

The Other AI

Advancements in artificial intelligence contribute to progressing daily routine management for cattle producers.

by **Laura Handke**

For an industry of people rooted in tradition as deeply as cattle producers, the adoption of artificial intelligence and its drive in developing new technology can be hard. For those willing to make the leap with technology, no matter how big or small, the rewards can pay dividends.

As a society, we often think of technology as tangible, something we can hold in our hand, but technology is the application of scientific knowledge for practical purpose – and in the cattle industry, practicality is king.

For University of Missouri Extension Beef Reproduction Specialist, Jordan Thomas, the genetic gains he has witnessed producers achieve in relatively short periods of time is a key driver in the research he and his team conduct. Thomas often begins a presentation with one seemingly simple question: “Can you afford not to make an investment in your breeding program?”

Thomas says when compared to other sectors of livestock, the statistics associated with technology adoption across the beef industry is costing producers efficiency and, ultimately, money. In his latest research, tellingly named the 7 & 7 Synch, results concluded 82% of cows come into heat before the timed artificial insemination (AI) service using the new protocol.

The 7 & 7 Synch protocol improves ovarian follicular maturity before the administration of gonadotrophin-releasing hormone (GnRH) by treatment with prostaglandin F2a and an intravaginal progesterone insert, also known as a CIDR, before the GnRH, to improve the control of a cow's estrous cycle. Pregnancy rates were markedly better in both conventional and sex-sorted semen using the new protocol, with Thomas sharing, “Pregnancy rates with this new protocol are exceptional.”

Research on this protocol is still being conducted, and at the time of interview, Thomas urged all producers interested in learning more to visit Mizzou Repro, located on the University of Missouri Extension website, for forthcoming application and procedural instructions and videos.

The investment of time, research and resources by academia and the private sector, alike, continue to create ease, safety and efficacy within the cattle industry. And the contributions have transformed routine management – such as artificial insemination



Te Pari provides chute-side technology for livestock producers to collect 12 unique data points on their cattle.

and herd health via vaccinations and performance indicators – into opportunities for operational improvement.

New-age dosing

Receiving a warm welcome since the company entered the U.S. market five years ago, Australian-company, Te Pari, delivers technology chute-side.

The company's dosing guns take the physical work out of squeezing a manual pistol grip syringe, while the precision dosing option also offers Wi-Fi connection to the scale for exact dosing.

The Te Pari strategy centers on looking at the complete animal treatment package rather than focusing on one specific piece – such as capturing weights.

“We are going to market as a complete solution,” Regional Sales Representative, Kurt Chellenberg, says, “because we know that people want to know key pieces of data about livestock to help them make decisions about culling and breeding.”

The Te Pari scale system offers the opportunity for producers to collect 12 unique points of data independent of the dosing information that is captured when paired with the system's gun applicators.

For Fred and Donna Borman's, Big Horn, Mont., F1 baldy operation, Te Pari's technology has offered an additional benefit to easier cattle processing and treatment.

“We are seeing a savings in vaccinations and medications by dosing exactly by weight,” says Kyla Johnson, employee. “And we have seen great results that the treatment is working when we are processing calves and one comes across the scale that weighs 650



Te Pari's dosing gun is centered around functionality and takes the physical work out of squeezing a manual pistol grip syringe, while featuring Wi-Fi connection to scale for exact dosing.



Headed by Jordan Thomas, a University of Missouri Extension research team has developed the 7 & 7 Synch breeding program to improve the management of a cow's estrous cycle.



Fred and Donna Borman, Bighorn, Mont., use Te Pari's dosing guns to give each animal a precise dosing, which saves money on vaccinations.

pounds when the majority are weighing 500. That calf is getting dosed correctly and we don't have to re-treat later in the season."

She adds while she still has the gun in her hand and is dosing every animal that comes across the scale, having the technology in place to know that when she pulls the trigger a precise dose is administered, recorded and uploaded to the cloud where anyone from the operation can access anywhere, at any time, is where they find exceptional value.

"I know that when I pull the trigger, I gave the correct dose. We know exactly how many cc's each calf gets and we can go back and look at that information," she says with Fred concurring. "I think that the savings on our pour-on and vaccinations are going to pay for the system very quickly."

While chute-side WiFi and precision dosing are both exciting advancements in producer-available technology, drones, airplanes and remote sensing are also adding another level of producer management. Paired with both veterinary and agronomic science, remote sensing may change the way we manage both our herds and pastures.

Futuristic forage management

For those who battle mesquite in the South and Southwestern U.S., LANDVisor™ advanced brush management, a new, consultative management program launched by CortevaAgriscience, is being employed to pinpoint problem areas, application prescriptions and opportunities for production and livestock carrying-capacity improvement.

"The really neat thing about this program is that it is a digital offering, but it also combines with personal consultation by trained consultants in the field," says Charlie Hart, Corteva Agriscience Market Develop Specialist, and leader of LANDVisor advanced brush management research and development. "Essentially what we are doing is applying technology that is being used on the crop-side of precision agriculture to improve pastures."

The program works in three phases to guarantee a 70% kill on mesquite brush. In phase one, interested landowners

“Essentially what we are doing is applying technology that is being used on the crop-side of precision agriculture to improve pastures.”

— Charlie Hart



LANDVisor maps soil types, mesquite density and other information to help plan mesquite spraying. It also monitors foliage to help determine when it is ready to spray.

connect with a certified LANDVvisor consultant to discuss the goals for their operation. In this phase, pastures are assessed and delineated to map areas on which the rancher is interested in managing brush, and the consultant uses the LANDVvisor precision tools to identify and georeference problematic species. Satellite and aerial imagery are used to create GIS-supervised classification maps that indicate both nuisance and beneficial plants on the property. Polygons are created around every mesquite on the property for use in sophisticated monitoring for proper timing of application. The system also incorporates soil maps and associated potential forage productivity maps for planning purposes.

Phase two sees a return visit from the advisor to discuss imagery results and available control options, revisiting the initial ranch management goals established in phase one. Following a treatment decision, a second level of LANDVvisor does a more thorough, three-year evaluation of the mesquite in the rancher selected area.

"We are looking at color, leaf biomass and photosynthetic activity (over that period) to tell us if or when we expect to hit the window of susceptibility on a mesquite plant. And depending on what we learn, we may or may not spray that year," says Hart.

Once peak susceptibility conditions are met, phase three consists of a shapefile of the target-treatment area and prescription plan being uploaded to an applicator of the rancher's choice and the area being treated.

Hart says that both return on investment and perpetual value propositions make LANDVvisor an important land-management technology as the program expands both in geography and species control.

"Not only can I look at the potential productivity of my ranch as it is today, but I can also see what the potential for productivity on my ranch would be if I could control brush on my best soils. There's a lot of opportunity for a rancher in that knowledge," Hart says, "it doesn't just tell me what my livestock carrying-capacity is, it tells me how many animals I have the potential to run." HW



After the treatment plan is finalized, LANDVvisor delivers an application file for aerial applicators to use in their GPS systems. It ensures precise application according to plan.