

Response of Sandhill Vegetation to Deferred Grazing

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The "sea of grass" in the Nebraska Sandhills amazes those who visit this magnificent range land for the first time. Ranchers and range technicians from other areas marvel at the response this mixed prairie vegetation makes to deferred grazing.

The experience of rancher, Olin B. Waddill, and son, Joe, of Gordon, Nebraska, illustrates the recuperative power of the Sandhill vegetation. The 2,240 acre Waddill ranch is located approximately 12 miles northeast of Gordon in the sandhills of Western Cherry County. The 18-19 inches of average annual precipitation rapidly infiltrates into the sands. Some water seeps to subterranean depths and finds its way to sub-irrigated meadows and open water lakes. The choppy and strongly rolling sandhills sometimes have wetlands in the valleys between the ranges of hills.

Three hundred thirty acres of sub-irrigated meadows are used for hay. The 1,900 acres of hills are used for grazing during summer and snow-free winter months. If

closely grazed, the dune sand begins to move with the wind. Grass is the natural stabilizing force for these sands. Twelve acres have

In this article Don Sylvester tells how grazing values were increased and the range resource protected on the Nebraska Sandhills ranch of Olin B. Waddill and Son by means of a program of deferred grazing and range improvement instituted in 1949. As a result of this program most of the pastures on the ranch have increased from the fair to the excellent range condition class in a period of seven years. Calf crops and beef production have also increased.

been planted to trees for livestock windbreaks and are the only cultivated areas on the ranch.

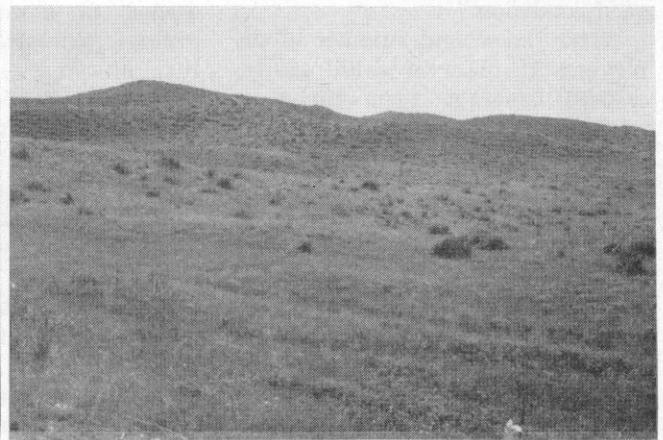
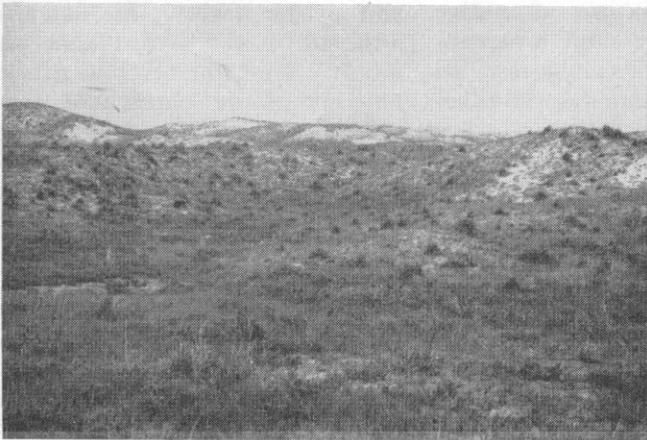
This ranch, like many sandhills ranches, is operated basically as a cow-calf operation. Protein supplement and hay are fed three to four winter months. Pastures deferred during the growing season are grazed in the fall and open periods of winter.

Problem

In the fall of 1949, Olin Waddill became especially concerned about an area that had been cultivated. Although it had not been farmed for about 20 years, it continued to produce only annual bromes, sunflowers, and other annuals. The County Agent was contacted and assistance obtained from the Cherry County Soil Conservation District. "I was afraid the hills would blow away before spring, they looked so bare," Waddill said.

An appointment was made. Waddill invited in several neighbors to look at the field to be seeded and to discuss grasses. An entire afternoon was devoted to talking grass with these ranchers. A few weeks later this author went over the ranch with Waddill and made a range survey, and further studied the range problems. The normally vigorous sandhill grasses; sand bluestem, sand lovegrass, prairie sandreed, and little bluestem, had given way to shorter species; hairy and blue grama and the less palatable green sagewort and sandhill muhly. The forage production of the pastures had decreased due to heavy grazing, and the beef production was down.

Excess water on the meadows at haying time also was a problem. Moreover, protection from winter storms was needed on certain ranges for better management of livestock and winter grazing.



Left: Vegetation on Sands and Choppy Sandhills range sites on the Waddill ranch as it appeared in 1949. The bare hills were threatening to blow away. Right: Vegetation on Sands and Choppy Sandhills sites as it appeared seven years after the installation of a program of deferred grazing and conservation range management on the Waddill ranch.

A summary of the available animal unit months from grazing and those from roughage showed that these did not fit seasonal needs. More cattle could be wintered than could be summered. This brought into sharp focus the problems needing attention.

Range Conservation Plan

From the analysis, Waddill, with the help of the Soil Conservation Service technicians, developed a conservation plan for his ranch. Specifically, plans were made to graze about half of the annual grass growth, rest the pastures, seed the old cultivated field, control the water on the meadows, and plant trees for livestock protection.

Among his first actions was the negotiation of a five-year lease to summer 210 cows and their calves. This made it possible to rest all the home range in the summer of 1950 except one pasture. By fall he was pleased to see areas with plant cover that had been bare the previous winter. In January of 1951, Waddill wrote, "As winter progresses, we are all the more convinced that this deferment program is the thing. Last year at this time we found it necessary to bring in from the cow herd the thin cows and heifers that had been on hay five to six weeks and put them on cake. However, at this time these cows are still in the fall pasture (deferred in summer), haven't had any hay, and are in good condition."

After the second summer of deferment an observer could see increased coverage from the remnants of sand bluestem and sand lovegrass. Both were displacing less desirable vegetation.

Waddill wrote again in March, 1953, "In regard to our range management plan, I wish to say that since we started the plan, our cattle have steadily grown more rugged and thrifty, including the calves. Our calf crop is approximately 95 percent. That is ahead of times past for us, that's for sure. It is evident that our cows are healthier, having calves normally,



Early spring scene on old cropland area seeded to a native grass mixture in 1950. Grasses seeded included sand lovegrass, little bluestem, and switchgrass.

and giving plenty of milk to keep them going. Our top load of steer calves weighed 445 pounds in 1951, and 444 pounds in 1952. There is one thing for sure and that is we are happy with the recovery of the grass in our pastures and we feel that greater things are ahead. We will continue our plan indefinitely."

Drainage facilities were installed on hay meadows in areas where the water table sometimes remained above the surface at haying time. Reed canarygrass, which is native to many sandhill valleys, was seeded on the wet land sites where the vegetation was in poor condition. The old cropland field was seeded to a mixture of native grasses, primarily sand lovegrass, little bluestem and switchgrass. In May, 1950, the land was sub-tilled and the native mixture was planted. Good seedbed preparation and favorable moisture conditions contributed to a good stand. The lovegrass produced some seed the first fall.

Tree windbreaks were designed for protection of livestock in winter. The land to be planted to trees was prepared and fenced in the fall of 1951 and planted in the spring of 1952. The sod was plowed apart to kill the grass in a strip about four feet wide. Trees

were planted in these shallow dead furrows. The plowed strips were cultivated to reduce competition for the trees. The grass was allowed to grow in the upland space between the tree rows to reduce the hazards of wind erosion. As the trees grew the cultivated area was increased so all the grass was removed when the trees were large enough to prevent soil blowing.

Results

Today the ranges are well covered with high producing grasses. Beef production is up. Sand bluestem, sand lovegrass, and prairie sandreed have crowded out most of the sandhill muhly, green sagewort, and shorter grama. One flat area adjacent to the seeded area was nearly a solid stand of blue grama, but now large patches of sand bluestem have replaced the grama. Most of the pastures improved from the *fair* range condition class to *excellent* range condition class in the seven years.

Mr. Waddill says, "Never again will I graze the hills as I did prior to this program. I want those good grasses." Waddill's son, Joe, is looking forward to continuing the range conservation plan, including alternating the seasons of use to provide complete rest for all pastures.