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NOBLE NEWS & VIEWS

SUSTAINABILITY

USRSB Helps Industry Improve and Communicate

Myriah D. Johnson, Ph.D., economics program leader and agricultural economics consultant | mdjohnson@noble.org



The U.S. Roundtable for Sustainable Beef (USRSB), formed in 2015, is a multistakeholder initiative developed to advance, support and communicate continuous improvement in sustainability of the U.S. beef value chain. Ever since its inception, the Noble Research Institute has been a part of this organization. As a founding member, we helped lay the groundwork for the organization. We remain

actively engaged in many of the ongoing efforts today. As the USRSB continues to grow, we wanted to take time to share more about this organization and our involvement.

REPRESENTING PRODUCER INTERESTS

While the Noble Research Institute technically fits into the USRSB as a civil society member, *Story continues on next page*



THE FIVE CONSTITUENCIES OF THE USRSB

The USRSB comprises five constituencies: civil society, retail, processors, allied Industry and producers.

ONE

PRODUCERS

Producers are individuals, organizations and associations of people who are actively engaged in the ownership and management of cattle used to produce beef. Members include cow-calf producers, stocker operators and feedyards.

TWO

ALLIED INDUSTRY

Allied industry is the organizations and associations of people who supply the beef value chain with goods and services. These members include, for example, pharmaceutical companies, financial institutions, technology providers and others.

THREE

PROCESSORS

Processors are those who process cattle and beef into saleable products. These members include Lopezo Foods, based in Oklahoma City, and Cargill.

FOUR

RETAIL

Retail comprises those who bring beef and beef-related products to consumers. Retail members of USRSB include McDonald's, Arby's, Wendy's, Walmart, Target and Taco Bell.

FIVE

CIVIL SOCIETY

Civil society is made up of academic institutions, non-government and non-commercial institutions, foundations, alliances, and associations with a stake in the beef value chain.

The Noble Research Institute fits into the USRSB as a civil society member, along with other entities like the King Ranch Institute for Ranch Management and several universities.

we are also there as producers ourselves. Additionally, because of our work with you as producers, we represent your interests as well. Our work with producers is well known within the group, so we are leaned on to represent your interests as producers in addition to the viewpoints that participating producer members bring.

WHAT IS SUSTAINABLE BEEF?

These entities came together in 2015 to define sustainability for the beef industry rather than waiting for someone else to define it for us. The USRSB defined sustainable beef as “a

socially responsible, environmentally sound and economically viable product that prioritizes planet, people, animals and progress.” Beyond that, the group understands there are many facets to sustainable beef and that there is no one-size-fits-all approach. USRSB recognizes that sustainability is a personal journey in which we each are striving for continuous improvement — responsibly meeting the needs of today while improving the ability to meet the needs of the next generation.

Many of us easily identify with these sentiments. Few of us seek to degrade the resources with which we work. The desire to be better and to leave things better than we found them is common across the agriculture industry. The USRSB captures this essence and communicates it in a way that is easily

Story continues on next page

SUSTAINABLE BEEF IS:
A socially responsible, environmentally sound and economically viable product that prioritizes planet, people, animals and progress.

—As defined by USRSB



A U.S. BEEF INDUSTRY SUSTAINABILITY FRAMEWORK

RESOURCE TOOLBOX

SUSTAINABLE BEEF

A socially responsible, environmentally sound and economically viable product that prioritizes planet, people, animals and progress.

HIGH-PRIORITY INDICATORS

Outline areas most important to beef sustainability: animal health and well being, efficiency and yield, water resources, land resources, air and greenhouse gas emissions, and employee safety and well-being.

SECTOR-SPECIFIC METRICS

Measure progress across high-priority indicators, leveraging opportunities unique to each segment of the beef value chain.

SUSTAINABILITY ASSESSMENT GUIDES

Provide technical guidance to aid user understanding and implementation of metrics.



In 2015, Noble Research Institute helped found the U.S. Roundtable for Sustainable Beef. Read about the group's work and the progress made to date at www.usrb.org



understood across the supply chain and to our consumers.

SETTING UP A SUSTAINABILITY FRAMEWORK FOR U.S. BEEF

Once the group defined sustainable beef, it began working to identify the indicators and metrics that would comprise sustainable beef. Indicators are the areas that span across all sectors of the beef value chain, while metrics make the indicators specific to each sector. After starting with more than 100 potential indicators, the group narrowed it down to six high-priority indicators of sustainability:

- Water resources.
- Land resources.
- Air and greenhouse gas emissions.
- Efficiency and yield.
- Animal health and well-being.
- Employee safety and well-being.

Together, the group said that these areas indicate sustainability in beef production, no matter the segment of the industry in which you participate. After reaching this milestone, group members then had their work cut out for them in defining the individual metrics for each indicator by production segment.

ACTIONS AND ASSESSMENTS

Through this process, members of each segment defined their metrics. For instance, cow-calf producers developed the land resource metric for the cow-calf segment. No other segment had the right to come in and tell another segment how to do their job, so to speak. The segments offered each other feedback and suggestions, but they each dictated their own area. Engaging each sector of the value chain was a critical component in every developmental step.

Lastly, in the framework of the sustainable beef, the group developed Sustainability



Chad Ellis, industry relations and stewardship manager, and Myriah Johnson, Ph.D., economics program leader and agricultural economics consultant, provide research-based, producer-centered perspectives on the USRSB Board of Directors.

put out for public comment, more than 1,000 comments were received and helped refine the framework. If you haven't had a chance, I encourage you to visit www.usrb.org to read more about the framework. Hopefully it is useful to you as you work to continually improve your operation.

NOBLE AND THE USRSB

As I mentioned at the beginning of this article, Noble has been involved from the start. Chad Ellis, industry relations and stewardship manager, was one of the founding directors of the board and remains in that capacity today. I also recently joined him as a member on the board of directors.

One way that many of you may be familiar

Assessment Guides (SAGs). These are technical guidance documents to aid user understanding and facilitate implementation. They also provide users with additional tools and resources for assessing their own operations relative to the high-priority indicators and accompanying metrics.

During the course of the past four years, a significant amount of work has been done to develop this framework. In no way has this been a single person's effort. There have been more than 250 people involved throughout this process. Further, when the framework was

with our involvement is through the Integrity Beef Sustainability Pilot Project, in which several of you have participated during the last two years. This pilot project is a collaboration that involves several supply chain partners and aims to test the indicators and metrics put forth by the USRSB.

Additionally, we have been working to develop a self-assessment tool for all segments of the value chain. Many of the participants in the pilot project tested the beta version of this tool and provided us with feedback. This tool is continuing to be developed for broader adoption through the USRSB. The goal of the self-assessment is to provide entities with a way to score their sustainability. The self-assessment is designed to be for each entity's own use and to help them continue to improve. The idea is that you would score yourself once each year, just as you would your production or financials, and use the assessment as a tool to help refine your management going forward.

These are just a few examples of how Noble and some local producers have been involved in the USRSB. Further, every member of the USRSB recognizes how hard it is for individual producers to attend each of the meetings in person. Webinar call-in numbers are always available for folks to call in and participate. This may be an avenue through which some of you choose to participate.

As the USRSB moves forward in communicating this framework and aims for adoption within the beef industry, I hope you will consider joining the effort. Our consumers and partners are asking for sustainable products. This is our way to communicate to them all the great things we as beef producers are doing while always striving for more. If you would like to discuss this topic further, don't hesitate to reach out to any of us here at Noble. 🐮

LIVESTOCK

What I Want in the Perfect Beef Cow



by Ryon Walker, Ph.D.,
livestock consultant |
rswalker@noble.org

Back in the early 1990s, headlines generated some interest in developing a “green cow.” This green cow was supposed to produce (synthesize) its own food, just like our green forages. I believe it had something to do with photosynthesis, using sunlight as energy. Theoretically, that would have significantly contributed to making the perfect cow: low input with high output. So, did science fail because there is no such thing as a green cow?

To the contrary. Science has helped us understand how to identify best management practices that allow us to produce an efficient, sustainable product. However, management is only part of the equation. The animal and the environment are the other parts. We can manage only as well as the cow and her offspring

WE CAN MANAGE ONLY AS WELL AS THE COW AND HER OFFSPRING WILL ALLOW US TO. IF WE CAN PRODUCE A “PERFECT COW,” THEN WE CAN MORE EASILY MANAGE THAT COW.

will allow us to. If we can produce a “perfect cow,” then we can more easily manage that cow.

So what should the perfect cow look like?

What a perfect beef cow looks like phenotypically depends on the eye of the beholder, but what she is capable of should result in the same goals. The perfect cow can possess all the traits you are looking for through genetic selection, phenotypic evaluation, management and production measurements.

Fair enough?

Not only do I want the perfect cow to possess certain traits, but I think some traits are more important than others. Here is how I rank these traits based on importance, as a percentage.

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RYON WALKER'S TOP PREFERRED TRAITS IN A BEEF COW

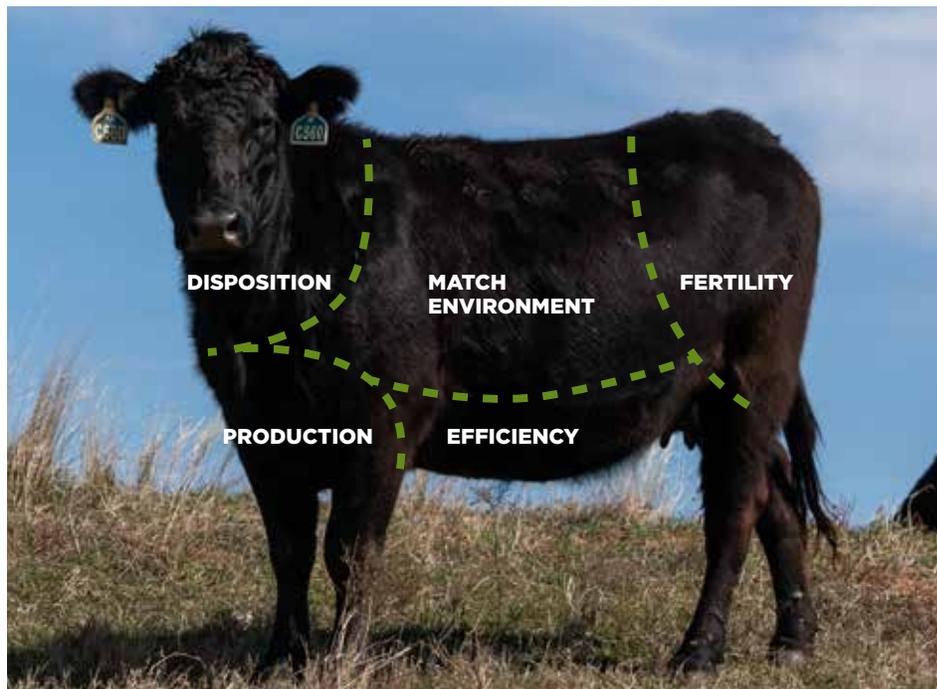
ONE ENVIRONMENT FIT HER ENVIRONMENT.

35 pct. How the cow fits with her environment is the most important trait for me. This means she will deliver a healthy calf every year and maintain her body condition throughout the year as she accomplishes that. She will be more efficient at forage utilization because she likely has a lower intake, can metabolize and prioritize nutrients more efficiently. If a cow cannot maintain a body condition score (BCS) 5 throughout the year, this can have negative impacts on fertility, milk production and health.

TWO FERTILITY MUST CALVE EVERY 365 DAYS, NO EXCEPTIONS.

25 pct. In my mind, fertility is one of the most important traits in a female. However, if the cow does not fit her environment, she won't survive. Because of this, I rank it second. From an economic standpoint, however, fertility ranks the highest.

- To deliver a healthy calf every year, the cow must calve by 24 months of age (in non- or low-percentage Brahman crosses).
- Age and weight at puberty are moderately to highly heritable traits. By selecting for these traits in your replacement heifers, you increase their chances of reaching their target calving dates.
- This cow must calve every 365 days. No exceptions.
- The average gestation period for a cow is approximately 283 days. Based on what we know, if a cow calves in adequate body condition (BCS 5-6), she needs 60 to 75 days after calving to begin cycling again and have an opportunity to become pregnant naturally.
- To meet that goal, she needs to conceive within the first 30 days of the breeding season and calve in the first 30 days of the calving season. If she calves at a lower body condition, her recovery period after calving is longer, reducing the likelihood of her conceiving early in the breeding season.



THREE EFFICIENCY BE EFFICIENT THROUGHOUT HER PRODUCTION CYCLE.

15 pct. This can be defined in many ways: as a single trait (reproductive, forage, what she produces, etc.) or she can be efficient in every stage of production. I want a cow that can be efficient in all of the traits listed above and throughout her production cycle. I am looking for a cow that can:

- Wean a calf greater than or equal to my average weaning weight.
- Be moderately framed and weigh less than or equal to 1,300 pounds.
- Maintain a BCS of a 5 (\pm 0.5) throughout the year.

FOUR PRODUCTION PROVIDE THE NUTRIENT RESOURCES FOR HER OFF- SPRING TO REACH THEIR GENETIC POTENTIAL.

15 pct. If the cow fits her environment and calves when she needs to, that calf is likely your biggest source of income. The cow must provide sufficient resources for the calf to reach its genetic potential. This not only includes the genetic potential for this calf to grow, but also the mother's nutrient resources available during lactation and the conversion of feed and forage resources (other than from its mother) to protein prior to weaning. Major factors that can impact the genetic potential of a calf are:

- Length of calving season.
- Mother's milk production.
- Forage resources.
- Environmental conditions.
- Health.

Remember, management and environment make up two-thirds of the equation. The cow is the other one-third.

FIVE DISPOSITION MUST NOT BE CRAZY.

10 pct. A cow's disposition is becoming more important as we find ourselves not having the time to deal with poorly dispositioned cattle. Because the average herd size in the U.S. is approximately 40 head, many beef producers have a full-time job outside of raising cattle. So, my cow must not be crazy. Research has shown us that poor disposition in cattle causes stress, resulting in increased risk for reductions in fertility and animal performance as well as higher susceptibility to sickness and disease. So, cull based on disposition. We do! 🐮

LIVESTOCK

Water Quality Matters for Cattle on Pasture



by Caitlin Hebbert, livestock consultant | cshebbert@noble.org

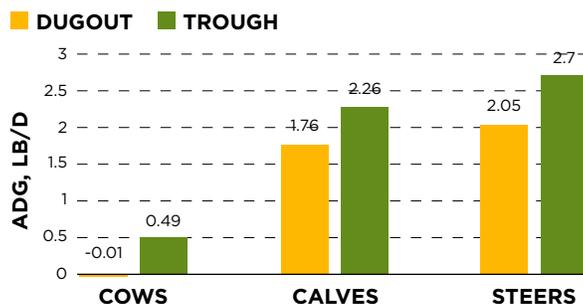


You don't need me or anyone else to tell you that water is important for livestock and all other living things. The necessity of water is common sense, but what tends to fall by the wayside is just how much of an effect the water quality can have on an animal's ability to thrive and grow.

We don't usually forget about water. We know that a lack of water will dramatically and definitely affect cattle health and performance. What we may forget is that water is a nutrient and has nutritional value that can affect livestock as its quality changes. Water varies in quality of nutritional value from one source to the next, just like feedstuffs that have protein, energy, fiber and minerals. It is important not to take it at face value. In other words, we, as stewards of livestock, should evaluate our water sources and be aware of how they change throughout the year. For example, during the summer, our ponds and tanks experience higher rates of evaporation, concentrating elements in water.

LIVESTOCK PERFORMANCE ON TROUGH OR POND WATER

In this study comparing the effect of water sources on average daily gain (ADG), cows, calves and steers on pasture gained significantly more pounds per day when supplied with water pumped to a trough vs. drinking directly from a pond (dugout).



Willms, W.D. 1996. Agriculture and Agri-Food Canada and Alberta Agriculture, Stavelly, Alberta.

Story continues on next page

A beef cow can drink up to 5% of her body weight in water per day; a high-producing dairy cow can drink as much as 20%. The quantity of water that animals consume is affected by many factors, including growth, pregnancy, lactation, activity, diet composition, feed intake, environmental temperature and water quality. Water quality and quantity affect feed intake and animal health since poor water quality usually leads to reductions in water, and subsequently a decrease in feed consumption.

COMMON WATER QUALITY PROBLEMS AFFECTING LIVESTOCK

- High concentrations of minerals (excess salinity)
- High nitrogen content
- Bacterial contamination
- Heavy growths of toxic blue-green algae
- Accidental spills of petroleum, pesticides or fertilizers

Studies have been conducted to examine the effect of water intake levels on cattle weight gain, and have demonstrated that the more water an animal drinks, the more feed it consumes, leading to greater weight gain. Logic may say: "If I have clean ponds with good, clear water and no excess contamination, I should be in the clear." But it's not always that simple.

Research also has addressed the direct effect of water source and quality on gain. The two most common types of watering systems for cattle are:

- A trough fed by a well or a spring.
- An impoundment or pond.

One study conducted in Saskatchewan identified a 9-10% increase in weight gain of steers and calves drinking from water pumped into a trough versus those that drank from a pond. Similar studies have observed as high as a 16% increase in gains for stocker steers with access to clean water.

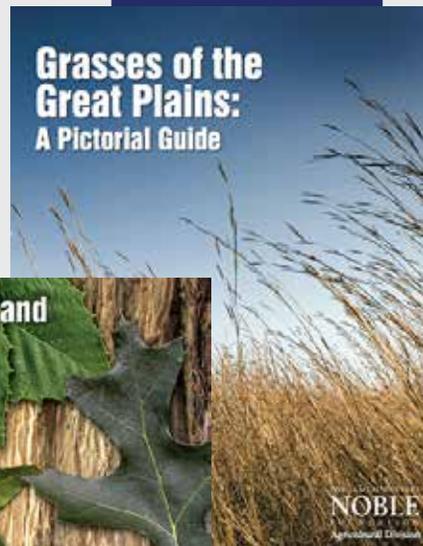
In the Saskatchewan study, there were no significant differences in water chemistry or biological constituents (minerals, dissolved solids, contamination) between trough water and direct pond water; therefore, these gain increases likely reflect greater palatability and subsequently, greater water intake. The aeration that occurs during the pumping process is thought to be one factor contributing to the increase in palatability of water for livestock. Even further, cattle with access to clean, aerated water have been documented to spend more time grazing and less time resting than those which drink directly from farm ponds.

The bottom line is that even a well-maintained pond rarely, if ever, can compare to water pumped into a trough, as long as the trough water source is good quality and not contaminated. When given the choice, cattle will avoid water contaminated even with as little as 0.005% manure by weight, so your ponds are probably less palatable than you may think. If you're watering a cow-calf operation, this may not be of any great concern to you. But if you retain your calves or bring in stockers, give your water sources and how you deliver it a second thought. That extra boost in gains per day really adds up, especially in the right market, so ensuring that clean water is available can definitely pay off in the long run. 🐄

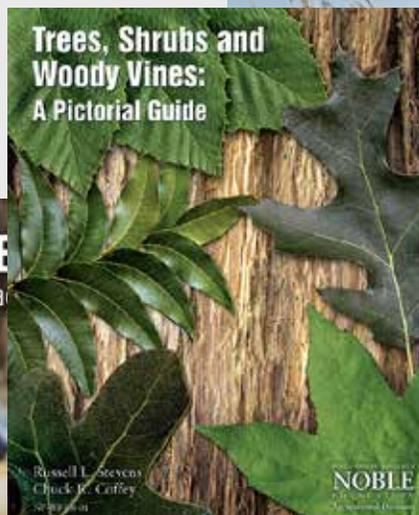
MORE NEWS AND BOOKS ONLINE

Keep up with the latest news and information from Noble Research Institute consultants and researchers at www.noble.org

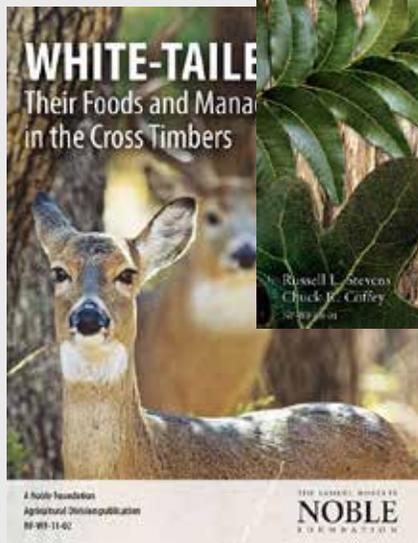
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FORAGE

Proper Stocking Rates Make Growing-Season Burns Possible

by Steven Smith, wildlife and fisheries consultant | sgsmith@noble.org



While the traditional burning season for the Southern Great Plains goes from December to April, more and more land managers are conducting prescribed burns during the growing

season in order to achieve their pasture management and forage goals. Regardless of the burn season, a major goal of prescribed burning is to control brush, improve wildlife habitat and improve forage quality for livestock.

A crucial factor for the success of growing-season burns is the stocking rate of livestock grazing the land, because of its effect on the fine fuel available. Proper livestock stocking rate is the most important management decision a manager can make. It impacts not only livestock production, operation economics and wildlife habitat, but also a land manager's ability to use the important ecological process of prescribed burning.

Story continues on next page



Lush forage growing on Sept. 13, 2018, in Cooke County, Texas, after a growing-season burn on July 5.



AVOID OVERSTOCKING, OVERGRAZING

Overstocked pastures lead to overgrazing, which is consistently the No. 1 problem we see in many operations. Overgrazing is a significant cause of poor forage and livestock production, wildlife habitat loss, soil erosion, weed problems, and lower profitability on millions of acres across the country. A correctly stocked property is important for operational profitability and can provide flexibility in operational management in order to:

- Provide or improve wildlife habitat.
- Implement prescribed burning.
- Adapt to drought or other adverse weather conditions.
- Temporarily increase livestock numbers in years with better-than-average growing conditions.

GROWING-SEASON BURNS NEED ADEQUATE FUEL

If a land manager is interested in conducting growing-season burns, the area to be burned usually needs adequate fine fuel comprised of last year's growth. As mentioned above, when land managers limit their burn season to the five months from December to April, they often find it difficult to implement the number of burns needed to achieve their goals

of brush control, forage improvement and optimum wildlife habitat.

Typically, weather during the traditional burn months is somewhat turbulent, because fronts move through an area. These fronts cause wind to frequently change direction, leaving small windows for burning.

This is one reason why more and more land managers are conducting growing-season burns, during late spring through early fall months, to meet some of their prescribed burning goals. Weather during the summer months typically has higher humidity and more-consistent wind patterns. Regardless of the burn season, a major goal of prescribed burning is to control brush, improve wildlife habitat and forage quality for livestock.

For more information about how to determine a stocking rate, see: Proper livestock stocking rate supports operation, wildlife. www.noble.org/live-stock-stocking-rate

For another example of growing season burns extending forage quality, see: Growing-Season Burns Hold Potential for Fall and Winter Forage. www.noble.org/growing-season-burns

STUDY SHOWS VALUE OF GROWING-SEASON BURNS

During the summer of 2018, a producer in Cooke County, Texas, conducted several growing-season burns on native rangeland pastures on June 23 and July 5. The producer collected and analyzed forage samples on Sept. 17, 2018, and again on Nov. 13, 2018, to track the forage quality of the areas. The producer also collected samples from an ungrazed, unburned area (same site) to serve as a comparison to the burned areas. The burned and unburned areas were divided by a ranch road.

As you can see in the results table, the burned areas provided higher-quality forage — higher crude protein and total digestible nutrients (TDN) and lower levels of less-desirable



FORAGE SAMPLES COLLECTED FROM BURNED AND UNBURNED AREAS IN COOKE COUNTY, TEXAS, IN 2018

	CRUDE PROTEIN (%)	ADF (%)	NDF (%)	TDN (%)
Sept. 17 sample				
Control-unburned	9.6	38.9	71.1	51.6
June 23 burn	15.3	33.2	59.0	58.2
July 5 burn	16.5	32.7	58.7	58.8
Nov. 13 sample				
Control-unburned	6.2	46.5	78.8	42.9
June 23 burn	14.8	32.2	58.0	59.3
July 5 burn	16.6	36.0	60.1	55.0

Note: ADF=Acid Detergent Fiber. NDF=Neutral Detergent Fiber. TDN=Total Digestible Nutrients

fiber — going into the winter months than did the ungrazed, unburned area.

These burns were possible only because the producer had a livestock stocking rate that allowed him the flexibility to accumulate a fine fuel load from the previous growing season in the pastures he wanted to burn. Because of the successful growing-season burns, this producer was able to wait until December before he started feeding supplemental protein. His stocking rate also permitted him to maintain enough standing forage for his herd, allowing him

the ability to wait until February to feed the first bale of hay of the year.

STOCK RIGHT FOR OPTIMUM FORAGE

So you can see another major reason that stocking rates are the most important decision a livestock producer can make. If a producer would like to implement growing-season burns, these areas should not be grazed or lightly grazed during the year prior to the burn. In many operations, the current stocking rates may need to be adjusted for them to be able to implement growing-season burns. 🐄

PECANS

How You Can Control the Pecan Weevil

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



The pecan weevil, *Curculio caryae* (Horn), is perhaps the most damaging insect in the majority of pecan-producing states in the U.S. If not managed, this weevil can cause severe economic

damage to your pecan operation that could last for multiple years. The arid Southwest (West Texas, New Mexico, Arizona and California) has not yet had an established population of weevil develop.

Adult pecan weevils are brownish in color and approximately 3/8 of an inch long. Female adult weevils have extremely long snouts that can equal or exceed the length of the body. It is important to be able to identify both the adult weevil and its larval stage. Weevils in the larval stage are grubs that can be found in the nut during harvest time. They are approximately 3/5 of an inch long and are white with reddish heads.

Weevils are the only pest in the pecan orchard or grove to develop inside the kernel. After the pecan kernels have been harvested and removed from the orchard, however, other insects can infest the kernels in storage.

UNDERSTAND THE WEEVIL LIFE CYCLE

Understanding the life cycle of the pecan weevil is important to help you manage them in your integrated pest management plan.

Adult weevils winter underground in the orchard floor, emerging in August through October. Mated females lay eggs inside the shell of developing pecans. The larvae progress through several stages and feed off the kernel while inside the shell from the late summertime into fall. At the end of fall into early winter, primarily during October and November, the grown larvae chew their way out of the pecan and fall to the ground.

Story continues on next page





The time from when the eggs are laid in the pecan to when the larvae emerge is approximately 42 days. Once the larvae are on the ground, they burrow into the soil and construct an almost impenetrable earthen cell underground. This cell can be located between 4 to 12 inches below the surface, depending on the condition of the soil. Once they reach this stage, the larvae can remain dormant for the next eight to 10 months, only to emerge next year and start the cycle all over again. Approximately 10% of larvae do not emerge at that time and can remain dormant an additional year. Therefore, their life cycle can take two or three years to complete one generation.

HOW TO MONITOR AND CONTROL

The most effective control for pecan weevil is the use of insecticides to prevent adult weevils from feeding and adult females from laying eggs. Adults typically emerge over a two-month period (August to September); however, depending on weather, emergence can occur even up to harvest. Multiple applications of insecticide are generally recommended, based on the timing and levels of infestation.

To determine the level of infestation and to best time spray applications, set up wire cone traps, pyramid traps and circle traps in the orchard to monitor weevil emergence. Note that female weevils usually take four to five days to begin laying eggs. The traps should be set out in late July and checked regularly — daily is preferred — until October to detect the onset of emergence, peak emergence and fluctuations in emergence.

Place the traps throughout your orchard, focusing on the trees that have a history of weevil damage. These trees can serve as your best indicator of increasing infestation. When using traps, select about 10 trees in the orchard. If trees are large, it may take two or more traps to encircle the tree. The economic threshold to spray for pecan weevils in Oklahoma is 0.3 weevils per trap per day. For example, if you had 10 traps set in your orchard, 3 weevils caught in total would meet the threshold of 0.3, which would indicate



INTERESTED IN GROWING PECANS?

Check out our So You Want to Grow Pecans event on Sept. 3. There is a growing demand for pecans as more people are discovering the many health benefits associated with this native nut.

LOCATION

Kruse Auditorium, Entry 5

TIME

6:30 - 8:30 p.m.

you need an insecticide spray.

Pecan weevil management is a crucial management technique. Weevils can be controlled with surveillance of traps throughout late nut development through harvest. This will greatly diminish the damage to your crop. If controlled year after year, you can significantly reduce the population in your orchard.

For more details on pecan weevil control and the use of traps, see Oklahoma State University factsheets Biology and Control of Pecan Weevil in Oklahoma ([bit.ly/pecan-weevil-control](#)) and Monitoring Adult Weevil Populations in Pecan and Fruit Trees in Oklahoma ([bit.ly/weevil-population](#)). 🐜

WEEVILS CAN DAMAGE PECANS IN TWO WAYS

Weevils can cause two types of damage to a pecan crop, occurring at two stages of pecan development.

1

In the first wave, adult weevils puncture the developing immature pecans (water stage), causing the nuts to drop.

2

The second wave happens later in the season, after the pecan kernel starts to develop (dough stage). Adult weevils deposit eggs inside the pecan. After the larvae hatch, they feed on the kernel, then the fully developed larvae chew through the shell and shuck to exit the nut and drop to the ground.



MANAGEMENT CALENDAR ONLINE

To properly manage a successful pecan orchard, a well-developed plan should be implemented. Planning will help growers and managers be prepared for tasks that will need to be addressed throughout the year. Go to www.noble.org/pecan-management-calendar to view our pecan management calendar for the month of June and July

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JUNE 4 How Plants and Animals Respond to Grazing



8:30 a.m.-noon.
Noble Research Institute
Kruse Auditorium, Entry 5
No Registration Fee

Grazing is a management tool that uses livestock and their act of consuming plant material to impact an ecosystem or landscape. Grazing affects both the plant and the animal. Plant type and availability, stage of growth, animal preferences, livestock age and physiological condition, stock density, duration of grazing and recovery, and management all play roles in the responses of both plants and animals to grazing.

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UPCOMING EVENTS

Preregistration is required. Registration closes five business days before the event.
For more information or to register, visit www.noble.org/events or call 580-223-5810.
For other agricultural questions, please call our Ag Helpline at 580-224-6500.



JUNE | 11

Managing Brush with Proper Techniques

Join us to learn the potential positives and negatives of woody plants and how to manage brush encroachment using fire, mechanical and chemical control options. This field day will demonstrate how to apply certain control techniques as well as show past treatments.

8 a.m.-noon
Coffey Ranch
No Registration Fee



JUNE | 14

Matching Forage Quality to Performance

9 a.m.-4 p.m., Coffey Ranch
Registration Fee: \$25,
includes lunch



JULY | 30

Managing Crop Load for Improved Production

9 a.m.-noon
McMillan Farm
No Registration Fee



AUGUST | 27

Understanding Irrigation Systems and Technology for Pecans

9 a.m.-noon
Kruse Auditorium, Entry 5
No Registration Fee



SEPTEMBER | 3

So You Want To Grow Pecans

6:30-8:30 p.m.
Kruse Auditorium, Entry 5
No Registration Fee