My Rangelands: What Kinds? How Good?

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Cooperative Extension Service
South Dakota State University
Brookings, South Dakota
MY RANGE LANDS

What Kinds? How Good?

By E. J. Dyksterhuis, Extension Range Specialist

Rangelands could be ranked simply as either Lowlands or Uplands. But this simplest possible classification isn't very helpful. You probably recognize at least 3 to 8 kinds of land in your native pastures—each with different merits and faults.

Read down the list of names below, ignoring description, and tentatively mark the names of land you think you may have. They are arranged from most productive to least productive; with "Sandy," "Silty," and "Clayey" being the ordinary fully productive most cultivated soils of gently sloping uplands. After this preliminary marking of names, read the descriptions, along with others, near each one that you checked. The rangelands you have in mind, on different parts of your place, should each fit one of these descriptions better than the others:

WET LAND (WL)—Marshy lands but not open-water marsh. There is subirrigation from seepage, ponding, or other causes, but the water-table is above the surface during only part of the growing season. Too wet for cultivated crops but too dry for common reed, cattails, or true water plants.

SUBIRRIGATED (Sb)—Lands with water-table rarely above the surface during the growing season but subirrigated most of the growing season.

SALINE SUBIRRIGATED (SS)—Subirrigated land where salt and/or alkali accumulations are apparent on the surface, or as white seams in the top soil, and salt tolerant plants occur over the major part of the area.

OVERFLOW (Ov)—Areas regularly receiving more than normal soil moisture because of run-in from higher land; including stream overflow, run-in from higher slopes, and areas with water spreading systems. (Not Subirrigated or Wet Land.)

SALINE OVERFLOW (SO)—Areas regularly receiving more than normal soil moisture because of run-in, where salt and/or alkali accumulations are apparent and salt tolerant plants occur over a major part of the area.

SANDS (Sa)—Deep, loose, fine sands and very fine sands on nearly level to gently rolling hills but not compace dark level loamy fine sands and loamy very fine sands nor coarse sands. Common only in Shannon, Bennett, Todd and Tripp Counties. Some in Brown and Marshall.

SAVANNAH SITE (Sv)—Uplands with deep soils on which there was grass cover with only isolated trees when settlers came. This site is common at margins of land that will support forest.

SANDY (Sy)—All normal coarse to fine sandy loams (not true sands) plus dark nearly level loamy fine sands, and loamy very fine sands. (Sandy land with layers that cement, and become very hard when dry, is classed as Thin Sandy, or a type of Shallow or Very Shallow.)

SILTY (Si)—All normal very fine sandy loams, loams, silt loams, and silts.
CLAYEY (Cy)—All normal sandy to silty clay loams and clays that are granular and readily take water when under good cover.

CHOPPY SANDS (CS)—Deep, loose, fine sands on abruptly irregular slopes, often 20% or more; typically with narrow ridges or peaks and some broken surfaces. Found locally in Shannon to Tripp and Brown and Marshall Counties.

THIN SANDY (TSy)—Sandy thin soils but with deep subsoils generally on hills with smooth surfaced slopes over 20%. Not true sands. (Also lesser slopes where cementing occurs in upper layers on drying.)

THIN CLAYEY (TCy)—Clayey thin soils but with deep subsoils generally on hills with smooth surfaced slopes over 15%.

THIN SILTY (TSi)—Silty thin soils but with deep subsoils generally on hills with smooth surfaced slopes over 15%.

SHALLOW CLAY (SwC)—Shallow granular clays (10-20 inches deep) resting on raw shale almost unused by plant roots. Shallow structureless (dispersed) clays should be referred to Dense Clay below.

SHALLOW GRAVEL (SwG)—Shallow soils (10-20 inches) resting on clean gravelly or cobbly materials.

SHALLOW LIMY (SwL)—Shallow limy soils (10-20 inches) underlain by rock virtually impervious by plant roots.

SHALLOW NONLIMY (SwN)—Shallow neutral to acid soils (10-20 inches) underlain by rock virtually impervious by plant roots.

PANSPOTS (Ps)—Areas where hard clays or other impervious materials lie close to or at the surface in shallow depressions which occupy 20-50% of the area.

DENSE CLAY (DC)—Clays with a dispersed (hard, structureless, massive) layer near the surface. The dispersed layer is very hard to extremely hard when dry and very sticky when wet. (Not Saline Upland.)

THIN LOESS (TL)—Thin soils on deep deposits of wind blown silt on slopes of 30% or more, commonly with breaks in sod or slippage on slopes. (Found only in the southeast corner of the state, for example Canton hills.)

THIN BREAKS (TB)—Areas where parent materials outcrop at different levels forming irregular, benchy slopes of from 20-65%. Soils are of various depths and textures. Trees may occur locally above outcrops.

VERY SHALLOW (VS)—Areas where few roots can penetrate deeper than 10 inches. Outcropping of gravel or bedrock is characteristic. If on bedrock the joints develop deep soil pockets usually marked by tall grasses, shrubs, or stunted trees.

VERY SHALLOW POROUS (VSP)—May be differentiated where land has material below the surface soil too open and clean to benefit plants because of very rapid and deep water percolation.

SALINE UPLAND (SU)—Uplands of ordinary depth where salt and/or alkali accumulations are apparent and salt tolerant plants occur over a major part of the area. Found only in western counties.

SHALE (Sh)—Readily puddled uplands where some unweathered shale is exposed at the surface and little, if any, development of soil layers is evident. (Deep slaty shales that do not puddle are usually Savannah Site, Thin Breaks, or Badlands. For either class of shales, if some soil development is apparent, see Shallow Clay.)

BADLANDS (Bl)—Nearly barren lands broken by drainages dry most of the year. Intermingled gravelly areas are too small or too narrow to consider separately. (Large barren areas should be considered separately. They are not a kind of rangeland.)

You will notice that the preceding range soil-groups are arranged in the order of natural productivity; that is from most to least total plant production when not influenced by history of cultivation, mowing, or grazing. All growth, down to ground-line, is considered.

In the 15 to 19-inch precipitation zone of the State, such yields in average years vary from about 6,000 pounds air-dry per acre on Wet Land to about 2,200 pounds on ordinary Silty uplands; and on down to about 600 pounds on the least productive range soil-groups.

Only 26 short meaningful names are used for the importantly different range soil-groups in the State. When the precipitation zone (p.z. or rainfall belt) is added to these names, we have adequate names for the kinds of rangeland in your part of the state. For example, "Sandy 15-19 in. p.z. West S. Dak." Thus, "Sandy 15-19 in. p.z." and "Sandy 20-24 in. p.z." are different range sites with different potentials.

Land is soil and climate—regardless of what may be growing on it at any particular time. Kinds of soil are grouped in various ways for different uses. Where range management is the intended use, soils are grouped very broadly as shown above.

Rangeland is land where nature put a grazable crop. South Dakota was once almost all a natural range, excepting the natural forest lands of the Black Hills. Therefore, the lands can be used as range if desired. However, much of the land is suitable for more intensive use. Suitability of our soils for various uses is presented in Fact Sheets entitled "South Dakota Soils."
remember

When you give the name of the range soil-group along with the precipitation zone for your part of the state you have named the kind of rangeland (range site). There are more kinds of range than of rangeland because the same land can be seen with both good and poor range cover.

The best kind of rangeland can have a plant cover that provides little more grazing than the poorest kind. This happens if the best rangeland has plant cover reduced to poor range condition while the cover on the poorest rangeland is still in excellent range condition. The cause of poor production on the one is then the condition of the range (range-condition-class) instead of the kind of range land (range site). Only kinds of rangeland (range sites) are described here.

The kind of rangeland you have is almost a permanent feature. Changes are costly whether through water spreading, control of water-table, structures to catch silt or change in kind of land caused by erosion. The kind of plant cover on the land is readily changed: For Better, with little cost, through management of grazing. With more cost, using range seedings, herbicides, fertilizers, or mechanical soil treatments. For worse, by droughts, close grazing, no rests from grazing, and insect predations.

Average yields from different kinds of rangeland vary greatly, even when all have plant cover in excellent range condition. For example, an acre of Wet Land range can produce about 6 times more total-annual-yield than an acre of Badlands range—both in top range condition, in the same year, and in the same precipitation zone.

The kinds of rangelands (range sites) on your place determine what practices will be profitable for you, and what the natural potential is on different parts of your range.

For a professional check on your judgment of the range sites you have, contact your County Agricultural Agent or other specialist in soils or range.

This is one of five new Fact Sheets for ranchers and livestock farmers, specifically aimed at common problems of ranges and tame pastures, published by the Cooperative Extension Service of South Dakota State University, Brookings. Titles of these are:

"Proper" Range Use: How To Rate Use on Your Native Pastures.

Reseed Native Range Grasses? or Plant a Tame Pasture?

My Rangelands: What Kinds? How Good?

Range Seedings: Kinds that Succeed and Kinds That Fail.

Graze Longer and Feed Less Roughage: Systems to Balance Native and Tame Pastures With Seasonal Needs.
SHALLOW LIMY (Light) - Shallow limy soils with 0.5 to 1.0 percent calcium carbonate in plant materials, easily subject to soil crusting and surface run-off.

SHALLOW NONLIMY (Dark) - Shallow nonlimy soils with 0.5 to 1.0 percent calcium carbonate by rock materials or rock material in plant materials.

PANSPOTS (Dry) - Areas where low clay or other impermeable materials lie close to or in the surface in shallow depressions where 0.5 to 0.8 percent of the area.

Only a short distance from the high plains to the east, such soils as average parts vary from about 300 pounds of dry per acre. Yields of 2200 pounds of ordinary wheat on a 40-foot plot would be expected on soils above 650 pounds on the level plains.

Penalty for private use to avoid payment of postage, $300.