TEXAS A&M AGRILIFE EXTENSION

June 20th 2017

Volume I, Issue 3

Texas Winegrower

A Quarterly Publication of the Texas AgriLife Extension Viticulture and Enology Program

Inside this issue:

Upcoming Events:

There are no Viticulture program events planned for this time.

In this issue:

Thank you for choosing to take the time to read our latest issue of Texas Winegrower. If you have not had an opportunity to read our previous issues they can be found under the viticulture tab, as "Resources" on the new Aggie Hort Viticulture and Enology Page. The web address for the home page is, http://aggie-horticulture.tamu.edu/vitwine/ .

All Texas growing regions are well into the growing season at this point and growers in the southern regions are already looking down the barrel of an early harvest. Warmer than average temperatures in the late winter and early spring got vines off to an early start this year, and continued warm temperatures appear to be leading to an early harvest. We've chosen to utilize this issue to address some common grower questions/concerns regarding general vineyard management practices. Michael Cook gets us started with an excellent overiew of vineyard floor management, Justin Scheiner discusses ways to manage vigor in the vineyard, Pierre Helwi provides some resources and considerations for mitigation strategies following hail damage. Finally, Fran Pontash answers some common grower questions regarding vineyard spray programs.

We certainly hope you find this information relevant and we welcome your feedback with regard to future topics you would like to see covered.

Hit The Target without Pesticide Applicator Number
Jacy Lewis

A number of growers have expressed concern regarding an inability to register their vineyards with the Hit The Target due to a lack of a pesticide applicatory license.

It is possible to register as a producer or consultant without an applicators license, this is extremely important as the majority of grape growers do not have or require an applicators license.

In order to register you must send an email to hitthetarget.kel@gmail.com . They will respond to you with a number you can use in lieu of an applicators license. Additionally KEL has tutorials on how to register with and use the program that can be found at

How to register: https://www.youtube.com/watch?v=4kZtecYBW74&authuser=0

Adding a Crop: https://www.youtube.com/watch?v=yJnJ7MZfgtE&authuser=0

Solving Common Vineyard Problems

Essentials of Vineyard Floor Management

Michael Cook

Vineyard floor management (VFM) is an often-overlooked practice that can substantially influence the performance of a vineyard. The major components involved in VFM include controlling weed pressure, conserving soil, and managing soil water.

Weeds compete with vines for nutrients and water in the soil, can harbor pests and disease, and in a young vineyard can cause shading issues and inhibit good spray coverage. Weed control is particularly important during the first few years of vineyard establishment but should generally be carried out for the life of the vineyard. Before planting a vineyard, invasive and perennial weeds should be suppressed to minimize pressure once the vineyard is planted. As previously mentioned, young vines are especially sensitive to weed pressure, this is because they are unestablished and have a minimal root system, thus mining for nutrients and water is limited to a small area in the soil profile. In order to prevent weeds from competing with vines for nutrients and water growers should maintain a three to four foot weed free strip under the trellis.

Row middle management is another component to weed management. To minimize erosion, alleviate soil compaction, and prevent rut formation in the vineyard row middles, most growing regions in Texas contain some sort of cover crop. For most growers, this simply consists of native grass. Intentional seeding of an annual or perennial cover crop is also common. Annuals are often seeded in the row middle in Fall and can include mustard and cereal crops, annual ryegrass, and nitrogen fixing legumes such as clover and vetch. They are often tilled under mid to late Spring. The seeding of perennial cover crops offer the benefit of providing soil cover over multiple seasons without the need to replant but must be managed more closely. Native mixes of grasses and wildflowers are recommended. Ensuring the row middles are properly maintained will help prevent unwanted weed infestations under the trellis and reduce insect habitat.

Weeds found in the vineyard can be categorized into two taxonomic groups; the dicots (broadleaves) and monocots (i.e. grasses and sedges). There are many differences between the two groups, including how a grower may manage them. This is one reason why proper weed identification is critical as not all weeds are controlled in the same manner. Weeds can be further defined by their life cycle. Annuals grow and seed out during one season and either germinate in the Spring or Fall. Biennials grow vegetatively for one year and then set seed the following year; thistle is an example of a biennial. Perennials on the other hand are long lived and therefore are often the most challenging weed to control in the vineyard. Not only do perennial weeds reproduce via seed, they can also propagate vegetatively via rhizomes, stolons, bulbs or tubers.

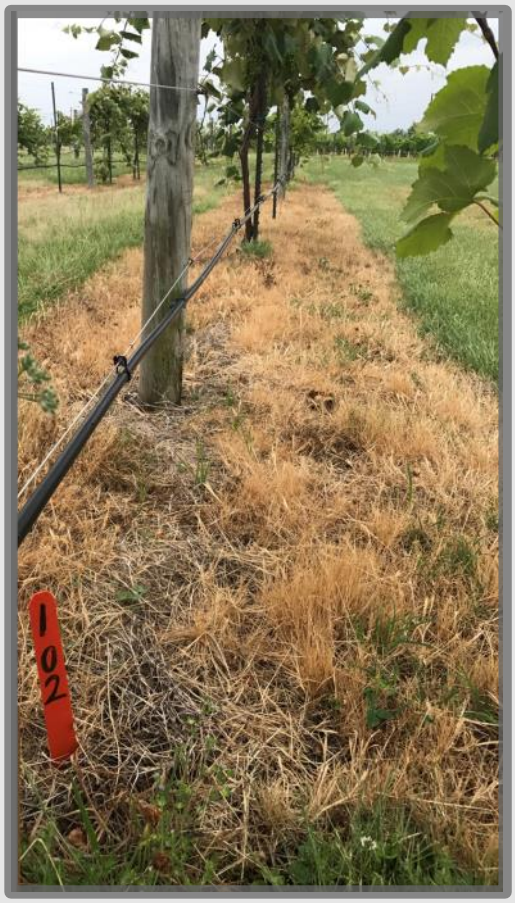
Both cultural and chemical methods of weed management are utilized in the vineyard, often in tandem. Cultural controls include hand weeding, mulching, burning via propane tank, or with a mechanical implement attached to a tractor. Avoiding trunk and root zones when applying cultural control methods is necessary to prevent diseases such as crown gall as well as serious mechanical injury to the vine. Chemical control is popular with many growers because it can be effective, often requires less labor and equipment, applications can be made quickly, and is cost effective. For optimum efficacy, the appropriate herbicide must be safely applied at the right time. Herbicides are categorized into both pre- and post-emergent types. A pre-emergence herbicide works by preventing weed seeds from germinating and is typically used to control annual weeds. Timing is of the utmost importance. Additionally, many products require a rain event for the product to work effectively. There are a handful of pre-emergence herbicides that target specific weeds and are labeled for use in the vineyard.

(Continued on page 3)

Solving Common Vineyard Problems

(Continued from page 2)

Read the labels carefully as there are often vine age and soil type restrictions. Post-emergence herbicides are applied once weeds are visually present and are either selective or non-selective in nature. Selective herbicides only control very specific weed species and pose little risk to grapevines. Non-selective herbicides, such as glyphosate, will cause damage to any green tissue it encounters, regardless of species. Glyphosate is routinely used in the vineyard to manage weeds, however, since it is non-selective, grapes are sensitive to spray drift. Installation of grow tubes during the season is recommended to protect young vines from accidental spray drift. Spraying under appropriate weather conditions, using a cone style protector on the spray wand, and installing large droplet size nozzles are additional measures that will help reduce the chance of spray drift. Furthermore, post-emergence herbicides are either labeled as contact or systemic.



Contact herbicides damage the plant tissue that receives the herbicide and has a fairly rapid effect on weeds. Systemic herbicides are slower acting products but can translocate throughout the plant, including the roots, which helps ensure a permanent kill. Contact herbicides are often used against annual weeds while systemic herbicides work well for controlling difficult perennial species. It should be noted that "tank mixing" a contact and systemic herbicide or applying one shortly after another is not recommended. Applying these two in tandem with the mindset of ensuring high weed suppression rates is erroneous and is a waste of resources. Using the correct product for weed species present in the vineyard at the proper time is a skill every grower should develop. Controlling weeds is not just for aesthetic purposes but can significantly improve vine performance and should be a part of every growers strategic plan.

For assistance in cover cropping, weed identification, product selection, how to calibrate your sprayer, and what kind of equipment may be suitable for your vineyard operation please contact your local Extension Viticulture Specialist. When purchasing herbicide always read the label and be familiar with the active ingredient(s).

Under no circumstances should growers ever apply phenoxy type herbicides, such as 2,4-D or dicamba, in or near a vineyard. Spray drift and vapor drift from these chemicals can have a detrimental effect on the vineyard, even with just a single application. Phenoxy herbicides are common ingredients in many products used to control broadleaf weeds in residential and commercial lawns and landscapes, land under highway jurisdiction, pastures, and farming operations. The Texas A&M AgriLife Extension Service recently published an in-depth article discussing the danger that phenoxy herbicides pose to grapevines. Please contact your local viticulture specialist for a pdf copy or download your copy here :

aggie-horticulture.tamu.edu/vitwine/files/2017/04/Agrilife-Extension-April-2017-2-4D-Supplement-Newsletter.pdf

Solving Common Vineyard Problems

Managing Vine Vigor

Justin Scheiner

One of the most challenging aspects of vineyard management is controlling vine vigor. Depending on your situation, this could mean trying to increase vigor to develop a full canopy that's capable of ripening a sizeable crop, or reduce vigor to prevent shoots from overgrowing the trellis. In Texas, that can even change from one year to another due to our erratic weather. Two examples that quickly come to mind are 2011, a historic drought year, and 2015, the wettest year on record for the state. Both years presented very different challenges for vineyards, and therefore different responses were needed to manage vine growth. In this article we will review factors that influence vine vigor and highlight possible points of control.

Vigor is frequently defined as the relative growth rate of a grapevine or a shoot. Vigorously growing shoots are characterized by having long internodes (the smooth portion of a shoot between nodes), large leaves, and they often have actively growing lateral shoots. Grapevines are indeterminate so they will continue to grow indefinitely as long as conditions are favorable.

Genetics play an important role in vine vigor as some cultivars such as Cabernet Sauvignon and Blanc Du Bois are inherently more vigorous than others. Likewise, rootstocks have the potential to influence vine vigor. Rootstocks with *V. riparia* x *V. rupestris* parentage such as 101-14Mgt and 3309C are generally less vigorous than those with *V. berlandieri* x *V. rupestris* parentage such as 1103P and 110R. When establishing a vineyard, it's important to select a rootstock that is adapted to the soil conditions of the site, but one must also consider its vigor potential. For example, 140Ru, a *V. berlandieri* x *V. rupestris* rootstock, has many desirable characteristics such as high drought resistance and salt tolerance, but it is known to be extremely vigorous and therefore not frequently used. However, it could be appropriate on a site with very low vigor potential due to restrictive soil properties.

The role that soils play in vine vigor relates to water and nutrient holding capacity. Soils that have a significant clay content or a fine texture (or high organic matter which is rare in Texas) have a higher water and nutrient holding capacity than coarse or sandy soils. Similarly, soil depth has an important influence. In an ideal situation, a grape grower would carefully control water availability all season with irrigation, but that's not typically the case in Texas due to spring and summer rains that can occur in excess. Regardless, one should carefully determine when and how much irrigation water to apply based soil properties, weather, and other observations or data collected. It's easy to assume that overwatering is more common than under-watering, but that's not always the case. As the old saying goes, you can't manage what you don't measure and this applies quite well to irrigation. It is typically necessary to customize the irrigation strategy for each individual block to account for differences in soil, vine age, cultivar, etc.

Vineyard floor management also impacts vigor through the availability and competition for water and soil nutrients. The least competitive floor management system is a killed ground cover or mulch, followed by bare soil, and a living ground cover. Mulches and killed ground covers reduce evaporation of water from the soil surface thereby increasing water availability. In contrast, living ground covers compete with vines for these resources which is principally

(Continued on page 5)

Solving Common Vineyard Problems

(Continued from page 4)

why weed control in a new vineyard is so important, particularly under-vine.

The most common under-vine treatment in vineyards with a ground cover is a weed-free strip between 2' and 5' wide. The wider the weed-free strip is, the less competition, and vice versa. Although it is possible to allow vegetation to grow directly beneath vines to maximize competition, difficulties in managing this vegetation generally deter most growers. If choosing a cover crop to plant, one should consider the competitive nature of the species in addition to other attributes.

It's tempting to think that planting vines close together will moderate vigor by increasing root competition, but research has proven that this does not work under vigorous soil conditions. Rather, this may exacerbate the problem by reducing the trellis space provided for each vine. For soils with a low water and nutrient holding capacity, the addition of organic matter through cover cropping or a direct application can provide significant benefits.

Any essential plant nutrient has the potential to limit vine vigor when deficient, but many growers think of nitrogen because grapevine vigor can be affected by nitrogen application levels. In most soils, nitrogen needs to be applied annually to maintain a strong, healthy canopy, but it's important to consider all sources of available nitrogen such as organic matter, and soil type when determining how much and how often to make an application. Soils with a poor nutrient holding capacity (sandy soils) will need more frequent applications than heavier soils. If canopy development is poor it may be a good idea to reexamine your fertility program to determine if this is a limiting factor.

One final aspect of vigor to consider is shoot number and crop. At some point you have likely heard that dormant pruning is an invigorating action, or that shoot number is inversely proportional to shoot vigor. This is in reference to the fact that early season shoot growth is fueled by energy that was stored in the vine in the previous season. Developing shoots share the same fixed pool of energy so the more shoots there are the less vigorous they will be. During dormant pruning, we aim to match the number of buds retained or future shoots to vine size in an attempt to balance shoot growth with the crop. However, there may be times where retaining additional shoots is desirable, but will result in overcrowding and excessive shading. This is why divided canopy systems were created. They facilitate higher shoot numbers to combat vigor, but these systems require more intensive management and may not be compatible with mechanization.

Around bloom, the carbohydrate stores from the previous season are typically depleted, and in situations where shoot vigor is inadequate, it may be necessary to reduce the crop through shoot or cluster thinning. The resulting compensatory growth is generally more significant when clusters are removed early. Waiting until later to remove fruit results in a loss of energy that could have gone to shoot development. This is why all fruit should be removed from first leaf vines, and why it's necessary to closely monitor canopy development in young vineyards. When applied properly, cluster thinning can be an effective vigor management tool.

Finally, in those situations where vigor cannot be adequately controlled, canopy management can often provide the necessary relief.

Solving Common Vineyard Problems

Managing Vines After Hail Damage

Pierre Helwi

If you ask a winegrower in Texas about his biggest fear, the answer depending on region may well be hailstorms during the season.

Damage from hail can range from random spots on leaf blades and scares on shoots to total defoliation, broken branches and complete crop loss. Usually, if damage occurs early in the season, vines have the ability to recover by reshooting from secondary buds and wounds can "heal" properly. However the degree of recovery depends on vine health and vigor, timing of the damage and its intensity.

In which situations should the vineyard be retrained after hail damage?

If damage happens early in the season and the potential number of healthy clusters is significant and economic (more than 60%), simply leave the inflorescences and wait for the canopy to regrow and reshoot. In this case, many new shoots on the vine will grow, producing a second crop which will most likely not ripen to an acceptable level by the time the initial crop has achieved target Brix levels. Consequence harvest decisions may be more difficult.

If damage is more than 60%, growers may consider knocking broken shoots to the basal buds and allowing new ones to develop from secondary buds. In fact, shoot loss will stimulate the initiation of fruitful buds from secondary and latent buds, with minimal effect on bud fruitfulness or crop in the following season. This practice would allow the development of healthy canes with a good quality wood for the next season.

Secondary bud fruitfulness is lower than primary buds and it is variety dependent. Varieties such as Cabernet-Sauvignon and Syrah have relatively fruitful secondary buds compared to Riesling or Chardonnay. Clusters on secondary shoots will ripe later in the growing season.

In a later season hail damage scenario (after flowering), retraining vines is not recommended. Shoot loss may stimulate some new canopy growth from dormant buds, however fruit ripeness will be greatly delayed and the quality is likely to be affected.

In young vines, the scarring on a shoot that will eventually become the trunk can interfere with sap flow and may provide sites for entry of trunk diseases. In this case, cutting back wounded shoots and retraining a new shoot as a trunk should be considered.

What about the pest management program?

In wet and warm season, scarred berries will be prone to bunch rots and *Botrytis cinerea*, and sour rot organisms in addition to different insects and pests. An adequate fungal disease program will protect sound berries from infection but cannot prevent the development of rot on damaged berries (attention required to the pre-harvest interval for all fungicides). An opened canopy allowing the circulation of air at the fruit zone will also help to maintain a lower disease pressure.

After hail storm, the application of a broad-spectrum fungicide may help avoid opportunistic fungi, including *Botrytis cinerea*. A botrytis-specific fungicide may be helpful as well. Elevate, Vangard, Scala or the highest label rate of Pristine would be suitable choices. The development of Crown gall and wood diseases such as *Eutypa* dieback and *Botryosphaeria* can also be an issue for wounded shoots and canes.

Summary

After a hailstorm, it is important to inspect damage to plants as soon as possible. If damage is extensive and early in the season (between budbreak and bloom), re-

(Continued on page 7)

Solving Common Vineyard Problems

(Continued from page 6)

training of vine parts may be necessary and pruning may need to be adjusted to obtain healthy wood and sufficient buds for next season. If the damage occurred pre-veraison, the injured berries may scar over and continue developing, or they may or shrivel without rotting. Crop thinning might be appropriate for a homogenous ripening pattern and for young and weak vines.

Ways to Mitigate the Effects of Damaging Hail Storms

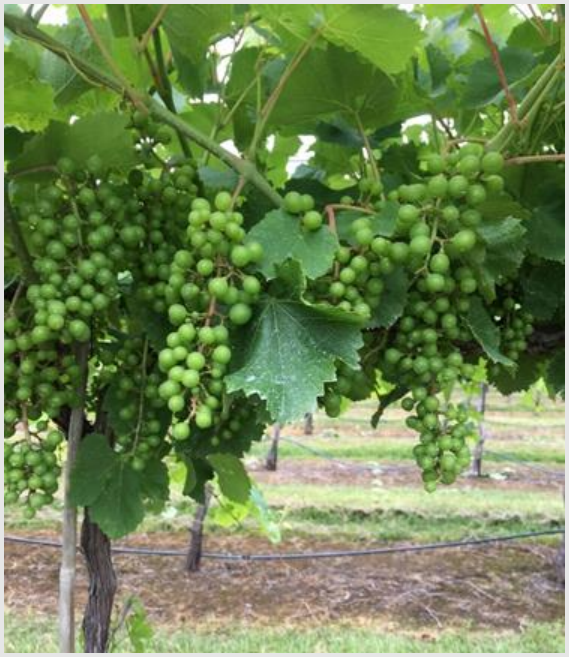
- Growers may retain some extra buds to compensate for the anticipated fruit loss. A grower can prune less severely by keeping 1 or 2 extra buds. Excessive vigor can be a problem in this case and attention should be taken for its consequence.
- Crop insurance: Growers with hail damage insurance should contact their insurer as soon as possible and arrange for damage assessment.
- Hail netting: one of the most reliable techniques on the market. However it has a high installation cost. These nets are frequently used for table grape vineyards and in some countries such as Argentina where hail storms destroy annually 20% of the harvest.

Vines (A) three days and (B) one month after hailstorm. Secondary shoots emerged from secondary and latent buds after an intense hailstorm early in the season (April 16, 2017).

Solving Common Vineyard Problems

Understanding Pest Control Spray Programs

Fran Pontash



There is no argument that winemakers prefer quality fruit that is free of disease and insect injury. Quality fruit is an indication of healthy vines and good viticulture management. Healthy vines are capable of producing higher yields with relative consistency, and the vines tend to live longer. This potential for higher return on investment has a solid disease and insect management program serving as its backbone.

Quite frequently we are asked, **"Do you have a schedule I can follow so I know when and what to spray?"** What we have is more than that. The annually published guide, ***Texas Grape Pest Management Guide*** (2017, Kamas and Scheiner, Texas A&M AgriLife Bookstore) describes fungicide and insecticide applications, the growth stage when certain spray applications are most needed, chemical options, modes of action, efficacy, symptom identification, and more. However, it is up to each grower to determine the ultimate timing and choice of chemical(s) with which to spray his/her vines.

Why can't we offer a one size fits all prescribed schedule? In order to control diseases and pests, a prescribed schedule would demand one to spray so frequently that he rids the site of all flying, crawling, sporulating, and replicating organisms. This type of spray plan deploys excessive and expensive amounts of chemicals, and is a potential environmental debacle, posing a hazard to humans, animals, aquatic life, and neighborly relations. A clearer understanding of what, when, and why to spray can avoid a cycle of over application.

Integrated Pest Management (IPM). "IPM is an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices" (epa.gov/safepestcontrol/integrated-pest-management-ipm-principles). Vineyard practices that alter the environment such as opening the canopy to optimize air movement and sun penetration, frequent mowing and managing irrigation help reduce the number of chemical pesticide applications that are necessary. An IPM strategic plan improves chemical efficacy, whether organic or conventional improving fruit and vine health. It hinges on prevention and since some of the diseases that we wrestle with have no cure, prevention literally pays off by saving vines and crops.

Prevention. Prevention relies on obtaining knowledge of our grapevines, their environment, diseases, insects, and the chemicals we use. This begins with selecting suitable plant material. Grape varieties and rootstocks differ in their ability to tolerate certain diseases, weather conditions, and soil character. There is information available on specific rootstock and variety characteristics, so don't hesitate to consult with your viticulture program specialist.

(Continued on page 9)

Solving Common Vineyard Problems

(Continued from page 8)

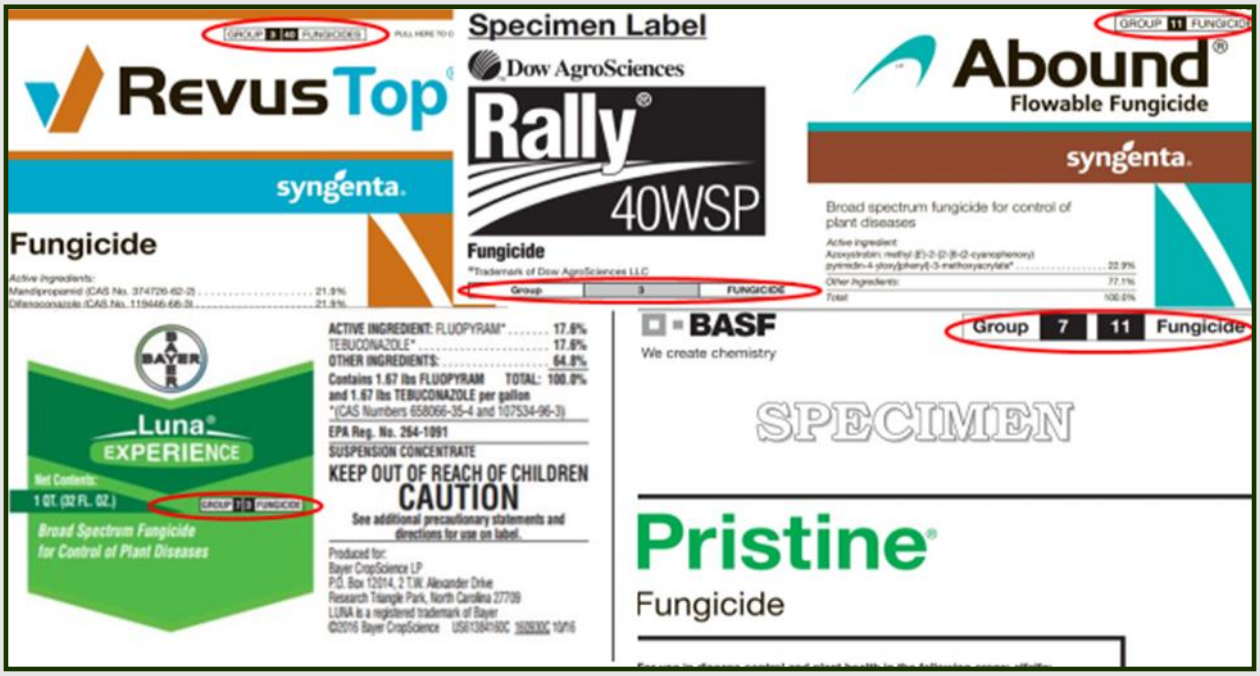
In addition, consider that some varieties are more susceptible to certain diseases, insects and animals than others. Some examples are Desmia funeralis, the grape leaf-folder that feeds on Lenoir powdery mildew on Tempranillo, and deer feeding on Blanc Du Bois.

Sanitation. A clean vineyard can prevent outbreaks. An open, trained canopy maximizes air flow and spray penetration. Wood, leaf, and cluster debris removed from the vineyard floor helps to prevent disease by removing insect eggs, larvae and fungal pathogens on dead and dying plant tissue. Frequent mowing prevents weeds from forming mature seed heads. Uncontrolled weed growth competes with vines for nutrients and water, and weeds typically win leaving vines weakened and vulnerable to drought, nutritional disorders, and insect infestation.

Frequency. Spray applications begin during dormancy and continue until senescence. Pesticides have become more efficient and specific in their mode of action; it is important to rotate chemical applications by their mode of action Pesticides can be overused to the point that the target pathogens or insects develop a resistance to their particular mode of action. Rotating chemicals with different modes of action helps to avoid overusing some of our most effective chemicals.

Maintaining a healthy canopy begins with dormant sprays and sprays continue until senescence. Pesticides use different modes of action that are often target specific. It is important to rotate applications by mode of action. Using chemicals with multiple modes of action helps reduce the ability of target pathogens, insects, and weeds to develop a resistance to the active ingredients of the pesticide. Read all pesticide labels for target pest, appropriate application and resistance management. Don't hesitate to consult your viticulture program specialist if you have questions.

Note: Fungicide Groups 3, 7, and 11, signifying modes of action, are repeated and circled in red.



(Continued on page 10)

Solving Common Vineyard Problems

(Continued from page 9)

Always read and follow the directions on the label, and calibrate the output of your sprayer to know its rate of application. Use a separate sprayer for herbicides. Some combinations of insecticides, fungicides, and fertilizers can be harmful if tank mixed while others mix easily in a spray application. Before mixing, test the chemical compatibility of what you want to spray. In a jar half filled with water, add the proportionate amounts of each chemical. Shake for 15 minutes. The formation of heat, scum, clumps, and a high degree of solid precipitates indicate chemical incompatibility and should not be applied . Read the following caution found on Rampart's label:

"**COMPATIBILITY Mixing Rampart Fungicide with certain surfactants, foliar fertilizers or other pesticides may cause crop injury. Rampart Fungicide is a slightly acidic buffer solution. Avoid mixing Rampart Fungicide with strongly acidic or alkaline materials. Do not tank mix without first testing the mixture's compatibility nor apply it without assessing its safety to the crop (phytotoxicity)." (2017. Loveland Products. Rampart Fungicide. p. 3**)

Timing. Temperature, rainfall and humidity determine disease and insect emergence, thus they determine the timing and choice of sprays that are most effective. Optimizing the timing increases the efficacy of each application and the cost of each chemical purchase. It requires an understanding of the differences between the diseases, insects, and weeds, their times of emergence, their strengths and weaknesses, and the symptoms and signs that they leave behind. Gaining a better understanding of pests and pesticides is an ongoing process. Good record keeping helps immensely. A custom program can be created from recordings of previous weather conditions, chemicals used, timing, and observations of symptoms. Updating our knowledge base has becomes increasingly important as new technology, urban encroachment, and the discovery of previously unrecognized diseases continue to unfold.
Insecticide applications can be optimized by monitoring the emergence of populations so that the highest number of insects are controlled per spray. Sticky traps for sharpshooters and pheromone traps for grape berry moth help monitor the time and severity of their emergence.

General. Most newly planted vineyards experience a grace period in regards to grape fungal diseases. The diseases eventually infect your vineyard, overwinter in it, and take advantage of tender new growth each spring. Insect pests such as grasshoppers and vectors of Pierce's Disease prefer tender growth and feed on new tissue especially in areas of high risk to insect pressure.

The Grape Pest Management Guide found at http://www.agrilifebookstore.org/Texas-Grape-Pest-Management-Guide-p/ht-085.htm outlines disease and insect pressure by vine growth stage. The outline includes lists of our most frequently used chemicals. Efficacy and modes of action are also included. Don't hesitate to contact a program specialist with your specific questions.

Solving Common Vineyard Problems

Managing Yield In The Spring Begins During Harvest

Jacy Lewis

Decisions made in the spring can dramatically impact the crop you harvest months down the road. The ability to accurately estimate the potential yield of a block enables you to determine how much fruit you will likely have at harvest and plan accordingly. Most importantly, it can help you assess the ability of your vines to ripen the crop they are set to produce. This is the only opportunity to reduce crop load in a way that will change the quality of the fruit you harvest and potentially reduce the stress that a large crop can place on young or weak vines. The decision to reduce yield by crop thinning can be a complex one, taking into account a variety of factors. How to make the decision to thin is beyond the scope of this article. Here we will detail the basics of how to estimate yield, the first component of how you will manage your crop yield for the rest of the season. Additional more time consuming techniques can be used to get higher precision in your estimates that are also beyond the scope of this article.

Estimating next year's crop starts at harvest this year. Estimating yield in a given season requires that you have available historical records of cluster weights at harvest. Because cluster weights vary year to year, it is important that you collect data yearly in order to eventually obtain a reliable average that you can work with in subsequent years. You will find that this is likely the single largest variable in your equation, so good record keeping here is essential. In young blocks, you may rely on averages from other blocks of the same variety that you have collected data on in the past, but there is no substitute for collecting data from each variety and block to get the best prediction of average expected cluster weight.

When collecting average cluster weights, it is tempting to pull clusters from a harvest bin for weighing. There are a number of problems with this practice. First, it is too easy to introduce sampling bias when one is forced to look at a bin and choose clusters. There is the tendency to choose either large or small clusters inadvertently. Additionally, at this point clusters may have become damaged and/or have lost berries. A better method is to randomly select vines from your vineyard map then hand harvest these individual vines. One caveat here is that it is best to avoid using vines on the edge of your vineyard as they are commonly not representative of the vineyard as a whole. So choose from vines not at the end of a row or from the outside rows of the block. Count the total number of clusters per vine. Weigh all of the clusters together, then divide that number by the total number of clusters. This will give you the average cluster weight for that vine. You can then average the (mean cluster weight) for all of the sampled vines. This will give you the average cluster weight for that vineyard block.

How many vines need to be sampled depends on the number and uniformity of vines in the block. In a block with little variability, a sample size representing 1%-2% of the total number of vines may be sufficient. In an established block that has a mix of non-bearing and bearing vines, or vines of multiple ages and skips, it is necessary to increase this number. Any increase in the number of vines sampled will increase the accuracy of your predictions.

When spring yield prediction is done, you must determine the number of bearing vines per block as well as the average number of clusters per vine. Be sure to make adjustments to your estimates by assessing the vineyard for vines that may have been lost in the previous year, and tracking the number of replants, or retrained vines that will not be expected to bear in the current growing season. It is important that this count be done accurately, as even a small over or under estimate of the number of bearing vines can result in a large decrease in the accuracy of yield. The smaller the block, the greater the importance of the accuracy of this number.

Estimating clusters per vine is done in a similar fashion to estimating cluster weight at harvest. A minimum of 1%-2% of the vines in the block, provided it is uniform, should be selected randomly and the number of clusters on each vine carefully counted. You must be sure you wait until developing clusters are all exposed. Waiting until berry set will help ensure better accuracy if set is low.

Finally, the equation for estimating crop yield is as follows:

Yield in tons/block= 1 / 2,000lbs X Vines/block X Clusters/vine X Average historical cluster weight

Texas Winegrower is a production of the Texas A&M AgriLife Extension Viticulture Program.

Editor: Jacy L. Lewis Program Coordinator, and Laboratory Manager Texas A&M AgriLife Viticulture and Fruit Lab 830-990-4046

We welcome your questions or comments! Please address all comments or inquiries to:
Laura Nelson at l.nelson@tamu.edu

Find Us On The Web

https://www.facebook.com/TXViticulture/

We hope you have enjoyed this issue of our statewide newsletter. Our goal is to provide timely information on topics of relevance to winegrape growers in Texas. We strive to provide updates on scientific research, expert information on pest and disease management, vineyard best practices, and information on opportunities to attend Extension program events.

First and foremost, we want to produce a newsletter that is relevant and provides information that you as part of the winegrowing community are interested in. We welcome your comments and suggestions and are particularly interested in topics you would like to see covered in future issues. Please let us know what you think.

Thank you for your support of our program, and allowing us to help you to address your growing needs.

Cheers,
Jacy L. Lewis
Editor

Your Viticulture Extension Program Specialists

Fran Pontash

Representing the Gulf Coast and South Texas Winegrape Growers.

979-845-5341

fmpontasch@tamu.edu

Michael Cook

Representing the North Texas Winegrape Growers.

940-349-2896

m.cook@tamu.edu

Pierre Helwi

Representing the Texas High Plains Winegrape Growers.

806-723-8447

pierre.helwi@ag.tamu.edu

Until further notice, Hill Country Winegrape Growers may contact the Fredericksburg Viticulture and Fruit Laboratory and Jim Kamas at: 830-990-4046 or j-kamas@tamu.edu .