

# RANGELAND PRODUCTIVITY Cloud 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<br>and soil name | Ecological site             | Total dry-weight production |                 |                     |
|-----------------------------|-----------------------------|-----------------------------|-----------------|---------------------|
|                             |                             | Favorable<br>year           | Average<br>year | Unfavorable<br>year |
|                             |                             | Lb/acre                     | Lb/acre         | Lb/acre             |
| 027CT:<br>Crete-----        | Clay Upland (pe25-34)       | 4,500                       | 4,100           | 3,700               |
| 027EU:<br>Eudora-----       | Loamy Lowland (pe25-34)     | 7,000                       | 5,500           | 4,500               |
| 027HE:<br>Haynie-----       | Loamy Lowland (pe25-34)     | 7,000                       | 5,000           | 4,500               |
| Sarpy-----                  | Sandy Lowland (pe25-34)     | 3,800                       | 3,500           | 3,000               |
| 027HN:<br>Hobbs-----        | Loamy Lowland (pe25-34)     | 7,000                       | 5,500           | 4,000               |
| 089ND:<br>Nibson-----       | Limy Upland (pe20-26)       | 4,000                       | 2,500           | 1,500               |
| 123AB:<br>Armo-----         | Limy Upland (pe20-26)       | 4,000                       | 3,000           | 1,000               |
| 123AC:<br>Armo-----         | Limy Upland (pe20-26)       | 4,000                       | 3,000           | 1,000               |
| 123HB:<br>Harney-----       | Loamy Upland (pe20-26)      | 5,000                       | 3,500           | 2,000               |
| 123HE:<br>Harney-----       | Loamy Upland (pe20-26)      | 5,000                       | 3,500           | 2,000               |
| Mento-----                  | Clay Upland (pe20-26)       | 3,500                       | 2,000           | 1,000               |
| 123LA:<br>Lancaster-----    | Loamy Upland (pe26-30)      | 5,000                       | 3,500           | 2,000               |
| Armo-----                   | Limy Upland (pe26-30)       | 4,000                       | 3,000           | 1,000               |
| 123NA:<br>New Cambria-----  | Clay Terrace (pe20-26)      | 5,000                       | 4,000           | 2,500               |
| 123NC:<br>Nibson-----       | Limy Upland (pe20-26)       | 4,000                       | 2,500           | 1,500               |
| 123RB:<br>Roxbury-----      | Loamy Lowland (pe20-26)     | 6,500                       | 5,000           | 3,500               |
| 123RC:<br>Roxbury-----      | Loamy Lowland (pe20-26)     | 6,500                       | 5,000           | 3,500               |
| 123WA:<br>Wakeen-----       | Limy Upland (pe20-26)       | 4,000                       | 2,500           | 1,000               |
| 143EE:<br>Edalgo-----       | Clay Upland (pe26-30)       | 5,000                       | 3,500           | 2,000               |
| Hedville-----               | Shallow Sandstone (pe26-30) | 4,000                       | 3,000           | 2,000               |
| 143GE:<br>Geary-----        | Loamy Upland (pe25-34)      | 6,000                       | 4,000           | 3,000               |
| 143HE:<br>Hedville-----     | Shallow Sandstone (pe26-30) | 4,000                       | 3,000           | 2,000               |
| Rock Outcrop-----           | ---                         | ---                         | ---             | ---                 |
| 143HP:<br>Hobbs-----        | Loamy Lowland (pe26-30)     | 4,700                       | 4,200           | 4,000               |
| Geary-----                  | Loamy Upland (pe26-30)      | 6,000                       | 4,000           | 3,000               |
| 143LA:<br>Lancaster-----    | Loamy Upland (pe26-30)      | 5,000                       | 3,500           | 2,000               |
| 143RO:<br>Roxbury-----      | Loamy Lowland (pe26-30)     | 6,500                       | 5,000           | 3,500               |
| 157BK:<br>Geary-----        | Loamy Upland (pe25-34)      | 6,000                       | 4,000           | 3,000               |
| Hobbs-----                  | Loamy Lowland (pe25-34)     | 4,500                       | 4,000           | 3,800               |
| 157CH:<br>Crete-----        | Clay Upland (pe25-34)       | 4,500                       | 4,100           | 3,700               |
| 157ED:<br>Eudora-----       | Loamy Terrace (pe25-34)     | 10,000                      | 8,000           | 6,000               |
| 157KN:<br>Kenesaw-----      | Loamy Upland (pe25-34)      | 4,500                       | 4,200           | 3,800               |
| 157SD:<br>Inavale-----      | Sandy Lowland (pe20-26)     | 3,500                       | 3,000           | 2,200               |
| 201CG:<br>Cass-----         | Sandy Lowland (pe26-30)     | 4,300                       | 4,000           | 3,700               |
| 201CS:<br>Crete-----        | Clay Upland (pe26-30)       | 4,500                       | 4,100           | 3,700               |
| 201SA:<br>Sarpy-----        | Sands (pe26-30)             | 3,800                       | 3,500           | 3,000               |
| Aa:<br>Hobbs-----           | Loamy Lowland (pe26-30)     | 6,500                       | 5,000           | 4,000               |
| Ah:<br>Saltine-----         | Saline Lowland (pe26-30)    | 3,800                       | 3,400           | 3,000               |
| Ar:<br>Armo-----            | Limy Upland (pe26-30)       | 4,000                       | 3,000           | 1,000               |
| Ba:<br>Hastings-----        | Loamy Upland (pe26-30)      | 4,800                       | 4,400           | 4,000               |
| Hobbs-----                  | Loamy Lowland (pe26-30)     | 6,500                       | 5,000           | 4,000               |
| Br:<br>Bridgeport-----      | Loamy Lowland (pe26-30)     | 5,000                       | 4,000           | 3,000               |
| Ca:<br>Cozad-----           | Silty Lowland - Veg. Zone 3 | 4,500                       | 4,200           | 3,800               |
| Cass-----                   | Sandy Lowland - Veg. Zone 3 | 3,500                       | 3,200           | 3,000               |
| Cb:<br>Cass-----            | Sandy Lowland - Veg. Zone 3 | 3,500                       | 3,200           | 3,000               |
| Cf:<br>Munjor-----          | Sandy Lowland - Veg. Zone 3 | 5,000                       | 4,000           | 3,000               |
| Inavale-----                | Sandy Lowland (pe20-26)     | 3,500                       | 3,000           | 2,200               |
| CLP:                        |                             |                             |                 |                     |

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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<br>and soil name | Ecological site             | Total dry-weight production |                 |                     |
|-----------------------------|-----------------------------|-----------------------------|-----------------|---------------------|
|                             |                             | Favorable<br>year           | Average<br>year | Unfavorable<br>year |
|                             |                             | Lb/acre                     | Lb/acre         | Lb/acre             |
| Clay Pits-----              | ---                         | ---                         | ---             | ---                 |
| Cr:                         |                             |                             |                 |                     |
| Crete-----                  | Clay Upland (pe25-34)       | 4,500                       | 4,100           | 3,000               |
| Cs:                         |                             |                             |                 |                     |
| Crete-----                  | Clay Upland (pe25-34)       | 4,500                       | 4,100           | 3,700               |
| Ct:                         |                             |                             |                 |                     |
| Crete-----                  | Clay Upland (pe26-30)       | 4,500                       | 4,100           | 3,700               |
| Cu:                         |                             |                             |                 |                     |
| Crete-----                  | Clay Upland (pe26-30)       | 4,500                       | 4,100           | 3,700               |
| De:                         |                             |                             |                 |                     |
| Detroit-----                | Loamy Terrace (pe26-30)     | 6,000                       | 4,500           | 3,000               |
| Eu:                         |                             |                             |                 |                     |
| Eudora-----                 | Loamy Terrace (pe26-30)     | 10,000                      | 8,000           | 6,000               |
| Ge:                         |                             |                             |                 |                     |
| Geary-----                  | Loamy Upland (pe25-34)      | 6,000                       | 4,000           | 3,000               |
| GRP:                        |                             |                             |                 |                     |
| Gravel Pits-----            | ---                         | ---                         | ---             | ---                 |
| Gs:                         |                             |                             |                 |                     |
| Geary-----                  | Loamy Upland (pe26-30)      | 6,000                       | 4,000           | 3,000               |
| Hb:                         |                             |                             |                 |                     |
| Hastings-----               | Loamy Upland (pe26-30)      | 4,800                       | 4,400           | 4,000               |
| Hc:                         |                             |                             |                 |                     |
| Hastings-----               | Loamy Upland (pe26-30)      | 4,800                       | 4,400           | 4,000               |
| Hd:                         |                             |                             |                 |                     |
| Hastings-----               | Loamy Upland (pe26-30)      | 4,800                       | 4,400           | 4,000               |
| He:                         |                             |                             |                 |                     |
| Hedville-----               | Shallow Sandstone (pe26-30) | 4,000                       | 3,000           | 2,000               |
| Ho:                         |                             |                             |                 |                     |
| Hobbs-----                  | Loamy Lowland (pe25-34)     | 4,700                       | 4,200           | 4,000               |
| Hr:                         |                             |                             |                 |                     |
| Hord-----                   | Loamy Terrace (pe26-30)     | 4,500                       | 4,200           | 3,800               |
| Hu:                         |                             |                             |                 |                     |
| Humbarger-----              | Loamy Lowland (pe26-30)     | 6,500                       | 5,000           | 3,500               |
| Kp:                         |                             |                             |                 |                     |
| Kipson-----                 | Limy Upland (pe26-30)       | 4,500                       | 3,500           | 2,000               |
| Lh:                         |                             |                             |                 |                     |
| Lancaster-----              | Loamy Upland (pe26-30)      | 5,000                       | 3,500           | 2,500               |
| Hedville-----               | Shallow Sandstone (pe26-30) | 4,000                       | 3,000           | 2,000               |
| Lm:                         |                             |                             |                 |                     |
| Longford-----               | Loamy Upland (pe26-30)      | 5,500                       | 4,000           | 3,000               |
| Ln:                         |                             |                             |                 |                     |
| Longford-----               | Loamy Upland (pe26-30)      | 5,500                       | 4,000           | 3,000               |
| Lo:                         |                             |                             |                 |                     |
| Longford-----               | Loamy Upland (pe26-30)      | 5,000                       | 3,500           | 2,500               |
| M-W:                        |                             |                             |                 |                     |
| Miscellaneous Water-----    | ---                         | ---                         | ---             | ---                 |
| Mc:                         |                             |                             |                 |                     |
| Mccook-----                 | Loamy Terrace (pe20-26)     | 3,800                       | 3,300           | 2,800               |
| Mr:                         |                             |                             |                 |                     |
| Muir-----                   | Loamy Terrace (pe25-34)     | 7,500                       | 5,500           | 4,000               |
| Nc:                         |                             |                             |                 |                     |
| New Cambria-----            | Clay Terrace (pe26-30)      | 5,000                       | 4,000           | 2,500               |
| Nu:                         |                             |                             |                 |                     |
| Nuckolls-----               | Loamy Upland (pe26-30)      | 3,700                       | 3,200           | 2,700               |
| Nx:                         |                             |                             |                 |                     |
| Nuckolls-----               | Loamy Upland (pe26-30)      | 3,700                       | 3,200           | 2,700               |
| QUA:                        |                             |                             |                 |                     |
| Quarries-----               | ---                         | ---                         | ---             | ---                 |
| Rx:                         |                             |                             |                 |                     |
| Roxbury-----                | Loamy Terrace (pe26-30)     | 5,000                       | 4,000           | 3,000               |
| Sa:                         |                             |                             |                 |                     |
| Inavale-----                | Sandy Lowland (pe20-26)     | 3,500                       | 3,000           | 2,200               |
| SAP:                        |                             |                             |                 |                     |
| Sand Pits-----              | ---                         | ---                         | ---             | ---                 |
| Sd:                         |                             |                             |                 |                     |
| Inavale-----                | Sandy Lowland (pe20-26)     | 3,500                       | 3,000           | 2,200               |
| St:                         |                             |                             |                 |                     |
| Sutphen-----                | Clay Lowland (pe26-30)      | 7,500                       | 5,500           | 3,500               |
| To:                         |                             |                             |                 |                     |
| Tobin-----                  | Loamy Lowland (pe26-30)     | 6,000                       | 5,000           | 4,000               |
| W:                          |                             |                             |                 |                     |
| Water-----                  | ---                         | ---                         | ---             | ---                 |
| Wa:                         |                             |                             |                 |                     |
| Wakeen-----                 | Limy Upland (pe26-30)       | 4,000                       | 2,500           | 1,000               |

