

# A Challenge Facing Us All

Water is our most valuable commodity as an industry.

by *Kayla M. Wilkins*

It takes approximately 614 gallons of water to produce 1 lb. of beef. No, cattle do not consume 614 gallons of water in their lifetime. That statistic is derived from the water usage associated with beef production from grass-to-plate according to Sara Place, Ph.D., National Cattlemen's Beef Association (NCBA) senior director of sustainable beef production research.

That said, water is no small matter for the beef cattle industry today. On the contrary, water is arguably the most prominent issue facing not only cattle producers but also all rural and urban



municipalities from coast to coast.

Dependent on location, producers are facing an array of issues from a regulatory and management standpoint. In the southern United States, sheer

availability of water is critical, while regulatory and water quality challenges have sprung up in other parts of the country.

## Depletion of water resources

Drought has swept across the southeastern United States in the last year, facing producers with some difficult choices. Average rainfall in those regions



has decreased significantly, forcing some producers to liquidate. Put simply, producers cannot raise beef cattle without water. Georgia Cattlemen's Association Executive Vice President Will Bentley says the industry in his state has taken a downturn.

"We've had a lot of producers that have had to decrease their herd size because they simply did not have enough grass to feed the animals they had," he notes.

Historically, rivers, streams and wells have been the avenues for cattle producers in Georgia to assure their cattle have fresh, clean water. Today, the picture looks considerably different.

"You are seeing several of our rivers shrinking down," Bentley explains. "Creeks that have flowed for years, that people have never seen dry, have gone dry over the last year in conditions we haven't seen in my lifetime."

The unusual dry spell extending across the Southeast is creating an array of obstacles for cattle producers in the area and is affecting their productivity. Kyle Gillooly, a Hereford and Angus breeder in Wadley, Ga., says he identifies the closing profit margin as the biggest challenge when facing a drought situation in agriculture. Gillooly is the former president of the Georgia Cattlemen's Association and owns Predestined Cattle Co. Along with the cattle business, his family runs a row-crop operation, providing him much insight to the effects of water in agriculture.

If cattle prices are at an all-time high, Gillooly explains, the cost of feed and irrigating hay fields is more justifiable. However, in today's market, he says covering additional costs may not be worth the extra investment in some cases. Producers cannot afford to put dollars toward additional feed resources in a drought situation when there is not enough income generated to increase their bottom line.

Aside from profitability declining with the depletion of water sources, Gillooly notes the bigger concern as the potential for fire. He recalls fire devastating many areas across the country as a result of drought in the last couple of years.

"The drought is one thing, but when you get to extreme situations and you are at the risk of fire damage, we have got to do a better job of making sure there are no careless mistakes that cause those fires," he says.

Unlike the Southeast, the southern states including Texas, Oklahoma and New Mexico are on the upward trend, making a comeback from the previous drought years. Jay Evans, chairman of the Texas and Southwest Cattle Raisers Association water subcommittee, says the drought across the southern and western regions of the United States

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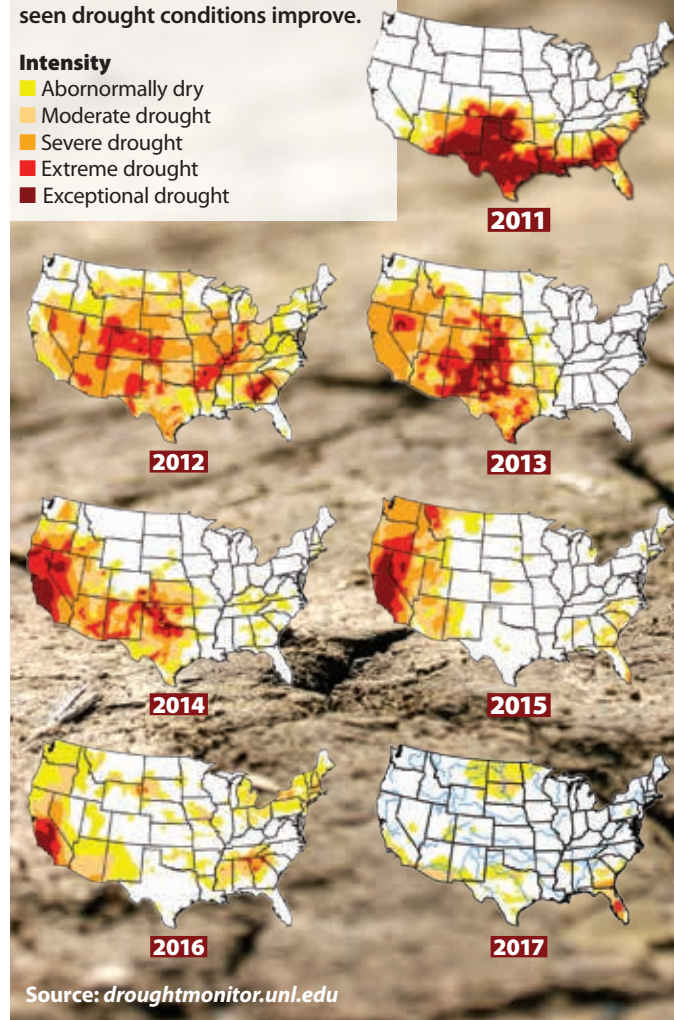
— Jay Evans

## U.S. Drought Monitor

Since 2011, much of the U.S. has seen drought conditions improve.

### Intensity

- Abnormally dry
- Moderate drought
- Severe drought
- Extreme drought
- Exceptional drought



resulted in an adverse impact for the industry just a few short years ago.

"It was a drought of record and had tremendous impact," he says. "Some historians say, in a lot of ways, it was equal to or even worse from a resource standpoint than the drought of the '50s. There are different opinions on that, but either way it was bad."

Even so, Evans notes the beef industry in Texas has rapidly restocked in many areas because of the increased rainfall and improved range conditions. This recovery for the industry does not come without slight hesitation from cattle producers, as they are cautious to avoid potential problems. Nevertheless, Evans says as of Jan. 1, 2017, the national beef cow inventory has grown by 2.2 million head in the past three years.

"People are saying they have been expanding and want to continue to expand," he explains. "According to the recent CattleFax cow-calf survey,

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approximately 90% of ranchers surveyed in our area said they plan to continue to restock at a conservative level or remain the same.”

As far as water resources in Texas and surrounding states, producers rely on both surface water and groundwater. Some of the groundwater in Texas comes out of the Ogallala aquifer that spans into several states in the southwestern and central United States.

The cattle industry is not the only industry relying on the various aquifers, however. Many industries rely on groundwater resources, and without putting conservation-minded practices in place, the aquifers may deplete faster than they can recharge.

With competition high, Evans is optimistic about various scientific technologies coming up the pipeline to extend the life of the aquifer. Purification of brackish water is one area many industry leaders in Texas have begun to develop. By simple definition, brackish water is deemed unusable because of its salinity content. Brackish water can be taken out of the Gulf of Mexico or pumped from the ground. Evans says there is a lot of brackish water out there, and if the science can support the use of it, a lot of regions will be benefitting in a big way.

“You could consider it a new source that is not being used right now. There is a large quantity of it,” Evans notes. “Brackish water will help us conserve our fresh water. It provides the opportunity to extend the life of our water resource. We just need to be sure we do it right and the decisions are based on sound science.”

These dry conditions are not reserved for the southern and southeastern states; California has faced extreme dry conditions in the last several years, as well. California Cattlemen’s Association Director of Government Affairs Kirk Wilbur says, like in Texas, producers in California are grateful for the better year in terms of rainfall.

“We have a number of ranchers who have significantly reduced their herd numbers,” he explains. “Now that they’ve got more water resources available to them, they are going to be struggling to build this herd back up. I think drought over the past five or six years has probably been one of the larger water stories that we’ve got here in the state of California.”

### Regulatory conversation

The drought brought along a wealth of regulations hindering the productivity of California producers in some cases. Wilbur says Senate Bill 88 requires the State Water Resources Control Board to adopt emergency regulations requiring all people with a diversion of water in the state to report their use of water on an annual basis. In addition, the bill requires anyone who diverts more than 10-acre feet of water per year to install a measuring device at each point of diversion.

“I could go on and on and on with some of the problems confronted by ranchers installing those measuring devices,” he explains. “The bottom line is the cost to the rancher of installing those devices in almost every circumstance in the state of California is very much going to outweigh any data benefit that the State Water Resources Control Board could get.”

Aside from water use alone, California and other states have found themselves working through a plethora of environmental issues pertaining to water quality. Wilbur notes citizens across the country obviously want and need clean water for not only drinking purposes but also for recreational purposes. With these needs in mind, water again finds itself as a hot topic for many constituents in the political arena. Because of the negative light frequently shed onto agriculture, it is no surprise the industry catches a lot of backlash when the issue of water quality comes to the table.

“I think it goes without saying there have been circumstances in the past where we’ve seen bad actors in the ranching community who have caused a lot of water quality impairments,” Wilbur



explains. “We’re not saying that cattle can’t cause water quality impairments. Unfortunately, because of those isolated circumstances in the past, livestock grazing is a low hanging fruit in terms of going after water quality impairments.”

Regrettably, regulatory actions pertaining to water sometimes have an adverse effect on the productivity of cattle producers not only in California but also across the country.

Producers in the Midwest, specifically Ohio, are experiencing similar issues with water quality. Elizabeth Harsh, Ohio Cattlemen’s Association executive director, says those issues are largely focused around Lake Erie. Its algae blooms have micro toxins in them, so it’s not safe to swim or be in water containing them. Harsh explains that algae blooms are harmful to the fishing and the tourist industries there. In order for the algae to bloom in the first place, it must receive nutrients. Many individuals have identified runoff from livestock waste as containing the nutrients causing the algae to bloom.

“The overarching point is water quality is a huge challenge, but there’s a lot of contributors,” she explains. “It’s not just agriculture, and that’s an important point to make. However, agriculture knows we have a role to play, and we want to do our part while they work to address the other sources of the problem.”

Harsh says new regulation in the northwestern part of the state prohibits spreading fertilizer or manure on frozen or snow-covered ground unless it is injected, incorporated or put on a growing cover crop. The fear is that snowmelt contaminated with livestock waste will run into streams and cause water quality issues.

This regulation can come with a costly outcome for cattle producers like Bonnie Bradford, St. Marys, Ohio. The Bradford family has been raising Hereford cattle minutes from Grand Lake, St. Mary’s watershed for a number of years, and this new regulation has posed a new obstacle for the Bradfords and other producers in the area.

In years past, they spread manure as fertilizer across their ground during the snow season. Today, they cannot spread manure or fertilizer on frozen ground or on unfrozen ground if the forecast indicates at least a 50% chance of a half-inch of rain within in the next 24 hours.

Under this new regulation, producers are forced to create a different use for manure or to pay for a facility to store manure until the ground is dry and

there is no chance for runoff. To avoid inputting additional costs, the Brafords plant cover crops, spread their waste as nutrients for the soil and cut the cover crops in those fields to feed their cattle.

Although there is still optimism in relation to the regulation implemented in Ohio, Harsh stresses the importance of legislators understanding water as it pertains to agriculture when writing laws associated with waters of the United States.

“One of the things the beef industry has to do is be more transparent and open our farm gates and our barn doors to talk about what we do,” she says. “That necessitates empowering and encouraging producers so that they feel comfortable telling their story. They’ve got a great story to tell about being stewards 24/7, 365 days a year in all kinds of weather, whatever it takes to care for those animals. If we don’t tell that story, somebody else is going to tell it for us.”

Legislation on water varies from state to state, but the potential for legislative changes on federal

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In some cases, regulatory actions pertaining to water and agriculture have an adverse effect on the productivity of producers across the country.



regulation worries some industry leaders across the country. For example, Bentley says Georgia's government has traditionally been cognizant of agriculture when writing policy. Because of that knowledge, the state regulation has not posed any additional challenges for the cattle producer, but he can't say the same for federal regulation.

"All they are doing is adding a layer of bureaucracy and adding a layer of red tape that hampers industry and hampers profitability on farms," he says. "As a result, they really don't get

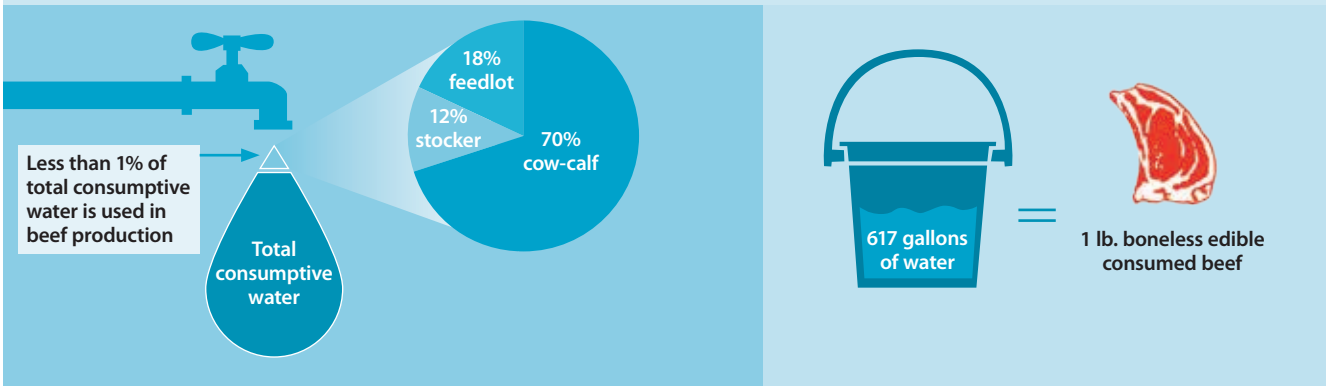
the desired effect because we are already doing those practices that provide clean water."

### Industry response

Aside from moving forward in educating decision-makers about water needs in agriculture, the industry has made significant strides in terms of sustainability as it pertains to water to combat this issue. Sara Place with NCBA notes a life cycle assessment completed in 2013 to identify the environmental impacts of beef production from grass to plate.

# Water Use in Beef Production

The National Cattlemen's Beef Association conducted a life cycle assessment of beef production from grass to plate in 2013. Consumptive water accounts for one of the 14 sustainability indicators measured in the beef industry sustainability assessment. The breakdown of water use is below.



### 95% of beef's water footprint

### 5% of beef's water footprint

Feed production	Cow-calf and stocker	Feedlot	Processing	Retail	Consumer
<ul style="list-style-type: none"> <li>Improvements in irrigation technology</li> <li>Use more water efficient crops</li> <li>Increase the use of production practices that conserve soil water</li> </ul>	<ul style="list-style-type: none"> <li>Improvements in production efficiency</li> <li>Increase the efficiency of pasture irrigations</li> </ul>	<ul style="list-style-type: none"> <li>Improvements in production efficiency</li> </ul>	<ul style="list-style-type: none"> <li>Increasing the efficiency of water use including increased use of closed-loop water cooling systems</li> </ul>	<ul style="list-style-type: none"> <li>Harvesting rainwater for potable use</li> <li>Increasing the efficiency of water cooling systems</li> </ul>	<ul style="list-style-type: none"> <li>Reduce food waste</li> </ul>

Since 2005, beef has reduced its water footprint by 3% by reducing irrigation water per unit of feed and increasing feed efficiencies, reducing packaging requirements, and new recycling technology in packing plants. Perhaps most important is that water is cleaner than ever before — since 2005 water quality has improved 10%.

“We found the beef industry has definitely improved. Even just from 2005 to 2011 our emissions to water have declined by 10%, and our water use has declined by 3%. That is expressing it by unit of beef consumed by U.S. consumers, so that is pretty tremendous progress for a six-year period,” she explains. “A lot of that is coming from the fact that beef production itself is getting more efficient and that efficiency is everywhere from crop production to better feeding techniques of animals.”

Since 95% of water use during beef production takes place during crop production, Place says as irrigation techniques improve and conservation practices are implemented in crop production that will, in turn, improve the conservation of water in the beef industry. In addition, she foresees precision agriculture and simply keeping cattle out of riparian areas aiding in reaching the most sustainable cow herd possible.

“Those types of techniques and different conservation practices related to feed production whether it is grazing animals, growing corn or what have you, is going to make a big difference in terms of continuing the progress the beef industry has already made,” Place notes.

The rates of adoption of these methods by cattle producers is still unsure, but NCBA is in the midst of a research study exploring the rates at which producers are implementing production practices that increase sustainability in a beef herd.

For Georgia rancher Kyle Gillooly, being an environmental steward is at the forefront. However, he notes the dry conditions in his area have made sustainability a challenge.

“Environmental protection is easily attainable when you’ve got adequate rainfall. Everybody can do the right thing in those situations,” he notes. “I think our beef industry has understood the environmental aspects of sustainability, not only to cattle, but the land and the lifeblood — which is water. However, it is tough to know what to do

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— Kyle Gillooly

when you are in a drought situation and trying to utilize the proper land management tools and beef production tools.”

Along with management techniques, Gillooly notes genetic improvement and the progressive nature of Hereford breeders have aided in making the breed more durable when faced with less-than-ideal conditions.

“I think this breed itself has done remarkable especially in our part of the country, being more of a grass-fed region, these cattle have to maintain on pastures,” he explains. “At least for our operation, and as I travel and see other operations, breeders have an understanding of the genetics that produce cattle that get to the point where they can maintain on pasture even in a drought year.”

When times are hard, Gillooly says, proper management practices on the front end have helped him tremendously. He explains proper culling strategy makes feeding those calves more justifiable in a drought situation simply because they are worth more and are more durable. Futuristically speaking, Gillooly advises producers to keep environmental stewardship on the forefront.

“As long as we can keep EPA (Environmental Protection Agency) from overstepping the boundaries of telling us what we can and can’t do, I think our beef industry leadership and our state cattlemen’s associations do a really good job of encouraging the beef producers to always keep the environmental aspects a top priority when you are raising these cattle.” **HW**