

VEGETATIVE SOIL GROUPS

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Guide for Placing Soils in Vegetative Soil Groups and Assignment to Plant Species as Indicators of Plant Adaptation for Establishment and Growth

Vegetative soil groups (VSG's) consist of soils having similar properties and qualities that affect their suitability for plant establishment and growth. The groups are used primarily for determining the best-suited plants for conservation practices and forage production, depending on the major **soil** feature(s) or problem(s). Climatic factors, such as precipitation, maximum and minimum temperatures, 4ETa zones, length of the growing season, elevation, and possible management inputs such as irrigation are considered separately within the eVegGuide (i.e., through species' ratings for 4ETa zones and irrigation requirements).

Based on the definitions and interpretations of VSG's provided below, one or more applicable VSG's are displayed in an individual specie's plant record (using PLANT EDITOR) within the eVegGuide. These VSG ratings represent the limiting soil feature(s) to which the plant has been shown to be adapted and tolerant. The major soil features that determine the suitability of the groups for plant establishment, survival, growth and long-term maintenance are summarized below, and also described in detail in Table 1 (page 2).

- A. ALL CLIMATICALLY ADAPTED PLANTS SUITED. Soils are deep to very deep, moderately coarse to medium textured, moderately well to well-drained, moderately rapidly to moderately slowly permeable. (Soils in this group can have slight wetness and 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 five 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 slowly to slowly permeable.
- 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 through very poorly drained. (Drained soil phases will be placed in appropriate group according to their current drainage status.) Slight salinity and/or alkalinity may be present.
- F. Choice of plants limited by SALINITY OR ALKALINITY. Soils are moderately to strongly saline 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 through 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 non-arable category, such as river wash, stony or rocky upland, etc.

Table 1. Detailed criteria for assigning vegetative soil groups, reflecting plant adaptation to soils (in terms of establishment, survival, growth and long-term maintenance).

Vegetative soil group	Major soil limitation	Effective depth (inches)	Surface texture	Subsoil Permeability ¹	Drainage class ²	Salinity and alkalinity ³	Reaction ⁴	Erosion hazard	AWC ⁵
A	None	36 or more	SL to SiCL	Mod. rapid to slow	Mod. well or well	None or slight	Medium acid to mod. alkaline (pH 5.6-8.4)	Slight or moderate	5 or more
B	Drought-iness	36 or more	S, ILS, GSL, VG, K	Very rapid to very slow	Excessively to mod. well	None or slight	Strongly acid to mod. alkaline (pH 5.1-8.4)	Slight or moderate	5 or less
C	Fine texture	20 or more	C, SIC, GC	Moderate to slow	Mod. well or well	None or slight	Medium acid to mod. alkaline (pH 5.6-8.4)	Slight or moderate	5 or more
D	Claypan soils ⁶	10 to 36	SL to SiCL	Slow or very slow	Well to somewhat poorly	None or slight	Medium acid to mod. alkaline (pH 5.6-8.4)	Slight or moderate	3 or more
E	Wetness	20 or more	S to C	Rapid to slow	Somewhat poorly to very poorly	None or slight	Medium acid to mod. alkaline (pH 5.6-8.4)	Slight or moderate	3 or more
F	Salinity or alkalinity	20 or more	S to C	Rapid to slow	Mod. well to poorly	Moderate to strong	Neutral to very strongly alkaline (pH 6.6-9.0+)	Slight or moderate	3 or more
G	Shallow Depth ⁷	10 to 36 10 to 20	S, LS, GSL, VG, K, SL to SiCL C, SIC, sc	Mod. rapid to very slow	Mod. well to somewhat excessively	None or slight	Medium acid to mod. alkaline (pH 5.6-8.4)	Slight or moderate	3 or more
H	Low pH	20 or more	SL to SiCL	Mod. rapid to mod. slow	Somewhat poorly to somewhat excessively	None	Strongly acid to extremely acid (pH less than 5.6)	Slight or moderate	3 or more
H	Toxicity (serpentine soils)	10 or more	L to C	Mod. rapid to mod. slow	Somewhat poorly to somewhat excessively	None or slight	Medium acid to mod. alkaline (pH 5.6-8.4)	Slight or moderate	3 or more
J	Severe ⁸	Any	Any	Very rapid to very slow	Excessively to very poorly	None to strong	Any	Slight to severe	Any

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 in areas of soils where drainage has not been altered. If the soils have been drained, use the class that most nearly reflects growing conditions following improvement of drainage.

³ Use current levels of salinity and alkalinity that are evident in the field. Levels may be higher or lower than those indicated on 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 upper 20 inches of the soil.

⁵ Limits are for the total available water capacity in the part of the soil that is generally available to roots or to a depth of 60 inches if there are no severe intervening restrictions of soil or water. Refer to California Soil Handbook, chapter 3, section 3.423.

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 AB boundary.

⁷ Depth to unfractured bedrock or hardpan. If there is a claypan more than 6 inches thick over the bedrock or hardpan, place in group D. See footnote 6 for other claypan criteria.

8 Includes all soils that are not suitable for routine cultivation, seeding, and planting. Includes all class VII and VIII land; very cobbly soils.