



Protecting Animal and Human Health

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



Promoting the proper use of antibiotics in animal agriculture to preserve their efficacy for both animal and human health is of prime importance. That's a goal of the International Consortium for Antimicrobial

Stewardship in Agriculture (ICASA), which Noble Research Institute became a founding member of in 2018. The industry-oriented program was created by the nonprofit Foundation for Food and Agriculture Research to advance research projects related to

antimicrobial stewardship and antimicrobial resistance in animal agriculture. As ICASA continues to develop and grow, we want to take this opportunity to share more about our work with this important organization.

IMPROVING ANTIBIOTIC STEWARDSHIP THROUGH INNOVATIONS AND PARTNERSHIPS

ICASA was created to accelerate innovation and improve antibiotic stewardship by building the cross-sector partnerships critical to making advances on a truly broad scale. The consortium seeks long-term solutions to major drivers of antibiotic use by field-testing

new technologies and management practices that can improve animal health and welfare, promote responsible and judicious antibiotic use, and benefit animal agriculture as well as the general public.

ICASA's research promotes the judicious use of antibiotics and advances animal health, productivity and welfare, as well as food safety for consumers and economics for producers. As a vehicle for collaboration and exposure to new ideas, the consortium framework of ICASA streamlines the development of new partnerships and projects to drive significant advances that benefit both the public and private sectors.

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WORKING GROUPS TACKLE HIGH-PRIORITY AREAS

A number of working groups facilitate projects within the consortium. Currently, the five working groups are technologies, liver abscesses, metaphylaxis, late-day bovine respiratory disease (BRD) and swine health. These five working groups were determined to be high priority areas by the executive committee. Each working group has met and is working to develop its approaches to address these issues. As these approaches are developed, they will be submitted as grant requests to ICASA and FFAR. To receive a grant, the project must be approved by the working group, the executive committee and FFAR. We expect many new projects to be approved and begin within the next year.

FIRST GRANT FOCUS: CAUSES OF LATE-DAY BRD IN HIGH-PERFORMING FEEDLOT CATTLE

The first and only grant project approved and started so far is titled "Identifying potential causes of late-day bovine respiratory disease in high-performing feedlot cattle." Noble is a grant partner, along with Hy-Plains Feedyard, Veterinary Research & Consulting Services, U.S. Meat Animal Research Center and the Great Plains Veterinary Educational Center.

We know that cow-calf producers have selected for high-performing cattle over the years. These high-performing cattle are characterized by high average daily gain (ADG) and improved feed conversion, and yield a valuable carcass based on carcass weight, yield grade and quality grade. However, an increased incidence of BRD has been observed in high-performing cattle at approximately 60 to 90 days on feed. As the incidence of disease increases, the animals require more antibiotics, and the timing of disease occurs much later in the feeding period compared to traditional disease incidence.

Late-feeding-period diseases are an industry-wide and growing economic concern, because significant resources have been invested in the animals, and there are potential negative impacts on product quality when disease occurs just prior to processing. This is a major issue, as animals have been selected for improved performance using Expedited Progeny Differences (EPDs) for years, with significant public and private investments in breeding technologies and animals. The high morbidity both detracts from the advantages of selecting for genetically superior animals and results in more antibiotic use

HOW ICASA SUPPORTS RESEARCH

Further, ICASA believes that its collaborative framework and the involvement of organizations across the supply chain will enable new knowledge to be deployed on a large scale, benefiting animals, farmers and the broader public. Lastly, as a consortium focused on animal agriculture, ICASA will support work across a number of species.



Cross-disciplinary management approaches that facilitate improved antibiotic use and which may evaluate the interaction of feeding/nutrition, genetics and alternative management options.



The development of diagnostic tests and alternatives to antibiotics.



The development of precision technologies and electronic systems for data capture and analysis to improve food safety and security throughout the supply chain.

for prevention or treatment. Despite advancements in technology and genetics, morbidity and mortality continue to increase in the feedyard.

As a part of this grant project, we will evaluate several different areas, including the effect of rate of gain and length of backgrounding on calf health and performance in the feedyard. Another effort will be to convene leading industry personnel to combine their knowledge on the topic. We will do more data analysis on vaccinations and timing, along with an evaluation on genetics, feed intake and physiological responses of these types of cattle. We are only at the tip of the iceberg with this and hope to learn much more that will guide further research.

These are just a few examples of how Noble is involved with FFAR and, more specifically, ICASA. As the work of ICASA progresses across many fronts, we will be sure to update you through these *Noble News and Views* articles. We believe that the outcomes of this consortium's efforts will provide viable solutions for many of the problems animal agriculture faces. If you want further information on ICASA's activities, don't hesitate to reach out to us here at Noble. 🐮



FFAR BUILDS UNIQUE PARTNERSHIPS

The International Consortium for Antimicrobial Stewardship in Agriculture (ICASA), along with several other initiatives and consortiums, is part of the Foundation for Food & Agriculture Research (FFAR). FFAR is a nonprofit organization established by the 2014 U.S. Farm Bill to build unique partnerships that support innovative science addressing today's food and agriculture challenges.

The premise of FFAR's formation was that increased investment in innovative partnerships and cutting-edge research and development would be critical to nourish a growing global population. FFAR works with diverse partners to leverage public and private resources to increase scientific and technological research, innovation and partnerships critical to boosting America's agricultural economy while focusing on problems of national and international significance. FFAR complements other existing federally-funded agricultural science research endeavors and accelerates solutions to challenges in American agriculture.

FOUNDING MEMBERS

The founding members of ICASA, which also make up the executive committee, are:

- Advanced Animal Diagnostics
- The Beef Alliance
- Cactus Research
- Hy-Plains Feedyard
- JBS USA
- McDonald's
- National Pork Board
- National Cattlemen's Beef Association
- Noble Research Institute
- Pipestone Veterinary Services
- Tyson Foods
- Veterinary Research & Consulting Services

WILDLIFE

3 Ways to Attract More Ducks to Your Pond



Mike Porter, senior wildlife and fisheries consultant | mdportor@noble.org



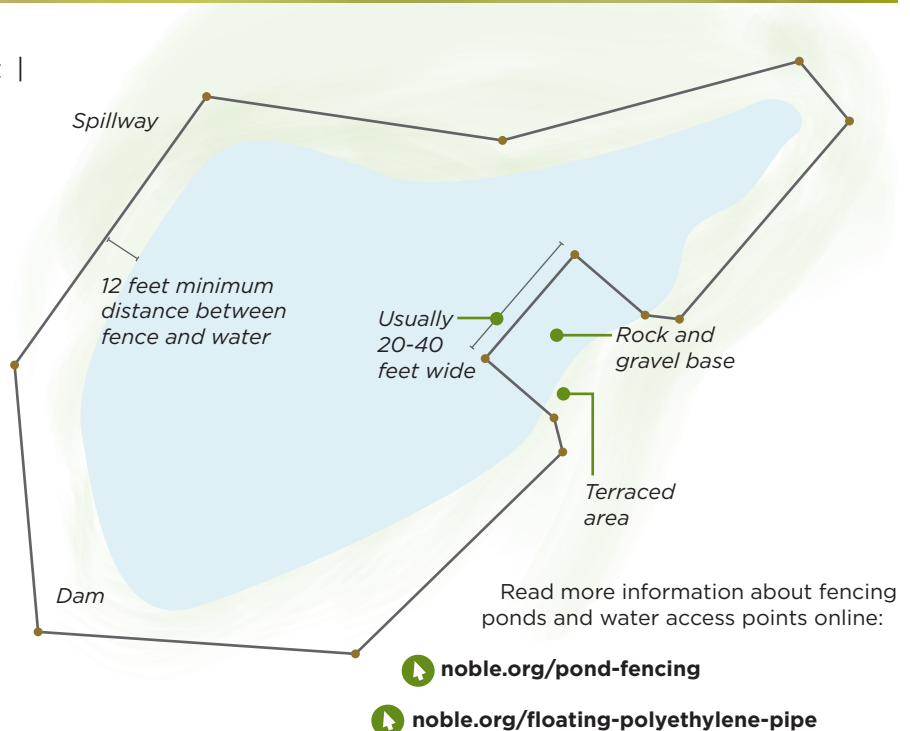
Some ponds attract more ducks, and attract ducks more consistently, than other ponds. What can be done to increase the likelihood of ducks visiting a pond? The following management strategies increase the likelihood of migratory ducks visiting a pond.

1. INCREASE WATER CLARITY.

Clear water encourages aquatic plants, aquatic snails and several aquatic insects, which are primary foods of migratory ducks.

- When livestock activity at a pond stirs up clay turbidity and creates bare soil along the shoreline, fencing all or a majority of a pond perimeter can improve water clarity and allow growth of shoreline vegetation. When a pond is needed for livestock water, most of a pond can be fenced while still providing an access point for livestock.

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- When erosion in a watershed creates clay turbidity in a pond, options to reduce this condition include reducing tillage, reducing livestock grazing pressure, shaping and vegetating gullies, placing rock weirs in gullies, spreading seed and fertilizer on bare soil areas, or maintaining a thick grass buffer (biofilter) adjacent to a pond. Information about rock weirs is provided in the Noble publication, “Rock Weirs and Flumes Can Prevent Erosion” (www.noble.org/rock-weirs-flumes).
- When abundant fish such as bullheads or common carp stir up clay turbidity or when fish such as grass carp inhibit aquatic plant growth, they can be eliminated by treating a pond with a fish toxicant such as rotenone or by draining a pond (note: these treatments also remove desirable fish that might be present). Information about rotenoning and draining ponds is provided in these articles: “Rotenone can remove undesirable fish from a pond” (www.noble.org/rotenone-remove-undesirable-fish) and “Fish population renovation during a drought” (www.noble.org/fish-population-drought).

2. REDUCE DISTURBANCE.

Human activity near a pond can scare away ducks, causing them to relocate elsewhere.

- When traffic on a farm or ranch road or livestock feeding activity scares ducks from a pond, the road or feeding activity can be moved away from the pond, to reduce disturbance.
- When traffic on a public, farm or ranch

road scares ducks off a pond, a couple of rows of evergreen trees can be planted between the road and pond to create a visibility screen to reduce disturbance. Such a visibility screen also can help reduce trespass poaching by making the ducks “out of sight, out of mind” for some would-be poachers.

- When excessive hunting activity scares ducks from a pond and prevents population buildup (ducks are gregarious), reducing the frequency of hunting at a pond can help increase duck numbers.

3. ADD DUCK FOOD PLANTS.

Adding a previously unavailable duck food or increasing the diversity of foods can attract more ducks.

- When oaks or native pecan trees are not present near a pond, they can be planted near the shoreline to attract mallard and wood duck during years when the trees produce acorns or pecans. These plantings should usually be protected with net wire beaver exclosures to prevent beaver from cutting down planted trees. Erecting beaver exclosures around existing trees that are strategically located near a pond is also a good practice to prevent beaver from cutting down established desirable trees. Information about beaver exclosures is provided in the Noble annual report article “Exclosures for Preventing Beaver Damage” (www.noble.org/exclosures-for-preventing-beaver-damage) and on pages 2-5 of the January 2016 Texas Chapter of The Wildlife Society Newsletter (bit.ly/tctws-jan2016).
- When emergent duck food plants such as

barnyard grass or smartweed are absent, they can be seeded onto wet mud flats during late spring or early summer drought-induced drawdowns.

- When a pond manager has the means to draw down and refill a pond at will, a pond can be drawn down during late spring or early summer, and shallow portions of the pond can be planted with a crop such as Japanese millet or sorghum. The crop is allowed to grow and produce grain, then the pond is refilled to attract ducks. As long as the standing crop is not manipulated in any manner other than flooding, ducks can legally be hunted at such a pond.
- When waterfowl are simply observed and not hunted near a pond, managers can scatter grains such as corn, sorghum or wheat, along the shoreline or in shallow water to attract and feed ducks. Hunting near a pond where grains have been scattered is illegal.

Pond owners implementing such management should realize migratory ducks can be unpredictable. A pond providing the best possible habitat could still have few or no ducks on a specific date. Season, local temperatures, temperatures north of the pond, duck abundances in the flyway, water levels, alternative feeding and roosting sites in the area, cold fronts and other factors also influence whether ducks visit a pond on a specific date. Nevertheless, a pond with better habitat and less disturbance typically supports more ducks than a pond with poor habitat and more disturbance. 🐾



Figure 1. Female nut clusters (nutlets) occur on current season growth, while male catkins (pendulous flower spikes) grow on previous season growth.

PECANS

It Takes Two (or More): Understanding Pecan Tree Dichogamy

By Charlie Graham, Ph.D., senior pecan specialist | cjgraham@noble.org



A common question asked by homeowners is “Can I plant just one pecan tree in my yard or pasture?” To sufficiently answer this question, we must first

discuss the dichogamy of a pecan tree and how it affects pollination.

For most horticultural plants to successfully produce a crop, viable pollen must be present when the female flowers are receptive for

pollination. This is true both for bee-pollinated plants and for wind-pollinated plants, such as pecan. Adequate pollination of a pecan tree is critical for the yield and kernel quality of the nut.

Most fruit trees have flowers that are considered complete, with each flower having a pistil (female) and stamen (male) reproductive structures. However, pecans are different because they have separate male and female flowers on the same tree. They are physically located on different parts of the tree, with the female nutlets (Figure 1) emerging from current season growth, and the

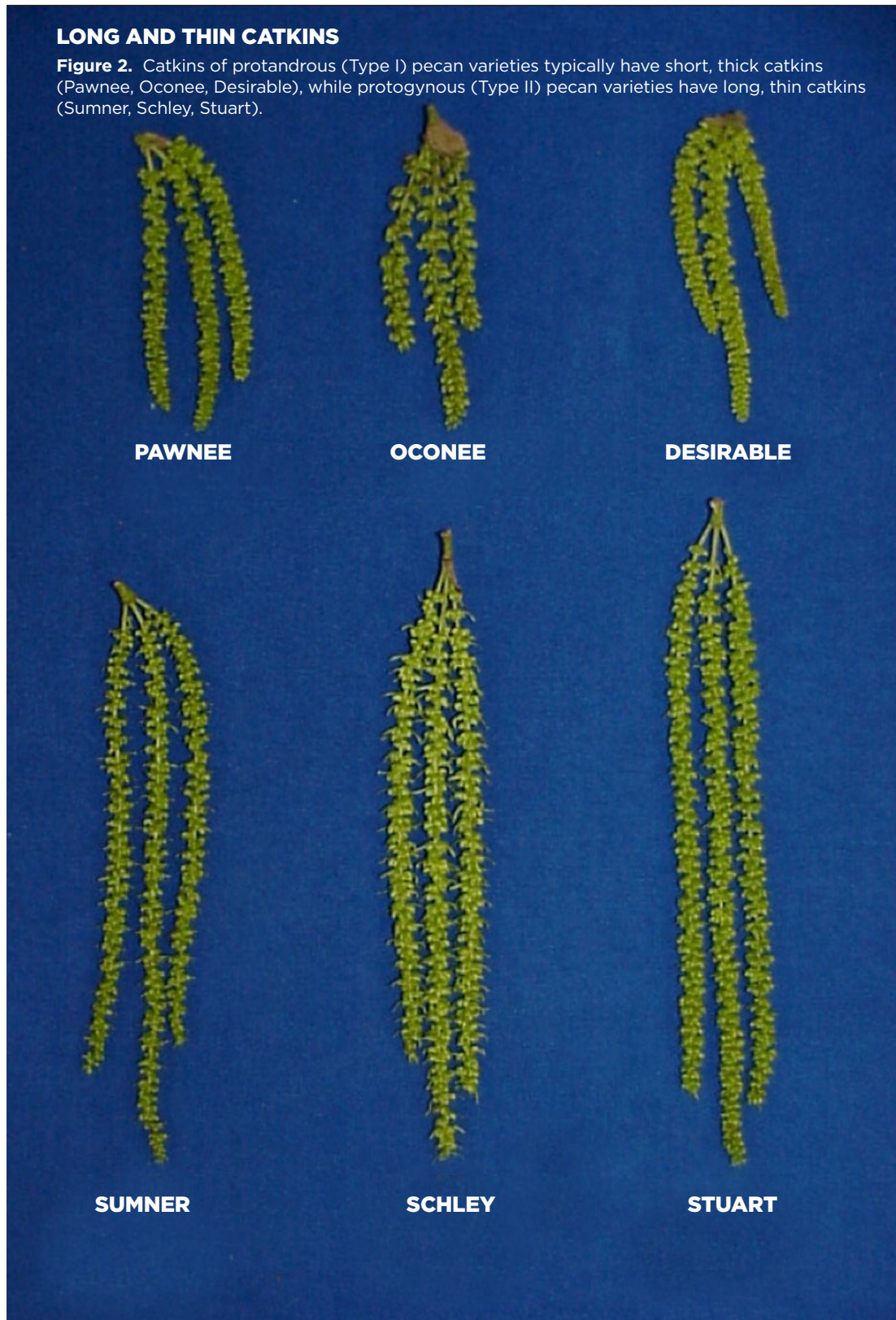
male catkins (Figure 1) developing on last year’s growth. But in addition to being physically separated, the male and female flowers do not mature at the same time, which is called dichogamous flowering.

If that isn’t confusing enough, pecans take it one step further. You can find some trees that mature the male flowers first followed by the maturing female flower, with this sequence being a Type I or protandrous flowering. While another tree matures the female flower first followed by the male flowers maturing,

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LONG AND THIN CATKINS

Figure 2. Catkins of protandrous (Type I) pecan varieties typically have short, thick catkins (Pawnee, Oconee, Desirable), while protogynous (Type II) pecan varieties have long, thin catkins (Sumner, Schley, Stuart).



which is known as a Type II or protogynous flowering. If male pollen release does not overlap nutlet receptivity then the tree has complete dichogamy, but if the timing of pollen release does overlap nutlet receptivity then the tree has incomplete dichogamy. Protogynous cultivars typically have long, thin catkins, while protandrous cultivars typically have catkins which are shorter and of greater diameter (Figure 2).

Why do pecans have this type of flowering? The simple answer is to maximize outcrossing which increases genetic diversity in native stands. More genetic variation leads to better pecan tree survival, continued evolution, and better climate adaptation. Trees with complete dichogamy must be cross-pollinated by another tree to set fruit. Cross-pollinated pecans are usually larger and higher quality than self-pollinated pecans. Self-pollination leads to poor nut growth and development, resulting in low quality kernels and increased nut abortion.

If you look at Figure 3, you can easily see that while Kanza (Type

TYPE I AND TYPE II VARIETIES

When planning an orchard, both Type I and Type II varieties need to be included to ensure pollination of all varieties.

Common Type I or protandrous pecan varieties:

- Caddo
- Cheyenne
- Creek
- Desirable
- Jackson
- Oconee
- Pawnee
- Western

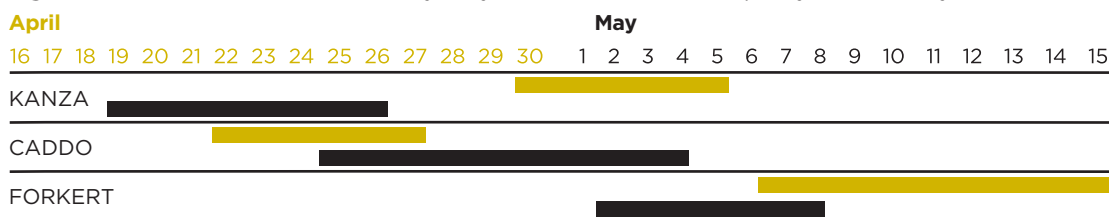
Common Type II or protogynous pecan varieties include:

- Burkett
- Candy
- Choctaw
- Elliot
- Forkert
- Kanza
- Lakota
- Maramec
- Nacono
- Schley
- Stuart
- Sumner
- Wichita

However, it is not as simple as planting a random combination of protandrous and protogynous pecan varieties.

PECAN POLLINATION CHART

Figure 3. Pollen dehiscence is denoted by the yellow bar, and nutlet receptivity is denoted by the black bar.



II) is a good match for Caddo (Type I), use of another Type II pecan such as Forkert would be a poor choice as a pollinator for Kanza or Caddo. Forkert's pollen shed occurs well after the Kanza and Caddo nutlets are receptive. Therefore, it is imperative that you consult a pecan variety pollination chart (learn more

Story continues on next page

at www.noble.org/cross-pollination-is-essential) when designing a pecan orchard to ensure there will be adequate pollination. It is recommended to find at least two to three varieties that shed pollen at the same time the main variety is receptive.

Research indicates that effective pollination may decrease at distances greater than 150 feet from a pollen source, so you must have pollinator trees no further than every fourth row. The duration of pollen dehiscence (shedding) for a cultivar may vary greatly in different years, as a function of variable weather and due to location of the orchards. Sustained high winds coupled with low humidity tend to shorten the period of effective pollination, both by accelerating pollen dehiscence and by

Literature Cited

Woodroof, J. G., and N. C. Woodroof. 1929. Flowering and fruiting habit of the pecan. Proc. National Pecan Assoc. 28:128-136.

shortening the period of nutlet receptivity. High humidity delays pollen dehiscence and extends the period of nutlet receptivity, according to research published in proceedings of the National Pecan Association in 1929. Small orchards may not need pollinator trees if native or seedling trees are within a few hundred feet of the new planting; however, large commercial plantings should include pollinators within the orchard. 🐄

GLOSSARY

Anther: The pollen-bearing part of a stamen (male flower)

Catkin: The pendulous spike of multiple male (staminate) flowers

Cross-pollination: In pecan trees, when pollen is delivered from the stamen (male) flower of one tree to the female flower of another tree

Dehiscence: The opening of anthers to release pollen, or “shedding”

Dichogamous flowering: When male and female

flowers on a tree mature at different times

Dichogamy: Can be complete (if male pollen release does not overlap female nutlet receptivity), or incomplete (if the timing of pollen release does overlap nutlet receptivity)

Nutlet: The mature female flower structure of the pecan tree

Pistil: The female reproductive structure of a flower

Pollinator tree: In (or near) a pecan orchard, a tree that

sheds pollen when the female nutlets on the main variety of pecan trees are receptive

Protandrous (Type I): Trees on which the male flowers mature first, followed by the female flowers

Protogynous (Type II): Trees on which the female flowers mature first, followed by the male flowers

Self-pollination: The acceptance by stigmas of pollen from flowers on the same tree

Stamen: The male reproductive organ of a flower

DECEMBER 2019

PRESCRIBED FIRE WORKSHOPS

OK-FIRE is pleased to announce its fall schedule of training workshops. They will be led by J. D. Carlson, Ph.D., OSU fire meteorologist and OK-FIRE program manager, and will consist of a combination of presentations and lab exercises in which attendees will get hands-on experience with the OK-FIRE website at mesonet.org/index.php/okfire.



REGISTER

Registration is required. Please register at bit.ly/ok-fire-2019 or by contacting Andrea Melvin (andrea@mesonet.org or 405-325-2652) at the Oklahoma Climatological Survey.

LOCATION AND DATE

Stillwater, Oklahoma
Dec. 12,
9:30 a.m.-4:30 p.m.



LIVESTOCK

Top 12 Things to Consider Before Building a Cattle Handling Facility

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



The cattle handling facility is at the heart of most every ranch. The quality of the facility and its ease of use can determine the enjoyment or frustration of use and dictate how often you work cattle through it. Properly designed and thought-out facilities will be safe for the producer and animal, handle cattle with ease, require a minimal number of personnel and allow for cattle to be worked in a timely fashion.

There are multiple design principles that can be used, depending on the cattle-handling abilities of the personnel and their ability to understand “cow psychology.”

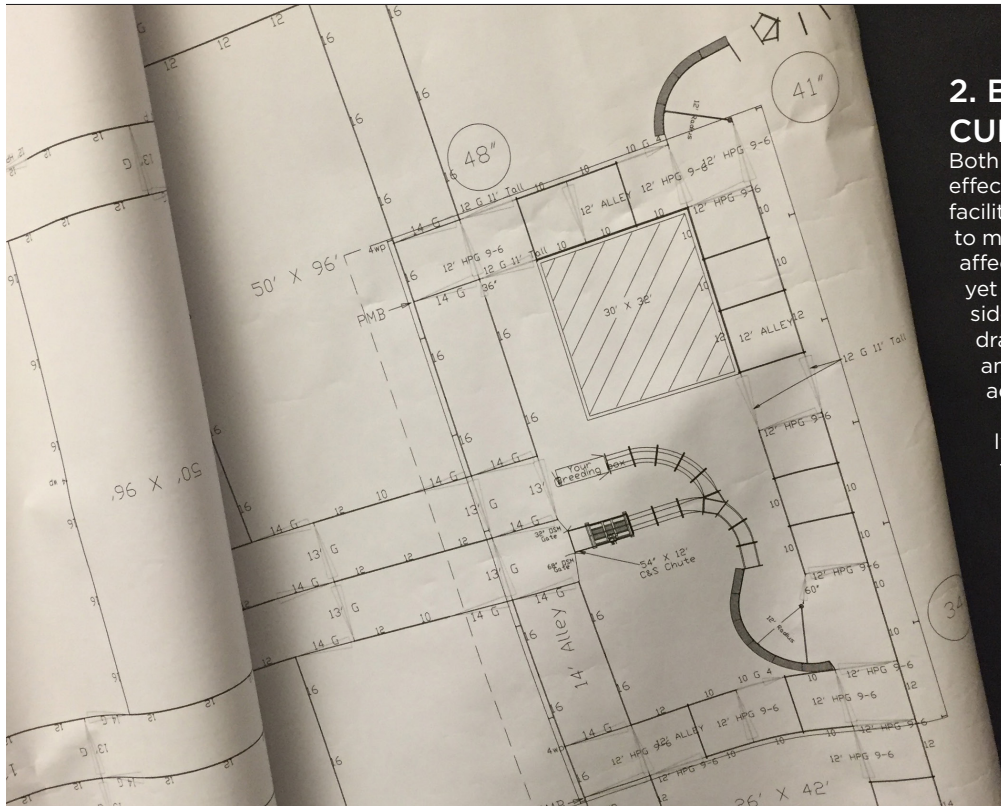
Here are the top 12 factors you should consider prior to building a new facility.

1. USE TYPE

Consider the species and type or class of animal for which the working facility will be used. Will it only be used for cattle, or will you need to handle goats and sheep, or horses, in addition to cattle? If it's only cattle, will it be used only for a stocker operation, or will you need to process cows, bulls and calves through the chute as well? The size of cattle worked will dictate how wide of a raceway you need. Finally, do you plan to rope and drag calves, or process through a chute? Roping and dragging calves will require an area large enough to do so.

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2. BUD BOX OR SOLID-SIDED, CURVED DESIGNS

Both Bud Box and solid-sided, curved designs are effective. In general, the curved, solid-sided-fence facility, in my opinion, allows the cattle handler to make mistakes and recover without adversely affecting cattle flow. If you are in the wrong position yet the animal cannot see you because of the solid side, it may not affect the movement of cattle. A drawback to this style is it is more complicated and costly to build because of the curves and the added expense of the solid-sided fences.

The Bud Box system (learn more at bit.ly/tamu-bud-box) uses the animal's instincts to your advantage. It works on the principle that animals will want to return to where they have been if they cannot proceed further. When they turn around and head back in the direction that they came from, the animal is diverted down another alley or raceway leading up to the working chute. The drawbacks to this system are that it is typically not recommended for novice cattle handlers, and if handlers are out of place, they can impede cattle movement.

3. LOCATION

It's all about the location. The working facility should be central to most pastures and easily accessed, either using lanes or along adjoining fences that help funnel cattle into the facility. Having a corral situated where cattle have to routinely enter and leave on their own will facilitate penning them on working day. One example is a catch pen situated between pastures that cattle must walk through when rotating from one pasture to the other. It could be a central watering location or where feed and hay are fed to the animals. If you plan to use the facility to hold sick or freshly received animals for a few days, then having shade from trees along the fence might be beneficial.

4. MATERIALS

There are numerous materials that a set of working facilities can be built out of: drill stem pipe, highway guardrails, cable, sucker rod, cattle panels, wood. All have their benefits and drawbacks. In general, metal building materials will probably outlast wood. Cable fences are not well-suited for working and crowding facilities. They flex too much and can allow calves to get through. Likewise, if you have to quickly climb a fence to get away from an aggressive animal, cable fences will not support your weight well enough to allow you to quickly escape. Make sure any drill stem you purchase is not magnetized, as it makes welding difficult. Also, make sure the drill stem is not radioactive or excessively rusty if it has been used in drilling activity. Graduated cattle panels have smaller hole sizes on the bottom of the panel, making them difficult to climb when in a hurry. If using sucker rod, consider welding a clip over the rod to the line post. Experience has proven that welding a sucker rod only to a post will result in a broken weld.

5. UTILITIES

Having access to electricity and water is beneficial but not necessary. If you plan to use an electric branding iron, access to land-line electricity will eliminate the need for a costly and loud generator. If you have electricity available, you can have a small room located next to the chute to store medicine and vaccines in a refrigerator. Additionally, you can have hot water to help clean up the equipment after use.

6. COVER AND SHADE

It is beneficial to have cover over the working chute in case you have to work the cattle in extremely hot or inclement weather. Additionally, you may decide to have a portion of the pens covered in case you need to hold a quarantined or sick animal in the facility for a length of time.



7. SLOPE

The working facility should have a small degree of slope to allow drainage during and after rainfall events. The slope should not be so great that erosion or channeling will occur after the grass has been trampled down. Additionally, consider the degree and direction of the slope when planning where you will back up a trailer to the pens. Backing across a slope when muddy may result in the trailer sliding sideways. Trying to pull up a muddy slope when loaded may be difficult, too.



8. CALF CHUTE, PALPATION CAGE, GATES

Buy a chute that is large enough to handle your largest animal, including your bull. It may be necessary to restrain the bull to treat a foot or to conduct a breeding soundness exam. Remember, bulls are longer and thicker than a cow. Many of the economy-type chutes are not designed to hold a bull. Also plan for a palpation cage at the end of the chute to allow a safe access area for a veterinarian so he or she doesn't have to worry about getting run over by the next cow in line. The cage will also be handy if you have to treat a hind foot.

Design the facility with options. It is much easier to work 2- to 3-month old calves in a calf chute than in a large, cow-sized chute. Do not skimp on gates! Make sure they are heavy and well-built. Plan on gates between adjacent pens and from the alleys. Having gates between pens allows you to open up adjacent pens to create one large pen when needed. Use headers across the top of the gate to ensure it stays in line and does not sag, so it opens and closes as it should. Make the headers high enough that you can drive equipment or ride horseback under them.

9. ACCESS TO ROADS

You should plan to have all-weather road access to the working facility to enable you to load and unload cattle even in rainy conditions. However, placing a set of corrals right off a county road could enable cattle thieves to bait your cows into the pens and easily and quickly load out and steal animals, so keep that in mind.

10. SIZE

The size of the facility will be determined by the activities needed and how long you plan to hold cattle there. If you are just using the pens as a holding area while working the cattle, each cow-calf pair will require a minimum of 35 to 45 square feet. The larger the calf while on the cow, the more room that will be required.



11. NUMBER OF PENS

One of the biggest design mistakes we see is a facility without enough holding pens. It is always good to plan to have at least one more pen than you think you need. At the minimum, three pens are needed. You will need one large pen to hold the cattle when they are first caught, and then preferably two more to sort calves and cows into. This will also allow you to have an open pen to catch the animals after they have been worked so that they do not get mixed with unprocessed cattle. Designing an alleyway alongside the pens that leads to the chute allows you to sort animals out of the alley and into the pens. Additionally, the alley can be used to hold cattle temporarily.

12. OTHER CONSIDERATIONS

- Build with flexibility in mind:
 - A.** Design the facility so that expansion will not require a major overhaul.
 - B.** Make the design modular so more pens can be added alongside existing alleys.
 - C.** Make the raceway leading to the chute adjustable to enable it to be wide enough for cows, but can be adjusted down so that a calf cannot turn around in it.
- Do not design the facility so that the chute turns out into the pasture. If you miss a head catch on an animal, you cannot easily recycle it back around.
- Set all posts at least 3 feet down into concrete.
- If concrete is used under the chute, extend it at least 6 to 8 feet past the front of the chute. Make sure the concrete is heavily grooved to provide traction even when covered with mud and manure.
- Reduce shadows that go across alleys by running alleys east and west if possible. Cattle do not have depth perception and may view a shadow as a hole or trench, causing them to balk.

VISIT, PLAN, VISUALIZE

As you design your handling facility, go see as many other working facilities as possible in person. Talk with the people who use them, and ask what they like and what they would change. Draw your design out on paper, and then lay it out on the ground to scale. Use marking paint and survey flags to help you visualize the layout before building. Then walk through the layout as you would when working cattle. It is far easier to make adjustments in the planning stage than after everything is built. 🐮

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FEB. 25 Managing Crops in Hoop Houses

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

Specialty crop growers worldwide continue to adopt high tunnel hoop houses because they provide an element of environmental control not possible with field production. During this course, you will learn how to manage the growing environment unique to hoop houses to produce high yielding, high quality crops.

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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.

Name: _____
 Business
 Consolidated
 Personal

Managing Taxes for Agricultural Producers

Cost Basis
 Market Based

CURRENT ASSETS

- Cash & Checking
- Accounts Receivable
- Prepaid Expenses
- Cash Investment Growing Crops
- Marketable Securities
- Stored Crops and F
- Purchased Seed
- Supplies
- Other Current Assets
- TOTAL CURRENT FARM ASSETS
- Non-Farm Assets
- Stocks
- Marketable Securities
- Other Non-Farm Assets
- TOTAL NON-FARM ASSETS
- TOTAL CURRENT ASSETS

NON-CURRENT ASSETS

- Breeding Livestock
- Vehicles

CURRENT LIABILITIES

- Accounts Payable
- Line of Credit and Operating Notes
- Current Portion of Term Debt
- Accrued Interest
- Taxes Payable:
- Ad Valorem
- Employee Payroll Withholding
- Income Taxes
- Deferred Taxes
- Other Accrued Expenses
- Other Current Liabilities
- TOTAL CURRENT FARM LIABILITIES

DEC. | 10

The Internal Revenue Service continues to interpret and publish guidance and regulations pertaining to the tax legislation passed by Congress in December 2017. Some changes will become effective for the 2019 tax year. Join us to learn more details. Tax professionals will be available to answer questions.

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



DEC. | 12 How to Get Your Wild Game from Field to Table

1:30-6 p.m.
Pavilion
Registration Fee: \$25



JAN. | 9 Estate Planning for Agricultural Producers

10 a.m.-3 p.m.
Pavilion
Registration Fee: \$25



FEB. | 21 Selecting and Developing Bulls

9 a.m.-3:30 p.m.
Oswalt Ranch
Registration Fee: \$25



MARCH | 5 Beef Quality Assurance Certification

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