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A Guide to H-2A Audit Preparedness

Part 1

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This article has been adapted from a webinar on H-2A audit preparedness hosted by Seso Labor, Inc. on March 6, 2024.

Insufficient numbers of US workers have prompted many farmers to hire temporary non-immigrant (H-2A) workers for seasonal agricultural labor. Although the H-2A program allows farmers to meet labor needs, the program involves specific requirements for employers. One requirement is participating in periodic, unannounced audits conducted by state and federal departments of labor (DOL hereafter).

There are two possible H-2A audit scenarios: Office of Foreign Labor Certification (OFLC) desk audits and DOL wage and hour investigation audits. Although both types assess an employer's compliance with H-2A program requirements, each audit is different in its focus, requirements, procedures, and outcomes. Both types are stressful and potentially disruptive to an unprepared employer. Anticipating an audit and being prepared will lower stress and help you achieve a favorable outcome.

This article introduces the topic of H-2A audit preparedness by describing the objectives and procedures for an OFLA desk audit. It will provide recommendations for preparing an audit file, a set of records that will, at a minimum, be requested in a desk audit. Having this documentation ready before its needed will ease the audit process and result in fewer disruptions. The next article on H-2A audit preparedness will examine wage and hour investigation audits.

Desk Audits Defined: A desk audit—also called a paper audit—is a high-level inspection of an employer's compliance with H-2A rules. A desk audit is conducted by personnel at the Department of Labor's Office of Foreign Labor Certification (OFLC), which is located in Chicago, Illinois. The OFLC, which is part of the USDOL's Employment and Training Administration, plays an important administrative role in the H-2A program. When an employer submits a job order (an ETA 790/790a form) to recruit temporary seasonal workers, the request is submitted to a state workforce agency (SWA). After reviewing and conditionally approving the job order, the SWA will refer it to the OFLA for certification or final approval. In addition to certification, the OFLA determines prevailing wages, sets policy, and conducts audits for compliance (N.A., 2024).

A desk audit is a high-level assessment of compliance based on the employers "core compliance" documentation—important paperwork that participants must complete and retain to participate in the H-2A program. Desk audits can be random or targeted—if an employer has had problems in the past, they are more likely to be targets of an audit. Because this inspection is non-granular, auditors do not delve into a farm's work schedules, overtime records, pay records, or other details (that's a wage and hour investigation). In a desk audit, DOL personnel want to know if an employer recruited and employed workers as described in a previous year's job order and, if not, why.

The OFLC Audit Process: For employers, the process begins when a letter announcing an audit is received in the mail. This letter will identify a list of documents that must be returned to OFLC within 30 days. Requested documents consist of the "core" documents in your audit file but many include others. It's important to send copies of *all* requested documents for inspection.

Employers are required to keep required H-2A records on file for three years, so an audit can focus on any single or multiple years (single-year audits are the norm). For example, an audit conducted in 2024 can request documents from 2021, 2022, 2023, or several



years.

It is very important to respond to the OFLC letter within 30 days! Failure to do so will result in a negative judgment, leading to disbarment (being excluded from the H-2A program) or supervised recruitment for up to three years. According to Daniel Ross (2024), Seso's in-house H-2A counsel, the main reason for employer disbarment from the H-2A program is failure to respond to an audit notice—farms that are fully compliant and have done nothing wrong can be disbarred from H-2A if they ignore an audit letter! If you're unable to provide all requested documents within 30 days, it's possible to request an extension from the OFLC. Extensions should be requested as early as possible. If you have a legitimate reason for the request, you may receive more time at the OFLC's discretion.

After an employer's documents are received, OFLC personnel will examine the records and compare them to the job order from the target year. The auditor will look for evidence that the employer has either complied with program requirements or has not based on the records. If discrepancies are found, the auditor will ask for an explanation. For example, if workers were sent home earlier than expected, the employer will have to explain why this happened. If there was a legitimate business reason for discrepancies and proper procedures were followed (for example, the three-fourths pay rule was followed), the discrepancy will probably be allowed. If not, the employer can be penalized. The stakes of an audit are high: debarment or supervised recruitment can result from failure to follow proper procedures and present documentation to prove this. If a desk audit raises suspicion of willful violation, OFLC auditors may refer the case for a wage and hour investigation.

Preparing for A Desk Audit: The best way to manage an audit is to be prepared for one in advance. This involves preparing an audit file containing core H-2A documents. Because employers are required to keep documents for three years from the date of certification (or denial), each audit file should be maintained for three years. While the audit file may not have all requested documents by the OFLC, it will contain most of the paperwork needed for a desk audit. At minimum, your audit file should contain the following documents (Ross, 2024):

- Proof of recruitment efforts and updated final recruitment report.
- Proof of workers' compensation.
- Copies of each worker's earnings records.
- The work contract or a copy of the Application for Temporary Employment Certification if no separate contract exists.
- If applicable, records of notice to the NPC and DHS of the abandonment of employment or termination for cause of a worker / early departures (i.e., notice that workers have absconded after arriving at the farm or returned home early after being fired).
- Inbound and outbound transportation reimbursements and subsistence.
- H-2A visas and I-94's for each worker assigned to the contract.
- Proof that no recruiter fees were charged to workers by third parties.
- Copies of housing inspection from the state or federal inspection, and water test certificates for worker housing.
- Vehicle registration and insurance policies, as well as driver's licenses for any drivers transporting workers.
- Farm Labor Contractors must also retain copies of surety bonds, grower agreements, and FLC/FLCE licensing.
- I-9's should be retained for 3 years after the date of hire, or one year after employment ends, whichever is later.

If you have any questions about the required documents, contact the OFLC for clarification. It's also a good idea to note the reason for any discrepancies that may arise from the paperwork. For example, if fewer workers were needed than expected, be prepared to explain why; if workers returned home early because there was less work than expected, be prepared to explain.

Having this paperwork on hand will put you in a better place when an audit occurs. The process will be less stressful and disruptive to normal operations if you're prepared!

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What is Terroir—and Does New York Have One?

Part 1 of 3

Bonnie Nelsen

If you ask connoisseurs to identify the world's best sparkling wine, they'll probably name a brand of French champagne. The best cigars? José Martí of course, made from tobacco grown in Cuba's Vuelto Abajo region. The best port wines? They're made by Porto's venerable lodges using grapes grown exclusively in Northern Portugal's Douro region. If asked to explain their choices, connoisseurs will probably refer to the craftsmanship, heritage, and unique attributes possessed by the agricultural commodities from which these products are made, all of which allow producers to command premium prices.

The success of products like French champagne, Cuban cigars, and Port wine illustrate the marketing power of terroir, a concept that describes where and how an agricultural commodity is grown. Terroir (pronounced *ter wä*) matters because it shapes the flavors, aromas, mouthfeel, and other sensory attributes of agricultural commodities and the finished goods made from them (Clingeffer and Osmand, 2014). For example, fruit from a single grape variety—let's say a pinot noir-- can have different sensory attributes based on terroir, which in turn influences the sensory attributes of wines produced from them.

Nearly all areas with defined terroir (and most research) focus on grape and wine production. Wine professionals have established hierarchies to designate and rank the quality of terroirs (Capretti, 2023). Wine, grapes, and land with middling terroirs fetch average prices while those in highly-ranked terroirs command exorbitant prices—that is, if one can find any for sale. In France, the average cost of appellation vineyard was €150,000/hectare in 2020 (\$71,683.00/acre) while the average cost of non-appellation vineyard was €14,500/hectare (\$6,929.00/acre) (Mercer, 2021).

This article kicks off a series that will explore the marketing potential of terroir for New York's commercial fruit industry. It explains the concept of terroir and its use in marketing. Luxury goods like French champagne, Cuban cigars, and Port wine don't command high prices because they're produced in an area with a terroir—they're successful because producers have leveraged terroir to create strong brands that differentiate their products and appeal to consumers. Subsequent articles will address how appellations, protected designations of origin (PDOs), and similar standards combine with branding to create sustainable competitive advantage—a competitive edge that lasts over time because it cannot be copied. Understanding how these designations work with branding is necessary to evaluate the marketing potential of New York's terroir.

What is terroir?

The literal meaning of "terroir" in French is "earth" or "soil" (Hatay, 2021). But the concept encompasses much more. In common usage—and particularly in winemaking--terroir is "the collective profile of qualities that the environment imparts" on agricultural products such as wine, cheese, tobacco, coffee, tea, fresh beef, and finished wool (Cornell, 2019). More simply, terroir is the "the expression of a place" or "a taste of place" in agricultural products (Edison, 2023). Terroir is typically associated with agricultural products whose consumption is strongly influenced by customers' "experiential sphere"—that is, products for which evaluation and appreciation are bound up with consumption (Riviezza, Granata, and Kakavand, 2017). Consequently, terroir is associated with products like fine wines, a good cigar, grass-fed beef, arabica coffee beans, and well-aged cheese but not cabbage, soybeans, or feedlot-raised pork.

The concept of terroir may be new to the apple industry but the practice of identifying and protecting them is old. The first application of terroir to wines occurred in the fourteenth century, when certain properties in Burgundy's Cote d'Or were singled out for producing top-quality wines. The first formally designated terroir was Italy's Chianti region in 1716, when four small villages were recognized as the only producers of Chianti wines (Clingeffer and Osmand, 2014). The Tokaji (Tokay) region in Hungary was designated in 1730, followed by the Douro region in Portugal in 1756 (Clingeffer and Osmand, 2014). These designations allowed farmers in each region to exclusively produce grapes and wines with the unique sensory profiles associated with Chianti, Tokay, and Port wines, respectively.

While a complex blend of factors contributes to terroir, four main pillars are universally recognized: climate, soil, terrain, and tradition/culture.

Climate and Terroir: Climate is the most important component of terroir because it predisposes a region to the produc-

tion of certain types of crops, cultivars, their growth, and variations in quality. Important components of climate that influence terroir are the suitability of a region for different cultivars, day-night temperature differences, day length, solar radiation, cloud cover, weather extremes (i.e., freezes, frost, and summer heat), weather consistency, heat accumulation, wind, precipitation, and humidity (Clingeffer and Osmand, 2014). In grape and wine production, climate is the most important factor producing variations in fruit composition, including the relative percentage of sugars, acids, and anthocyanins from year to year. Producers have adapted to regional variations by selecting cultivars suited for their environmental conditions, planting varieties that allow for consistent ripening and fullest development of sensory attributes.

Crops such as coffee and grapes are finicky and require very specific growing conditions to achieve optimum production and quality. Individual varieties thrive in narrow temperature ranges, which limits areas suitable for their cultivation. Within these zones, microclimates produce variations in sensory attributes which distinguish the fruit and finished products made from them. For example, the pinot noir grape is grown in areas with cool climates ranging from 57.2 F. -60.8 F. during the growing season, mainly in Burgundy and Northern Oregon. Within this narrow range, cooler microclimates in vineyards and rows produce lighter, elegant wines and warmer microclimates produce fruitier, full-bodied wines, variations for which this style of wine is known (Jones, 2013). While pinot noir grapes can be grown outside this temperature range, their wine will not fully possess the characteristics associated with this style.

Given the importance of climate in fruit production, climate change poses a challenge. Climate and weather have changed throughout history, but the rate and magnitude of change in recent decades appear to be increasing. Because crops such as grapes achieve optimum production and quality in a narrow range of conditions, warmer temperatures and extreme weather events pose risks to producers in designated appellations. Adaptive strategies used by grape producers include breeding new varieties and rootstocks, modifying vineyard row orientation, irrigation, and new types of trellising (Brillante et al., 2020, Jones, 2013).

Soil and Terroir: Soil and geology influence terroir by impacting water and nutrient availability to plants, as well as drainage, temperature regulation, and root development. Bedrock geology, soil layering, and mineral composition are elements that influence a growing area's terroir (Deloire, Prevost, and Kelly, 2008). Soils composed largely of clay, sand, limestone, slate and schist, and volcanic soils have different nutrient and water-carrying capacities and drainage properties which effect the productivity, flavor and mouth-feel of crops grown in them (Wine Turtle, 2024).

Viticulturists have long held that soil contributes unique characteristics and mouthfeel to wines. For example, the "flinty" character of Chablis wines and "gunflint" flavor notes of Riesling are associated with the flint, shale, and slate-bearing soils in which grapes are typically grown (Clingeffer and Osmand, 2014). The mineral-rich volcanic soils at the base of Sicily's Mount Etna produce complex, intensely flavored wines with distinct "minerality" or earthy flavors (Edison, 2023). Similarly, the chalky, clay-rich soils of Normandy impart mineral characteristics to the grasses, herbs, and wildflowers in cow pastures, which, in turn, impart distinctive, nuanced flavors to the milk used to produce Camembert cheese (N.A., 2023).

Terrain and Terroir: Terrain refers to a growing area's aspect, elevation, slope, and the influences of plants and animals. The aspect of a growing area is its orientation toward the sun. Grape producers deliberately face vineyards toward or away from the sun to regulate sun exposure, temperature, and growth rate of vines and fruit. Slope and elevation influence day-night temperature and promote air drainage. For example, high-elevation vineyards in Rioja, Spain and Mendoza, Argentina produce grapes that are high in acidity, antioxidants, and "freshness" (Cornell, 2019). Vineyards planted at exceptionally high elevations (i.e., 4000 feet above sea level) produce grapes with thicker skins due to high UV sun levels. Thick-skinned grapes produce wine with more tannins, deeper colors, and more intense, complex flavors (Cornell, 2019).

The contributions of flora and fauna to terroir have long been noted by producers of cheese and beef. The types and breeds of animals used for meat and milk production, plants used for grazing and fodder, microbiomes in soils, molds used in production, and microorganisms present in caves and cellars where cheese and meats are aged are thought to provide unique attributes to the finished product. For example, Issau-Iraty is an Appellation d'Origine Controllee (AOC) cheese produced in the western Pyrenees region of France. This cheese is made from milk produced by black-faced Manech sheep grazed in alpine meadows during summer. Both the milk produced by this breed and the grasses and wildflowers on which the sheep graze is thought to impart unique flavor characteristics to Issau-Iraty (Zahuranec, 2022).

Tradition and Terroir: The final pillar of terroir is also the broadest. Tradition encompasses the history, culture, and human elements in a particular area. In viticulture, this includes the selection of rootstock and scion, cultural practices, and the way wines are produced. For example, wine grapes used for sparkling wine in France's champagne region are harvested entirely by hand, using tools and techniques that have remained unchanged for centuries. Terroir also includes practices indirectly related to crop production, such as the tradition of wassailing in England's apple orchards. Traditional practices may be codified to establish legal standards for production. One example is Parmigiano Reggiano cheese, which has been produced in Italy's Emilia Romagna region for over 900 years. This cheese, originally produced in Cistercian and Benedictine monasteries, must contain only water, salt, and cow's milk from animals grazed on pastures in Emilia Romagna (now a Protected Designation of Origin, or PDO). Although milk from Friesian cattle can be used, cheese made with milk from traditional Rosse, Reggiana, and Longobardi breeds is considered to produce cheeses of highest quality ([Consortio Vaccherosse, 2023](#)). An additional quality designation—"mountain product"—can be used only if cows are grazed, fodder is grown, cheese is made, and ingredients are sourced from mountainous areas in the PDO (Consortio Vaccherosse, 2023).

Science and Terroir: The notion that environment influences the attributes of agricultural products like wine and cheese is widely accepted by consumers, producers, and industry experts. However, little scientific evidence exists to support this connection. While researchers agree that climate and soils determine the suitability of regions for specific crops, cultivars, and growing practices on a macro scale, empirical evidence of terroir's influence on flavor, aroma, and mouth-feel of finished agricultural products remains elusive (Brillante et al., 2020; Clingeffer and Osmand, 2014). For example, the concept of "minerality"—the idea that minerals from soil are manifest in the flavor of wine—is a fallacy as it's physically impossible for minerals from soils to be directly transferred to wine (Morris, 2023). And in a review of the proposed link between geology (soil composition, bedrock, and layering) and wine flavor, Maltman (2009) concluded that terroir is nothing more than "romantic fantasy." Another researcher described the gap between popular perception and scientific reality as this: "Terroir is...a cool concept. (For) anyone who enjoys wine and thinks about landscapes and place, it's logical, it's established...And yet it's brutally difficult to prove if you want to be a scientist (Beurteaux, 2023)."

Terroir and Marketing: The lack of scientific evidence for terroir is largely irrelevant from a marketing standpoint. Terroir is a social construct—a concept, category, or thing that is made real by convention and collective agreement. Unlike natural realities that exist independently of human belief, socially constructed realities exist as long as people believe in them. Because it has been established for centuries, is internationally accepted, and supported in communication between producers, experts, and consumers, the concept of terroir provides an excellent basis for marketing agricultural products.

Terroir is useful in marketing because it allows producers to utilize a differentiation strategy. From a competitive standpoint, two basic strategies are possible: low cost and product differentiation (there are variations on these, but we'll leave those aside for now). Companies using a low-cost strategy offer relatively standardized products of average quality at low prices. The key selling point in this strategy is value—getting a good product at a great price (think Walmart). Efficient operations and low product costs are key to implementing this strategy successfully.

In contrast, companies using a product differentiation strategy offer unique and/or new products that are of superior quality. The selling point in this strategy is quality and uniqueness—getting a distinctive and/or high-quality product, albeit at a higher price. Differentiation strategies are used when customers are willing to pay more for products that are perceived as unique or better quality—because customized, high-quality products cost more to produce, producers must charge higher prices. Understanding customers and delivering distinctive, high-quality products and services consistently and often are key to implementing a differentiation strategy.

Terroir is useful because it conveys a sense of uniqueness and product quality to agricultural products, which, in turn, allows producers to charge higher prices. The product itself may not be substantively different than those produced in areas without a terroir, but *perceived* differences justify higher prices for consumers. The prices of sparkling wine offer a good example. Sparkling wines are produced in many world regions using similar methods but these products command different prices. In 2017, a bottle of Prosecco retailed for \$ 12 on average, versus \$22-\$35 a bottle for California sparkling wine and \$52 per bottle on average for French champagne

(ABC News, 2017). Champagne branded as Dom Perignon and Cristal retailed for \$349 per bottle on average (ABC News, 2017). What accounted for these prices? Apart from length of aging (long-aged wines are more costly to produce than short-aged wines), experts admit that differences are in name only—Dom Perignon and Cristal are strong brands associated with the Champagne region's terroir, and many consumers consider it to be the best sparkling wine (ABC News, 2017).

This article has described the concept of terroir and its ability to market agricultural products. The next article in this series will examine how producers have used this concept to produce strong brands. When combined with legal designations such as Appellations d'Origine Controllee and Protected Designation of Origin, terroir has the ability to create the holy grail of strategic marketing—a sustainable competitive advantage. The final article in this series will examine New York's potential for marketing based on terroir.

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New Preplant Soil Preparation and Annual Fertilization Recommendations for 'Honeycrisp' Orchards

Terence Robinson, Lailiang Cheng, Mario Miranda Sazo,
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Since calcium is relatively immobile in the soil, Ca fertilization is best done by additions of lime before planting. In addition, bi-annual applications of lime after planting can maintain the correct amount of Ca in the soil. 'Honeycrisp' requires higher levels of Ca than other varieties and we recommend beginning the orchard with at least 5,000 lb/acre of Ca in the top 12 inches of the soil profile. We have been suggesting for the last 3 years to add significant amounts of lime before planting even if soil pH is in the recommended range (between 6.5 and 7.0). In a survey we did, the best performing blocks had pH of ~7.2. In addition, the recent thesis of one of our students showed that many rootstocks can grow very well even if soil pH is as high as 8.0. Thus, for **'Honeycrisp' we now suggest the optimum soil pH before planting should be 7.2 not 6.5-7.0**. Our new recommendation may seem high to some consultants or growers but in recent orchard plantings where **7.2 pH is maintained** we have seen low amounts of bitter pit and excellent tree growth.

We suggest growers use calcitic lime (CaCO_3) to amend soil Ca levels before planting rather than dolomitic lime or gypsum. Dolomitic lime will add Mg to the soil which is implicated in increased bitter pit while gypsum is very insoluble and not as readily available to the plant as calcitic lime.

Annual Fertilization

Annual fertilization strategies should be based on mineral nutrient values of leaf samples taken in late June/early July. We have also developed new standards for fertilizer input of 'Honeycrisp' based on revised optimum leaf nutrient values for 'Honeycrisp'. The proper timing for collecting 'Honeycrisp' leaf samples is about one month earlier than for other varieties. There are two reasons for this early leaf sampling: 1) Honeycrisp trees typically stop their shoot growth by the third week in June, earlier than many other apple varieties; and 2) development of zonal leaf chlorosis affects leaf nutrient concentrations, particularly leaf N status. First symptoms of 'Honeycrisp' leaves on the outer part of the canopy can start showing up leaf chlorosis as early as late June or mid-July. The discoloration starts on the edges of the leaves and spreads to the rest of the leaves. Development of zonal leaf chlorosis affects leaf nutrient concentrations, particularly leaf N status.

The recommended levels of N, K and Ca for 'Honeycrisp' are different than the suggested levels for most other varieties.

For **N fertilization** we recommend a leaf concentration of 2.0% (this is similar to what we recommend for 'McIntosh'). For hard varieties such as 'Gala', 'Delicious', 'Empire', 'Law Rome' etc. we recommend a leaf level of 2.25% but for McIntosh we have always recommended a lower level of 1.9-2.0. 'Honeycrisp' should be managed like McIntosh in terms of N. Leaf analysis results from the previous summer should guide the application of N fertilizers the following spring.

- For blocks with a leaf N lower than 2.0% we suggest 40 to 50 lb of N per acre per year to keep the tree vigor from falling too low. If tree vigor falls too low then no new renewal shoots develop from limb renewal pruning cuts and biennial bearing is worsened.
- For blocks with a leaf N level between 2.0 and 2.25% we suggest lowering the rate of N application from last year's to only 20 lb per acre to allow a gradual lowering of leaf level to the 2.0% target.
- For blocks with a leaf N level >2.25% we suggest no ground applied N.

Soil N applications should be made early in the season when shoots are actively growing, and N demand is highest. If ground application is used, this should occur prior to petal fall; after petal fall there is higher risk of increasing N levels in fruit. Split application is recommended at bud break and petal fall. If fertigation is used, target the period from bloom to end of shoot growth corresponding to the third week of June.

Post-harvest (early October) applications of foliar N can be beneficial for 'Honeycrisp' when vigor is low, particularly for trees with leaf N below 2%. Post-harvest applications will promote root growth and help replenish N reserves for early growth in the following season. Apply 3% foliar urea (25lbs/100 gal).

The issue of **K fertilization** is interesting because we found in the 1990's that K was essential for large fruit size and high yield of 'Empire'. Our work in 2008-2009 on 'Gala', another small-fruited variety also showed that high K levels in leaves (1.6%) and fruit (0.8%) are needed for fruit size and yield. Thus, we promoted the annual application of K with both varieties and had high targets for leaf K level (1.5-1.8%). It worked well with all other varieties until 'Honeycrisp' came along. We found that 'Honeycrisp' requires less K to have large fruit size and high yield than 'Gala'. Thus, it should need lesser amounts of annual K_2O than 'Gala'. For 'Gala' a high yield of 1500 bu/acre removes about 100 lb of K_2O per acre with the fruit. Thus, at least that amount of annual K should be applied to 'Gala' to sustain that high yield. For 'Honeycrisp', we recommend much lower amounts of K fertilizers based on the data we have (Table 1).

Since K is often tied to increased bitter pit, K fertilization of 'Honeycrisp' must be done with great caution. K fertilizers should only be applied when leaf analysis results suggest additional K is needed. Based on our recent work published in the Quarterly winter issue 2021, we have recommended an optimal range (1.0 to 1.3%) of leaf K level for 'Honeycrisp'. This is lower than other varieties such as 'Empire' and 'Gala' where we strive to elevate leaf K levels to 1.35-1.8%. For those varieties, this high K level helps give large fruit size, but with 'Honeycrisp' high leaf K gives excessive bitter pit. Leaf analysis results from the previous summer should guide the application of K fertilizers in the fall or the following spring.

- For blocks with leaf K lower than 1.0% we suggest 60 to 80 lb of K_2O per year to keep fruit size from being too small.

- For blocks with a leaf K level between 1.0 and 1.3% we suggest only 30 to 50 lb of K₂O per year to maintain good fruit size.
- For blocks with a leaf K level >1.3 we suggest no K fertilization until leaf level drops below 1.3%.

Table 1. New potassium recommendations and plant tissue levels for ‘Honeycrisp’ to mitigate incidence of bitter pit.

Honeycrisp orchard	Soil K Fertilization Program	K/Ca levels in Leaves and Fruit Peel Tissues
New planting	<i>Pre-planting preparation:</i> <ul style="list-style-type: none"> • Limit the input of K during pre-plant soil preparation so that K amount in the soil is not more than 6% of the Ca amount in the soil 	<i>Leaf K level:</i> <ul style="list-style-type: none"> • Target a value of 1.3% (years 1-2)
Mature planting	<i>Maintenance application:</i> <ul style="list-style-type: none"> • Base the application of K fertilizer on leaf analysis in early July. Typically, only apply 60~70% of the amount recommended for ‘Gala’, ‘Empire’ and ‘McIntosh’ at the same yield level. • If soil analysis indicates that there is over 350 lb of K per acre in the top 12” of soil, we suggest skipping K fertilization for one to two years to draw down the soil K reserves and then decide based on leaf analysis. 	<i>Leaf K level:</i> <ul style="list-style-type: none"> • Target a low value of 1.0 to 1.3% K concentration in the leaf <i>Peel sap K/Ca ratio (July timing):</i> <ul style="list-style-type: none"> • Target a ratio below 25

Ca fertilization is achieved by additions of calcitic lime before planting and with bi-annual applications of calcitic lime after planting. ‘Honeycrisp’ requires higher levels of Ca than other varieties. However, because leaf sampling for nutrient analysis is conducted one month earlier than other varieties, which gives a lower leaf Ca level, we recommend a leaf Ca level of 1.5 to 2.0%.

The levels of Ca in the soil should be monitored with soil analysis every 2 years for maintenance application of lime. The soil samples should be taken in the fall and target a level of 5,000 lb per acre in the top 12 inches of the soil.

You Can Now Finish and Impose the Last Steps of Precision Pruning for ‘Honeycrisp’ from Early Pink to Bloom

Terence Robinson, Mario Miranda Sazo, Craig Kahlke, and Mike Basedow

Our research over the last decade has shown that when flower bud load is very high (on year) chemical thinning almost never reduces crop load sufficiently to avoid biennial bearing. The best strategy is to prune away enough flower buds so that when trees are chemically thinned the number of fruits per tree can successfully be lowered to the optimum number. We suggest during the dormant pruning season calculate a target number of flower buds and then count the number of flower buds on the tree and devise a pruning strategy to remove enough buds to leave only the target number. Before pruning a ‘Honeycrisp’ block it is important to determine the percentage of buds that are floral (% of floral buds in a 100 bud sample of spurs from randomly selected shoots in a ‘Honeycrisp’ block). Floral bud identification at the dormant stage requires dissecting buds and viewing them under a microscope. This should be done on representative trees for each Honeycrisp block. Alternatively, growers can leave pruning of ‘Honeycrisp’ blocks until green tip. **There is a 3-4 week window from green tip to bloom when it is easy to visually identify and count flower buds per tree and then prune to the target flower cluster number at that time.** However, many growers who have significant acreages of ‘Honeycrisp’ (or other biennial bearing varieties) cannot wait to prune all of their trees in the spring. If you must begin pruning biennial varieties during the winter, we suggest two approaches you could consider.

1. Before pruning determine the number of flower buds per tree by sampling 10 branches (3/4-1 inch in diameter) from 5 representative trees in the orchard and dissecting all the spurs on the branches and examining the dissected buds under a microscope to determine what percentage of the spurs are floral. Then, adjust pruning intensity to ensure that the target number of flower buds are left on the tree.
2. Lightly prune Honeycrisp during the winter by only removing 1-3 large limbs (remember to always leave a longer stub with ‘Honeycrisp’, 2-3 fingers length to secure shoot renewal). Then between green tip and full bloom ‘touch up’ the trees which have too many flower buds by removing additional whole limbs and by spur pruning.

When determining the target number of buds to leave when pruning we suggest leaving a few extra flower buds as insurance against frost or poor set. Based on the most recent Cornell Honeycrisp pruning research we are currently suggesting that growers leave 50% more flower buds than the target fruit number as insurance.



Tree Fruit & Small Fruit Twilight Meeting

April 25th, 2024 — 7:00 PM—8:30PM

Location:
Apple Shed

3391 Fairville Maple Ridge Rd, Newark, NY, 14513

Arrive at 6:45PM for pizza & soda provided by



Join specialists Janet Van Zoeren, Anya Osatuke, and Anna Wallis for a conversation about fruit and berry phenology and pest management.

1st of 4 Free Twilight Meetings

Register here: <https://lof.cce.cornell.edu/event.php?id=1913>

- This series of monthly meetings will examine seasonal changes in tree fruit and berry crops, demonstrate scouting techniques, and discuss integrative pest management solutions to maximize the health and productivity of berry and fruit plantings.
- Please bring pictures or descriptions of pests you are concerned about on your farm.
- 1.5 DEC credits will be offered in categories 1a, 10, and 22. Please arrive at 6:45PM to sign-in for DEC credits.
- No pre-registration required; event is free to attend.
- Meetings are held from 7:00PM – 8:30PM on the last Thursday of every month through August. Scan QR code for future meeting details.



Cornell Cooperative Extension
Lake Ontario Fruit Program

New York State
IPM Integrated Pest Management
Program

Cornell Cooperative Extension | Harvest New York



Please contact Janet van Zoeren with any questions: 585 797 8368 | jev67@cornell.edu

YouTube Recording Available From Last Week's Frost Protection Webinar

The Cornell Statewide Frost Protection Webinar was successfully held last Friday, with several Cornell scientists and an NRCC climatologist.

Check out the latest research and discussion here: <https://www.youtube.com/watch?v=TIBEpfb98ws>

Agenda:

Introductions

Mike Basedow and Mario Miranda Sazo, CCE

Climate Monitoring of Apple Bud Development and Freeze Risk

Jessica Spaccio, Climatologist, Department of Earth & Atmospheric Science (EAS), Northeast Regional Climate Center (NRCC), Cornell U.

The Physiology of Frost Damage, and the Practical Challenges of Testing Mitigation Tools

Dr. Jason Londo, Cornell AgriTech

Practical Tips for Using Promalin as a Frost Mitigation Tool

Dr. Terence Robinson, Cornell AgriTech

Research on Sprayable Frost Protectants

Dr. Brent Arnoldussen, University of Kentucky

Helpful Links for our Email Communications

To ensure you are receiving our Email Communications add us to your email address book and the safe senders list. Also be sure to check your spam/junk folder. You can then mark "not spam".

For Spectrum emails-

Adding and Removing Emails to the Safe Senders List: <https://www.spectrum.net/support/internet/email-safe-senders-list-bhn-twc>

Blocked and Safe Senders in Spectrum Email: <https://www.spectrum.net/support/internet/blocking-and-unblocking-senders-spectrum-email>

For Gmail emails-

Change who's saved & suggested as contacts - Computer - Contacts Help (google.com): https://support.google.com/contacts/answer/7345608?hl=en&ref_topic=9160153&sjid=11168541538961671828-NA#zippy=

Mark or UnMark Spam (Google.com): https://support.google.com/mail/answer/1366858?hl=en&ref_topic=3394657&sjid=14093352891976052574-NA

If you continue to have problems Receiving our emails please reach out to Natalie. nlm53@cornell.edu

Mark Your Calendar

Meeting Title	Statewide Spring Pink Meeting
Date	Monday, April 22nd
Location	Zoom Webinar
Cost	Free, but pre-registration required at: https://lof.cce.cornell.edu/event.php?id=1925
Brief Description of Meeting/ Registration	Co-Hosted by CCE-LOF and CCE-ENYCHP. Hear the latest forecast for late April by Jessica Spaccio of NRCC. Hear updates in PACMAN by Dr. Terence Robinson, along with pest updates by Dr. Monique Rivera, and disease updates by Dr. Kerik Cox.

Meeting Title	Tree Fruit & Small Fruit Twilight Meetings
Dates	April 25, May 30, June 27, July 25
Locations	April 25 is Apple Shed, see link below for more info
Cost	Free, Sponsored by Valent! DEC Credits offered!
Brief Description of Meeting/ Registration	Join specialists Janet Van Zoeren, Anya Osatuke, and Anna Wallis for a conversation about fruit and berry phenology and pest management, at a new location each month. Please arrive at 6:45pm for pizza and soda provided by Valent. See flyer in newsletter above for April 25, or go to : https://lof.cce.cornell.edu/event.php?id=1913

Meeting Title	2nd Annual Western NY Fruit Grower Tour
Date	Tuesday, August 13 th
Location	Centered in Orleans County
Cost	Minimal thanks to sponsor support!
Brief Description of Meeting/ Registration	Save the Date! This is the second annual tour that we are co-hosting with Lake Ontario Ag Consulting, Inc. Stay tuned here, and in our email communications for more details as we get closer. Sponsors – we'll be contacting you shortly with the same announcement.

Cornell Cooperative Extension

Lake Ontario Fruit Program

12690 Rt. 31

Albion, NY 14411

Contents

A Guide to H-2A Audit Preparedness
Part 1

What is Terroir—and Does New York Have One?
Part 1 of 3

New Preplant Soil Preparation and Annual Fertilization
Recommendations for 'Honeycrisp' Orchards

You Can Now Finish and Impose the Last Steps of Precision
Pruning for 'Honeycrisp' from Early Pink to Bloom

Tree Fruit & Small Fruit Twilight Meeting YouTube Recording

YouTube Recording Available From Last Week's Frost Protec-
tion Webinar

Helpful Links for our Email Communications

Mark Your Calendar

Contact Us

Fruit Notes

Fruit Specialists



Craig Kahlke | 585-735-5448 | cjk37@cornell.edu
Team Leader, Fruit Quality Management

Areas of Interest: Fruit Quality and factors that affect fruit quality before, during, and after storage.

Crops: Blueberries, Raspberries / Blackberries, Strawberries, Apples, Apricots, Cherries, Nectarines, Peaches, Pears, Plums



Mario Miranda Sazo | 315-719-1318 | mrm67@cornell.edu
Cultural Practices

Crops: Blueberries, Raspberries / Blackberries, Strawberries, Apples, Apricots, Asian Pears, Cherries, Currants, Gooseberries, Nectarines, Peaches, Pears, Plums



Janet van Zoeren | 585-797-8368 | jev67@cornell.edu
Integrated Pest Management (IPM)

Areas of Interest: IPM of tree fruit and berry pests, biological control, pollinators.

Crops: Blueberries, Raspberries / Blackberries, Strawberries, Apples, Apricots, Asian Pears, Cherries, Currants, Nectarines,



Bonalyn Nelsen | 315-980-9926 | bjn2@cornell.edu
Business Management

Areas of Interest: Fruit Farm Business Management, Farm Labor & Regulations, and Evaluation of ROI of New Technologies

Crops: Blueberries, Raspberries / Blackberries, Strawberries, Apples, Apricots, Cherries, Nectarines, Peaches, Pears, Plums

For more information about our program visit us at lof.cce.cornell.edu