



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

In this issue:

Jacy Lewis

Inside this issue:

| | |
|---|-------|
| <i>Understanding and recognizing synthetic auxin damage in grapes</i> | 2-3 |
| <i>Responding to herbicide drift injury</i> | 4-8 |
| <i>Preventing herbicide drift injury</i> | 9-10 |
| Information of interest | 10-11 |
| Contact information | 12 |

Upcoming Events:

April 28– Newsom Field Day, Newsom Vineyards Plains TX

June 19-20 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 this special supplemental issue of Texas Winegrower. As promised in our February issue of Texas Winegrower we are publishing a supplement to our regular newsletter. In that issue Justin Scheiner provided an article titled **“Herbicide Drift in Vineyards”**, if you have not had an opportunity to read that article, we encourage you to do so. Due to an overwhelming interest in recent months regarding the concerns surrounding herbicide drift in vineyards, coinciding with the release of agronomic crops with resistance to multiple synthetic auxin herbicides we have put together several articles along with links to helpful information for our growers in this supplement.

I would like to extend my appreciation to Dr. Kassim Al-Katib of UC Davis for generously allowing us to reprint a section of his article on herbicide damage.

While it is not possible to cover everything you may need to know or every situation we hope you find the information in this supplement useful. As always, if you have further questions or find yourself needing assistance, please contact your regional Viticulture Program Specialist.

Finally on page 11 of this newsletter we are including the agenda for the advanced grower workshop being held June 19-20 in Fredericksburg. Registration is currently open and you can register online at agriliferegister.tamu.edu/productListingDetails/2307 or by phone at 979-845-2604

Seating will be limited to 65 attendees and there will be no same day/on site registration, so if you plan to attend please register early to ensure seating. Registration closes June 12th. Five IPM CEU's will be available.

Understanding and Recognizing Synthetic Auxin damage in grapes

Auxin like herbicides and how they cause injury:

Jim Kamas

What are Synthetic Auxin Herbicides:

Synthetic auxin herbicides are a broad group of related compounds originally designed to eliminate broadleaf weeds in monocotyledonous crops such as wheat, rice and other cereal grains. They are also commonly used to manage broadleaf weeds in grassy pasture lands and lawns, for pre-plant burn down applications and as brush killers along fence lines and industrial right of ways. More recently crops such as cotton, corn and soybeans have been genetically engineered to be resistant to auxin-like herbicides which has resulted in increased risk to growers of sensitive crops in areas where these new resistant crops are being grown.

In general, most dicotyledonous (dicot) plants from ornamentals, to garden crops and broadleaf weeds are susceptible to injury and damage when exposed to these compounds. Grapevines are however several orders of magnitude more sensitive to injury from these products than other crops considered to be very sensitive such as tomatoes. In Washington state, drift from grain growing regions to the east has been documented to have caused damage to vineyards along the Columbia River, 50 miles away from the point of application. While this injury resulted from highly volatile formulations of 2,4-D, it accentuates how sensitive grapevines are to these products in even very low rates of exposure.

There are other groups of auxin-like herbicides that can also cause damage similar to 2,4-D but the symptoms and physical characteristics of these compounds vary. It may be difficult to tell which exact herbicide is the most likely culprit and obtaining the assistance of an experienced consultant/ investigator may be required if it is



not possible to get accurate information on what herbicides were used in the vicinity of your vineyard. The first group known as the Phenoxy-carboxylic acids includes 2,4-dichlorophenoxyacetic acid (2,4-D), mecoprop and MCPA. 2,4-D is the member of this family most commonly encountered as a risk to grape growers because of the immediate and severe effects on vines and due to its ability to volatilize and drift as a gas. These products are used in pasturelands and cereal crops and pose a threat to vineyards throughout the state and the region. Under conditions favoring temperature inversions, volatile vapor can rise several feet, encounter an inversion layer, then travel at a mile or more where vapor exposure to sensitive plants can cause injury. The ester formulations are the most volatile, however while less volatile, amine and salt formulations can still be problematic. Newer “low volatility formulations” of 2,4-D have reportedly been developed for use with the new GM crops, but actual “safety” for surrounding sensitive crops is still not fully documented.

Benzoic acids like dicamba are also commonly encountered by vineyards near pasturelands. Dicamba, sold under the trade names Banvel®, Marksman®, Celebrity®, and many others, is labeled for grain crops and grasslands. It is commonly used to control thistles and other weeds not readily managed by other phenoxy herbicides. Dicamba is commonly package-mixed with 2,4-D for broader spectrum weed control. While not as volatile as 2,4-D, dicamba injury on grapevines can be equally severe and long lasting. It is now being marketed as part of the RoundUp Ready Xtend crop system for cotton and soybeans as Xtendimax® and in combination with glyphosate as RoundUp Xtend® (pending

(Continued on page 3)

Understanding and Recognizing Synthetic Auxin Damage in Grapes

(Continued from page 2)

EPA approval) with VaporGrip® technology.

A third important family of auxin herbicides are the pyridine carboxylic acids. Compounds within this group include picloram and triclopyr which are used for brush control on right of ways or CRP land, or as additions to 2,4-D for enhanced broadleaf control in pastures. Products include Gazon®, Crossbow® and Garlon®; and while not known for volatile movement, much like dicamba, even very limited exposure to these chemicals can cause extensive injury to grapevines.

How Injury Occurs:

While injury caused by these hormone-like herbicides is the same in all broadleaf plants, the extent of injury or damage varies considerably from family to family with grapevines being among the very most sensitive. Immediately after exposure, grapevines begin showing toxic effects on new growth. The plant response is referred to as epinasty. Epinastic growth is the result of the upper portion of the tissue growing at a faster rate than the lower portion, resulting in a downward curving or “cupping” of the tissue. In grapes it is characterized as a twisting, curling and cupping of foliage that has not fully expanded. The primary response these herbicides induce is unregulated cell expansion. To further exacer-

bate the problem, these herbicides are readily translocated to the phloem which is responsible for the transport of sugars and other products of photosynthesis. This unregulated cell expansion in phloem tissue causes a collapse of the nutrient transport system within grapevines. A few days after exposure, shoot tips may abort, plants can develop leaf chlorosis and many shoots can begin to die back. New growth may exhibit severe shoot and petiole twisting, leaf cupping, stunting, curling, roughness, crinkling of the leaf surface, vein discoloration, and fingering of the leaf margins. Because photosynthate transport is shut down in portions of the plant, grapevines exposed to hormone-like herbicides cannot adequately ripen fruit, cannot move carbohydrate to storage vessels, and are consequently severely predisposed to winter injury. High exposure to these herbicides has been known to express itself for at least three seasons after the exposure event. Arguably, if vines are still expressing exposure symptoms, the fruit remains unusable because of the possible contamination of fruit with these herbicides. Because none of these herbicides are labeled for use in vineyards, EPA does not have food tolerances for these herbicides in grapes. Few wineries will take the risk of processing fruit from vineyards showing herbicide damage. Therefore, even reduced crops may be considered as complete crop losses due to contamination of the fruit.

While it is the case that from a physiological perspective all synthetic auxin herbicides likely work in a similar way to kill plants, the exact means by which they act varies somewhat from species to species. There are various auxin herbicides and they affect the different parts of the plant. This is why while symptoms from injury are somewhat similar, ultimately they result in broadly different outcomes. However, understanding these symptoms and being able to recognize the difference in visible injury is a valuable tool in knowing which herbicide is responsible for an observed injury. If you need to have your vines tested, knowing which family(ies) are the most likely culprit(s) will help in choosing a laboratory for testing and in choosing which tests to order. UC Davis has an extensive online gallery of herbicide injury. A link can be found on page 10 of this newsletter under Information of interest.



Classic Dicamba injury results in a halo of extreme chlorosis on severely cupped leaves.

kill is not well understood, and likely varies with some variability in the extent to which chemical/hormonal pathways within the plant are affected by these various herbicides may vary but the same outcome. This does not mean that the differences in symptoms holds no importance. Being able to recognize the difference in visible symptoms of various synthetic auxin herbicides which herbicide is responsible for an observed injury is a valuable tool in knowing which herbicide is responsible for an observed injury.

Being able to recognize the difference in visible injury is a valuable tool in knowing which herbicide is responsible for an observed injury. If you need to have your vines tested for exposure to a synthetic auxin,

Responding to herbicide drift injury

Preliminary Herbicide Drift Diagnosis (edited for Texas growers)

Kassim Al-Khatib, professor, University of California, Davis

Reprinted with the authors permission from the UC IPM website and edited slightly for Texas growers. This is an excellent step by step breakdown of how to initiate your investigation into herbicide drift damage to your vineyard.

Investigating herbicide drift cases should start when a grower observes unusual symptoms on their crops or observes nearby spraying during weather conditions that may cause drift. The following information should be collected to document herbicide drift incidents.

1. Look for symptom patterns in the field and document the severity of symptoms. Is there a symptom-intensity gradient across the field? Patterns of injury may help identify the source of the problem. The direction of herbicide drift can sometimes be determined by finding "drift shadows" by trees, buildings, or elevated roads. Anything that intercepts or deflects spray droplets can cause an area of undamaged plants on the downwind side of the object.
2. Check to see if other species, especially weeds, develop symptoms similar to symptoms on the species at issue.
3. If there is open ground or a crop between the damaged field and the sprayed field, check for herbicide symptoms on plants in that area. Draw a map or use GPS to locate injured plants in the field. It will be helpful if you record the date when injury symptoms were first observed in the field.
4. Report the description of injury symptoms and photograph typical symptoms of foliage, roots, and bio-indicator plants such as weeds. Continue to report and photograph symptoms through the growing season. Take a large number of quality photos including close-up photos. Record the date and location of each photo. Aerial photos may help to show the pattern and severity of herbicide damage.
5. Plant tissue and soil can be analyzed for herbicide residue. However, growers need to take several precautions when analyzing tissue or soil:
 - Select a reputable laboratory that is certified to conduct GLP (good laboratory practices) analysis. In addition, check the detection level for the procedure used to analyze herbicide residue; and select the laboratory with the most sensitive procedure. The detection level should be at a level below the concentration that causes biological effect. If you select a laboratory that has higher detection threshold levels, they may not detect any residue even though you may see injury symptoms.
 - Sample plant tissue or soil from areas where symptoms are intense. The depth of soil sample is im-

Responding to herbicide drift injury

portant for herbicide detection. Try not to sample too deep because it may dilute the herbicide residue. Plant tissue or soil samples should be packed in dry ice and sent to the lab immediately after sampling. Laboratories should analyze samples immediately.

- Chemical analysis is costly and may not provide a positive identification of some of the herbicides that damage plants because detection levels are not high enough. Some herbicides rapidly degrade in plants and soils and may be gone before the sample is taken and analyzed. Analytical procedures are specific to each herbicide and must be specified. Chemical analysis may determine the presence of herbicide residue but cannot determine the source of drift or any yield loss caused.

6. Try to create a timeline of the drift incident by investigating all events in the surrounding area. Drift is most likely from adjacent areas but also may occur from farther away. Try to determine the date and time of herbicide application, herbicide name and formulation, wind speed and direction, temperature during application, name of applicator, boom height, nozzle type, spray pressure, and gallons per acre.

7. Collect and record the crop and herbicide history of damaged fields to prove that damage is not due to your own spray.

8. If you intend to file a complaint, *contact (Texas) Department of Agriculture immediately after observing herbicide injury symptoms to file an official complaint and arrange for their visit to your field. If you intend to litigate, try to obtain legal advice at an early stage of the litigation. Consider securing an expert investigator/consultant with experience in providing expert witness to herbicide damage in vineyards. Do not wait for TDA to begin your own investigation or take your own plant samples.

*For consumable crops such as grapes estimating yield loss can be a complicated task. Keeping good records of tonnage from previous years is important for estimating loss as well as understanding how potential residual levels of herbicide in your fruit may affect marketability even when a crop is produced. When the herbicide in question is not labeled for use in grapes, no acceptable tolerance levels of the chemical in the fruit will have been established. This may make it necessary to destroy any consumable crop known to be contaminated with an off label herbicide resulting in a complete crop loss equivalency.

*Sections in green edited for Texas grape growers.

BE PROACTIVE

Don't wait for TDA or a regulatory agency to initiate an investigation. If you believe your vineyard has suffered herbicide drift injury, start collecting your own evidence immediately. Time is of the essence in detecting herbicide residuals in plant tissue, and symptoms change over time. Collect and submit plant samples and start taking photographs as soon as damage becomes apparent.

Responding to herbicide drift injury

Collecting and submitting samples for detection of herbicide residue *Jim Kamas*

A companion article in this newsletter outlines the steps growers should take to contact state regulatory agencies responsible for regulating pesticide applications. However, growers who have experience with injured vineyards commonly suggest a parallel course of action. Independent, private laboratories are established around the country that can test for residue in injured grapevine tissue as well as from weeds in and around the vineyard. Procedural recommendations from these laboratories are as follows:

- **Find and contact a pesticide testing lab to do business with.** A search engine query will come up with several established companies. Contact your local viticultural field agent or specialist for suggestions. When choosing a lab, ask about their detection levels in the plant(s) you will be submitting. Also be certain they are able to test for the exact herbicide that you believe your vines were exposed to. If you are uncertain and are not able to find out which chemical was used, choose a lab that will test for the greatest number of synthetic auxin herbicides. Additionally, choose the lab with the lowest detection levels. If financing permits, sending samples to multiple labs may help in building a stronger legal case.
- **Take samples immediately.** These herbicides begin to change and degrade within plants, so time is of the essence. With 2,4-D exposure, while vines may exhibit symptoms for several years, analysis of plant tissue a year or less from exposure commonly fails to confirm any presence of herbicides. Unless you know exactly which metabolite you are looking for, it may not show up.
- **Document everything.** Take several samples from various parts of the vineyard where contamination is suspected. Record and photograph the relative amounts of injury seen with each sample site. Continue to photograph any continuing symptoms on a regular basis as long as symptoms are present. A photographic timeline may be helpful.
- **Use laboratory gloves to take samples, and change them between each sampling site to reduce the possibility of cross-contamination.**
- **Refrigerate samples after collection and overnight to the lab doing the analysis.** Mailing with a cold pack may be beneficial. Contact the lab that you will be using for their specific recommendation.
- **Fully document chain of custody with your analytical lab.** Having a third party witness that can testify as to the date and location of the sampling is a good idea.

Samples commonly cost \$100 or more each, but considering the potential long-term injury, failure to fully document the extent of exposure may leave you without the evidence you may need in settling a legal dispute.

The best prevention and management of herbicide injury is maintaining strong relationships and communication

(Continued on page 7)

Responding to herbicide drift injury

(Continued from page 6)

with your neighbors. Human error can occur, but a positive relationship and open lines of communication may not only prevent herbicide damage from occurring but may make legal recourse unnecessary.

Also keep in mind, commercial applicators in Texas must be insured, so odds are that if legal action is required, it may not be against your neighbor or even the applicator directly. The legal fight may well be with the land owner or applicator's insurance company. It's rare for an individual to be completely unsympathetic to damage they have caused to someone else's property and in many cases land owners are not responsible for application mistakes, so maintaining a positive relationship with them is ultimately in everyone's best interest.

Filing an herbicide drift complaint with TDA

Justin Scheiner

Damage from herbicide drift is not something that any grape grower wants to think about, but it's a good idea to have a plan in case it happens to your vineyard. As discussed in Jim Kamas' article in this issue *Understanding and Recognizing Synthetic Auxin Damage in Grapes*, plants immediately begin to metabolize herbicides upon absorption, and herbicides begin to degrade so action should be taken without delay to preserve evidence. Likewise, if you intend to file a formal complaint with the Texas Department of Agriculture (TDA), it should be initiated soon after the damage is noticed while the evidence is most apparent.

The TDA employs just over twenty agriculture inspectors that are tasked with investigating complaints of herbicide drift or misuse. These are also the folks that inspect your spray records if you get audited. If you file a formal drift complaint, one of these inspectors will be assigned to investigate your case. The investigation will include a series of interviews, beginning with you, to determine if a violation occurred and who the perpetrator is.

Upon arriving at your property, the inspector will begin with checking your spray records to rule out the most obvious culprit, you. That means your pesticide pro-

gram had better be in compliance and your spray records better be up to date. There have been cases where growers that filed complaints ended up paying a fine for noncompliance. This is a good time to remind growers that it is a violation to use product brands not specifically labeled for use in grapes, even if the same formulation of the chemical is labeled for grapes under another brand name. Products not labeled for use on any crops on your farm have no place in your pesticide shed.

The inspector may photograph the damaged area of your vineyard and surrounding area. He or she may also collect samples for herbicide residue analysis. **This decision is made by the inspector, and is not required during an investigation.** The inspection may then proceed to neighboring properties. TDA does not estimate monetary losses that may have occurred, nor will they indicate suspected guilt until the investigation is finalized.

After the investigation is complete, a final report is written and will be available to you upon written request based on the Texas Public Information Act. You will receive a call from the inspector with the findings

(Continued on page 8)

Responding to herbicide drift injury

(Continued from page 7)

of his or her investigation and if a violation is documented, TDA may take one of the following actions: issue a warning; assess an administrative penalty; suspend, modify or revoke a license; or refer the case to another appropriate state or federal agency, county attorney, district attorney or Texas attorney general for further action. In addition to TDA's investigation and actions, you may conduct a separate, independent investigation, and regardless of the TDA's findings, you

may pursue civil action. **In order to recover losses a civil action is required as TDA does NOT recover losses for injured land owners.** We always recommend that a written request via the TPIA of the report be requested in order to eliminate any communication errors between you the grower and TDA when discussing the report. It is also possible the report may contain information not discussed in conversation that will either assist in your case, or aid in preventing problems in the future.

How to File a Complaint

To file a complaint with TDA, you can either call your local TDA office or the state office in Austin (1-800-TELL-TDA). Keep in mind that once a complaint is filed, it cannot be withdrawn without an investigation. Confidential complaints may be filed, but TDA does not guarantee that confidentiality can be maintained through process. After initiating a complaint, the TDA inspector assigned to your case will contact you by phone or mail to initiate a report.

According to TDA, the inspector's report will contain:

1. **the name of the person allegedly responsible for the application of the pesticide, if known;**
2. **the name of the owner or lessee of the land or structure on which the application was made, if known;**
3. **the name of the owner or lessee of the land or structure to which adverse effects are alleged to have occurred, if known**
4. **the facts of the allegations set forth in detail signed by the complaining party.**

If you have the unfortunate circumstance of herbicide drift and you decide that is worthwhile to file a formal complaint with TDA and/or conduct an independent investigation, don't wait until it's too late to collect evidence. Know what the symptoms and signs of herbicide injury look like and be prepared to act. If you have questions regarding herbicide injury contact your viticulture specialist for assistance.

For more information about filing a complaint with TDA visit:

texasagriculture.gov/RegulatoryPrograms/Pesticides/AgriculturalApplicators/AgPesticideComplaintInvestigationProcedures.aspx

Preventing Herbicide Drift Injury

Preventing herbicide drift from the “other side of the fence”

Jacy Lewis

It is common that growers may feel powerless when it comes to preventing herbicide drift into their vineyards, however there are actually a number of ways that winegrape growers can be proactive in protecting their vineyards from the effects of herbicide drift.

First and foremost start with your own pesticide program. This not only means in your vineyard but also on any property that you own surrounding your vineyard including your home, winery, or adjacent crops. Be certain that everyone who may care for any of these areas understands that there is a zero use policy for all synthetic auxin herbicides. This includes lawn and garden maintenance contractors. It is your responsibility to educate everyone working on your property about the dangers these synthetic auxin herbicides pose to your vineyard. It is surprising how many vineyards have experienced injury when the target plants were weeds on their own property, often applied by well meaning grounds keepers. This is the type of non-target injury that you have complete control over.

Another way to avoid injury is by networking and building relationships with anyone in your area who may be applying herbicides or interacts with individuals who do. If you have homes nearby, get to know your neighbors and let them know how dangerous these chemicals are for your vineyard. Because many homeowners are not fully aware of the nature of the herbicides they use in their lawn, provide them with a list of chemical and brand names to watch out for.

Contact your county commissioner or city and be certain they know that use of these chemicals in right of ways pose a serious threat to your vineyard operation, even when used according to label instructions. If you see someone spraying near your vineyard, don't be afraid to politely ask them what they are spraying, if injury occurs this will arm you with needed information

and they may even be willing to stop.

Get to know the chemical salesmen in your area. Be certain they are educated on the dangers these chemicals pose to your operation and ask them to please help you by educating buyers about these dangers as well. Having a congenial relationship with these salesmen can go a long way towards making them partners with you in educating consumers. Particularly in areas where winegrapes are not an established crop, many chemical applicators continue to be unaware of this danger and unaware that there are vineyards in their area.

Additionally, get to know the commercial applicators operating in your area. This includes landscape contractors as well as aerial applicators. Let them know the location of your vineyard as well as the damage that can be done to it from inadvertent drift. Be certain they are educated with regard to the volatility of some compounds and the distances from which they can pose a threat under certain weather conditions.

Finally, two new programs in Texas are designed to work in conjunction with one another to assist applicators in protecting non-target crops from accidental

Red Flags are used to indicate highly sensitive crops like grapes.



Photo, courtesy of U. Missouri Extension

(Continued on page 10)

Preventing Herbicide Drift Injury

(Continued from page 9)

drift. Flag the technology uses a system of colored flags to help applicators to visualize both resistant and susceptible crops both from the road and from above.

Red flags are used to signify Extreme Caution ; conventional varieties with no herbicidal resistance as well as apiaries, orchards, vineyards, vegetable fields, and organic crops. We recommend that as a precaution all growers participate in this system by marking their vineyards with these flags.

In conjunction with the Flag the technology program, the Hit the Target program that is replacing the Texas Crop Registry allows growers to register their sensitive crop acreages to be included in maps available to applicators. This program was advertised to go into effect

April 15th of this year, however Ray Smith, TPPA chairman informed us that it is awaiting some approvals and will be live by May 1st.

The app can be found under the title “Flag the Technology” in your app store. It is available for both Iphone and Android devices



While some growers are questioning the utility of the program, we feel it is important for growers to be proactive in taking all possible cautionary measures to protect their vineyards. Doing so might not only prevent accidental drift injury to your vineyards but may be important in showing regulators and courts that a grower has taken all possible protective action should an incident occur.

on

Information of Interest

Resources and Information

Herbicide Drift and the Law

[Pesticide Drift Liability \(Part 1\): Potential Legal Theories](#)

agrillife.org/texasaglaw/2016/05/09/pesticide-drift-liability-part-1-potential-legal-theories/

[Pesticide Drift Liability \(Part 2\): Landowner Liability for Independent Contractor](#)

agrillife.org/texasaglaw/2016/05/16/pesticide-drift-liability-part-2-landowner-liability-independent-contractor/

[Pesticide Drift Liability \(Part 3\): Practical Advice for Farmers & Ranchers Using Pesticides](#)

agrillife.org/texasaglaw/2016/05/23/pesticide-drift-liability-part-3-practical-advice-farmers-ranchers-using-pesticides/

[What can I do to stop my neighbor from spraying my property?](#)

agrillife.org/texasaglaw/2017/04/10/questions-tiffanys-desk-can-stop-neighbor-spraying-property/

Understanding the new resistant crop systems

[Enlist Crop Systems®](#)

<http://www.enlist.com/en/how-it-works/enlist-traits>

[Xtend Crop Systems®](#)

<https://www.roundupreadyxtend.com/About/Chemistry/Pages/default.aspx>

Recognizing symptoms of synthetic auxin injury in grapes

[Online Gallery of Herbicide Injury:](#) herbicidesymptoms.ipm.ucanr.edu/index.cfm

Preventing Herbicide Drift Injury

[Flag the technology program](#)

agrillifecdn.tamu.edu/coastalbend/files/2016/06/Flag-the-Technology-with-maroon-042016.pdf

[Flag the technology app for Android](#)

[Flag the technology app for iPhone](#)

Information of Interest

Advanced Grape Grower Workshop

1:00 pm June 19th through 5:00 pm June 20th

Hill Country University Center, Fredericksburg, TX

Monday:

Controlling Fungal Diseases of Fruit & Foliage- Jim Kamas ♠

Sustainable Vineyard Floor Management- Justin Scheiner ♠

Break

Managing Acidity in the Vineyard & the Winery- Andrea Botezatu

Nitrogen Fertilization: Materials, Rates & Timing- Larry Stein

Strategies in Frost Protection- Monte Nesbitt

Evening BYOB Supper at Local Winery

Tuesday:

Mechanization of Vineyard Tasks- Justin Scheiner

Post-Harvest Handling for Optimal Fruit Quality- Andrea Botezatu

Break

Managing Grapevine Fungal Trunk Diseases- Dave Appel ♠

Making Sense of the Glyphosate Controversy- Monte Nesbitt ♠

Catered Lunch

Dealing With Sodic Water & Soils- Larry Stein

Virus Status of the Texas Grape Industry- Sheila McBride ♠

Break

Grower Panel Discussion on Variety Performance in Texas

Integrated Canopy Management- Jim Kamas

Final Questions & Wrap Up

♠ Eligible for Pesticide Applicator CEUs

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 found this special supplement to our regular newsletter both useful and informative. Our goal continues to be to provide timely information on topics of relevance to Texas winegrape growers. In service to the winegrape community we work to provide unbiased, science based information on important topics, and provide 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

fmponsasch@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

Photos courtesy of Texas A&M AgriLife Extension

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

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.

A member of the Texas A&M University System and its statewide Agriculture Program