

To better manage irrigated pasture

Avoid Common Mistakes

by Troy Smith

For more than 30 years, Glenn Reagan worked as a range management specialist for the U.S. Forest Service. He says he likes to think he learned a little something along the way. So, upon retirement from his agency position, Reagan put his knowledge to the test by establishing his own grazing enterprise. The resource that has most enhanced his Texas Panhandle operation, near Texline, is irrigated pasture. He has learned even more about managing that resource and, as is often the case, some valuable lessons were the result of mistakes.

Starting small, Reagan eventually built his irrigated pasture acreage to include nine center-pivot systems. He has grazed both stocker cattle and cows. Now at an age when he wants to cut back, Reagan's operation includes four 80-acre irrigated circles. About 280 commercial Angus and crossbred cows utilize the irrigated grass during the summer and graze native range in the winter.

"My annual production costs average around \$200 per cow," says Reagan, who considers himself a hard-nosed manager. "But I'm really more farmer than rancher — a grass farmer. My goal is optimum production of forage that can be harvested by bovines."

Reagan believes irrigated pasture can be a viable alternative to row crops, but greater profitability will be more readily achieved if producers avoid costly mistakes. He urges producers considering development of irrigated pasture to seek advice about grass and forage species suited to their environment.

Reagan admits his original choice of primary forage specie was not well-suited to the Texas High Plains. The bromegrass variety tended to grow in bunches instead of providing even cover. Reagan says he

thought irrigation water and fertilizer were wasted on the bare patches between clumps of grass.

"I switched to a variety of Bermuda grass — a sod-forming grass that's both cold- and heat-tolerant," Reagan explains. "It's hardy and high in protein. It's worked well for me."

When irrigating, Reagan uses a low-pressure system with irrigator nozzles hung low to reduce wind drift and evaporation loss. Irrigating at night, or prior to

10 a.m., also cuts evaporation

loss. The exception might be in early spring when irrigating to jump-start the grass. Nighttime temperatures may still drop low enough to chill wet grass, so daytime watering may be advisable.

Reagan also learned that it's best not to have cattle in the pasture when irrigating. Not only does animal hoof action promote

compaction of wet soil, but cattle may chew on irrigator nozzles and damage them. Irrigating when a pasture is vacant may not always be possible, but it can fit rotational grazing systems calling for short-duration use of individual pastures or paddocks.

"Fertilizer is important, especially nitrogen and usually phosphorus, but our soil needs sulfur, too," Reagan advises. "Fertilization is site-specific, so don't guess at it. Get an analysis by a professional."

Another experience

J.D. Anderson, Arapahoe, Neb., admits

to making multiple mistakes when establishing and managing grazing on irrigated pastures. Anderson is co-owner of Grazers Inc., a cow-calf and stocker operation with grass-legume mixtures under five center-pivot systems. Irrigated pasture was introduced in 1998 to mitigate the effects of drought and relieve pressure on native range. Anderson says affordable pasture to rent was also becoming increasingly scarce. The irrigated pasture has allowed for increased carrying capacity on the operation's own land.

Several different forage varieties have been used, including mixtures incorporating perennial rye, smooth and meadow brome, orchard grass and different wheat grasses plus legumes, including alfalfa and bird's-foot trefoil. However, the first attempt at establishing irrigated pasture failed.

"We had drill problems and planted too deep. And we planted a little too late in the spring," Anderson explains. "You have to have your drill set correctly, and timing of seeding can make a big difference. Fall-seeding usually works better."

Anderson had heard that once it is established, fast-growing irrigated pasture should be grazed aggressively. However, he admits to stocking too heavily at first. And when the cattle became dissatisfied, they tested the fences, which proved inadequate. One- or two-wire fences may be good enough for crossfencing, but he now uses five electrified wires around the pasture perimeter and makes certain they remain hot.

"But we've under-stocked, too, when the grass is growing so fast that it gets ahead of the cattle," Anderson adds. "It helps to be able to manipulate cattle numbers."

Anderson has learned there is a point of diminishing returns when applying irrigation water. Instead of the 20 inches (in.) applied during early years, he seldom applies more than 12 in. of irrigation annually. Fertilization consists of 200 pounds (lb.) of nitrogen and 50 lb. of phosphorus (P) annually, with sulfur (S) and zinc (Zn) added when needed.

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Feeding & Feedstuffs

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Irrigated pasture has been advantageous for growing fall calves and for spring-calving pairs. The pairs graze there from early spring and through breeding season until calves are early-weaned — usually by July. Then, the weaned calves remain on irrigated grass while their dams are sent to native pastures. The irrigated pastures are stocked heaviest during the spring. In the summer and fall, the pastures are stocked lighter with weaned spring calves and fall pairs. Any excess forage is harvested for hay.

Management concerns include the potential for bloat if legumes make up very much of the forage mix. Additionally, Anderson advises producers to implement adequate health programs when practicing intensive grazing with large numbers of cattle grazing relatively small pastures or paddocks. Pinkeye or any contagious disease can spread rapidly among concentrated animals.

There also may be potential for reduced female fertility from high levels of nitrate or excessive protein associated with certain irrigated forage species.

“You should choose forages that fit your situation,” Anderson adds. “In the future, I would pick species that are not so high in protein. And I’ll plant grasses that are more drought-tolerant.”

Expert advice

Grazing consultant Bob Scriven, of Kearney, Neb., specializes in helping producers manage irrigated pasture. Throughout the years, he has witnessed the results of common management mistakes. Many producers face disappointment right off the bat due to mistakes made when pasture is seeded.

“Tillage pays. A well-tilled seedbed consistently provides the best planting conditions,” Scriven offers. “No-till is more risky. Some no-till plantings fail, and others take a year to become established.”

Scriven says problems also may arise if producers fail to consider the possibility of herbicide carryover when seeding grass

in fields previously devoted to crops such as corn or soybeans. It may take two years from the time corn herbicides were last applied before residue is reduced and safe for newly seeded grasses. Residual chemical carryover typically is worse on sandy soils and those with low organic matter or high pH.

“Insufficient watering after planting may be the most common mistake. Frequency of watering is important, too, since the seedlings’ shallow roots can dry out easily,” Scriven warns. “Our recommendation is to water frequently with about one-third inch of moisture per application. This may need to be done every two or three days, but depends on the drying effect of warm temperatures and wind velocity. Waiting for that predicted rain ‘this

afternoon’ can set you up for failure when it doesn’t rain after all.

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Scriven says many producers do not start watering their cool-season pastures early enough in the spring. He recommends irrigating as soon as the frost is

gone from the ground and grass begins to grow. Some research suggests soil moisture be maintained at 50% of saturation during the growing season, so building of adequate soil moisture should start early.

Then, Scriven advises, water sufficiently throughout the growing season to supplement precipitation and meet moisture requirements for optimum forage growth. He calls $\frac{3}{4}$ in. per application ideal. And if it hasn’t rained enough, it’s best to apply that much about every five days.

For most producers, Scriven states, the biggest challenge associated with irrigated pasture is managing rapid spring growth. During its period of fastest growth, it’s not unusual for irrigated cool-season grass

to grow at the rate of 1 in. per day, producing up to 20 tons of forage dry matter (DM). That forage will not be utilized at its peak quality (both nutrient value and palatability) unless the pasture is stocked with enough animals to keep pace with rapid growth.

To achieve the most efficient forage utilization, the stocking rates should vary with changes in forage growth rate.

“This means more cattle need to be available when the grass is growing rapidly,” Scriven explains, “but some will need to be removed from a particular pasture as growth slows down.”

According to Scriven, making the most of irrigated pasture depends on a producer’s ability to estimate total forage production and the efficiency of the cattle consuming it. He advises producers to measure the amount of forage in several small, sample plots. Areas of 2 to 3 square feet (sq. ft.) will suffice. The producer can measure the average height of forage in each plot to calculate the amount of forage per inch of growth. Observing how fast the forage is growing, in inches per day or per week, allows for an estimate of how much feed is produced on a daily or weekly basis.

The producer also needs to know the amount of forage normally consumed by the type and size of grazing animals, and the efficiency by which those animals utilize the total forage. That gives the producer an idea of how many animals can be placed on a pasture, and the length of time they can graze it.

“Keep in mind that these measurements are not exact, so assume your answer is wrong. Doing so will encourage you to remeasure, recalculate and reobserve in order to get a more accurate answer,” Scriven advises.

“Managing irrigated pasture is not an exact science. We have much to learn,” he adds. “The efforts of producers, researchers and managers will allow all of us to improve our collective knowledge.”



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