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Long Star Land Steward Award, and has partnerships with Ducks Unlimited and the USDA NRCS.

Of his hunting and conservation endeavors he says, "My only regret is that I didn't start it a little bit earlier."

For more about these ranches, visit their websites at *http://southernbellefarm.com/, http://tavaputsranch.com/* and *www.txaglandtrust.org/tag/77-ranch/.*

— Story & photos by Shelby Mettlen

MANAGED GRAZING

Manage Soil Health on Pasture and Range

It only make sense: For an industry, individual business or any human endeavor to be sustainable, it must be environmentally responsible, socially acceptable and environmentally sound. According to agronomist Steven Shafer, soil health underpins all three of these pillars of sustainability for production agriculture. To some extent, however, soil health has been taken for granted by many agricultural producers, including crop farmers and graziers. That is changing.

Management tips offered to stop taking soil health for granted.

"In recent years, there has been a reawakening to the importance of soil health. It's been an explosion, really, and rightly so," Shafer told cattle producers. During a Cattlemen's College educational session, Shafer, who is chief scientific officer for the Soil Health Institute, was aided by Natural Resource Conservation Service (NRCS) Grazing Lands Specialist Dennis Chessman in leading a discussion focused on management of soil health in pasture and range management systems.

"It is the soil's capacity to function as a vital, living ecosystem that sustains plants, animals and humans," said Shafer. "If we're even talking about soil 'health,' it means that soil is alive. It is very much a living system. Much of the earth's biodiversity exists in the soil."

Shafer noted how prediction models portend increasing frequency of drought in the coming decades, and the need to increase drought resistance by building

►"It is the soil's capacity to function as a vital, living ecosystem that sustains plants, animals and humans," says agronomist Steven Shafer of the Soil Health Institute.

soil health in cropping systems and grazing lands. He emphasized the value of management strategies that retain and build soil organic matter, which is composed chiefly of carbon, to increase water-holding capacity and increase retention of soil nutrients.

Specific to grazing lands, Shafer and Chessman lauded the value of management systems that foster improved plant health and enhanced growth of root biomass. Chessman emphasized that plant root exudates feed a wide variety of life forms in the soil, including bacteria, fungus, protozoa, nematodes and arthropods, and provide the "glue" that holds soils together.

►Dennis Chessman emphasized four management principles that NRCS has identified as important to promoting soil health.

Chessman emphasized four management principles that NRCS has identified as important to promoting soil health:

1. Minimize disturbance of soil surfaces, giving attention to grazing management utilizing appropriate stock density and stock movement.
2. Keep soil surfaces covered as much as possible, by leaving sufficient residual above-ground growth.
3. Increase system diversity, moving away from monocultures to diverse plant communities.
4. Maintain and build healthy, deep plant root systems.

"We tend to focus on above-ground growth — what we can see," said Chessman. "We need to think more about what we can't see under the soil surface."

— Story & photos by Troy Smith

Manage Grazing for Sustainability

What is effective grazing management? According to University of California–Davis Extension Range Management Specialist Kenneth Tate, grazing management should satisfy nutrient requirements of grazing animals. At the same time, it should satisfy the needs of forage plants for growth, reproduction and root system growth. Grazing management should also mitigate detrimental effects on soil health.

Stocking rate may be the most important contributor to long-term productivity of land and livestock.

Tate teamed with North Carolina grazier Johnny Rogers, who also coordinates his state's Amazing Grazing Project, to discuss sustainable grazing management concepts, during a Cattlemen's College session hosted at the 2017 Cattle Industry Convention in Nashville, Tenn.

"We must be adaptive grazing managers to be productive and care for the environment," Tate told cattle producers in attendance. "I'm not a proponent of any one strategy. All have a place," he added, emphasizing that he considers neither an intensive nor an extensive approach to be best for the sustainability of all grazing operations.

Tate said whether managers apply intensively managed rotational systems or season-long continuous grazing, stocking rate — the number of animals allocated to a pasture or paddock per unit of time — may be the most important contributor to long-term productivity of land and livestock. Tate estimates that about 75% of ranchers

employ some kind of rotational grazing system, allowing at least some pastures to rest for some portion of the growing season. Of those, 5% apply intensive management strategies utilizing relatively high stock density and frequent rotation allowing for short grazing periods in each pasture followed by long periods of pasture rest.

►Range Management Specialist Kenneth Tate estimates that about 75% of ranchers employ some kind of rotational grazing system, allowing at least some pastures to rest for some portion of the growing season.

"Intensive management can work well when rest periods are sufficient," said Tate, adding that continuous season-long grazing works, too, but moderate stocking rates work best in the long run.

Choice of strategy can vary, depending on the production environment and the producer's goals, added Tate. "There is no perfect prescription. I've seen continuous, season-long grazing and intensive rotational systems utilized successfully on the same ranch."

For his portion of the presentation, Rogers said tools used for applying adaptive management include water, fence and an open mind. A proponent of rotational grazing, Rogers said even a pasture with one water source might be easily divided with temporary electric fence.

"Consider the power of one wire," advised Rogers. "When you divide one pasture into two, you have doubled the stock density for each and doubled the period of rest for each."

Other concepts discussed included targeted grazing on certain areas where increased livestock impact could be beneficial. Similarly, feeding hay in multiple targeted areas helps return nutrients to the soil, in areas where they might be most needed. Rogers reminded the audience that for $1 of nutrient consumed by a cow, roughly 85¢ worth comes out the back end and can be captured as fertilizer.

— Story & photos by Troy Smith

Grass to Cash

"Primarily, what we're in the business of doing is turning grass into cash," Dennis Hancock, associate professor and state forage extension specialist for the University of Georgia, told Cattlemen's College attendees in Nashville, Tenn.

Southeast forage specialist explains the significance of forage value in cattle production.

Forage quality is the key to profitability in beef cattle systems, Hancock pointed out. It's important to note that nutrient needs change with the stage of production of an animal. Producers need to understand the relationship between gain and animal health to boost immunity and nutrition at the same time.

Protein is important, but it's normally fairly easily fed, he said. It's usually not as challenging as energy to get into an animal.

"Getting the caloric intake into those animals is often our biggest limitation," he said.

►Less digestibility means more manure, said Dennis Hancock, associate professor and state forage extension specialist for the University of Georgia. "We might be producing more bales, but at a certain point, we're just producing more manure."

The relationship between quality and animal performance is more apparent in the stocker industry than it is in the cow-calf segment, he said, noting that steers gaining 2.5 pounds (lb.) per head per day, should be receiving a diet with about 74% total digestible nutrients (TDN). Cows at peak lactation need about 60% TDN and 12% crude protein (CP), and those requirements drop to just 48% TDN and 7% CP at weaning.

As the cattle industry knows, body

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