

RANGELAND PRODUCTIVITY  
Cowley County, Kansas

### Use and Explanation of Rangeland, Grazed Forest Land, Native Pastureland Interpretations

Information in this subsection can be used to plan the use and management of soils for rangeland, grazed forest land, and native pasture. Different kinds of soils vary in their capacity to produce native grasses and other plants suitable for grazing. Information in this subsection provides groupings of similar soils and estimates of potential forage production, which can be used to determine livestock stocking rates.

**Rangeland.** Range is land on which the native vegetation (climax or natural potential plant community) is predominantly grasses, grasslike plants, forbs, and shrubs suitable for grazing and browsing. Range includes natural grasslands, savannas, many wetlands, some deserts, tundra, and certain shrub and forb communities. Rangeland receives no regular or frequent cultural treatment. The composition and production of the plant community are determined by soil, climate, topography, overstory canopy, and grazing management.

**Grazed Forest Land.** Includes land on which the understory includes, as an integral part of the forest plant community, plants that can be grazed without significantly impairing other forest values.

**Native Pasture.** Includes land on which the native vegetation (climax or natural potential plant community) is forest but which is used and managed primarily for production of native plants for forage. Native pasture includes cut-over forest land and forest land cleared and now managed for native or naturalized forage plants.

#### Rangeland

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management based on the relationship between the soils and vegetation and water.

The Rangeland, Grazed Forest land, Native Pastureland Interpretations shows, for each soil that supports rangeland vegetation, the ecological site and the potential annual production of vegetation in favorable, normal, unfavorable years. An explanation of the column headings in this table follows.

An ecological site is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time throughout the soil development process; a characteristic hydrology, particularly infiltration and runoff, that has developed over time; and a characteristic plant community (kind and amount of vegetation). The hydrology of a site is influenced by development of the soil and plant community. The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production. Descriptions of ecological sites are provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service.

Total dry-weight production is the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, average, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture. Yields are adjusted to a common percent of air-dry moisture content.

Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range similarity index and rangeland trend. Range similarity index is determined by comparing the present plant community with the potential natural plant community on a particular rangeland ecological site. The more closely the existing community resembles the potential community, the higher the range similarity index. Rangeland trend is defined as the direction of change in an existing plant community relative to the potential natural plant community. Further information about the range similarity index and rangeland trend is available in chapter 4 of the National Range and Pasture Handbook, which is available in local offices of the Natural Resources Conservation Service. The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, an area with a range similarity index somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

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(Only the soils that support rangeland vegetation suitable for grazing are rated.) Refer to range site description to determine the percentage allowable of grasses, forbs, and shrubs for the range ecological site.

Map symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Average year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
015CS:				
Clime-----	Limy Upland (pe30-36)	5,000	3,500	2,500
Sogn-----	Shallow Limy (pe30-36)	3,500	2,500	1,500
015FC:				
Florence-----	Loamy Upland (pe30-36)	5,500	4,500	3,500
015LC:				
Labette-----	Loamy Upland (pe30-36)	5,500	4,500	3,500
015LS:				
Ladysmith-----	Clay Upland (pe30-36)	5,000	3,500	2,000
015NS:				
Norge-----	Loamy Upland (pe25-34)	5,500	3,700	2,750
015NT:				
Norge, eroded-----	Loamy Upland (pe25-34)	5,500	3,700	2,750
015ON:				
Olpe-----	Loamy Upland (pe30-36)	6,000	4,500	3,000
Norge-----	Loamy Upland (pe30-36)	5,500	3,700	2,750
015VE:				
Verdigris-----	Loamy Lowland (pe30-36)	10,000	8,500	6,000
019MB:				
Martin-----	Loamy Upland (pe30-36)	7,000	5,500	4,000
049FM:				
Florence-----	Loamy Upland (pe30-36)	5,500	4,500	3,500
Martin-----	Loamy Upland (pe30-36)	7,000	5,500	4,000
049IV:				
Ivan-----	Loamy Lowland (pe30-36)	10,000	8,000	6,000
191MB:				
Milan-----	Loamy Upland (pe24-32)	5,500	4,000	2,500
191MC:				
Milan-----	Loamy Upland (pe24-32)	5,500	4,000	2,500
191PX:				
Pratt-----	Sands (pe24-32)	4,500	3,500	2,500
191RO:				
Rosehill-----	Clay Upland (pe24-32)	5,500	3,500	2,000
191RS:				
Rosehill-----	Clay Upland (pe24-32)	5,500	3,500	2,000
191TV:				
Tivoli-----	Choppy Sands (pe24-32)	2,000	1,400	1,000
191US:				
Ustifluvents-----	---	---	---	---
Aa:				
Attica-----	Sandy (pe24-32)	4,500	3,000	2,000
Ab:				
Attica-----	Sandy (pe24-32)	4,500	3,000	2,000
Tivoli-----	Sands (pe24-32)	4,000	3,000	2,000
AED:				
Arents, Earthen Dam-----	---	---	---	---
Ba:				
Bethany-----	Loamy Upland (pe24-32)	5,000	3,500	2,500
Bb:				
Bethany-----	Loamy Upland (pe24-32)	5,000	3,500	2,500
Bc:				
Brewer-----	Loamy Terrace (pe24-32)	6,000	4,200	3,000
Ca:				
Canadian-----	Sandy Terrace (pe24-32)	6,500	4,500	3,500
Ch:				
Clime-----	Limy Upland (pe30-36)	5,000	3,500	2,500
Rock Outcrop-----	---	---	---	---
Cc:				
Clime-----	Limy Upland (pe30-36)	5,000	3,500	2,500
Sogn-----	Shallow Limy (pe30-36)	3,500	2,500	1,500
Da:				
Dale-----	Loamy Terrace (pe24-32)	8,500	6,100	4,500
Db:				
Dwight-----	Clay Pan (pe30-36)	4,000	3,000	2,000
Fa:				
Florence-----	Loamy Upland (pe30-36)	5,500	4,500	3,500
Florence-----	Loamy Upland (pe30-36)	5,500	4,500	3,500
Ia:				
Irwin-----	Clay Upland (pe25-34)	5,000	3,500	2,000
Ib:				
Ivan-----	Loamy Lowland (pe30-36)	10,000	8,000	6,000
INT:				
Aquolls-----	---	---	---	---
La:				
Labette-----	Loamy Upland (pe30-36)	5,500	4,500	3,500
Lb:				
Labette-----	Loamy Upland (pe30-36)	5,500	4,500	3,500
Lc:				
Labette, eroded-----	Loamy Upland (pe30-36)	5,500	4,500	3,500
Ld:				
Labette-----	Loamy Upland (pe30-36)	5,500	4,500	3,500
Dwight-----	Clay Pan (pe30-36)	4,000	3,000	2,000
Le:				
Labette-----	Loamy Upland (pe30-36)	5,500	4,500	3,500
Sogn-----	Shallow Limy (pe30-36)	3,500	2,500	1,500

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Map symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Average year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
Lf: Lesho-----	Subirrigated (pe24-32)	10,000	9,000	8,000
Lg: Lincoln-----	Sandy Lowland (pe24-32)	6,500	5,500	4,000
Lg: Tivoli-----	Sands (pe24-32)	4,000	3,000	2,000
M-W: Miscellaneous Water-----	---	---	---	---
Ma: Martin-----	Loamy Upland (pe30-36)	6,500	5,000	3,500
Mb: Martin-----	Loamy Upland (pe30-36)	6,500	5,000	3,500
Mc: Martin, eroded-----	Loamy Upland (pe30-36)	6,500	5,000	3,500
MCC: Martin-----	Loamy Upland (pe30-36)	7,000	5,500	4,000
Md: Florence-----	Loamy Upland (pe30-36)	5,500	4,500	3,500
Md: Martin-----	Loamy Upland (pe30-36)	6,500	5,000	3,500
Md: Florence-----	Loamy Upland (pe30-36)	5,500	4,500	3,500
Me: Milan-----	Loamy Upland (pe24-32)	5,000	3,500	2,500
Mf: Minco-----	Loamy Upland (pe24-32)	5,500	3,850	2,750
Mg: Minco-----	Loamy Upland (pe24-32)	5,500	3,850	2,750
Na: Norge-----	Loamy Upland (pe24-32)	5,500	3,700	2,750
Nb: Norge-----	Loamy Upland (pe24-32)	5,500	3,700	2,750
Nc: Norge, eroded-----	Loamy Upland (pe24-32)	5,500	3,700	2,750
Oa: Olpe-----	Loamy Upland (pe30-36)	6,000	4,500	3,000
Ob: Osage-----	Clay Lowland (pe30-36)	9,000	8,000	6,000
Ra: Reading-----	Loamy Lowland (pe30-36)	10,000	8,000	6,000
Rb: Rosehill-----	Clay Upland (pe25-34)	5,000	3,500	2,000
Rc: Rosehill-----	Clay Upland (pe25-34)	5,000	3,500	2,000
Sa: Smolan-----	Loamy Upland (pe25-34)	5,500	4,000	3,000
Sb: Smolan-----	Loamy Upland (pe25-34)	5,500	4,000	3,000
Sc: Smolan, eroded-----	Loamy Upland (pe25-34)	5,500	4,000	3,000
Sd: Sogn-----	Shallow Limy (pe30-36)	3,500	2,500	1,500
Ta: Tabler-----	Clay Upland (pe24-32)	3,800	2,600	1,800
Tb: Tabler-----	Clay Upland (pe24-32)	5,000	3,500	2,000
Va: Vanoss-----	Loamy Upland (pe24-32)	5,500	3,700	2,500
Vb: Vanoss-----	Loamy Upland (pe24-32)	5,500	3,700	2,500
Vc: Vanoss-----	Loamy Upland (pe24-32)	5,500	3,700	2,500
Vd: Verdigris-----	Loamy Lowland (pe30-36)	10,000	8,500	6,000
W: Water Areas-----	---	---	---	---
Wa: Waurika-----	Clay Upland (pe24-32)	5,000	3,500	2,000

