Nueces Agriculture

"IMPROVING FOOD & FIBER PRODUCTION"

Volume 12, Issue 3 *May 2019*

Inside this Issue:

TEXAS A&M AGRILIFE EXTENSION

Find us on Facebook at @NuecesCountyAgriculture

The past month has been a challenging time for cotton plants and cotton farmers in Nueces County. We have seen successful cotton stands established only to be met with rains followed by blowing winds. As a result, blowing sand caused significant damage to many acres of young cotton across the county, while growers were running rotary hoes across fields as quickly as possible to prevent blowing sand, an estimated 20 – 30% of our cotton acres were plowed out and replanted. In some cases a third planting was even necessary and growers are still struggling with wind blowing issues in these later planted fields. However, rainfall has been beneficial to our corn and sorghum crops which are both in exceptional condition across the county. The majority of the county corn crop has begun to tassel. Wheat is being harvested and good yields are being reported on the small amount of wheat acres we have in the county. Pastures are in good condition and responding to the ample rainfall and warming weather.

PRIVATE APPLICATOR TRAINING

When: Tuesdays - 6/4, 9/3, 12/3 **Pre-Registration Required……(361)767-5223**

Time …..……8:00 am—11:30 am **Where..……..…A&M AgriLife Ext. Office, 710 E. Main, Robstown, TX**

Fee: $50.00 (Includes study manuals)

A Private Applicator is defined by law as a person who uses or supervises the use of a restricted-use or state-limited use pesticide for the purpose of producing an agricultural commodity.

FARM WORKER PROTECTION SAFETY TRAINING

When…….7/12, 12/6 **Time ……..…….9:00 –11:00 am**

Where …….. Texas A&M AgriLife Extension Office

Pesticide handlers and workers must be trained every year unless they are certified applicators. All participants in this training will be issued cards verifying they have successfully completed the required training and given a copy of the sign-in roster for their employer's files.

MAY
23

SPRING RANCH MANAGEMENT FIELD DAY

JOHNNY S. CALDERON BUILDING - 710 E. MAIN, ROBSTOWN

8am - 2pm

In addition to touring several Nueces County operations, this program will provide ranch managers updates on internal and external parasite control options, feral hog abatement, brush management strategies, NRCS cost share programs, and pasture management techniques. There will be 3 CEUs provided to those in attendance. Cost of participation is $25.

PLEASE REGISTER AT: HTTP://BIT.LY/2019SRMFD OR BY CALLING 361.767.5223.

Adjuvants: Why are Adjuvants Important and What is the Difference Between Adjuvants?

by Jourdan M. Bell, Agronomist, Texas A&M AgriLife Research and Extension – Amarillo
Peter Dotray, Weed Scientist, Texas A&M AgriLife Research and Extension Service – Lubbock
James Grichar, Senior Research Scientist, Texas A&M AgriLife – Corpus Christi

Adjuvants are products used to enhance herbicide activity. They act as an herbicide activator or stabilizer by modifying the physical properties of spray solutions. There are numerous adjuvants on the market including nonionic surfactants, crop oil concentrates, methylated seed oils, buffering agents, antifoam agents, drift control agents, and fertilizers; consequently, there are often questions about adjuvant importance and interchangeability. Knowledge of adjuvant activation can help with proper adjuvant selection. There are three primary adjuvant categories: surfactants, oil based adjuvants, and spray utility agents.

Surfactants

Surfactants (spreaders, stickers, emulsifiers, wetting agents) increase surface contact, reduce runoff, and increase leaf penetration. Surfactants are activator agents that enhance herbicide performance.

• Nonionic surfactants (NIS) are water soluble chemical and lipid compounds that are not molecularly charged (positive or negative). Surfactants reduce the surface tension of the water molecule enabling the water droplet to cover a greater leaf surface area; essentially the water droplet spreads out across a larger area. Typical recommendations are 1–2 pints per 100 gallons of spray solution or 0.25 to 0.5% volume per volume (v/v). Although at higher than labeled rates, crop injury can occur with a NIS, NIS typically causes less injury than other adjuvants. NIS are often referred to as wetting agents or spreading agents. NIS are commonly used under "average" growing conditions.

• Anionic surfactants are binding agents that form a negative ion (anion) when placed in water to enhance foaming and spreading. If the sprayer has an agitator, too much foam can be created causing application issues.

• Cationic surfactants are binding agents that form a positive ion (cation) when placed in water. Cationic surfactants are used in cleaning compounds and NOT labeled for crop use. For this reason, be careful about using soaps as an adjuvant.

Producers often ask, "can I use kitchen dishwashing detergent (dish soap) as a surfactant?" Dishwashing detergent contains both nonionic and anionic surfactants, and depending on the concentration, there can be antagonism between the two surfactants and the herbicide resulting in crop injury and/or a reduction in efficacy. Dishwashing detergents are not labeled for crop use, so the producer will not be protected if injury occurs. Dishwashing detergent also may leave a residue on the leaf surface.

Oil Based Adjuvants

There are three categories of oil based adjuvants: crop oil concentrates, crop oil, and vegetable oil. Oil based adjuvants slow the drying of the herbicide droplet on the leaf surface, which increases the potential for herbicide absorption. Oil based adjuvants also can improve penetration into the leaf by modifying (solubilizing) leaf surface waxes. These oil based adjuvants can cause injury (leaf burn) if applied with a herbicide under less than ideal moisture conditions.

• Crop oil concentrates (COCs) are primarily composed of emulsifiable petroleum-based oil (83 to 85%) and a small percentage of a nonionic surfactant. Typical recommendations are 1–2 quarts per 100 gallons (or 1 to 2.5% v/v). COCs are often known as penetrating agents.
• Vegetable oil concentrates (VOCs) are primarily a crop oil such as cotton, linseed or soybean oil and a small percentage of a non-ionic surfactant. Methylated seed oils (MSOs) are vegetable oils that have been modified through a process of esterification. MSOs are typically recommended at 0.25 to 1.0% v/v of spray solution.
• Crop Oils are not vegetable based. They are more than 95 percent paraffin or naptha-based petroleum oil with 1 to 2 percent nonionic surfactant. Basic crop oils are not commonly used with herbicides.

Spray Utility Agents

Spray utility agents are adjuvants that may change the physical characteristics of the spray solution. Spray utility agents include buffering agents, antifoam agents, and drift control agents.
• Buffering agents are used to lower the spray solution pH to stabilize herbicide activity. Most pesticide activity is enhanced when the pH of the spray solution is between 4.0 and 6.5. With the exception of sulfonylurea herbicides, pesticide activity is less stable at a pH of 7.0 or greater. Sulfonylurea herbicides perform better in more neutral and basic spray solutions with a pH greater than 7.0
Drift control agents (DRAs) are adjuvants labeled to minimize drift by increasing droplet size and reducing driftable fines (droplet sizes <150 microns) by increasing the viscosity of the solution. DRAs are often made of vegetable oils, polyacrylamide, polyethylene, and polysaccharides. If drift control agents are applied at higher than labeled rates, DRAs can clog spray nozzles or even result in reduced coverage because droplets are too large resulting in poor coverage. A poor spray pattern may also occur when using DRAs with extremely coarse/ultra coarse nozzles because of the increased droplet size. Increasing spray pressure within the nozzle manufacturer guidelines may be needed to ensure an effective spray pattern.
Nitrogen fertilizers can also be used as adjuvants. Herbicides absorption can improve with the use of common nitrogen sources such as urea ammonium nitrate (UAN) or ammonium sulfate (AMS). Fertilizers are usually recommended at 1–2 qt or 1–2 lb per acre. AMS is a humectant. Humectants are water-soluble adjuvants that slow the rate of herbicide drying and allow for enhanced absorption. The normal AMS rate is 17.4 lb per 100 gallons of water. There are restrictions to NOT add AMS in tank mix with the new dicamba formulations (Engenia®, Xtendimax® With VaporGrip® Technology, or FeXapan® herbicide Plus VaporGrip® Technology) for use in dicamba-tolerant (XtendFlex) cotton.
Some herbicides should not be used with adjuvants because of the risk of enhancing herbicide uptake and crop injury. Other herbicides may require only one adjuvant or a combination of several adjuvants. It is important to read the label and confirm the appropriate adjuvant for the herbicide spray solution. Unless noted on the label, recommended adjuvants should not be substituted with other non-recommended adjuvants. With certain herbicides, one adjuvant may work better than another adjuvant or one adjuvant may be more phytotoxic resulting in greater leaf injury than another to the crop. On hot and humid days, crop oil concentrates have been known to cause more crop damage than nonionic surfactants. On the other hand, some herbicide labels may suggest to use crop oil concentrates in the semi-arid west Texas environment. While fertilizers have been known to enhance herbicide activity, fertilizers should only be used according to the label. As with dicamba, fertilizers can also enhance the volatility of specific herbicides. Some DRAs are required when tank mixing certain herbicides with Engenia®, Xtendimax® With VaporGrip® Technology, or FeXapan® herbicide Plus Vapor Grip® Technology. It is always advised to consult the label and/or product websites before using any adjuvant.

As Hurricane Season Looms, AgriLife Extension Offers Preparedness Instruction

COLLEGE STATION – This year, National Hurricane Preparedness Week is May 5-11, and the Texas A&M AgriLife Extension Service is urging Texans to prepare homes, businesses, farms and ranches for a hurricane or other disaster.

“Hurricane season in the Atlantic and the Caribbean begins around June 1 and typically lasts through Nov. 30,” said Dr. Monty Dozier, AgriLife Extension special assistant for Rebuild Texas, College Station. “It’s nearly impossible to know if a hurricane is approaching any sooner than five to seven days out, so it’s vital that people, especially those in coastal areas, take the time to prepare well in advance.”

Dozier said Texans can begin to prepare for a hurricane by following the advice provided in disaster and emergency preparedness publications available through the Texas Extension Disaster Education Network website, Texas EDEN, at http://texashelp.tamu.edu. Additional information on disaster preparation is available through the Texas A&M AgriLife Extension Bookstore at https://www.agrilifebookstore.org/.

“There are also e-book format downloads available for mobile devices,” he said.

Dozier said one of these publications, “Texans, Get Ready! Be Prepared to Survive a Disaster,” explains how to protect a household during and immediately after a catastrophe by developing and practicing a family emergency plan along with preparing disaster kits for the home, office and each vehicle.

“These kits should contain enough supplies to last a family at least three days,” he said.

Dozier said kit contents include bottled water, non-perishable foods, a hand-operated can opener, mouth/nose protection masks, extra clothing, a first-aid kit, gloves, blankets, toiletries, battery- or hand-powered flashlight, weather radio, spare batteries, garbage bags, medications and anti-bacterial cleaners or wipes.

“It’s also a good idea to prepare a grab-and-go box containing important documents and financial records in the event of an emergency situation,” he added. “The AgriLife Extension publication ‘Personal and Family Financial Records Inventory,’ which is available on the Bookstore website, provides guidance on how to consolidate personal and family financial information.

“There are many steps people can take to prepare for a disaster or emergency, and our AgriLife Extension publications offer some practical and useful guidance on how to prepare,” Dozier said. “We hope Texans and others will make the most of National Hurricane Preparedness Week and use this time to ready themselves and their families.

Developing Resistance to Bt Genes in Cotton Bollworm

by John L. Few IV, IPM Agent in Southern Blacklands and Dr. David Kerns, Extension Entomologist in College Station

Cotton and corn are major cash crops in Texas with a market value of over 3 million dollars combined in 2016. With this much money at stake, producers are looking for methods to ensure their crops will be successful. Cotton bollworm (*Helicoverpa zea*) is a major pest in cotton and cause sever yield losses. In corn, corn earworm (same insect as cotton bollworm) can occasionally cause significant direct yield from feeding, but most often causing losses by providing an entry point for mycotoxins. One of the most popular methods of controlling cotton bollworm/corn earworm is the use of transgenic Bt technologies. Over the years cotton Bt technologies have evolved from single toxin event to multiple pyramided toxins (Table 1), each with different insecticidal genes expressed as a mean to control caterpillar pest. Dual and multi-gene Bt cottons were developed to prevent resistance and expand pest spectrum activity. Because of the overlap between Bt cotton and Bt corn traits, there is great concern regarding selection for Bt resistance in bollworm/earworm.

Cry1Ac (Bollgard) has always been a weak toxin to bollworm, and Cry1F is even less effective. The inclusion of the Cry2 toxins had greatly increased the effectiveness to bollworm. However recently this pest has developed a resistance to almost every strain of Bt currently in the market. Research conducted at Texas A&M University has shown wide-spread bollworm/earworm resistance to all cotton and corn Bt technologies except for those expressing Vip3A (Table 2). Because of the high frequency of resistance to the Cry toxins, there is a great deal of resistance selection pressure being placed on the Vip3A toxin.

Although there are no corn earworm management strategies to mitigate injury in field corn, cotton should be scouted and treated with insecticides as needed. Recently, action thresholds have been changed in cotton to reflect problems associated with Bt resistance (Table 3).

Insecticides that have proven effective for bollworm control in cotton include: Prevathon, Besiege and Blackhawk. Pyrethroids may be effective at times, but in 2018, bollworm resistance to pyrethroids was widespread throughout most of Texas. Additionally, pyrethroids are noted for flaring secondary pests such as aphids and mites. Among Prevathon, Besiege and Blackhawk, Prevathon and Besiege are most commonly used because they offer longer residual control than Blackhawk. Blackhawk will generally provide about 5-7 days control, whereas Prevathon and Besiege will offer 14-21 days of activity depending on the rate. Prevathon and Besiege share a main active ingredient, chlorantraniliprole. Besiege is more concentrated and also contains a pyrethroid. As a rule of thumb, each fl-oz/ac of Prevathon will provide about 1 days activity, whereas Besiege will provide 1 days activity per 0.5 fl-oz/ac. Suggested rates for Prevathon range from 14-21 fl-oz/ac and for Besiege 7.2-10 fl-oz/ac. Where long-residual control is needed, Prevathon should be applied at 19-21 fl-oz/ac, and Besige at 10 fl-oz/ac. If Blackhawk is utilized the suggested rate is 3 oz/ac. In summary, we know that we have to be smarter and more strategic with our pest management practices. Vip3A is the only Bt technology that is consistently effective at controlling cotton bollworm. But bear in mind that other pests such as tobacco budworm, beet armyworm and fall armyworm are still susceptible to all current Bt technologies.

Resistance to Bts had resulted in unexpected injury events in both cotton and corn. Unexpected injury can occur in any cotton technology but is very common in WideStrike, fairly common in Bollgard 2 and TwinLink, and rare in WideStrike 3, Bollgard 3 and TwinLink Plus. Unexpected injury is common in all non-Vip3A corn hybrids, but injury may occur in Vip3A corn hybrids.

Table 1. Past and current Bt cotton technologies

Company	1st generation (single gene)	2nd generation (dual gene)	3rd generation (multi-gene)	3rd generation (2017)
Monsanto/Bayer	Bollgard (Cry1Ac)	Bollgard 2 (Cry1Ac+Cry2A		Bollgard 3 (Cry1Ac+Cry2Ab+Vip
Dow/Corteva		WideStrike (Cry1Ac+Cry1F	WideStrike 3 (Cry1Ac+Cry1F+Vip	
Bayer/BASF		TwinLink (Cry1Ab+Cry2Ae)		TwinLink Plus (Cry1Ab+Cry2Ae+Vip
Homogeny across crops				
Crop	Cry1A	Cry1F	Cry2	Vip3A
Cotton	Cry1Ac, Cry1Ab	Cry1F	Cry2Ab, Cry2Ae	Vip3A
Corn	Cry1Ab	Cry1F	Cry2Ab2	Vip3A
	Cry1A.105 (Cry1Ab, Cry1Ac,			
Both crops	Cry1As, Cry1F, Cry2As and Vip3A			

Table 2. Percentage of populations expressing resistance ratios exceeding 10X

2016[1]		2017		2018	
Cry1Ac	40%	Cry1Ac	100%	Cry1Ac	90.09%
Cry2Ab2	80%	Cry2Ab2	76.92%	Cry2Ab2	67.65%
Cry1F	ND	Cry1F[2]	28.5-100%	Cry1F	100%
Vip3A	0%	Vip3A	0%	Vip3A	0%

[1]Small sample size from the Mid-South; Bad Cry1F toxin

[2]RRs were >5.4 or >10.9, depending on highest concentration tested. Data suggests "true" resistance ratios likely all exceeded 10X for all populations

Table 3. Current action threshold recommendations for Bt cotton in Texas

Areas where Bt resistance and injury has been a problem		
Dual gene Bt cotton	WideStrike, Bollgard 2, TwinLink	Treat when 20% of plants have bollworm eggs
Multi gene Bt cotton	Widestrike 3, Bollgard 3, TwinLink Plus	Treat when 6% of squares or bolls have injury and worms are present
Areas where Bt resistance and injury has not been a problem		
All Bt cotton	WideStrike, Bollgard, TwinLink, WideStrike 3, Bollgard 3, TwinLink Plus	Treat when 6% of squares or bolls have injury and worms are present

.

TEXAS A&M AGRILIFE EXTENSION

The WILDLIFE FACT CHECK Series

Johnny Calderon Building
710 E. Main Street, Robstown

June 7:	On the Radar: Understanding How to Manage Invasive Species
June 28:	Are All Exotics Invasive? Understanding Why Non-native Wildlife Have the Edge
July 12:	Are all Invasives Exotic? Understanding Why Some Wildlife Populations Can Become Too Large
August 2:	Landowner Liability and Leases: Understanding Landowner Rights and Lease Laws

Schedule for ALL Programs: 11:30 - Noon Registration
Noon-1:30 Program and Lunch

Cost: $60 per person for all sessions or $20 per person per session including lunch.

Please register at http://bit.ly/2019WFCS or contact Lisa at 361.767.5223

Cotton Aphids

Because of the boll weevils found late last season in a few Nueces County fields; the Boll Weevil Eradication Program has responded with increased trapping densities around those fields. As a secondary measure these fields are also receiving treatments of malathion at pinhead square. While these steps are critical in maintaining the ground gained in the eradication program over many years, growers are encouraged to scout fields and be aware of the potential for aphids to flare up in some of these fields. The following are excerpts from "Cotton Aphids" Extension publication number ENTO-074.

Secondary pests, such as aphids, become a serious problem when broad-spectrum insecticides targeted at primary pests disrupt natural control. The resulting larger aphid populations damage cotton by sucking sap from plants, stunting plant growth and yield, and fouling leaves and bolls with honeydew—all of which translates into economic loss for cotton producers.

Aphid populations tend to be larger in clean-till or conventional-till production systems compared to crops planted into small grains or sorghum residue. The planting date can greatly influence the risk of developing abundant aphids. In general, higher aphid numbers tend to develop in late-planted cotton than in early plantings.

A uniform stand can also play a role. Aphids are likely to be more prevalent in "skippy" stands or cotton planted in a skip row pattern.

Avoid excessive nitrogen. Nitrogen compounds are the staple of aphid nutrition; too much nitrogen makes the cotton a more nutritionally suitable host, and the aphids thrive in greater numbers.

Aphids reproduce prolifically. Those found in cotton reproduce asexually, giving birth to live young without mating. One female may produce as many as 80 young females that mature within 8 to 10 days. Under optimum conditions, new generations can occur as often as every 5 to 7 days.

While scouting cotton fields, randomly check several upper, middle, and lower leaves across the field. Because the aphids reproduce so rapidly, once you detect cotton aphids, scout fields twice a week.

To determine the infestation level, sample a total of 60 leaves divided between the top, middle, and lower portion of the plants across the field.
*Count the number of live aphids (do not count cast skins), mummies, and fungus-killed aphids on each leaf.
*Calculate the average number of live aphids per leaf, and the percentage killed by either the wasps or fungi.
*If aphid numbers are approaching threshold, also estimate the number of lady beetles.
*Once the aphid numbers are near threshold, scout again in 48 hours to determine whether the aphid population is declining.

Aphids in pre-blooming cotton, from emergence to first bloom, rarely develop to economically damaging levels, and many insecticidal seed treatments can affect aphids for up to 30 days after planting. Until bloom stage, consider light aphid populations as an important food source for natural enemies such as lady beetles and parasitoids, allowing those populations to build. Avoid insecticide treatments for aphids in pre-blooming cotton unless you have very high aphid populations. The insecticides you use for early season pests (thrips and cotton fleahoppers) can influence both aphid and natural enemy populations. Select an insecticide that controls the pest you are targeting but has the least detrimental impact on natural enemies.

Mid season, use the action threshold and natural enemy considerations to determine the need for an insecticide application. Adhering to the threshold lets parasitoids and predaceous insects, such as lady beetles, control the aphid populations and you might not need to use insecticides.

When maturing grain sorghum or corn fields are nearby, natural enemies often move into cotton where aphid populations are increasing. If the number of mummies or fungus-killed aphids is 20 percent of the total aphid population (live and dead aphids), or if the lady beetle population reaches 0.3 adults or 0.2 larvae per 1 row-foot, then an insecticide application may be unnecessary.

Consider alternatives to pyrethroids for managing pests such as bollworms and lygus bugs when aphids are present. Pyrethroids can flare aphid populations. Avoid using excessively low rates of aphicides and concentrate on providing good treatment coverage.

Cotton aphid infestations develop on the undersides of leaves throughout the plant canopy. Thorough top-to-bottom coverage through increased spray volume and nozzle selection is important. Use drops on ground application equipment, a minimum of 10 gallons total spray volume per acre for ground equipment, and 5 gallons per acre by air. Some aphicides perform better when you apply them with crop oil concentrate, but others may perform worse. Carefully follow the product label suggestions.

Cotton aphids are known for developing resistance to insecticides. Repeated use of the same insecticide chemistry can reduce aphid response to similar insecticides used later in the season. Avoid exposing an aphid population to multiple applications of the same class of insecticide, regardless of the initial target pest. For example, if you treat for cotton fleahoppers with an organophoshate insecticide and aphids are present in the field, and 2 weeks later you need to treat for aphids, avoid using an organophosphate; choose an alternative chemistry.

The suggested Aphid Action Threshold prior to first cracked boll is 40–70 aphids per leaf. After first cracked boll it is 10 aphids per leaf, where rainfall of at least 1/4" is not likely to wash honeydew from the lint. Higher the yield potential (>1000 lbs lint/acre), lower the threshold.


06 . 05 . 2019 | 8AM - 3PM
TEXAS A&M AGRILIFE EXTENSION
Agricultural Demonstration and Applied Research Project
NUECES CO. CROP TOUR
3 CEUS PROVIDED
AGRILIFE RESEARCH AND EXTENSION CENTER, 10345 HWY 44, CORPUS CHRISTI

Nueces County
710 E. Main St., Ste. 1
Robstown, TX 78380

Visit us online!
http://nueces.agrilife.org/

Jason P. Ott, CEA
Ag/Natural Resources
710 E. Main St., Suite 1
Robstown, TX 78380
Ph: 361.767.5223
Fax: 361.767.5248
Email: j-ott@tamu.edu

In the event of a name, address or phone number change please contact the office at:
Texas A&M AgriLife Extension Service
710 E. Main, Suite 1 Attn: Ag/NR
Robstown, Texas 78380
(361) 767-5223