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NOBLE NEWS & VIEWS

PRODUCER RELATIONS

DIRECTION OVER PERFECTION



by Jeff Goodwin, senior pasture and range consultant | djgoodwin@noble.org; Jim Johnson, senior soils and crops consultant | jjjohnson@noble.org; Hugh Aljoe, director of producer relations | hidaljoe@noble.org

In today's agricultural climate of fluctuating markets, erratic weather patterns and growing social restlessness, the resolve of the American farmer and rancher has never been more tested. As stewards of the nation's private working lands, many progressive producers are working to mitigate those uncertainties by refocusing efforts on the foundational building block of their operation: the soil resource. For most agricultural enterprises, success and long-term viability ultimately hinges on soil health. For decades, the agriculture industry has focused, studied and ultimately understood the physical and chemical characteristics of our soil

NOBLE RESEARCH INSTITUTE IS POISED TO DELIVER PRODUCER-FOCUSED SOLUTIONS IN THE AREA OF REGENERATIVE AGRICULTURE.

resource. However until recently, little emphasis has been placed on the biological constituents and their importance in a healthy, functional soil. As researchers work to better understand the complexities of soil health, further understanding tends to lead to more questions. Noble Research Institute has recently focused efforts to gain critical insight into these soil health questions and help producers understand their impacts. Today, Noble Research Institute is poised to deliver producer-focused solutions in the area of regenerative agriculture.

Story continues on next page

WHAT IS REGENERATIVE AGRICULTURE?

To us, regenerative agriculture is the process of restoring degraded soils using practices based on ecological principles. Regenerative agriculture promotes:



Building soil organic matter and biodiversity.



Healthier and more productive soil that is drought- and flood-resilient.



Decreased use of chemical inputs and subsequent pollution.



Cleaner air and water.



Enhanced wildlife habitat.



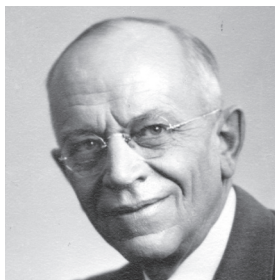
Capturing carbon in the soil to combat climate change.

REGENERATING THE LAND IS ACHIEVABLE, BUT THERE IS NO SET FORMULA. REGENERATIVE AGRICULTURE IS A PROCESS OR A JOURNEY, NOT A DESTINATION.

Foundationally, it begins with an understanding that the soil, plants, animals and humans are all connected, meaning every decision must work with this natural system and not in spite of it. Regenerative agriculture requires more focus on the positive direction of ecological trend rather than a perfected set of standardized rewards.

PRINCIPLES, NOT PRACTICES

Regeneration is addressed by following principles that rebuild processes from the ground up rather than focusing on specific singular management practices. Maintaining a solid foundation with healthy soil is the cornerstone to any agricultural enterprise. Soil health is the cornerstone of regenerative agriculture and is often defined as, “the continued capacity of the soil to function as a vital, living ecosystem that sustains plants, animals and humans.” We often think of “soil health management” as a new strategy but it’s actually not. For instance, in 1949, Aldo Leopold in *A Sand County Almanac* stated, “Land, then, is not merely soil; it is a fountain of energy flowing through a circuit of soils, plants and animals.” Healthy soils with effective nutrient and hydrologic cycles were functioning well before man decided



**“LAND, THEN, IS NOT MERELY SOIL;
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ALDO LEOPOLD, 1949 SAND COUNTY ALMANAC**

to manage them. However, agriculture in the early 1900s tended to focus more on plowing up the prairie soils with industrial technology and machinery rather than its ecology, thus soils were largely viewed as a medium to grow crops. For some, the Dust Bowl of the 1930s changed the perception or view of the soil. Fast forward to now and a lot has changed in how we “view” the soil. What has not changed is our responsibility as land stewards.

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REDUCING FEED, INORGANIC FERTILIZER AND FUEL OUT OF NECESSITY

For more than a decade, a regenerative movement has been taking the agriculture industry by storm. However, this movement was not born in a laboratory nor was it born by legislation. It was born by farmers and ranchers who wanted to do things differently. Sixty years ago, the agricultural industry was operating on cheap feed, cheap fertilizer and cheap fuel. During that time period, our industry and our science, focused on the chemical and physical characteristics of soils with little to no consideration of soil biological interactions. During this period, the prices of inputs eventually increased to the point at which they became unsustainable for many operations. Some farmers had to make a choice: continue doing what we have always done or find new ways to farm. Born out of equal parts necessity and frustration, some farmers began to experiment with farming techniques that limited the use of feed, inorganic fertilizer and fuel. They began to see that limiting or eliminating tillage reduced their fuel bill and using an ageless practice of “cover crops” began to keep the ground covered and provided numerous benefits to the soil. In essence, they were building a foundation of principles that we follow today in managing healthy soils.

KNOW YOUR FARM OR RANCH

When applying these principles, it is important to also operate within your context. Know your environment and understand that no two farms or ranches are the same. The same could be said for ecological regions and major land resource areas. These principles should be applied within the context of each individual farm or ranch. Practices that provide positive results in North Dakota may not be the same combination of practices that are effective in Oklahoma. The aforementioned principles should be applied as strategies to guide the application of individual management practices. The practices (no-till, cover crops, etc.) are simply tools used to implement the principles.

LOOKING FOR TOOLS

We begin to implement these principles into our operating plans, we look for tools to help us achieve these goals. Cover crops are commonly utilized in agronomic systems to meet several management goals, such as keeping the ground covered and adding biological diversity. Cover crops are an incredible tool and can be utilized to directly or indirectly meet any or all of the soil health management principles. Many producers have been utilizing mixed-species cover crops in cropland and pasture systems to increase diversity, increase organic matter, increase soil microbiological function, etc. However, with that said, you will notice that simply planting cover crops is not one of the principles. Cover crops are facilitators; they facilitate the producer’s ability to follow the soil health principles.

SOIL HEALTH INFLUENCES WATER, PLANTS, MINERALS AND ANIMALS

The primary goal of regenerative agriculture should be to improve soil health as it is a foundational precursor to the proper function of many ecological processes. The health of our landscapes and soil are interdependent. Our land’s condition is characterized by the functioning of both the soil and plant communities. Following these principles will allow the site’s production, health of the soil, and mineral and water cycles to greatly improve, ultimately creating an opportunity to regenerate the landscape. 🐄



5 SOIL HEALTH PRINCIPLES

These soil health/regenerative management principles were set forth to achieve specific goals. They are based on harnessing the power of biologic interactions between plants, soil microbes and all other soil life. These principles build soil aggregation, which further builds structure. These principles have proven the path forward for many progressive farmers and substantiated that conventional farming is not the only way. The following soil health building principles were developed by farmers, for farmers.

COVER THE SOIL:

1

Soil health cannot be built if the soil is uncovered or is moving. Using dedicated plants for grazing, cover crops and crop residue minimizes bare ground and builds soil organic matter. Plant cover further protects the soil from erosion and serves as a barrier between the sun and raw soil, preventing escalated soil temperatures that can destroy soil microbial life.

MINIMIZE SOIL DISTURBANCE:

2

Mechanical soil disturbance, such as tillage, alters the structure of the soil and limits biological activity. If the goal is to build healthy, functional soil systems, tillage should only be used in specific circumstances. However, tillage is not the only disturbance. Grazing, fire, pesticide applications, etc., are all disturbances. For this reason with grazing lands, some might use the term “optimize disturbance” to ensure that the timing, frequency, intensity and duration of these management activities are implemented in a planned manner mimicking what would occur naturally in the absence of man.

INCREASE PLANT DIVERSITY:

3

Increasing plant diversity creates an enabling environment and catalyst for a diverse underground community. In nature, we find grasses, legumes and forbs all working together in a native, diverse rangeland setting. The complex interactions of roots and other living organisms within the soil defines the soil’s water holding capacity, affects carbon sequestration and enables nutrient availability for plant productivity.

KEEP LIVING ROOTS IN THE GROUND ALL YEAR:

4

A living root in the ground year-round is required to keep the soil biology processes working, no matter the season. Soil microbes use active carbon first, which comes from living roots. These roots provide food for beneficial microbes and spark beneficial relationships between these microbes and the plant.

INTEGRATE LIVESTOCK PROPERLY:

5

Research, practical application and common sense tell us the same thing: livestock are a necessity for healthy soils and ecosystems. The Great Plains evolved under the presence of animals and grazing pressure. Soil and plant health is improved by proper grazing, which recycles nutrients, reduces plant selectivity and increases plant diversity. As with any management practice, grazing is a tool that requires intentional application.

LIVESTOCK

Don't Let Your Cows Eat the Profit

by Robert Wells, Ph.D., livestock consultant | rswells@noble.org



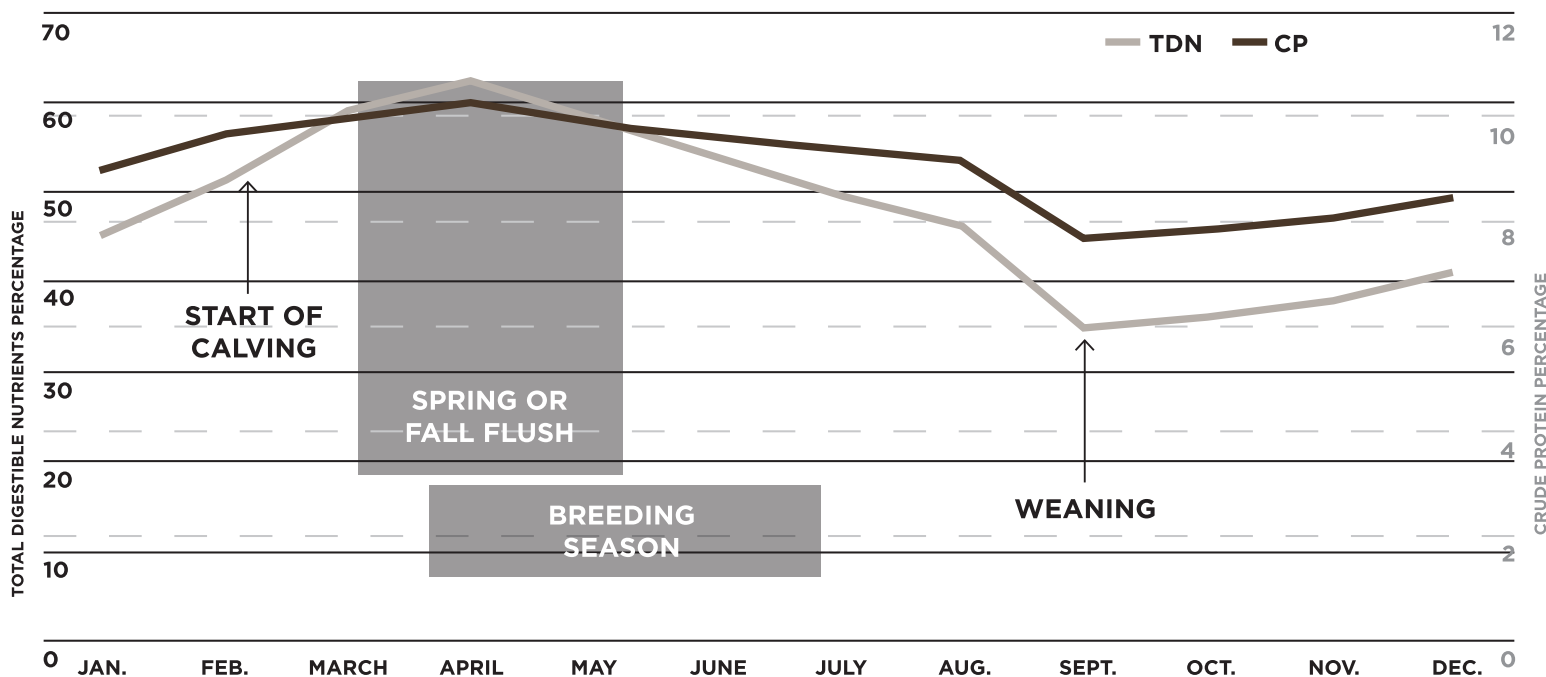
Intentional beef producers will develop a winter feeding strategy and calving season that reduces the cost of winter feed. The bulk of the cost of cow ownership typically occurs during the winter when additional supplementation is required. University and industry data indicate that annual cow costs range from \$500 to \$600. Nutritional supplementation makes up 40-60% of this total annual cost; thus, ranging from \$200 to \$360 per cow per year. Mineral supplementation makes up about \$35 of the total nutritional costs. The remainder, \$165-325 on average, is spent on supplemental feed and hay. What can be done to reduce the cost of the herd supplementation program without negatively impacting cow body condition score and reproduction?

The most impactful element that should be considered is to time the cow's peak lactation with when the best quality and quantity forage is available. This time is when she has the highest nutritional demand. Refer

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ANNUAL COW NUTRIENT REQUIREMENT CYCLE





to the graph to understand the relationship of timing of calving relative to the cow's highest nutritional demand. Peak lactation occurs about two to three months after birth.

IMPACTS ON BODY CONDITION SCORE

Many producers think the best time to start calving is when the spring or winter flush of forage is at its peak. However if they do this, then by the time peak lactation occurs, the cow may have missed the best forage of the year and will not be able to take full advantage of it. This will impact the cow through her body condition score (BCS) since there is a possibility that she will be on a negative plane of nutrition and losing weight. The first thing that the cow will lose is fat and her BCS will be reduced.

Secondly, by starting the calving season about two months in advance of the height of the forage quality and quantity, this will ensure that the majority of the cows will calve at the most opportune time relative to forage

quality. In a 60-day calving season, at least half of the cows should be in peak lactation when the annual flush of forage arrives.

IMPACTS ON REPRODUCTION

Since the cow will be consuming extremely high quality forage that exceeds 60% total digestible nutrients (TDN) and 10% crude protein (CP), she will be rebuilding any body fat reserves. This will signal to the body that the cow is in a favorable environment and can support the next pregnancy. Thus, she will start to cycle again in a timely manner after calving. Cow nutrition and subsequent body condition score has been demonstrated numerous times to have an impact on her rebreeding rate. A cow that is in a BCS of five or greater will have a much greater probability of timely rebreeding compared to one that is in a BCS of four or less. In this regard, what occurs this year can have a significant impact on profitability next year.

For young a cow that is trying to breed for

her second calf, the impact of nutrition can be the difference between her getting rebred or not. These females have a much higher nutritional demand than do mature cows. Two-year-old cows are still growing, lactating and trying to support the next reproductive cycle in that order, respectively. Reproduction is the first physiological process the cow will shut down if she is nutritionally compromised. Most of the time, lack of proper nutrition is to blame when a cow fails to get rebred for the second calf.

Cows that fail to rebreed or breed late will "eat away" at the profit of the entire ranch. A cow that calves just 30 days later than the previous year has given up at least 60 pounds of additional weaning weight, which can translate into about \$75 of lost value. A cow that doesn't breed at all has incurred all the annual costs of production yet did not repay the owner with a live calf at birth. In this sense, she is eating away at the ranch profit margin. 🐮

PECANS

Plan Your Pecan Spray Schedule Before the Season

by Will Chaney, pecan management systems senior research associate | jwchaney@noble.org



In a commercial pecan orchard setting, it is important to have a spray schedule planned before the season starts. Although you cannot be fully prepared for every issue that might arise, some planning can assist you in your management goals. Chemicals can be a costly input into your operation; more planning up front will save you time and money during the season.

INSECTICIDE SPRAY SCHEDULE

Rotation of chemical classes should occur as often as possible. Spraying the same class repeatedly can lead to a buildup of resistance from the targeted pest. Insecticides are not always necessary. Spraying for insects when you really don't need to will often reduce your beneficial populations, leaving you in a worse situation than when you started. You might look into multiple chemicals for each pest in case one of the chemicals for the targeted pest is not available. This also gives you options during late-season applications. If you had to change your plans early in the season and used a class you had originally not intended to use, this could affect later planned applications in the season. Examples of a spray schedule including application rates are outlined in the insecticide spray schedule.

Story continues on next page



EXAMPLE INSECTICIDE SPRAY SCHEDULE

When applying chemicals, always follow the label on the bottle over any other recommendation. The label is the law.

Time of Application	Insect to Be Controlled	Pesticide (rate/100 gal water)	Insecticide Resistance Action Committee (IRAC) Mode of Action
After bud-break and shoots of susceptible cultivars are about one-inch in length.	Phylloxera	<ul style="list-style-type: none"> Lorsban: 2 pints per acre Trimax Pro: 2 fluid ounces per acre 	Group 1B Group 4A
Following Pecan Nut Casebearer moth catch for two consecutive days, scout for eggs seven to 10 days later. Insecticide should be applied 14 days after first moth capture.	Pecan Nut Casebearer	<ul style="list-style-type: none"> Intrepid: 2F 6 fluid ounces per acre Confirm: 2F 12 fluid ounces per acre Altacor: 3.2 fluid ounces per acre 	Group 18 Group 18 Group 28
If orchards have a history of shuckworm infestation, a spray should be applied in early June. In early August, two to three additional sprays should be applied. Initiate August sprays at half-shell hardening and repeat at two-week intervals until shuck split if shuckworm activity continues. It is not necessary to spray in August if pecan weevil controls are applied.	Hickory Shuckworm	<ul style="list-style-type: none"> Dimilin: 2F 12 fluid ounces per acre Intrepid: 2F 6 fluid ounces per acre Apta: 24 fluid ounces per acre Altacor: 3.2 fluid ounces per acre 	Group 15 Group 18 Group 21A Group 28
In early season, do not treat yellow aphids if they are the only insect problem. Rely on beneficial insects to suppress early season populations. In prolonged dry periods, lower, chronic aphid populations may require treatment to prevent the build-up of unacceptable levels of honeydew and sooty mold.	Yellow Aphid Complex	<ul style="list-style-type: none"> Beleaf: 2.4 fluid ounces per acre Fulfill: 4 fluid ounces per acre Nexter: 8 fluid ounces per acre 	Group 9C Group 9B Group 21A
Trees known to have a recent history of weevil problems should be selected for monitoring. Emergence should be monitored in each infested grove with traps, knockdown sprays or a combination of these methods. Spray at once if excessive nut drop results from pecan weevil feeding punctures before pecan shells begin to harden. After pecan shells harden and nuts reach the "dough" or "gel" stage, treat when weevils emerge (especially following rains) and continue at seven-to-10-day intervals until emergence stops.	Pecan Weevil	<ul style="list-style-type: none"> Mustang Maxx: 4 fluid ounces per acre Brigade 2EC: 9 fluid ounces per acre Lambda Cy 1EC: 4 fluid ounces per acre Sevin XLR Plus: 4 quarts per acre 	Group 3A Group 3A Group 3 Group 1A

FUNGICIDE SPRAY SCHEDULE

In your fungicide spray program, you should rotate chemical classes with each application or as often as possible. This will prolong the effectiveness of the chemicals by preventing a buildup in resistance. Are your cultivars susceptible to a certain disease? If they are not, then a less aggressive spray plan may be adequate. However if your cultivars are susceptible, then an aggressive spray plan is required to control diseases. Weather can play a major role in the severity of the disease. Dry years will produce fewer scab issues in the orchard than wet years. Another consideration is if the orchard is grazed or not. Some fungicides cannot be applied to areas where you are grazing livestock. If you graze your orchard, you will want to make sure the chemicals you are using allow for grazing; if it does, what is the re-entry interval (REI) before the livestock are allowed to return to the orchard. Below is an example of a fungicide spray schedule with both grazed and non-grazed options.

Planning your chemical use in advance can improve your operation plans and improve your bottom line. It can also free up time during the season that can be used to focus on chemical safety. Be sure to use proper safety procedures such as using proper personal protective equipment (PPE). Be knowledgeable about the signal words used on pesticides (caution, warning and danger) and what each means. Understanding these words will change how you handle each chemical. Read the label on each bottle because labels can be different even among the same product. Know the REI and the pre-harvest interval (PHI) of the chemical you are using. Following the label recommendations can prevent accidents that will cost your operation time and money. 🐄



EXAMPLE FUNGICIDE SCHEDULE

When applying chemicals always follow the label on the bottle over any other recommendation. The label is the law.

Time Of Application	Disease to be controlled	Pesticide rate per 100 gallons of water	Fungicide Resistance Action Committee (FRAC) Mode of Action
First Pre-pollination Spray (Non-grazed) When leaves of disease susceptible cultivars are about one-inch in length.	Leaf Scab Vein Spot Downy Spot	<ul style="list-style-type: none"> Elast: 48 fluid ounces per acre Ziram: 7 pounds per acre REI: 48 Hours 	Group U12. Elast may cause leaf burn on Moore, Van Deman and Barton cultivars. Group M3
Second Pre-pollination Spray (Non-grazed) About 2 weeks after the first spray if weather is warm and leaves are growing rapidly.	Leaf Scab Vein Spot Downy Spot	<ul style="list-style-type: none"> Abound: 9.5 fluid ounces per acre Other strobilurin 	Group 11
First Leaf and Nut Cover Spray (Non-grazed) Two to three weeks after last spray. Often in early May.	Leaf and Nut Scab Vein Spot Downy Spot	<ul style="list-style-type: none"> Enable 2F: 8 fluid ounces per acre other DMI 	Group 3
First Leaf and Nut Cover Spray (Grazed) Two to three weeks after last spray. Often in early May.	Leaf and Nut Scab Vein Spot Downy Spot	<ul style="list-style-type: none"> Quash: 3 ounces per acre REI: 12 Hours 	Group 3
Second Cover Spray (Non-grazed) Cover sprays should be made at two- to four-week intervals. Two-week intervals are used during periods of frequent rainfall in orchards with very scab susceptible cultivars.	Nut Scab Brown spot Gnomonia	<ul style="list-style-type: none"> Super-Tin: 4L 12 fluid ounces per acre REI: 48 Hours 	Group 30
Second Cover Spray (Grazed) Cover sprays should be made at 2 to 4 week intervals. Two week intervals are used during periods of frequent rainfall in orchards with very scab susceptible cultivars.	Nut Scab Brown spot Gnomonia	<ul style="list-style-type: none"> Pristine: 14.5 ounces per acre REI: 12 Hours 	Group 7/11
Third Cover Sprays (Non-grazed)	Nut Scab	<ul style="list-style-type: none"> Headline: 7 fluid ounces per acre REI: 12 Hours 	Group 11
Fourth Cover Sprays (Non-grazed)	Nut Scab	<ul style="list-style-type: none"> Agri-fos Fosphite Rampart: 2 fluid quarts per acre 	Group 33
Fifth Cover Spray (Non-grazed) The last two cover sprays, which are often made from late July through August, can be eliminated if there is little scab on the nuts and rainfall is sparse.	Nut Scab	<ul style="list-style-type: none"> Super-Tin 4L 12 fluid ounces per acre 	Group 30
Sixth Cover Spray (Non-grazed)	Nut Scab	<ul style="list-style-type: none"> Agri-fos Fosphite Rampart: 2 fluid quarts per acre 	Group 33

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You'll need this account to sign up for events and to let us know your interests and communication preferences.

MARCH 26

Managing Weeds and Insects in Your Pastures

1:30-5 p.m.
Kruse Auditorium, Entry 5
No Registration Fee

Pasture and hayfield managers face many challenges from factors over which they have no control. They do, however, have some measure of control over weeds and insects. There are many different approaches to pest management, and each producer must select the approach, or combination of approaches, that best align with his or her own philosophy.

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UPCOMING EVENTS

Preregistration is requested. Registration fees for paid events will increase by \$10 one week before the event. For more information or to register, visit www.noble.org/events. For other agricultural questions, please call our Ag Helpline at 580-224-6500.



MANAGING EASTERN BLUEBIRDS

APRIL | 7

Come learn about eastern bluebirds, and other cavity-nesting songbirds, and how to build, place and manage their nest boxes. You will build a nest box that you can take home. You should also have the opportunity to view actual bluebird nesting activity in nest boxes.

4:30-7:30 p.m.
Protected Ag Demo Area, Entry 2
Registration Fee: \$25



MARCH | 5

Beef Quality Assurance Certification
1:30-5 p.m.
Kruse Auditorium, Entry 5
No Registration Fee



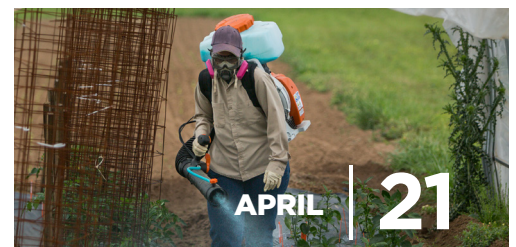
MARCH | 10

Hedging to Increase Pecan Production
1-4:30 p.m.
Montz Pecan Orchard
Wichita Falls, TX
No Registration Fee



MARCH | 10-13

Richard Mifflin Kleberg, Jr. Lectureship on Grazing Management
8 a.m. Pavilion
Registration Fee: \$500



APRIL | 21

Demonstrating Sprayers for Specialty Crops
1-5 p.m.
Protected Ag Demo Area
No Registration Fee