cornell.edu 845 389-3562 or Liz Higgins at emh56@cornell.edu.

This project is supported by USDA/NIFA under award number 2018-70027-28588

ENYCHP Next Gen Farmer Post-Harvest & Storage Tour at Samascott's Orchards

NORTHEAST EXTENSION RISK MANAGEMENT EDUCATION

USDA National Institute of Food and Agriculture
U.S. DEPARTMENT OF AGRICULTURE

How Grape Yield Components Vary

Tim Martinson, Cornell University ; Edited by James Meyers, CCE ENYCHP

Editor's Note: This article was originally published in August 2021 and sicusses yield estimation prior to the end of the 2021 growing season.

The 2021 growing season in New York was a warm one with ample (or more than ample) moisture, and frequent rain events. Bloom was about one week early in many parts of NY. And last winter was mild, with negligible amounts of winter injury. These ingredients and some early crop estimates in Western NY, reported by Jennifer Russo, Lake Erie Regional Grape Extension Program, suggested that many growers would experience a heavier-than average crop in 2021.

Marquette 2013

Yield Components

Treatment	Yield (T/A)	Yield (lb/vine)	Clusters Per Vine	Cluster wt. (g)	Berries per cluster	Berry wt. (g)	Adj. # of shoots	Yield (g) per shoot (adj)	Clusters Per shoot (adj)
High Cordon	4.3 b	13.8	83.5 b	76.6 a	63.2 a	1.21 ab	36.9 b	178.1 a	2.3 a
VSP	2.3 c	7.4	69.4 c	49.2 b	43.4 b	1.13 b	36.3 b	94.2 b	1.9 b
Umbrella	5.0 a	16.1	101.3 a	72.5 a	59.2 a	1.23 a	41.0 a	178.8 a	2.5 a

Figure 1 - Total yield is made up of several components. This data from a 2013 training trial compared two spur trained training systems (High Cordon, VSP) and one cane-pruned system (Umbrella). Clusters per vine, berries per cluster, and berry weight were all lower in the mid-wire VSP system.

Concord Crop Estimates.

Jennifer's review of 182 crop estimation blocks (Table 1), showed that half of the 182 blocks surveyed had projected yields of over 9 T/acre, with 19% estimated at 16 Tons/acre and higher.

LERGP Beltwide Concord Crop Estimation Samples

tons/acre	percent of belt	blocks	total blocks
0-4 tons	9%	17	182
5-8 tons	37%	67	182
9-11 tons	20%	36	182
12-15 tons	15%	27	182
16-19 tons	14%	25	182
20+ tons	5%	10	182

Table 1 - The Lake Erie Regional Grape Program Beltwide Concord Grape Crop Estimation percentage of total samples. Source: NY & PA Lake Erie Regional Grape Program weekly Crop Update, July 22, 2021

For Concords, mid-season crop estimation with mechanical harvesters is an accepted and common practice. It ties in with mechanical pruning to a standard 'node number' (often 120 nodes), along with later crop adjustment through mid-summer mechanical crop thinning to prevent overcropping if needed – and adjust to weather conditions while meeting processors' maturity standards.

For growers of other hybrid and vinifera wine grapes, we don't have a huge database of crop estimates – but observations tend to point to a large crop this year. For some, it seems like a possible repeat of 2017, when fruitful buds, exceptional fruit set, and ample moisture led to a huge crop – in some cases 30% above what growers had estimated.

So what distinguishes a 'heavy crop year' from an 'average' or 'small crop' year? Part of the answer is how different yield components combine to produce the final crop.

Yield and its components

Total yield is made up of several components:

- The number of vines per acre
- The number of clusters per vine
- How much the clusters weigh

Cluster weight is further composed of two elements:

- The number of berries per cluster
- Berry weight

With the possible exception of vines per acre, which is a fixed number (but there are skips and vine mortality that need to be taken into account), the yield components – clusters/vine, berries/cluster, and berry weight, vary from year to year. So how much do they vary and how much does each component contribute to the final yield?

(Continued on page 14)

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To examine this, I'll draw upon data collected over nine years (2008-2016) for Veraison to Harvest, and five years of complete yield data from the "NE1020 coordinated variety trial" at Cornell AgriTech.

Berry weight

1. Range of final berry weights for four varieties from 2008 to 2016. The box plots encompass the range of berry weights observed in four varieties from multiple vineyard blocks across New York. Concord (unsurprisingly) had the heaviest berries (median 3.6 g/berry) and berry weight varied by 1.4 g. The three V. vinifera varieties (also unsurprisingly) had smaller berries (median 1.6 to 1.8 g/berry) and berry weight varied by 0.9 g/berry.

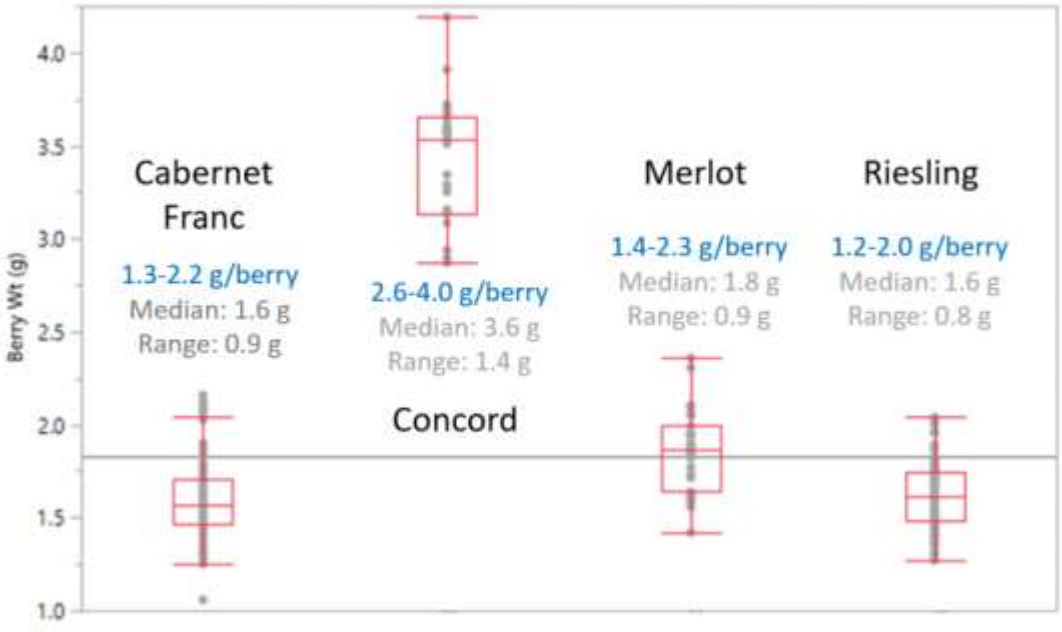

Figure 2 - Range of final berry weights for four varieties from 2008 to 2016.

2. **How each 0.1 gram/berry translates to yield per vine and per acre.** Simple math will show how each 1/10 gram per berry affects yield.

Assume:

- 6x9 ft planting density = 807 vines per acre
- Vines are managed to 5 shoots/ft of canopy = 30 shoots per vine
- The average number of clusters per shoot = 2, so there are 30 x 2 = 60 clusters per vine
- Berries per cluster = 50 (to use a nice round number)

Then:

- Berries per vine = 60 clusters x 50 berries/cluster = 3000 berries/vine
- Change in cluster weight = 0.1 g/berry x 50 berries/cluster = 5 g/cluster
- Change in weight/vine = 5 g/cluster x 60 clusters = 300 g/vine
- Change in crop weight = 300 g/vine x 807 vines/acre = 242,100 g/acre or 242 kg/acre
- Change in tons/acre = 242 kg/acre x 2.24 lb/kg = 542 lb/acre = 0.27 T/acre

So, given these assumptions, each 0.1 gram change in berry weight, is equivalent to a quarter of a ton of yield per acre.

Cluster number, berry number, and berry weight in six years of a variety trial

3. **Overall yield components across nine varieties.**

From 2010 to 2015, we collected detailed yield data from a variety trial of nine new and standard interspecific hybrid grape varieties. Each year, a crew harvested each vine by hand, counted the number of clusters harvested, and collected a 100-berry sample to obtain berry weights and fruit composition.

Table 2 shows the yearly variation in overall yield (kg/vine) and each of the yield components. The overall yield across all varieties varied by 40-78%. Cluster number (34-84%) was the component that varied the most, followed by cluster weight (22-37%). Breaking down cluster weight into its two components of berry number and berry weight, berries per cluster (15-53%) had a wider range of variability than berry weight (11 to 24%).

This quick and dirty summary appears to indicate that in relative importance, cluster number > berries per cluster > berry weight in contributing to year-to-year variability in yield. Anecdotally, a common rule of thumb is that cluster number-berry weight contribute 60-30-10 % respectively to yield.

4. **Examples from 3 different varieties.** So if we take the average numbers for berry weight, berries per cluster, and clusters per vine, and just change one of the factors using the observed minimum and maximum measured values, how does that affect overall yield?

In all three cases (Table 3, page 16), changing berry weight (varying by 0.4 g/berry) had the least impact (11-18%) on yield. Berries per cluster (varying by 13/cluster in Chancellor and 37/cluster in Noiret) had the next higher impact (19-40%). Variability in clusters per vine had the greatest impact on predicted yield (37-53%).

Implications for Crop Estimation

Reliable crop estimates are important to growers and processors, but even rigorous, consistent crop estimation can miss the mark in some years. While one publication suggests that getting within 15% of the true number is an appropriate goal, there are years when estimates are off by 30% or more, despite growers' or processors' best efforts. But the 'snapshots' from multiyear yield metrics suggest the

(Continued on page 16)

Attribute	Variety	Mean (range)	% change from mean	Range of variability
Yield	Aromella	4.7(2.6-7.4)	51%	40-78%
Kg/vine	Chancellor	6.3 (4.1-9.2)	40%	
	Corot noir	7.3 (1.6-10.2)	60%	
	La Crescent	6.1 (1.0-8.9)	65%	
	Noiret	4.3 (1.8-8.5)	78%	
	St Croix	4.9 (1.3-6.9)	58%	
	Traminette	5.1 (2.3-9.6)	72%	
	Valvin Muscat	6.4 (0.6-10.3)	76%	
	Vidal blanc	11.5 (4.8-16.4)	51%	
Cluster number	Aromella	67 (36-97)	45%	34-84%
	Chancellor	89 (56-117)	34%	
	Corot noir	71 (26-103)	55%	
	La Crescent	87 (23-123)	58%	
	Noiret	51 (24-87)	62%	
	St Croix	90 (26-132)	59%	
	Traminette	60 (32-101)	57%	
	Valvin Muscat	122 (12-218)	84%	
	Vidal blanc	89 (48-141)	52%	
Cluster Weight	Aromella	67.3 (46.5-90.2)	32%	22-37%
	Chancellor	70.5 (53.5-91.6)	27%	
	Corot noir	99.5 (53.9-128.4)	37%	
	La Crescent	67.0 (43.9-89.5)	34%	
	Noiret	82.6 (56.4-117.3)	37%	
	St Croix	53.1 (42.6-70.4)	26%	
	Traminette	79.1 (49.4-102.4)	33%	
	Valvin Muscat	55.5 (35.7-76.9)	37%	
	Vidal blanc	127.5 (100.0-155.9)	22%	
Berries per cluster	Aromella	47 (38-58)	21%	
	Chancellor	42 (37-50)	15%	15-53%
	Corot noir	51 (32-64)	32%	
	La Crescent	56 (42-71)	26%	
	Noiret	59 (35-82)	39%	
	St Croix	33 (23-41)	27%	
	Traminette	52 (28-83)	53%	
	Valvin Muscat	28 (18-39)	37%	
	Vidal blanc	73 (57-87)	20%	
Berry Weight	Aromella	1.89 (157-2.24)	11%	11-24%
	Chancellor	1.47 (1.29-1.62)	11%	
	Corot noir	1.89 (1.57-2.24)	18%	
	La Crescent	1.13 (0.95-1.28)	14%	
	Noiret	1.46 (1.19-1.67)	17%	
	St Croix	1.63 (1.36-1.89)	16%	
	Traminette	1.49 (1.14-1.77)	21%	
	Valvin Muscat	1.96 (1.47-2.43)	24%	
	Vidal blanc	1.72 (1.23-1.99)	22%	

Table 2 - Yield variation 2010-2015 in Coordinated Variety Planting at Cornell AgriTech

(Continued from page 14)
following:

1. Cluster counts are the most important, but not enough for accurate crop estimates. Getting accurate cluster counts will get you most of the way only (60-80 %?) to an accurate crop estimate, but doesn't capture variability in cluster weight. And it's difficult to be able to either sample enough vines or to choose the most 'representative' panels to accurately represent the variability in a vineyard block. Automated imaging (see RIPE summary, Using cell phones to obtain accurate prebloom cluster counts) offers the prospect of making prediction much more accurate by sampling more vines, but it still can't track variability in cluster weights.

2. Estimates of cluster weight are also needed. Predicting in mid-season how much clusters will weigh at harvest is the other important crop estimation goal. One can collect and weigh clusters at a specific time (for example lag phase, when berries transition from cell division to cell enlargement) and multiply by a factor (commonly x2) to predict the final weight. An alternative to this mid-season estimate is to weigh a sample of clusters at harvest each year and use that information along with cluster counts to arrive at a crop estimate.

3. Environmental conditions often intervene, requiring informal modification of estimates (i.e fudge factors). Even when growers have reliable cluster counts and historical cluster weights (or lag-phase estimates) as the basis for crop estimation, events during the growing season can intervene. Drought or disease can reduce final berry weight or lead to 'shelling'. Significant rainfall after dry periods can unexpectedly swell berry size. Patchy spring bud injury that lowers shoot and cluster count in part of the vineyard can be underestimated. For these reasons, experienced growers often mentally adjust crop estimates based on prior experience and informal 'fudge factors'.

	Average	Minimum	Maximum	% Yield Change	
				Minimum	Maximum
Aromella					
Change berry weight	1.33	1.19	1.54		
T/acre	**3.7**	**3.3**	**4.3**	-11%	11%
Change berries per cluster	47	38	58		
T/acre	**3.7**	**3.0**	**4.6**	-19%	19%
Change clusters/vine	67	36	97		
T/acre	**3.7**	**2.0**	**5.4**	-46%	46%
Chancellor					
Change berry weight	1.47	1.29	1.62		
T/acre	**4.9**	**4.3**	**5.4**	-12%	12%
Change berries per cluster	42	37	50		
T/acre	**5.0**	**4.3**	**5.8**	-14%	14%
Change clusters/vine	67	36	97		
T/acre	**4.9**	**3.1**	**6.5**	-37%	37%
Noiret					
Change berry weight	1.46	1.19	1.67		
T/acre	**3.9**	**3.2**	**4.5**	-18%	18%
Change berries per cluster	59	35	82		
T/acre	3.9	2.4	5.4	-40%	40%
Change clusters/vine	51	24	87		
T/acre	**3.9**	**1.8**	**6.7**	-53%	53%

Table 3 - Effect of varying one yield component at a time on predicted yield per acre in Aomella, Chancellor, and Noiret, from 2010-2015 yield data.

Grapevine Biology and environmental conditions drive variability

Yield components are determined in part by the grower (how many buds retained at dormant pruning, shoot thinning, cluster thinning), but grapevine physiology both in the previous year and the current season are huge determinants of cluster number, berry number and berry size. Here are some links to previous articles that address the physiology behind yield component variation:

- Bud fruitfulness (the number of clusters per shoot) is determined by weather and sunlight exposure during and after the previous year's bloom, when buds for next year are initiated (see previous Grapes 101 article Bud Fruitfulness and Yield).
- Floral branching (and flower number) is largely determined by leaf fall the previous year (See Grapes 101 article How Grapevine Flowers Form).
- Fruit set depends on weather during bloom and photosynthetic activity on leaves closest to clusters (cool, rainy = less fruit set). Early leaf removal (around trace bloom) of 5-7 leaves around the fruiting zone reduces fruit set. Removing shoot tips to interrupt shoot growth at bloom increases fruit set (see How Radical Manipulation of Sources and Sinks Affected Riesling Yield, Bud Hardiness, and Return Crop).

For more information

- *Bates, T. 2018. Concord Crop Adjustment: Theory, Research, and Practice, posted at Lake Erie Regional Grape Program https:// LERGP.com.*
- *Dami, I. and P. Sabbatini. 2011 Crop Estimation of Grapes. Ohio State University Factsheet HYG-1434-11. Good summary of common methods of crop estimation.*

Tim Martinson is senior extension associate with the statewide viticulture extension program, based at Cornell AgriTech in Geneva, NY. *This article was originally published in Appellation Cornell, Issue 46, August 2021, revised for Produce Pages.*

Upcoming Events & Important Information

Farm Financial Management Tuesdays: Planning for a Change or Exiting Your Farm Business: Assessing the Financial Ramifications of and Options for Significant Change to Your Farm Business
November 30, 2021
12:30-1:45 Zoom

The inflationary economy is upon us! The huge influx of money into the US economy following the COVID-19 pandemic has manufactured high prices and in turn increased operating costs for farm business thus forcing many businesses into net operating loss situations. Other farms are facing high labor costs or chronic labor shortages. Some farms have taken on debt loads that make these increased costs unaffordable. Depending on the stage in the business lifecycle, it may make sense to change enterprises or exit the farming business entirely. Join CCE ENYCH Ag Business Educator, Elizabeth Higgins, and CAAHP Ag Business Educator, Dayton Maxwell, for a one-hour program to learn about the financial aspects of changing or exiting a farm business. Register here: https://enych.cce.cornell.edu/event.php?id=1606

Cutworms in Tunnel Vegetables & Other Cool-Season Production Issues
December 1, 2021
Noon – 1 PM Zoom

The University of New Hampshire is hosting a free webinar for vegetable growers dealing with cutworm issues in cool-season production. They will cover cutworm identification, life history, and what is known about control strategies. This webinar will feature a panel of experts from around the region and there will be plenty of time for questions regarding this and other pests affecting cool-season production. Register here: https://extension.unh.edu/event/2021/12/cutworms-tunnel-vegetables-other-cool-season-production-issues

Farm Financial Records for Decision Making
December 2, 2021
7:00pm-9:00pm Zoom

A primer for beginning farmers, or a tune-up for those already in production, on recording income and annual expenses, capital expenditures and depreciation with additional information covering loans & credit card or revolving loan payments, sales of business assets, and deducting losses. Register here: https://enych.cce.cornell.edu/event.php?id=1575

Farm Financial Management Tuesdays: The Family and Emotional Component-Shifting Business Direction and Life After Farming
December 7, 2021
12:30-1:45pm Zoom

As farm business enterprises are changed or disbanded, the emotional stress can be tremendous, especially when individuals and family members maintain diminished assurance relative to future security. Join Gabriel Gurley and Brenda O'Brien of New York FarmNet for a one-hour program focused on successfully navigating the emotional turmoil of a family farm business transition. Register here: https://caahp.ccext.net/civicrm/event/info?reset=1&id=145

Farm Financial Management Tuesdays: New Venture Creation-Shifting Business Direction and Life After Farming
December 14, 2021
12:30-1:45pm Zoom

Change creates opportunity and new opportunities are certain when farm businesses change or end. Join Gabriel Gurley of New York FarmNet for a one-hour overview of identifying ways and means to capitalize on new opportunities resulting from farm business transitions. Register here: https://caahp.ccext.net/civicrm/event/info?reset=1&id=146

Tax Management for Beginning and Small Farm Businesses
January 18, 2022
7:00pm-9:00pm Zoom

A one-night virtual meeting for beginning and part-time farmers that provides useful tax information enabling participants to be make better tax decisions for their business. Federal and state income taxes will be covered. Tax regulations specific to NYS will be covered as well. Register here: https://enych.cce.cornell.edu/event.php?id=1576

Tax Code Benefits and Last Minute Tax Updates for Farms
January 25, 2022
7:00pm-9:00pm Zoom

For farm businesses of all shapes and sizes, tune in to learn more about key tax benefits and tax incentives that are available for farms. Because this is our last class, this workshop will also include updated tax information for the current tax season. Register here: https://enych.cce.cornell.edu/event.php?id=1577

Upcoming Events & Important Information

New England Vegetable and Fruit Conference 2021-Online Light!

December 13-17, 2021

Enjoy the New England Fruit and Vegetable Conference from the comfort of your own living room! The conference will be online this year, due to the ongoing COVID-19 epidemic. The program will be a streamlined version of our usual in-person content, with one morning and one afternoon session per day for one week, December 13th-17th. Tree fruit, small fruit, and vegetables will all be covered, and pesticide (New England and New York applicators) and certified crop advisor credits will be available. Check out the schedule, speaker line up and registration here: https://nevbga.com/nevfc/.

$50 registration fee gains you full access to the program and 3-months access to the recordings. NYSDEC pesticide recertification protocols available on the conference website.

Spray Safe, Spray Well: Reducing Pesticide Use Risks for Organic and Beginning Vegetables Farmers—Bilingual Online Workshop Series

Wednesday afternoons, December 2021—March 2022

Join us for this free eight-part, bilingual, winter workshop series focused on the basics of when and how to use OMRI-listed pesticides on your vegetable farm. Participants in Eastern New York will also have the opportunity to receive individual on-farm follow up support from the project team in the spring and summer of 2022.

Beginning and organic farmers are often disinterested in discussing pesticide use on the farm. However, investing time in improving your spray programs and equipment can help you to spray more safely, more effectively, and spray less overall.

To register, fill out the required information at https://bit.ly/3oG2wyp and feel free to contact Ethan Grundberg in Spanish or English (email: eg572@cornell.edu WhatsApp: Ethan Grundberg) with any questions.

January 10, 2022 - Becker Forum: Addressing 2022 Ag Workforce Challenges
Oncenter, Syracuse, NY

Jan 11-13, 2022 – Empire State Producers Expo
Oncenter, Syracuse, NY. More information soon

January 18-23, 2022 - NOFA-NY's 40th Annual Winter Conference,
Online, For more information and to register: https://nofany.org/conference/

February 1-3, 2022 – MidAtlantic Fruit and Vegetable Conference
Hershey, PA. For more information and to register https://www.mafvc.org/.

NEW VIDEO RESOURCES:

Marketing Agriculture Products Recorded Workshop Series

Are you interested in expanding your farm's product offerings in 2022? Finding markets, pricing, and market evaluation for new products are just some of the first steps. Check out this series of recorded workshop videos, created by Lindsey Pashow from CCE Harvest NY that covers those topic areas. Funding for the creation of these videos was provided by Northern New York Agriculture Development Program.

Finding Markets: The Finding Markets workshop focuses on finding markets to fit your agricultural business. (https://youtu.be/aO8Xb-pJE1M)

Pricing: The Pricing workshop focuses on finding the true cost of product, price to charge, and determining if it is a viable product for your agricultural business and market. (https://youtu.be/HP7oeX8EPrQ)

Market Evaluation: The Market Evaluation workshop focuses on techniques for evaluating both new and existing markets for your agricultural products. (https://youtu.be/BvWJ3F4eW4w)

Cornell Cooperative Extension
Eastern NY Commercial Horticulture Program