

Science Behind Facility Design

Cattle physiology explains why some facility designs work better.

Story & photo by **KASEY BROWN**,
special projects editor

“What do you like to think about on vacation? Only one thing at a time, right? Cattle are the same way. They only think about one thing at a time,” said Steve Boyles, professor at the Ohio State University, during a facility design workshop. This workshop was on a closed street in downtown Phoenix, Ariz., between buildings of the Phoenix Convention Center. The street was closed to house a cattle-handling demonstration area during the 2018 Cattle Industry Convention & NCBA Trade Show Jan. 31-Feb. 2.

Boyles was joined by Lily Edwards-Callaway, assistant professor at Colorado State University, and Dean Fish, ranch manager at Santa Fe Ranch in Nogales, Ariz. While the trio talked about low-stress handling methods and stockmanship tools to use while working cattle, they highlighted more of the physiology behind some cattle behavior.

Edwards-Callaway explained that cattle, being prey animals, scan the horizon for predators with their eyes on the sides of their faces. Thus, they have small binocular vision and poor depth perception. They are good at identifying things in a vertical orientation.



Presenters (from left) Lily Edwards-Callaway; Todd McCartney, session facilitator; Steve Boyles; and Dean Fish explained how to design a facility to work with cattle physiology.

She also noted that cattle can see color, but not in the same way as humans. Eyes are made of rods and cones. Rods allow for vision in low light, and cones allow for colors. Cattle are dichromats, which means they have two cones in the eye. This means colors appear differently. Because they have a higher ratio of rods to cones, things they see are also blurrier. Dichromats are more adept than trichromats (humans) at identifying camouflaged images. Cattle also have a *tapetum lucidum* that helps with night vision.

Cattle move their ears to localize sound, but they are not as good at it as humans, so they use their vision

first, Edwards-Callaway said.

These all explain that cattle perceive handling facilities differently than humans.

Fish explained the five principles of cattle handling that will help in facility design.

1. Cattle want to see you.
2. Cattle want to go around you.
3. Cattle want to be around other cattle.
4. The release of pressure is just as important as its application.
5. Cattle can only think of one thing at a time.

In facility design, Boyles said he prefers 10-foot-wide alleys, or bigger if you regularly work cattle on

horseback. They demonstrated the use of a Bud Box to go into the snake and squeeze chute.

When thinking of gate hinges, Fish said that when you latch the gate, you should be on the correct side, which is on the same side as the chute in which you are asking the cattle to go into.

Squeeze chutes should give access to the neck for injections, and Boyles said sometimes it is nice to have a bar to prevent cattle backing up. He suggested having a chest plate to prevent falling in the chute, or a bucket of sand or dirt to add traction.

If you want solid sides, Boyles recommended using them only on the perimeter of your working area to save on cost.

Keep in mind the size of your cattle. On average, bruising causes 7 pounds to be trimmed away from a carcass, Edwards-Callaway said. Safety for cattle and humans should be top of mind in facility design.

Editor's Note: This article was written as part of Angus Media's coverage of the 2018 Cattle Industry Convention and is copyrighted. See additional coverage distributed through Angus Media channels including the Angus Journal, Angus Beef Bulletin, Angus Beef Bulletin EXTRA, The Angus Report and online at www.angus.org.

Stockmanship: Focus on the family

A majority of U.S. beef cattle operations are family affairs, where husband, wife and children are actively engaged — especially when conducting management practices that require a crew. Tempers sometimes flare, and tears may be shed when families work cattle together. It really shouldn't be that way. Yelling and cussing at one another is not mandatory when working cattle. Not ever.

That's the opinion of Montana-based rancher and stockmanship clinician Curt Pate. Speaking during the 2018 Cattle Industry Convention in Phoenix, Ariz., Pate said failure to communicate is what fosters family friction. He was joined by his wife, Tammy; Texas rancher Todd McCartney and his son, Ben; and Texas A&M University animal scientist Ron Gill in a discussion of ways to promote positive interaction among family members that work cattle together.

Pate said instruction in basic “cowboy etiquette” is useful, particularly for families that work cattle from horseback. He called it bad manners to cut in front of another rider, ride into the midst of the herd without the boss's say-so, or to ride away from someone who has dismounted to open or



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close a gate. Not only are such infractions rude, but they may cause safety issues.

Todd McCartney directed comments to audience members who use calf tables at branding time, and how it's often the kids' job to push calves through the lead-up alley. He advised adults to teach youngsters how to do it without getting kicked.

“They need to keep the minds on the job, put the cell phones away and keep the noise down. That doesn't mean they can't have a quiet conversation, but keep the volume down. Kids need to learn to pay attention and be ready, not stand around with their hands in their pockets,” said McCartney.

“Dad (or whoever is in charge) shouldn't assume the kids, mom or the hired man already know what's expected of them. If you're the boss and you have a plan, share it,” he added. “Get your preparation of supplies and equipment done beforehand. Be ready to concentrate on making the work go smoothly.”

Ron Gill also advised the supervisor to take time to explain to everyone what needs to happen and how it should be done. Do that before you begin the job. He noted how explaining as you go, usually with a lot of yelling, disrupts the flow. Cattle react negatively, people become frustrated and things may only get worse.

“If your wife or your kids don't know what to do, it's your fault,” stated Gill. “Don't be hard on them if they're trying to do the right thing. Don't fuss at them so much that you're the reason your family dreads working cattle.”

— by **Troy Smith**, field editor