

## Managing Grass, Small Grains, and Cattle

**Jim Kramer, Jeff Printz, Jim Richardson, and Gene Goven**

"Instead of managing grass, small grains, and cattle for their own sake, I try to manage so they complement one another. That's a challenge." So says Gene Goven, an innovative thinker and manager who does a remarkable job of resource management with much assistance from other resource people on his 1,800-acre central North Dakota cattle and small grain ranch north of Turtle Lake in McLean county, North Dakota.

The first recorded use of a portion of his rangeland was by a horse rancher many years ago. During this time of prolonged, heavy grazing, the mixed grass rangeland community had shifted to approximately 70 to 80 percent Kentucky bluegrass, blue grama and fringed sagewort. When Goven purchased the unit in 1967, he began running 60 cow-calf pairs, moving them from one rangeland pasture in late June or early July to a larger pasture until the end of the growing season, usually into early November. The only water in the large summer pasture was in Crooked Lake, which caused a livestock distribution problem; the cattle were spending 2/3 of their time along the lake and 1/3 of the time on the rest of the unit. His remedy to this problem was to install two livestock watering dugouts and use salt blocks to equalize the distribution of his herd. "What I was doing wasn't working the way it should, but I was told it should work."

In 1982, he visited his local USDA Soil Conservation Service office for advice on solving his livestock distribution problem. With assistance from the staff, he developed a Great Plains Conservation Program contract. With SCS technical and financial assistance his large summer pasture was

fenced into four units. He decided to graze approximately 30 days in each one and rotate the initial turn-in dates from unit to unit. This was based on SCS stocking recommendations at the time. The weaning weights of his calves declined but he was able to



*L to R: Jessica Goven, Gene Goven, Emory Dubin USDA-SCS, Dr. Jim Richardson, NDSU Soils Dept., Jim Kramer with back to camera.*

increase his basic herd from 60 to 72 cow-calf pairs.

One notable observation he made after installing the four pasture system was "that some of the individual plants grazed in late June and early July were lighter color than others, the cool-season plants grazed in the boot stage looked sick." The cool season plants grazed early in the season and then rested did not have this sick appearance. Dr. Clayton Marlow of Montana State University has also noticed this phenomenon.

This was evident until 1986 when Gene began applying Holistic Resource Management (HRM) principles and established more paddocks, 19 presently. He no longer observes the light color in the plants.

He has shortened the time the plants are exposed to grazing animals and lengthened their rest period. He stated, "The last fencing I did, I should have done first." This includes one "sacrifice area" which is close to the headquarters and used for calving in the spring of the year. His herd now spends from three to ten days in each paddock; the drier it is, the longer the cattle are in each paddock. This gives more rest to the grasses in the next paddock in the rotation. He prefers to think and manage on a slow move of cattle and adjust to a fast move when the grass is growing fast. Cattle movement is not based on calendar dates, but on a rest factor. "If I don't do this, the paddocks just don't get the rest and improvement they need to insure their survival." It is easier to go slow and speed up rather than go fast and try to slow down.

Other early vegetation responses he has observed on his paddocks were semi-circular "rings" of western wheatgrass created by rhizomes. In 1986 his paddocks were covered with numerous forbs such as wild licorice and silverleaf scurfpea. Presently, the individual forb populations have leveled off but he did note the cattle utilized the wild licorice extensively at the bloom stage. Numerous forbs such as curley cup gumweed and absinth wormwood have decreased approximately 90 percent over the last ten years. Woody draws composed of green ash are maturing and developing with no visible browse lines. Also spreading and developing are small colonies of aspen. He has also observed that old cattle trails

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have healed and no new ones are forming.

Gene has noted a remarkable increase in upland game birds such as sharp-tailed grouse (that have established two spring dancing grounds), ringneck pheasant and Hungarian partridge. White-tailed deer are more abundant than before. Gene has also noticed that Canada geese follow one paddock behind the cattle eating the tender green re-growth. Clumps of western snowberry have been

agement tool on his ranch in 1986.

His 205 adjusted day weaning weights have increased from 480 pounds prior to 1982 to 545 in 1989. At an assumed, constant price of \$.65 (for charting purposes) Gene has more than tripled his income from his herd over the last eight years. He has increased his cow calf pairs to as high as 94, along with 15 yearlings. His basic herd numbers fluctuate according to rainfall. "Last year's management and rainfall in-

stay full longer than prior to the paddock system.

Another management tool is intentional shattering of the small grains during harvest then grazing his cattle on the croplands shortly afterwards. He practices intentional shattering when harvesting, depending upon where the cattle herd will be grazed. He takes them out of the stubble field after they have grazed for three weeks. In 1986 he began charting the grazing value of shattered grain versus its grain market value. The grazing value has averaged 51 percent for hard red spring wheat, 41 percent for oats and 53 percent for barley. Based on his charting, the over all grazing value is approximately one half of the grain value if the crop is harvested in late July. If the grain is harvested later in early September, its grazing value is approximately one fourth of the grain value. "I think in terms of animal days per acre instead of animal units per month." The croplands which were grazed by the herd in the fall of 1989 yielded twice as much spring wheat in 1990 as they should have, based on soil fertility tests. Protein of the wheat was three to four percent higher than wheat from surrounding croplands which were not grazed. The grazed croplands have soil organic matter levels comparable to ungrazed croplands which have clover in the rotation.

Gene is a family man, married to Marcy. They are parents of three children—Jessica 16, Matthew 15 and Kayla 5—and are foster parents to a daughter Yvonne, 21. The children often accompany Gene to his paddocks and fields, not so he can teach them, but that they can observe with him. He is a member of the Center For Holistic Resource Management and has been a member of the Society for Range Management for five years. He is also a member of the North Dakota State University Central Grasslands Station advisory board, has served as a state 4-H delegate to the natural resources volunteer leader forum at Estes Park, Colorado, and was a state producer delegate to the USDA-Soil Conservation Service National Range Congress in 1988.



L. to R: Scott Carter NDSU-LRRC, Matthew Goven, Gen Goven, Kayla Goven and Jessica Goven.

thinned as a result of this new system of grazing management. The cattle have thinned some clumps when salt blocks were placed in their center. "The deer just love the new lush, tender growth in the thinner patches of snowberry and new clumps of Juneberry that are emerging."

Livestock responses to the 19 paddocks are interesting too. His cows are "loose" all season long, but there are no "cow pies" lying around. "I just don't have a major fly problem or fly control." This he attributes to his grazing plan which includes "leap frogging" from paddock to paddock and flies just aren't a serious problem. Gary Langer of Hebron, N.D., noticed this on his ranch in 1986 and Gene began applying the same man-

fluence the current year's production." Nineteen eighty-eight and 1989 were very dry or the rains were untimely so his herd declined to 72 pairs in 1989. In 1990 he ran 71 pairs and is maintaining or improving the condition of his rangeland.

Recently, Gene's area received a four-inch rain in a short period of time. He noticed the neighboring dugouts filled immediately from surface runoff. His dugouts, which were dry, filled at a slower rate from the bottom 11 days after the rain. His ponds filled to a higher level and maintained their levels while the water level in neighboring ponds decreased. The wetlands located in his paddocks do not get as full as they used to after a heavy rain or snow melt. They also

Gene is also having fun and no way would he go back to conventional season long grazing. It's refreshing to see such innovative management on this ranch. Some "experts" have not always agreed with his style of management and several have had to "eat a little crow" in the past few years. Gene and his family are true, grass roots environmentalists and they not only talk the talk, they walk the walk and have living dynamic plant and animal communities to prove it.

In the fall of 1989, Jeff Printz, SCS Range Conservationist and Gene were conducting a tour on the ranch for employees of the U.S. Forest Service, Dickinson, N.D., and members of the Little Missouri Grazing Association of Medora, N.D. At one stop on the tour Jeff decided to check the range site with a sharpshooter. Although it had been a dry growing season and there was no soil moisture, the spade penetrated the soil to a depth of 18 inches with little or no effort. This phenomenon was never observed prior to the tour. It prompted the authors to establish a task force within the North Dakota Chapter of the Soil and Water Conservation Society to examine soil chemical and physical parameters on the Goven ranch. Also examined was a tract of rangeland which has not been used for over 50 years and

rangeland under a heavy grazed season long system for many years. This work was done to detect soil differences on these tracts of rangeland and Gene's rangeland.

In June of 1990 the authors (Figure 1) sampled the soils (Max-Zahl loams) on the tracts at depths of zero to five inches, five to 10 inches and 10 to 15 inches on thin upland, silty and wet meadow range sites. The soil was analyzed for phosphorus by the bicarbonate (Olson's) method, percent organic matter by the Corrected Walkley/Black method and potassium by a standard laboratory method. Later on in the summer Jeff Printz and Scott Carter of the NDSU Land Reclamation Research Center, Mandan, N.D., assisted by Jessica Goven used an air entry permeameter to determine the surface permeability on 11 sites on these operations (Figure 2).

Levels of available phosphorus declined with depth on nearly all of the soil profiles examined. No real differences are apparent between site and operations except on the wet meadow site in the season long operation which contained more than double the amount of available phosphorus than any other site.

Levels of percent organic matter were higher on the Goven (HRM) pastures than all others examined except for the wet meadow season

long pasture, which had the highest level of all sites examined.

Data gathered by using the air entry permeameter showed that the thin upland site in the HRM pastures was able to take six times as much water per hour as was the wet meadow site. The trend in water permeability of the soil surface is reversed in the season long pastures when compared to the HRM pastures. The excessive build up of mulch on the non-use area actually had a water shedding effect, as the area has not been utilized for 50+ years.

Results of this brief study indicate that when some soil parameters are examined there appears to be no clear advantage favoring HRM principles except for the levels of percent organic matter. The authors did note that during the soil sampling phase of the project, the soils in the HRM paddocks were much easier to dig with a spade than other tracts which were sampled. This suggests to the authors that other investigations are necessary to document the differences which are apparent to them and Mr. Goven. The soil differences between HRM, season long and non-use paddocks and pastures appear to be more of a physical nature rather than chemical. It is their recommendation that a more in depth study of the soil differences be performed.

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