



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

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### Upcoming Events:

Feb 16-18- TWGGA Annual Conference, San Marcos TX

Feb 25- Dallas County Hybrid Pruning Demonstration

Feb 28- Frost: "Understanding and Minimizing the Damage" Narra Family Vineyard Brownfield TX.

March 2- Hybrid Grape Pruning and Vine Propagation Workshop Myers Park in McKinney 9-4 pm RSVP required

March 3 - East Texas Grape Growers Field Day Time and Cost TBD

March 4 - North Texas vinifera pruning and training demonstration T.V. Munson Memorial Vineyard in Denison

March 10 - Fungicides & Sprayer Calibration at Eden Hill Winery in Celina 9:30-3:30pm Cost for lunch TBD

April 21-Field Day Vineyards at Grandview Richards TX

April 28- Newsom Field Day, Newsom Vineyards Plains TX

June 19-Advanced Grape Growers Workshop Fredericksburg TX

**For more information on times, locations or costs please contact your regional Viticulture Program Specialist.**

Thank you for taking the time to read the second issue of Texas Winegrower. We hope you are enjoying this winter as we all gear up for spring and another great growing season. Here in the Hill Country pruning is underway and bud break is just around the corner.

In lieu of Regional Updates, for this winter edition we have chosen to do a special section dedicated to new and potential growers. Your Extension Program Specialists have each prepared an article that will be of special interest to those of you who are just joining our growing community as well as those still in the planning stages of starting a vineyard business. We do hope however that even some of our experienced growers will find something in these articles of interest, especially if you are considering expanding your operation.

In addition, Extension Viticulture Specialist Justin Scheiner will be giving an overview of available information on herbicide drift. We recognize this is a growing concern in all regions of the state and hope to serve as a resource to our growers in both preventing and coping with the consequences of unintended herbicide contact in your vineyards.

Also of interest to New and Prospective growers, Jim Kamas will be doing a talk on The 10 Most Common Mistakes Made in Grape Growing at the TWGGA Annual Conference. New growers can learn about these mistakes before making them, experienced growers can better understand some of the mistakes they may be making.

## *Treatment to Manage Cotton Root Rot in Winegrapes* *Jacy Lewis*

Many of you have heard about the work on use of flutriafol for control of cotton root rot (CRR), being carried out by Dr. David Appel and Sheila McBride of the TAMU Dept. of Plant Pathology and Microbiology and the TPDDL, and have inquired as to the availability of this product for mitigation of this disease in vineyards. A request by TDA for a 24c registration for this product for use on winegrapes was approved. The product is sold commercially as TOPGUARD® Terra and can be obtained from your local chemical supplier.

This label is exclusively for control of CRR through a soil drench application. No other application method is approved and it is not approved for any other uses. This means in order to make an application you must have a chemical injector that will allow you to apply the product through an above ground drip irrigation system with appropriate backflow prevention.

An important note, **the current label for TOPGUARD® Terra does not include winegrapes. In order to be in compliance with Federal and State regulations, you must obtain and keep on hand a special FIFRA Section 24c label for the product.** The current label is valid through Oct 31, 2018 and can be obtained at [www.cdms.net/ldat/ldC5C001.pdf](http://www.cdms.net/ldat/ldC5C001.pdf).

# Special Section for New and Prospective Growers

## *Tips to New and Prospective Grape Growers*

*Fran Pontash*

The Texas wine and grape industry often attracts those who love a good challenge. The challenges of growing grapes and making wine in Texas are indeed real and planning for these challenges during the vineyard design stage will save years, dollars, remorse, and backache. Time and viticulture expertise are essential to successfully plan and establish a vineyard. Resilience and patience definitely help as well. Below are a few tips for a new grower to consider.

### Pre-planning Tips:

1. Understand that the challenges are not exaggerated.
2. Overestimate the amount of time, money, and expertise needed when scheduling tasks and making the business decisions. Waiting to develop a sound plan and accumulate funds actually saves time. Undercapitalized endeavors built upon inadequate planning tend to lead to a day of reckoning.
3. Assess your experiential and academic strengths and weaknesses. It can be surprising which skills can be useful and where the learning gaps lie.

### Planning Tips:

1. **Know Site Characteristics:** the growing conditions of the site combined with climate dictate vineyard establishment and management decisions. Time and effort spent learning specific site characteristics before planning is time well spent.

2. **Design the Vineyard Layout:** The layout, design and selection of grape variety and rootstocks depends on each vineyard site's characteristics. Characteristics include climate, soil characteristics, water quality and availability and disease pressure.

3. **Order Plant Material Early:** Roughly two-

thirds of the vineyards in Texas are planted with vines grafted on an appropriate rootstocks. To ensure that the appropriate grafted plant material is available, order the vines early. Early means one to two years before planting. Last minute orders tend to involve a compromise on the variety and/or rootstock selections, and possibly a compromise on quality of plant material.

4. **Gain Control of Weeds Before Planting:** Some weeds are more tenacious than others. A new vine with its undeveloped root system is not able to compete against weeds that are already established. It is best to treat the vine rows in the fall before spring planting. Diligent weed management is absolutely necessary.

#### *"Haste Makes Waste"*

**Making permanent decisions without adequate preparation can cost years in lost production. Poor decisions tend to become much more expensive than waiting a year or two to acquire further understanding of viticulture requirements of the site.**

**Continued on page 7**

## *Special Section for* *New and Prospective Growers*

### *Planning and Installing your Irrigation System*

*Michael Cook*

A sound irrigation system is a key element to a successful vineyard operation. Proper research and planning is necessary when designing an irrigation setup. Designing an irrigation system for any sized vineyard should occur well before planting while installation may occur before or shortly after planting. An agricultural engineer specializing in irrigation should always be consulted when planning your irrigation system to ensure a well-designed layout that can supply an adequate amount of high quality water to all vines.

The general water requirement for grapes throughout the year is approximately 24 inches per acre. This value is dependent on many factors including variety, macro-climate, soil structure, and topography. While some regions, receive enough rainfall per year, rainfall within the growing season is often sporadic and unpredictable. For example, ample rain may fall during the spring and fall but may be minimal summer leading to drought conditions during a critical times. Due to unpredictability of precipitation events in Texas, supplemental irrigation via drip system is strongly recommended for all vineyards in the state. While flood irrigation is still utilized in some places, drip irrigation remains the preferred method as it is effective at delivering water to the root zone while minimizing both waste and water loss due to evaporation. Growers in some regions opt to utilize underground drip to help prevent evaporative loss. However vertebrate damage along with the difficulty in detecting and repairing leaks or clogs are some reasons to avoid such a system.

The first consideration a grower should evaluate when developing an irrigation system is the water source. Having your water tested will help determine if the site of interest is suitable for culti-

vating grapes. Most growers will irrigate from a private well, even if municipal water is available the cost can be prohibitive. Others, especially those who have saline well water may pump from a large stock tank. Much care must be given to planning a system that utilizes tank water, as adequate filtration and water quantity are essential. Care must be taken that the tank not run dry. Next the grower should evaluate pump capacity. A pump's capacity should be calculated for a mature vineyard with a full canopy and crop load during the summer months. Before going forward with planning an irrigation system, assessing water quality is critical.

Once the site has been determined as suitable for grapes and a water source determined, irrigation supplies and layout should then be considered. Irrigation lines running down the rows should consist of 0.5-0.75-inch polyethylene tubing. Installing a drip wire a few inches above the vineyard floor can help prevent emitters from clogging and protect water lines from being damaged. For young vineyards one emitter per vine spaced 12 inches from the trunk is sufficient, however, once the root system expands installing a second emitter is recommended. When installing the second emitter, the line should be pulled to where each emitter is roughly 24 inches from the trunk. Emitter output often ranges from 0.5 to 2 gallons per hour and should be chosen based primarily on soil type.

Once the irrigation system is installed, it is up to the vineyard manager to irrigate the vineyard at the appropriate time and with sufficient quantity. Contact your regional viticulture extension specialist for more information regarding irrigation installation and management.

# Special Section for New and Prospective Growers

## *Obtaining and Understanding Soil and Water Tests*

*Andrew Labay*

Soil and irrigation water testing are common first steps when evaluating new sites for grape growing. For information on sampling, see the following links:

**Recommended links:**

- Soil Sample Submittal Form (with sampling info): <http://soiltesting.tamu.edu/files/soilwebform.pdf>
- Water Sample Submittal Form: <http://soiltesting.tamu.edu/files/waterweb1.pdf>
- USDA NRCS Web Soil Survey: <https://websoilsurvey.nrcs.usda.gov/app/>
- Managing Soil Salinity: <http://soiltesting.tamu.edu/publications/E-60.pdf>

There are often many questions when it comes to interpreting laboratory results. There are three critical areas to consider. Briefly highlighted here are among the more important pieces of information to target when evaluating soil and water at new sites: (1) soil pH, (2) salinity and (3) soil physical characteristics.

**Soil pH and Nutrition** - Soil test results alone are generally not considered a reliable tool for deter-

mining fertilization requirements for vineyards. Petiole testing along with visual observation of deficiency symptoms is instead the common practice for monitoring vine nutrition. That said, knowing soil and water pH values can be critical as they provide an indication of the chemical nature of the soil solution and help in predicting certain nutritional problems. For example, moderately alkaline soils (pH > 7) can be found in many regions of the state. These soils are typically calcareous, and vines can display iron and/or zinc deficiency if not managed with the use of adapted rootstocks (e.g. ‘1103P’, ‘5BB’ or ‘5C’) or fertilization.

**Soil and Water Salinity** - Grapevines are sensitive to elevated salinity levels. Poor growth or vine damage can occur as a result of an ‘osmotic effect’ as roots struggle to uptake salty water, and/or by toxic levels of sodium (Na), chloride (Cl) or boron (B) ions. For assessing salinity make sure to order a saturated paste extract test and see Tables 1 and 2 for a guide. When encountering salinity issues contact a specialist as the corrective measures depend on many variables including the type and extent of salinity issue and the chemical and physical characteristics of the soil.

**Table 1:** Soil sample interpretive guide for the risk of salinity \* via soil paste extract

Analysis*	Unit	No problem	Moderate Problem	Severe Problem
EC	mmhos/cm	1.5 - 2.5	2.5 – 4	4 - 7
TDS	ppm	960 – 1600	1600 – 2560	2560 - 5600
SAR	unitless	< 6	6 – 9	> 9
ESP	unitless	< 10	10 – 15	> 15
Na	ppm		> 690	
Cl	ppm	< 350	350 – 1060	>1060
B	ppm	< 1	1 - 3	> 3

## Special Section for New and Prospective Growers

### *Obtaining and Understanding Soil and Water Tests*

*Andrew Labay*

**Table 2:** Water sample interpretive guide for the risk of salinity

Analysis	Unit	No problem	Moderate problem	Severe problem
Conductivity	mmhos/cm	< 1	1 - 2.7	> 2.7
SAR	unitless	< 6	6 - 9	> 9
TDS	ppm	< 640	640 - 1728	> 1728
Na	ppm	< 460		
Cl	ppm	< 140	140 - 530	> 530
B	ppm	< 1	1 - 3	> 3
NO <sub>3</sub> -N	ppm	< 5	5 - 30	> 30

**Soil Physical Properties** - In addition to having moderate soil pH values and low salinity levels, grapevines perform best in soils that have adequate depth, moderate water holding capacity and fertility, and good drainage. Information for these latter characteristics are not always found on routine lab tests. Thus, it is recommended to dig/trench at multiple locations for an inspection throughout the root zone (down to 30-40") in addition to consulting the soil descriptions for your site found at the web soil survey website (see link below). Three key properties to inspect are soil texture, depth to impenetrable layers and internal drainage:

*Soil texture* refers to the relative proportion of various-sized particles including clay (small), silt (medium) and sand (large), and the texture has important consequences on water and nutrient holding capacity, aeration and internal drainage. Soil texture can be estimated by hand (i.e. 'feel test') or quantified by laboratory tests (see soil submittal form).

*Soil depth* can be limiting for grape root systems if

impenetrable layers (e.g. bedrock, claypans or caliche) occur as shallow as 18 inches or less (30 - 40" is preferred soil depth). If these layers are found they may need to be broken through deep tillage or ripping before planting.

*Soil internal drainage* refers to the capacity for water to move down through the soil profile. Drainage should always be assessed at new sites either through a percolation test, or more simply through the following method: dig a hole to 36" with a hand-held posthole digger and fill the hole with irrigation water. If the water drains in 12 hours drainage is excellent, if water drains by 24 hours it is adequate, however if water is standing beyond 24 hours drainage is poor and the soil conditions will need to be improved or avoided.

## *Special Section for New and Prospective Growers*

### *Sourcing and Procuring Plant Material*

*Pierre Helwi*

Choosing the best plant material for establishing a vineyard is a critical factor to produce wine of quality. In this section, material types and the key steps to be respected while ordering, planting and acquiring vines will be discussed.

- **Ordering** - A grower wanting assurance of availability of the desired varieties, clones and rootstock should order from a reputable nursery 18-24 months before planting. All nurseries are not equal, ask for recommendations from trusted growers. The selection of cultivar/rootstock should match the climate and soil type of the vineyard site. In Texas, many vineyards have tested positive for various grapevine viruses that will have negative effects on vine health, and berry quality. Buying vines that are certified to be free of viruses and diseases is of primary importance for a healthy and profitable vineyard.

#### **Available Types of Plant Material**

**Rooted cuttings** are bare-rooted dormant plants. After promoting their root growth in a warm and humid room, cuttings are transferred in the spring into the field and grown for one season. Because rooted cuttings are own-rooted, they offer none of the special qualities that can be obtained from rootstocks such as pest resistance, soil adaptation, or vigor restriction.

**Dormant bench grafts** are an affordable option for growers, they are made by joining a dormant rootstock cutting and a scion of the desired variety. They are bare-rooted dormant plants initiated in a warm and humid room and then grown into a nursery row for one season. Plants are then harvested after they become dormant. This is the most commonly utilized option in commercial vineyards.

**Dormant potted vines** are similar to dormant bench grafts but they are grown in containers rather than in the field. This is generally among the least economical options available. In this case you are paying for shipping pots and soil as well plant material.

**Green bench grafts** are similar to dormant potted vines except they are shipped out actively growing in the same year that they are grafted. Like dormant potted vines, you are paying for the shipment of pots and soil and in addition these can be the most labor intensive and difficult to handle choice when planting a vineyard.

- **Planting** - Once delivered, vines should be planted immediately. Spring is the optimal period for planting. In most parts of the state of Texas, dormant vines should be planted before April, and green grafts are best planted before June to escape high temperatures and solar irradiation as well as other difficult weather conditions.

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## Special Section for New and Prospective Growers

### Sourcing and Procuring Plant Material, cont. from page 6.

**Storage** - If vines are received before the vineyard is ready, storage depends on their type:

**Rooted cuttings and dormant benchgrafts:**

can be held in cold storage. It is important that roots stay moist and vines have sufficient oxygen. Do not store vines in water or a refrigerator for long periods of time.

**Dormant potted vines & green benchgrafts:**

should be placed in a shaded area until planted. Depending on the temperature, vines may need to be watered frequently.



Dormant potted vines and green benchgrafts are delivered potted in media. This makes them expensive to transport and requires space under shade for storage until planting. They must be carefully monitored as water needs will vary greatly with differences in temperature and humidity.

Choose what to plant based on what is suitable for your terroir as well as market demands and not what the nursery has in stock. The right disease-free scion/rootstock combination will help ensure a long term healthy vineyard producing premium quality fruits.



A vital part of planning a vineyard is arranging for the sale of your fruit in advance of planting.

### Tips for new growers, cont. from page 2.

- Carefully Organize Transfer of Ownership:** Visit wineries before planting to understand varietal preferences, wine styles, and winery demands before you plan to grow. Wineries are unique with different goals and with different capacities for purchasing grapes. Each winery has limitations, that dictate the grapes they choose to purchase.

Wineries are typically juggling several different grape deliveries at harvest with different expectations for specific varieties. Wineries have different minimum tonnage requirements and it is imperative that an accurate estimation of crop size and quality is communicated to the winemaker. A cooperative and mutually profitable business relationship between winery and grape producer benefits all interested parties and good communication at harvest is key.

## *Current Concerns for Winegrape Growers*

### *Herbicide Drift in Vineyards*

*Justin Scheiner*

Glyphosate tolerant row crops have been grown in Texas for over twenty years and are quite popular among producers of agronomic crops. Additionally there have been recent releases of crop varieties resistant to a wider variety of herbicides. Over the past few years, the abundance of herbicide resistant weeds in Texas and many other states have led to the introduction of crops that are tolerant to 2,4-D and dicamba. This has been giving many members of the wine industry cause for concern because grapes are highly susceptible to injury from both of these phenoxy herbicides at very low rates of exposure.

#### **Synthetic Auxin Herbicides**

2,4-D and dicamba belong to a class of herbicides known as the synthetic auxins because their action in plants mimics the plant hormone auxin. Upon exposure, synthetic auxins are translocated to plant meristems (growing points) where they cause uncontrolled growth leading to tissue damage and ultimately death. They are effective at killing broadleaf plants and have been used for many decades to control weeds in pastures, lawns, right-of-ways and in non-sensitive crops. Grapes happen to be very susceptible to 2,4-D and dicamba, and rates as low as 0.0025 pounds of active ingredient per acre have been reported to cause damage. This sensitivity and anticipated widespread adoption of 2,4-D and dicamba tolerant crops is fueling concerns over potential damage from accidental herbicide drift.

There are two types of drift, particle and vapor. Particle drift occurs when spray droplets are blown off target by wind, and the risk is minimized by following proper application techniques such as avoiding spraying in high winds, using appropriate nozzles, pressure, and boom height. Vapor drift occurs when spray materials change from a solid or liquid state to a gas or vapor enabling them to travel great distances before settling to the ground. The conventional formulations of 2,4-D and dicamba are prone to volatility, and the potential for accidental drift has led to a patchwork of regulations across the state. Some counties in Texas only allow seasonal commercial and agricultural use of 2,4-D, whereas others do not permit use at all or have no restrictions. ***The new formulations of 2,4-D and dicamba will not be subject to these regulations.***

#### **New Technology and Formulations**

The companies responsible for the 2,4-D and dicamba tolerance technology, Dow AgroSciences and Monsanto, have developed new formulations with lower volatility potential. Only these new formulations will be permitted on tolerant crops. Monsanto reports a 90% reduction in volatility potential with their [VaporGrip](#) technology and Dow a 96% reduction in volatility with their [choline salt](#) compared to traditional 2,4-D formula-

Information on these technologies can be found at the following links.

Vaporgrip:  
[www.roundupreadyxtend.com/About/vaporgriptechology/Pages/default.aspx](http://www.roundupreadyxtend.com/About/vaporgriptechology/Pages/default.aspx)

Choline salt:  
<http://www.enlist.com/en/how-it-works/enlist-duo-herbicide>

## ***Current Concerns for Winegrape Growers***

tions. Further, a number of other application requirements are mandated to reduce the potential of off target drift.

### **These include:**

- no aerial application
- ultra-coarse droplet spray tips
- a boom height of 24" or less above the crop canopy when making applications
- applying only when wind speeds are between 3 and 15 mph (**Texas Department of Agriculture has imposed a limit of 10 mph**)
- no application if the wind is blowing toward adjacent sensitive crops
- a downwind spray buffer to sensitive crops
- a maximum ground speed of 15 mph
- limited to no tank mixing

The concern, of course, is that some producers, knowingly or unknowingly, may not follow all of these safety measures and this is why communication is so important. Producers must be aware of the risks from product misuse. For example, tank mixing with ammonium sulfate, a common practice with herbicides, can eliminate the benefit of the VaporGrip technology. Or, in other words, the volatility potential would be no different than older formulations.

Horticultural crops are not the only crops at risk when proper application techniques are not followed. As it turns out, there is no cross-tolerance between dicamba tolerant and 2,4-D tolerant crops, although these herbicides are within the same chemical family. That is, 2,4-D tolerant crops are not tolerant to dicamba and vice versa. Producers will have to take note of all neighboring crops, and Texas has adopted a couple of programs to help raise awareness.

### **Flag the Technology and Hit the Target**

***Flag the Technology*** uses color coded flags posted at entry points in fields or other GPS points to mark the crop and/or technology trait(s) in use (<http://tpa.tamu.edu/>). This will allow applicators to visualize what crops and technology are in and around the application site. A mobile phone app for Flag the Technology is also under development so that applicators will have access to this information on their phones. The app will also have the ability to be meshed with ***Hit the Target***, formerly known as the Texas Crop Registry. This program allows producers of sensitive crops to register the locations of their fields so that applicators can see them on a satellite map. Other states have expressed interest in adopting this program, and rather than recreating the wheel, the Texas Crop Registry will function to serve their needs too. However, the name has been changed to Hit the Target to accommodate users outside of the state of Texas. The website for this program is currently unavailable while being redesigned.

### **Communication is Key**

While it's helpful that tools are being created and efforts are being made to raise awareness of sensitive crops, in order for these technologies to be successful, they must be utilized, and producers must know what precautions they need to take. Many organizations and individuals have been doing a good job of raising awareness, and you can do your part by communicating with your neighbors. Good stewardship stands to benefit everyone in the agriculture community.

**For more information on this important topic, look for our supplemental issue on Herbicide Drift due for publication in Mid April 2017.**

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

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*We welcome your questions or comments! Please address all comments or inquiries to:*

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#### **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*

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*Photos courtesy of Texas A&M AgriLife Extension*

**This publication may contain pesticide recommendations. Changes in pesticide regulations occur constantly and human errors are possible. Questions concerning the legality and/or registration status for pesticide use should be directed to the appropriate Extension Agent /Specialist or state regulatory agency. Read the label before applying any pesticide. The Texas A&M University System and its employees assume no responsibility for the effectiveness or results of any chemical pesticide usage. No endorsements of products are made nor implied.**

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