

# Balancing Livestock with Range Forage and Harvested Feed in South Dakota

BUD and LEO DEJONG, Kennebec, South Dakota, as told to LES ALBEE, Range Conservationist, Soil Conservation Service, Rapid City, South Dakota.

“Several serious range problems confronted us when we bought our present ranch ten years ago,” declared Bud and Leo DeJong. “The range lands had been grazed hard for a long time. The grass cover was thin and the soil had little mulch. The ground showed through the grass like a balding man’s head. We were overstocked, too, when we threw our own Angus cattle in with the Herefords we purchased with the ranch. But most serious of all was the lack of balance between our livestock numbers, range forage, and hay production,” they agreed.

Licking these problems has been a ten-year job. Balancing their livestock numbers with year-round forage and feed supplies has solved their major difficulties. Here, then, is the DeJong story.

Bud and Leo operate their 6,000-acre ranch on the south bank of the White River, 16 miles south of Kennebec, South Dakota. They moved their families from Eagle Butte to their present ranch site in 1948. Bud is the livestock man, while Leo is the grass man. They

always consult one another before making important decisions on livestock and grazing management and feed production operations. This is one of the secrets of their success.

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*Bud and Leo DeJong have lived on ranches since boyhood. Their father, Nick DeJong, acquired a ranch in Ziebach County, South Dakota, in 1924. In 1940 Bud and Leo bought their father’s ranch, expanding and developing it during the next few years. The brothers sold this place in 1948 and bought their present ranch, located 16 miles south of Kennebec, South Dakota, on the White River.*

*“Next to our cattle, our chief interest is horses,” say the DeJongs. The brothers raise and train registered quarter horses in addition to operating their 6,000-acre cattle ranch.*

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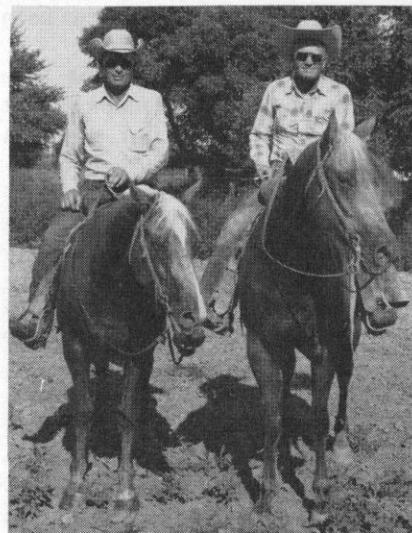
## Range Sites

The topography of the DeJong ranch varies from flat river bottoms to abruptly steep slopes and rolling uplands. Their different kinds of

range land (range sites), based on kind and amount of vegetation produced in top condition, are overflaw, silty, clayey, dense clay, shallow, silty clays, and shale.

These kinds of range land may be grouped into three classes according to their soil moisture relationships. “Normal” sites with deep soils take in and store most of the rainfall they receive. Silty, clayey, and dense clay range sites fall into this class. They differ in soil texture, differ significantly in kinds of range plants, but produce about the same amount of forage.

“Runoff” sites have limitations in



Leo and Bud DeJong astride their quarterhorse mounts after a cattle cutting demonstration during a South Dakota Section tour in July, 1957.

soil depth due to restrictive layers, or steep topography, or both, that cause rainfall to run off, so it is not available on these sites for forage production. Hence, less forage is produced. Their potential production is lower. Shallow, shallow clays, and shale range sites are in this class.

"Run-in" sites get extra water from surface runoff or from water tables in addition to precipitation. These sites produce more forage in proportion to the amount of extra moisture they receive. The overflow range site is in this class.

### Range Vegetation

Range condition, based on four classes—excellent, good, fair, and poor—is the amount of present vegetation that is original vegetation for the site. Most of the range in all sites on the DeJong ranch was in fair condition, or low in the good condition class, in the late 1940's. Blue grama, buffalograss, threadleaf and needleleaf sedges were dominant over most of these range sites. These short grasses and sedges are palatable and nutritious, but they are low producers of forage. Being shallow rooted, they do not make full use of the site. Low value invader plants crowd in.

This is mixed prairie range country, with 17 inches of annual precipitation, capable of supporting

medium height grasses in about equal proportion with short grasses. About three-fourths of this moisture (or 13 inches) falls in the growing season of April through September. Seasonal rainfall is highly variable, from very dry in 1956 to very wet in 1957. The DeJong's say they have never seen better forage conditions than this year. The last killing frosts in spring occur in early May, with the first killing frosts in fall in early October. This makes about 145-150 frost-free days.

The native range vegetation of the mixed prairie in the Northern Great Plains responds extremely well to grazing management. Favorable growing season precipitation aids management in hastening range improvement. Improvement in range condition from the late 1940's to the present time has brought all the DeJongs' ranges up into the excellent condition class. A good mixture now exists between short, mid- and tall grasses, of both bunch and rhizomatous and cool and warm season growth habits, on all range sites.

The short-growing warm season blue and hairy grama and buffalograss, and cool season threadleaf and needleleaf sedges are now overtopped by taller grasses, nearly doubling range forage production. The short grasses and sedges now

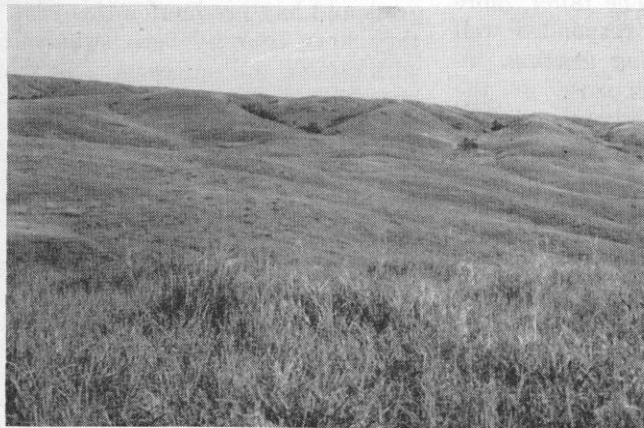
produce only about one-fourth of the total forage.

The principal cool season mid-grasses that furnish green forage in April, May and June, are western wheatgrass, green needlegrass, needle-and-thread, porcupinegrass and prairie Junegrass. With the exception of Junegrass, these cool season grasses usually "green up" in September and October, until hard frost nips them. They may produce one-third of the total forage.

The most important warm season mid- and tall grasses that responded to grazing management are big and little bluestem, sideoats grama, prairie sandreed, and plains muhly. These furnish abundant green forage through June, July and August. These may make up one-fourth of the total range forage.

To complete the natural vegetation, making up about one-eighth of the production, many native legumes, composites, and other perennial forbs are present in these top condition ranges. The principal legumes are scurfpeas, prairie clovers, milkvetches, leadplant and dwarfindigo amorphas, American vetch, and catclaw sensitivebrier.

Some of the lower value plants that have invaded these ranges on disturbed areas include tumblegrass, Japanese brome, sixweeks fescue, common sunflower, curly-



Excellent range condition in the DeJongs' winter pasture. The dense cover of mixed warm and cool season grasses is principally big and little bluestem, blue and sideoats grama, western wheatgrass, green needlegrass, and a profusion of native legumes and other forbs associated with top condition.



Leo DeJong and Bert Hall, former S.C.S. technician, showing the 1957 growth of western wheatgrass and green needlegrass hay on the 82-acre water spreading system at the DeJongs. Production exceeded two tons per acre.

cup gumweed, and bull thistle.

The upland draws and steep pockets, affording protection to livestock, usually contain silver buffaloberry, black chokeberry, American plum, woods rose, western snowberry, skunkbush sumac and green ash. The river bottoms also have American elm, willow and cottonwood. In this part of the Northern Great Plains these woody species seldom spread into good condition grassland to such an extent that brush control is necessary.

"We used to think little bluestem was a poor grass. We have found that it is one of our most valuable and palatable forage grasses on summer range," remarked Leo, on one of the range tours the South Dakota Section held on their ranch. "With top range condition, we now have more than six month's green grass each year."

#### **Angus, Herefords and Highlanders,**

The DeJongs favor Aberdeen-Angus cattle, although they acquired about 100 Hereford cows with the ranch in 1948. They also had some purebred Scottish Highlanders—to compare their wintering characteristics with the other breeds. From their start on this ranch, their longtime plan has been to sell the Herefords and cross Angus with Highlanders. "Angus cows with one-fourth Highlander blood will winter better, and one-eighth Highlander calves will out-produce our straight Angus calves," Bud commented. "The large bone of the Highlander blends well with the small bone of the Angus."

From 1948 to 1951, the DeJongs were running 400 cattle on their 6,000-acre ranch. Their ranges were closely grazed and in fair to good condition. Little or no range improvement took place under this rate of stocking. Their ranch was operated on a cow-calf basis during this period.

#### **Problems of Forage Balance**

Bud and Leo were deeply concerned with the lack of balance of their forage and feed supplies on a

seasonal and year-round basis. They were confronted with the basic problem of balancing these resources with their livestock numbers throughout the year. Their haylands consisted of about 160 acres of native grasses, half receiving extra water from a water spreading system.

They requested assistance of the Soil Conservation Service technician, through the Hamill Soil Conservation District, in April 1951, to help them plan their range conservation program. "At that time, we realized we were overstocked and short of both early spring pasture and hay. Without adequate hay, our cows moved onto summer ranges too early—soon after grass greened up. This practice led to a whole host of range problems," Leo reasoned, as he continued. "We couldn't improve production per animal or per acre until our forage and feed supplies were properly budgeted with seasonal needs of livestock."

#### **Deferred Grazing**

Half the cows were moved onto rented spring range for four months in 1951 and 1952. Relieving the spring pressure on summer ranges, by grazing these 150 cows on outside pasture, gave the native ranges their start toward improvement. The growing season was cool, with good rains, throughout the summer in 1951. The taller, more productive grasses responded well to the lighter spring grazing, increasing at the expense of the shorter, less productive ones. The extra grass mulched the soil, so more moisture soaked in. More grass was produced over a longer growing season as stored soil moisture increased. Less runoff and soil loss resulted. Range condition improved.

#### **Improved Haylands**

The DeJongs' next step was to seed nearly 300 acres of cropland to alfalfa, mixed with crested wheatgrass and smooth brome, to supplement native haylands. Good stands of alfalfa were established,

though the associated grasses failed to come through. In 1952, they sold seven thousand dollars worth of alfalfa seed, and turned down an offer of two and one-half times the purchase price for the ranch.

Further developments on hayland have included pumping water from the White River onto their alfalfa and constructing a series of 25 earthen check dams above their water spreading system. Now, for the past two years, the silt-laden floodwaters from 2,500 acres upstream have been "stilled" in the check dams, so only clear water has spread over the hayland. Excess floodwaters spread on down the river bottom onto alfalfa from the 82 acres of western wheatgrass-green needlegrass mixture on the original water spreading system.

These improvements have provided the margin of production needed to insure adequate hay, under adverse conditions, for their livestock. As Leo put it, "If we don't pump-irrigate our alfalfa, and if we don't save alfalfa for a seed crop, we can barely get by on our average hay production, providing we have an average winter, so you see how important these improvements are to us."

With the increasing demand for native grass seeds, the DeJongs harvested seed of green needlegrass and western wheatgrass this past summer. With the outstanding grass and hay production this year, they have literally been swamped with alfalfa and native hay. In the last few years, their highest production of hay has been slightly less than 1,000 tons, and their lowest 330 tons. This year will exceed any previous year in hay production.

#### **Feeding Practices**

These brothers bale all their hay for ease of handling. They feed some native hay bales left in the field. They feed little or no cake. They believe in growing their own protein on the ranch. They windrow about 300 acres of native grass in a 1,000-acre pasture in which they winter their breeding cows. By



Calves wintering in protection of trees on the bottomlands of the White River at the DeJong Ranch.

windrowing early, when the protein is 7 to 9 percent in the native grass, this amount is preserved till eaten from the windrows by the cows. Alternate windrowing of one-fourth to one-third of the winter pasture provides double the amount of protein from the same grass, if it were all left standing. Usually the snow cover is light enough, so that the windrows are available to the cows most of the time from December to April.

Their normal winter season might require two to three months of feed. Open winters may require less than one month of winter feeding. Hard winters may mean feeding in excess of four months. Cross-fencing in their 2,350-acre summer and 1,800-acre winter pastures has improved grazing management. "It helps both the grass and cattle to have fresh pastures to move onto as the grazing seasons progress. We have built needed stockwater ponds in each pasture, too—14 in all," the DeJongs pointed out.

#### Flexibility in Operations

They reduced their breeding herd, in 1951, from 300 to about

225 cows by selling the Herefords and culling their Angus herd. They changed their cow-calf operation to their present cow-calf-yearling steer basis. Their calf crops average 85 to 90 percent, up 5 percent from the early 1950's. Bud said that Angus won't average quite as high calving percentages as Herefords. They have increased average calf weights from about 400 pounds in 1951 to a high of 468 pounds in the dry year of 1956. They attribute this performance to improved ranges, better management, higher year-round condition of the cows, and creep feeding the calves. Creep feeding with whole oats has reduced the number of cutbacks at marketing time, added "bloom," and made a more uniform bunch of calves. They sold these 468-pound calves for 24 cents in 1956. Some of their calves went well over 500 pounds, selling at 28½ cents for club calves.

After selling their own uniform calves, they buy well-bred but light calves (preferably Hereford-Angus crosses weighing about 350 pounds) to winter and sell the following fall with 400 pounds gain. They usual-

ly buy 150 to 250 steer calves, according to the condition of their ranges and the amount of hay on hand. This adds flexibility to their operation. If it turns dry, they can sell these steers, leaving their breeding herd intact. They plan to put some winter gain on them with alfalfa, ground corn, and oats. By spring they are in good shape to go onto grass, and weigh about 750 pounds when marketed as long yearlings.

#### In Case of Drought

The DeJongs were concerned about drought creeping north in 1956. "If extended drought hits our ranges, we plan to sell our steers, so we can maintain our breeding herd intact. We think we can keep 200-225 cows through a severe drought without trouble or having to reduce our herd," observed Bud.

Looking to the future, Leo stated, "We could use 2,000 acres more summer range, so we could give our grass the periodic rests it needs to keep healthy root systems and to maintain a good ground cover of living grass and natural mulch for soil protection and maximum grass production per acre. It's this mulch that makes more moisture soak into the range, to be stored for grass growth, that minimizes drought effects. If this drought is moving north, we want to be ready."

The DeJong ranch is now well balanced between livestock numbers, summer and winter ranges, and hay. "Now we can surely breathe easier than we could back in 1951. Our range problems have nearly all disappeared. Our calf weights have increased. We have improved our range lands and balanced our livestock with forage and feed supplies," concluded the DeJong brothers, "and we have made money doing it."