

Wheatland to Grassland Pays Off in the Northern Plains

ROBERT D. SCHNELL, Schnell Ranch, Dickinson, North Dakota

The Schnell Ranch was founded in 1902 when Peter Schnell homesteaded on the banks of the Cedar River in southwestern North Dakota. From the beginning of the ranch until the present time the land has been devoted chiefly to cattle and horse raising with an occasional field in cultivation for small grain or corn.

Topography of the land in the ranch is typical of the Northern Great Plains with areas of nearly level and rolling land broken by an occasional flat-topped butte. Soil types vary widely but the majority would be classified within the range of sandy loams. Much of the land on the ranch is suitable for cultivation and portions of it have been cultivated at various times during the past 40 years. The lighter soils are subject to frequent and sometimes severe wind erosion when under cultivation.

Rainfall as recorded by the nearest weather station averages 15.11 inches per year. Native vegetation is largely short and mid-grass types with blue grama, western wheatgrass and needle-and-thread predominating.

Robert D. Schnell has been operating the Schnell Ranch in partnership with his father, Ray Schnell, for the past two years. A recent graduate in animal husbandry from North Dakota Agricultural College, Bob is a member of the North Dakota Stockmen's Association and the American Society of Range Management and is a partner in the Schnell Dickinson Livestock Sales Company.

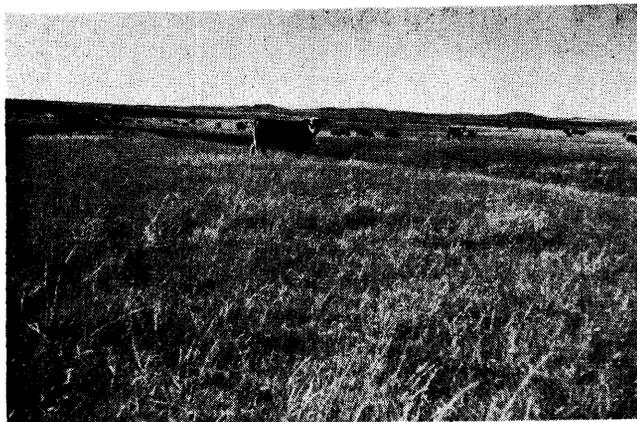
Scope of Operations

The present scope of operations on the Schnell Ranch is typical of many combined livestock-crop operations in western North Dakota. Basically the ranch is operated as

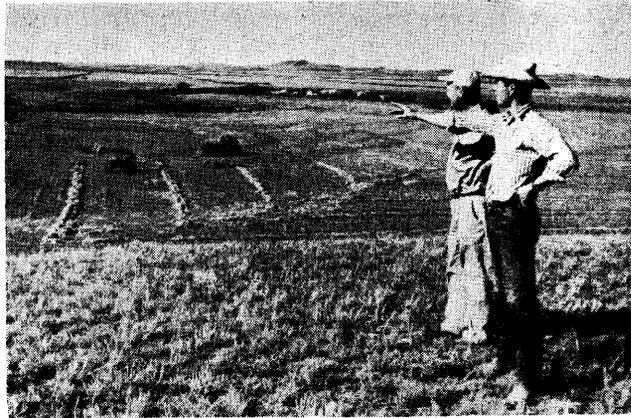
a cow-and-calf outfit with an occasional carryover of yearling steers, depending on feed and market conditions. Alfalfa, oats, barley and corn are grown for feed, and wheat is grown as a cash crop. Our rigorous winters require supplemental feeding of hay and corn silage for an average of four months out of the year.

At the present time the ranch includes a total of 5,120 acres, of which 3,572 acres remain in native grass. River bottom acreage has been seeded to alfalfa for hay production. An additional 633 acres of tame grass and grass-alfalfa mixtures are used for early pasture. The balance of 552 acres is under cultivation using a 2-year rotation of corn and small grain.

In the past, one of the big problems in range management for the ranch was a critical shortage of good early spring pasture. As a result of the effort to get the wheat crops in on time, all available manpower was required on the tractors in early spring. Consequently the cattle were turned on native range a full 30-45 days before the grass had made sufficient growth. Cows near calving after a long, hard winter lost in condition because



Native grass range on the Schnell Ranch is maintained in high condition by conservative grazing plus the use of supplementary tame grass pastures seeded on old wheat land. This native range is made up of blue grama, needle-and-thread, western wheatgrass and upland sedges.



Bob Schnell points out the principal features of his haying operation. Provision of winter feed is an important part of the ranching program in this portion of the Northern Great Plains.

they simply couldn't eat enough of the new grass. Our observations indicated that this practice was altering the composition of the native range by decreasing the percentage of valuable cool-season grasses such as western wheatgrass. Carrying capacity and productivity of the range progressively decreased due to this early grazing.

In the late forties, drought, wheat stem rust, falling wheat prices, and government acreage controls made us realize that cattle should be the mainstay of our operation. Consequently, the production of wheat as a major part of our operation was abandoned, and a program of reseeded on 1,100 of the 1,600 acres of cropland was begun.

Native hay meadows which had been broken up and planted to wheat in the early forties were seeded to alfalfa. This provided the additional feed reserve to carry the cattle onto good grass. Adapted tame grasses such as crested wheatgrass were seeded on old cropland to provide the badly needed early pasture. Fields that could no longer make a profit in wheat began to pay off when seeded to grass. Wind and water erosion on land with excessive slope or light soil was halted with a good grass cover.

Grass Seeding Program

Several varieties of grass, both in mixtures and in pure stands,

have been used in the grass program on the Schnell Ranch. Crested wheatgrass has been the most important because of the extreme early growth, drought resistance and sustained yield. Nordan, a new strain of crested, was planted for the first time this year and seems to produce especially vigorous seedlings. We believe slender wheatgrass is a valuable component of a grass mixture, chiefly because of its ability to establish itself rapidly. In several of our seedings slender wheatgrass made up well over half of the composition, although it was seeded at a rate of only one to four. Bromegrass is included in grass mixtures when the seeding is made on heavier soils or on fields with draws and low lying areas. We have found that over a period of years the more drought-resistant grasses predominate on the drier areas while brome will occupy the sites with more favorable moisture.

Intermediate wheatgrass is showing a good deal of promise in our grass mixtures, especially when used along with alfalfa. It yields at least as well as crested and provides a leafier plant which seems to be more palatable in midsummer. Alfalfa, in our opinion, has added substantially to the grazing capacity and nutritive value of our tame grass mixtures.

Because of the differences in soil type and topography in the fields

seeded to grass, mixtures are preferred over pure stands. A representative mixture proven to yield well includes the following amounts of seed per acre: crested wheatgrass, 3 lbs.; intermediate wheatgrass, 3 lbs.; slender wheatgrass, 2 lbs.; and alfalfa, 2 lbs. In our pasture mixtures we have kept the proportion of alfalfa low to minimize bloat hazard. So far we have had no bloat from grazing on grass-alfalfa pastures.

Getting Stands Established

Many people hesitate to risk a grass seeding on land in current crop production because of the time and income lost in establishing a grass cover. We admit that there is no sure-fire way of getting a stand in all years, and at least one year of production must be sacrificed. However, through the experience gained in seeding over 1,000 acres of tame grass, we have learned how to minimize some of the causes of seeding failures.

Proper seedbed preparation and careful seeding are of utmost importance in establishing a good stand of grass. An attempt should be made to eliminate as much competition from other plants as possible. Clean grain stubble, corn ground or summer fallow have all provided good seedbeds. Seedings that we have made on idle or weedy land have not proven successful. We have used nurse crops occasionally, but we don't believe

they are to be recommended except in abnormally wet years. Seedbeds, on sandy loam soils like ours, should be reasonably firm. Seed should be planted within one inch of the surface on heavy soil and within two inches of the surface on lighter soils. Good results have been obtained by plugging every other seed tube in an ordinary press-drill which gives a 12- or 14-inch spacing. We think this method has these advantages over close-drilled rows: it permits a seeding rate of a recommended 8 to 10 lbs. of seed per acre without the frequent trouble of getting light seed to flow freely through the drill; it reduces the chance of getting seedlings too thick, which might lower total production. We have always used the best seed we could buy. Large, plump, healthy seeds result in surer catches and more vigorous stands.

Proper Management Essential

Our experience indicates that careful management during the first two years will add to the survival and production of new grass stands. We do not graze new seedlings at all during the first season and graze only moderately during the second year. Weeds have always been a menace to new seedings, but we get good results by mowing with the mower set to cut 3 to 4 inches above the ground. 2,4-D amine sprayed at the rate of $\frac{3}{4}$ pint per acre has controlled weeds on seedings that have reached the 4-leaf stage without any harmful effects on the young grass.

Grazing of established tame grass pastures on the Schnell Ranch begins when the grass has attained a

growth of 4 to 5 inches. Seasons vary of course, but generally the cattle are turned on the grass between April 15 and May 1. Allowing a substantial growth before use gives the grass a foothold for continued production and also provides the cattle with adequate nutrition.

We think that there is yet much to be learned about the proper stocking rate for cultivated grass pastures in southwestern North Dakota. During May, 1956, a rolling, upland crested wheat, brome, and alfalfa pasture was grazed at the rate of one acre per head per month. Another pasture on lower, heavier soil was grazed at twice this rate for comparison. Both pastures appeared to be in good condition at the conclusion of the grazing period. It may be of interest to know that less than $2\frac{1}{2}$ inches of rain had fallen during the year 1956 up to and including the period of this trial.

The results of this small experiment together with the results of grazing trials conducted at the Dickinson Experiment Station, indicate that an acre of grass-alfalfa mixture should carry an animal unit for about 45 days. Using this knowledge as a guide for our range management program we are providing two acres of tame grass per head which will carry the cattle safely onto good native range on about June 15.

Benefits of Tame Pastures

From the standpoint of range management on the Schnell Ranch the greatest benefit of tame pastures is derived from their use as a supplement to the native grass.

By bridging the gap between winter feeding and range readiness, tame grasses have increased the length of our grazing season without the loss in vigor and composition and carrying capacity often associated with early grazing on native grass. This plan of deferred grazing on native grass has also given over-grazed ranges a chance to recover some of their original productiveness. It would be rather difficult to estimate exactly how much deferred grazing has increased the grazing capacity of our native grass, but it has helped substantially.

Another advantage is that the tame grasses provide a profitable alternative land use for surplus wheat acreage. Tame grass pastures also provide a valuable use for land which because of erosion or loss of fertility has become unprofitable under cultivation.

We think that the use of tame grasses for pasture is helping us to get the maximum return per acre of land. At the Dickinson Experiment Station, not far from our ranch, grass-alfalfa pastures have produced as much as 96 lbs. of beef per acre in a year when wheat was almost a complete failure. On today's market, this beef would sell for about \$18.00. Compare this with our average wheat yield of 12 bushels per acre which is worth \$24.00 at current market prices. This additional \$6.00 income per acre on wheat couldn't begin to cover the cost of machinery, labor and fuel required to grow wheat. Net income per acre has proven tame grass and alfalfa pastures to be the most profitable land use on the Schnell Ranch.



Notice to All Members

The tenth annual meeting of the American Society of Range Management will be held January 29 to February 1, 1957. Headquarters will be the Rainbow Hotel, Great Falls, Montana.—E. W. Stein, Chairman, Arrangements Committee.