

Dealing with Drought: Part Three Getting Ready for Rain

By Rio de la Vista with George Whitten and Tony Malmberg
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“Imagine you’re a rain drop,” Tony Malmberg said to a group of ranchers and environmentalists aged 15 to sixty-something gathered last week for the Rio Grande Headwaters Land Trust’s “Getting Ready for Rain: Making the most of it when it comes!” workshop. He had the group down on their hands and knees to look closely at what a raindrop might encounter when it hit the ground. Using the Rangewise monitoring process, workshop participants evaluated the condition of the soil surface, examined the vitality and diversity of plants, searched for evidence of animal or insect life, and discussed other indicators of land health.

“Most people who complain about drought aren’t using the water they have,” he noted, explaining that the key to effective rainfall is at the soil surface. Is it capped with a solid layer of crusty soil, so that a raindrop would simply run off as it would on pavement? Is it bare and quick to dry out in the baking sun? Or is it covered with some sort of living plant or the litter of previous year’s plant growth? Is the soil itself sponge-like, enriched with organic matter and able to hold that raindrop in the ground, where plants can use it for growth? Or where it can eventually saturate the soil, and where the conditions are right, even fill the “reservoir” and the ground water so that springs and streams flow more reliably and the aquifer is recharged?

These were the kinds of questions discussed and that seem more relevant than ever as this dry summer goes on unabated. The effectiveness of rainfall and irrigation water is a vital part of the water equation—albeit one that maybe overlooked when the focus is on water rights, the aquifer levels, dry canals and ditches and all-too-blue skies. But what if, through changes in management, one can achieve results such as rancher Gene Goven? North Dakota State University has done studies on how well Gene’s land is able to absorb the rainfall he receives. Neighboring areas average a water infiltration rate of about 8/10 inch/hour. Using careful grazing planning and management, Gene has improved his land’s water infiltration rate to 6.3 inches/hour. That means that land is 8 times more able to retain and use water than neighboring properties, which in turn means there is less erosion, less flooding, and improved wildlife habitat and productivity.

Of course, soil capacity varies across landscapes, but the interesting thing is that one’s management can make an important difference in how severe the effects of drought are through dry periods and how well the land and vegetation can recover from a season such as this. Likewise, soil conditions will determine how well rain or irrigation water will be absorbed and stored in the soil when it does come.

Rancher and Rio Grande Water Conservation District board member George Whitten has seen significant changes on his own land near Saguache. Over time, with planning his grazing and changes in his irrigation patterns, he has found that his land is more productive, more biologically diverse, and requires less water. He estimates that he has doubled his evapotranspiration rate—an indicator of plant growth that can be seen in infrared satellite photography—while cutting his water use approximately in half. Rather

than keeping the soil saturated throughout the growing season, he has reduced the amount of water being pumped (and he's also saving on his electric bill!) He has reduced the amount of hay he bales and now leaves a great deal of his winter forage supply in the field, cut and piled and doled out to his herd with the use of electric fence over the winter. The plant community has responded to his change in management by increasing both productivity and diversity. And at a cost of less than \$10.00 a ton as fed, it's economical and helps the bottom line. Not to mention the reduced workload and therefore an improved quality of life. One indicator of that is the guitar in the corner of George's new home—which he has recently found the time to learn to play.

Even with the changes he has been able to achieve on his land, George cannot ignore the bigger questions the current patterns of water use for the San Luis Valley. “If we have to pump it faster than it flows in, we are essentially mining water,” he believes. “We're using more that we're giving back. We have to ask: What can this country sustain?”

“We thought we had three years of drought reserve,” he noted. “But this year has shown us where we really stand. We've increased our irrigated acreage substantially in certain areas of Valley since about 1977. And from the first sprinkler installed in 1972, we now have over 3000 here. About 90% of our farmland is under sprinklers, which are the most efficient way to use *all* the water. We never could have added that much acreage under flood irrigation. But it's a disaster for recharge—little, if any, of that water flows back into the aquifer from sprinkler irrigation.”

As is the case across much of the world's land, the San Luis Valley is experiencing a kind of “double whammy”—while we draw down the aquifer through pumping, much of our soil surface is in less than optimal condition for absorbing rainfall or irrigation water and holding it in place and releasing it more slowly. As the previous articles in this series point out, the current depletion will not be quickly or easily reversed.

So what can an individual landowner or manager do to best survive this dry time, to recover most quickly and effectively when moisture is available and thereby to contribute to the recharge that is necessary to maintain a sustainable “water budget” for the Valley? That was the focus of the workshop, and a number of practical management guidelines for all land managers and many specifics for livestock operators were offered.

One of the first keys it seems, is to deepen our understanding of the ecological processes and how our management can enhance or diminish their functions. Tony Malmberg shared some interesting documentation from his own land, the Twin Creek Ranch near Lander, Wyoming, that illustrated both increases in productivity through wetter years and less decline through drier years.

To work towards results like that, he recommends a series of thought processes—which he learned over years of studying and practicing Holistic Management. Of primary importance he emphasized, is to focus on one's goal—not on the problem at hand. As most Valley residents know all too well this year, there are problems aplenty—but keeping a forward focus and planning towards what one wants vs. what one doesn't want is a powerful tool for avoiding despair and discovering unforeseen opportunities in the worst of situations.

Tony emphasized that good drought management is essentially no different than plain old good management. It requires preparation: having one's goal well thought out, and taking the time to carefully plan finances, grazing, infrastructure and time. It entails a

focus on the soil surface, doing what it takes to keep it covered with living plants and/or plant litter as a high priority for achieving effective ecological processes that are the foundation of productivity. This will require leaving enough plant material to achieve the soil coverage. If livestock are consuming all the growth and even picking up the litter off the soil, it will be a significant setback to future recovery and forage production.

It's important to have points of reference for good management. Tony discussed the need to know one's soil potential, to monitor soil cover, plant health and diversity, growth rates throughout the season and other ecological indicators—and to keep good records to inform decision making.

Responding to changing conditions is vital as well. “We need to evaluate the situation at hand—which just now means to study the scope and scale of the drought we are in,” Tony explained. At times like this, it can be critical to reduce livestock numbers early, in order to reserve remaining feed supplies for the best animals and avoid having to sell even more animals later. While preserving valued genetics in one's herd can be an important factor, extreme conditions may lead to some extreme actions for financial survival and preserving land health. Planning ahead and acting in a timely manner can at least minimize the impacts of such difficult decisions.

Tony recommended several few follow up actions to help be prepared for the next drought. After all, he noted, we live in a dry area and there are bound to be future cycles of dry times. Revisit one's records and monitoring results. Rethink sources of income—perhaps some greater diversity will be needed for the future. As for the land, strive to allow plant material to stockpile in the year after a drought—so the soil cover will increase and vegetation will be more resilient in the next drought and productivity can increase over time. Using dry periods to do maintenance, repairs or even refinements of on irrigation ditches and canals is also important, so that when water is available, it can be well used and distributed effectively.

Finally, Tony Malmberg recommends that we keep learning. “It's important to internalize the lessons in order to stay in business through the next drought. What did you learn this time?” Tony asked. “When you make a mistake, covering it up does not equal learning. Rethink what you are doing. Ask yourself: ‘Why am I doing this?’ *Know your reasons*. The reason your grandfather and father did what they did was because that was the best they could do then. If they were ranching now, they would be doing things differently. After all, good judgment comes from experience. And unfortunately, experience often comes from bad judgment.”

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