SECTION II

II - D. SOIL INTERPRETATIONS

7. Pastureland and Hay Land

INTRODUCTION

Pastureland refers to grazing lands composed of introduced or domesticated native forage species that are used primarily for the production of domestic livestock. They receive periodic renovation and/or cultural treatments such as tillage, fertilization, mowing, weed control, and may be irrigated. They are not in rotation with crops. Pastureland is principally harvested by grazing animals, but may be machined harvested to accumulate stored forage.

Hay Land refers to land on which perennial plants are managed and harvested for hay for six years or more. Hay land is generally machine harvested, but may be grazed. Land where annual plants are planted for hay or forage crops grown in short-term rotation is cropland.

Landscapes are divided into basic units for study, evaluation, and management. On rangelands and forest lands, these units are called ecological sites; while on forage croplands, hay land, and pasturelands, they are called forage suitability groups.

Forage suitability groups (FSGs) are composed of one or more individual soil map units having similar potentials and limitations for forage production. Soils within a forage production suitability group are sufficiently uniform to:

- Support the same adapted forage plants under the same management conditions
- Require similar conservation treatment and management to produce the forages selected in the same quality and quantity desired; and
- Have comparable potential productivity.

Forage suitability groups (FSG) condense and simplify soils information. They provide the soil and plant science information for planning. These forage suitability group descriptions contains the soil map units that make up the FSG, adapted forage species and planting mixture, limitations of the FSG, conservation problems associated with the various limitations, annual forage production estimates, and distribution of production during the growing season.

Currently FSGs have not been established in California. When FSGs are established for each California Major Land Resource Area (MLRA) having significant forage production, they will be filed in the Pastureland and Hay Land subsection of the Soil Interpretations folder of Section II of the eFOTG.

FORAGE SUITABILITY GROUPS

Forage Suitability Groups (FSGs) have not yet been developed for soils in California. Once developed, they will be located in the Forage Suitability Group subsection folder of the eFOTG. Data currently available for interpreting soils for pasture and hay land uses are contained in reports available on the Soil Data Mart and Web Soil Survey. FSGs will be developed for irrigated conditions (all 4 ETa Zones) and for non-irrigated conditions (ETa zones b, c, d, and e only) in each Major Land Resource Area.

Irrigated FSGs will be based on soils according to the following Vegetative Soil Group combinations:

1. A+B+C;
2. D+G;
3. E+F;
4. H+I;

And, according to the following forage mixtures:

1. Perennial grass alone;
2. Perennial grass and a legume;
3. Perennial grass mixture; and
4. Perennial grass mixture and a legume or legume mixture.

Non-irrigated FSGs will be based on soils according to the following Vegetative Soil Group combinations:

1. A+C;
2. B alone;
3. C+E+F;
4. D+G;
5. H+I;

And, according to the following forage mixtures:

1. Perennial grass alone;
2. Perennial grass and a legume;
3. Perennial grass mixture;
4. Perennial grass mixture and a legume or legume mixture;
5. Annual grass alone;
6. Annual grass and legume and;
7. Annual grass mixture and a legume or legume mixture.

VEGETATIVE SOIL GROUPS

Vegetative Soil Groups are described below and in the table following. Planting recommendations can be found in the Vegetative Guide.

A. ALL CLIMATICALLY ADAPTED PLANTS SUITED. Soils are deep to very deep, moderately coarse to medium textured, moderately well to well drained, moderately rapid to moderately slow permeability. Soils in this group can have slight wetness and/or slight salinity or alkalinity.

B. Choice of plants limited by DROUTHINESS AND LOW FERTILITY LEVEL. Soils are coarse to gravelly medium textured, excessively drained, with less than 5 inches of available water capacity (AWC) in the root zone.

C. Choice of plants limited by FINE TEXTURES. Soils are deep to very deep, moderately fine to fine-textured, moderately well drained, moderately slow to slow permeability.

D. Choice of plants limited by VERY SLOWLY PERMEABLE (CLAYPAN) SUBSOILS. Soils are moderately well drained, with slow or very slow subsoil permeability.

E. Choice of plants limited by WETNESS. Soils are somewhat poorly to very poorly drained. (Drained soil phases will be placed in appropriate group according to their current drained status.) Slight salinity or alkalinity may be present.

F. Choice of plants limited by SALINITY OR ALKALINITY. Soils are moderately to strongly saline and/or alkaline, and usually somewhat poorly or poorly drained.

G. Choice of plants limited by DEPTH. Soils are shallow to moderately deep, well-drained, over hardpan, bedrock, or other unfractured dense material.

H. Choice of plants limited by LOW pH. Soils are strongly to extremely acidic; pH is less than 5.6.

I. Choice of plants limited by TOXIC PROPERTIES. Soils are usually moderately to strongly serpentinitic.

J. Choice of plants depends upon ON-SITE INVESTIGATION. Soils include those in the miscellaneous area, non-arable category such as, riverwash, rubbleland, or rock outcrop.

Grouping Soils for Vegetative Purposes - California

Veg. Group Symbol	Major Soil Limitation	Effective Depth (in.)	Surface Texture	Subsoil Permeability 1/	Drainage Class 2/	Salinity & Alkalinity 3/	Reaction 4/	Erosion	AWC (in.) 5/
A	None	36 or more	sl through sicl	Moderately rapid through slow	Moderately well through well	None through slight	Medium acid through mod. Alkaline (pH 5.6-8.4)	Slight through moderate	5 or more
B	Drouthiness	36 or more	s, ls, gr-ls, vgr, or xgr	Very rapid through very slow	Excessively through moderately well	None through slight	Strongly acid through mod. Alkaline (pH 5.6-8.4)	Slight through moderate	3 or less
C	Fine Textures	20 or more	c or sic	Moderate through slow	Moderately well through well	None through slight	Medium acid through mod. Alkaline (pH 5.6-8.4)	Slight through moderate	5 or more
D	Clay Pan 6/	10 through 36	sl through sicl	Slow or very slow	Well through somewhat poorly	None through slight	Medium acid through mod. Alkaline (pH 5.6-8.4)	Slight through moderate	3 or more
E	Wetness	20 or more	s through c	Rapid through slow	Somewhat poorly through very poorly	None through slight	Medium acid through mod. Alkaline (pH 5.6-8.4)	Slight through moderate	3 or more
F	Salinity or Alkalinity	20 or more	s through c	Rapid through slow	Moderately well through poorly	Moderately through strong	Neutral through very Strongly alkaline (pH 6.6-9.0+)	Slight through moderate	3 or more
G	Shallow Depth 7/	10 through 20	Any	Moderately rapid through mod. slow	Moderately well through somewhat excessively	None through slight	Medium acid through mod. Alkaline (pH 5.6-8.4)	Slight through moderate	3 or more
H	Low pH	20 or more	Any	Moderately rapid through mod. slow	Somewhat poorly through somewhat excessively	None	Strongly acid through extremely acid (pH less than 5.6)	Slight through moderate	3 or more
I	Toxicity (serpentinite)	10 or more	Any	Moderately rapid through mod. slow	Somewhat poorly through somewhat excessively	None through slight	Medium acid through mod. Alkaline (pH 5.6-8.4)	Slight through moderate	3 or more
J	Severe 8/	any	Any	Very rapid through very slow	Excessively through very poorly	None through slight	any	Slight through severe	any

TABLE: Grouping Soils for Vegetative Purposes – California

FOOTNOTES

1/ Subsoil permeability refers to permeability of the B horizon(s) or the 10 to 40 inch control section in soils without B horizons.

2/ Drainage class refers to drainage of soils that do not have altered drainage. If the soils have been drained, use the drainage class that most nearly reflects growing conditions following drainage improvement.

3/ Use current levels of salinity or alkalinity that are present in the field. Levels may be higher or lower than indicated on soil maps. Capability unit designations may be based on general assumptions that do not uniformly reflect current short-term growing conditions on each parcel of land.

4/ Generally, applies to the soil to a depth of 20 inches.

5/ Limits are for total available water-holding capacity for that part of the soil profile generally available to roots or to a depth of 60 inches if no severe intervening restrictions of soil or water are present.

6/ Soils in this group must have a clay increase of at least 15 percent, absolute, within 1 inch, or an abrupt or very abrupt boundary between the A and B horizons.

7/ Depth to unfractured rock or hardpan. If a claypan over 6 inches thick is present over rock or hardpan, place soil in group D. See note 6 for other claypan criteria.

8/ Includes all soils not suitable for routine cultivation, seeding, and planting. Includes all class VIII land, extremely cobbly soils, soils in class 3, 4, and 5 rockiness, and/or class 2, 3, 4, and 5 stoniness. These soils require on-site recommendations.

Pastureland and Hay Land Soil Survey Information

Within the Soil Data Mart, yield information is available for pasture (AUMs) and alfalfa or grass hay (tns/ac) in the “Irrigated and Non-irrigated Yields by Map Unit” and “Irrigated and Non-irrigated Yields by Map Unit Component” reports.

Within the Web Soil Survey, maps and tables of yield information are available for pasture (AUMs) and alfalfa or grass hay (tns/ac) for your defined area of interest under the tab, “Suitabilities and Limitations for Use” under the section “Vegetative Productivity”.