CALIFORNIA SOILS SUITABLE FOR GRAPES

The following lists divide the state into 5 geographical regions (not to be confused with climatic regions as defined by Winkler): North Coast, Central Coast, Sierra Foothills, San Joaquin Valley, and Southern California. The lists of soils were developed largely from soil surveys of the counties shown. Included are all of the important soils in grape production, and some that are of lesser importance. Soils of little or no importance for grapes are not listed. NOTE: THESE SOILS VARY IN THEIR CAPABILITIES FOR GROWING GRAPES AND IN THE MANAGEMENT INPUTS NECESSARY FOR SUCCESSFUL PRODUCTION. Therefore, this list should be used as a general guide only, and the prospective vineyardist should refer to the original soil surveys, in addition to climatic information and experience of UC farm advisors and local growers in order to best match varieties and rootstocks with soil and climatic conditions in the area of interest.

The following notes describe the headings on the table:

Soil Series. A soil series is a group of soils that have similar profiles but have slight variations in texture or other characteristics. *Soil series with an asterisk may be salt or sodium affected at some locations.

Landscape Position. The landscape position of a soil implies certain profile, slope, and drainage characteristics, as follows:

Floodplain - Recently deposited soils; deep profiles; may be stratified with layers of different textures; may have water table close to the surface; usually nearly level.

Basin - Low areas of recently deposited soils; deep profiles but mostly clay or silty clay textures; poorly drained with water tables close to the surface; nearly level.

Recent alluvial fan - Recently deposited soils, slightly higher than the floodplain; deep profiles with relatively uniform medium to coarse textures; usually well drained except on low ends of fans; gently sloping to nearly level.

Young alluvial fan - Slightly older and higher than recent fans; other characteristics similar.

Wind modified fan - Sandy alluvial fan material that has been moved or piled into dunes by wind; usually deep profiles with uniform coarse textures; drainage usually good; sloping to hilly topography unless leveled.

Old alluvial fan - Old alluvial material that has continued to weather and develop a clay or hardpan subsoil; root depth restricted; usually well drained but susceptible to perched water tables; gently sloping to undulating.

Terrace - Similar to old alluvial fan but at a level clearly above recent fans; root depth restricted by clay or hardpan; susceptible to perched water tables, gently sloping to hilly.

Upland - Soils formed directly on bedrock; profile depths and textures vary; usually well drained; varying slopes.

Parent Material.

Granitic - Derived from granite, granodiorite, etc.; relatively coarse textured rocks result in sandy and sandy loam soils.

Basic igneous - Derived from gabbro or diorite; more easily weathered than granitic rocks and therefore result in loam, clay loam, and clay soils.

Volcanic - Derived from andesite or basalt; medium to fine textured rocks result in loam and clay loam soils.

Metamorphic - Derived from wide mixture of metamorphosed sedimentary or volcanic rocks; soils usually medium to fine textured.

Sedimentary - Derived from shale or sandstone (rarely limestone); fine textured soils from shale, coarse textured from sandstone.

Surface Texture. Texture refers to the relative proportions of sand, silt, and clay particles in a mass of soil. Abbreviations used are defined as follows:

S = sand
LS = loamy sand
SL = sandy loam
SCL = sandy clay loam
SiL = silt loam
SiCL = silty clay loam
SiC = silty clay

FSL = fine sandy loam
L = loam
CL = clay loam
C = clay
Co = coarse
g = gravelly

Subsoil Texture. Subsoil texture is only given where it contrasts with the surface texture. The same abbreviations are used.

Effective Rooting Depth. Depth to which a soil is readily penetrated by roots and utilized for extraction of water, air, and plant nutrients. IF DEPTH IS LESS THAN 60 INCHES, THE LAYER THAT LIMITS DEPTH IS SHOWN.

Permeability. The quality of a soil profile that enables water or air to move through it. Subsoil permeability is shown where it differs from that of the surface soil. Abbreviations used are defined as follows:

VS = very slow, <0.06 inches/hour
S = slow, 0.06-0.20 " "
MS = moderately slow, 0.20-0.63 inches/hour
M = moderate, 0.63-2.00 inches/hour

MR = moderately rapid, 2.00-6.30 inches/hour
R = rapid, 6.30-20.0 inches/hour
VR = very rapid, >20.0 inches/hour

Profile Available Waterholding Capacity. The capacity of soil to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field capacity and the amount at wilting point. It is expressed in inches of water for the total effective rooting depth.

VL = very low, 0-2.5 inches
L = low, 2.5-5 inches
M = moderate, 5-7.5 inches

H = high, 7.5-10 inches
VH = very high >10 inches

pH. A numerical means for designating acidity and alkalinity in soils.

ext a = extremely acid, <4.5
v st a = very strongly acid, 4.5-5.0
st a = strongly acid, 5.1-5.5
m a = medium acid, 5.6-6.0
sl a = slightly acid, 6.1-6.5

n = neutral, 6.6-7.3
mi alk = mildly alkaline, 7.4-7.8
mod alk = moderately alkaline, 7.9-8.4
st alk = strongly alkaline, 8.5-9.0
v st alk = very strongly alkaline, >9.0

Occurrence by Counties. A plus sign (+) indicates that the soil listed occurs in the county(s) listed at the top of the table. The soil surveys from which this information was obtained are listed below, proceeding from north to south in each geographical region.

North Coast. Soil Survey of Mendocino County Bottomlands, California, special report, 1973; Lake County, unpublished data from soil survey in progress; Soil Survey of Sonoma County, California, 1972; Soil Survey of Napa County, California, 1978.

Central Coast. Soil Survey of the Alameda Area, California, 1966; Soil Survey of Contra Costa County, California, 1977; Soil Survey of the Santa Clara Area, California, 1958; Soil Survey of the Eastern Santa Clara Area, California, 1974; Soil Survey of San Benito County, California, 1969; Soil Survey of Monterey County, California, 1978; Soil Survey of San Luis Obispo County, Paso Robles Area, California (in press); Soil Survey of San Luis Obispo County, Coastal Part, California (in manuscript); Soil Survey of the Northern Santa Barbara Area, California, 1972.

Sierra Foothills. Soil Survey of the Nevada County Area, California, 1975; Soil Survey of Placer County, West Part, California (in manuscript); Soil Survey of the El Dorado Area, California, 1974; Soil Survey of the Amador Area, California, 1965; Soil-Vegetation Maps and Tables, Calaveras County, partial coverage published 1975-78; Soil-Vegetation Maps and Tables, Tuolumne County, partial coverage published 1975-78.

San Joaquin Valley. Soil Survey of the Lodi Area, California, 1937; Soil Survey of the Stockton Area, California, 1951; Soil Survey of the Eastern Stanislaus Area, California, 1964; Soil Survey of the Merced Area, California, 1962; Soil Survey of the Madera Area, California, 1962; Soil Survey of the Eastern Fresno Area, California 1971; Soil Survey of Kings County, California, 1946; Soil Survey of the Visalia Area, California, 1940; Soil Survey of the Pixley Area, California, 1942; Soil Survey of the Wasco Area, California, 1942; Soil Survey of the Bakersfield Area, California, 1945.

Southern California. Soil Survey of San Bernardino County, Southwest Part, California (in press); Soil Survey of the Western Riverside Area, California, 1971; Soil Survey of the San Diego Area, California, 1973.

Capability Class/Limitations

Capability classification is the grouping of soils to show their relative suitability for most kinds of farming.

Class I soils have few limitations that restrict their use. Class I soils must meet certain standards with regard to soil depth, texture, permeability, drainage, available water holding capacity, slope, erosion hazard, flooding hazard, salinity, toxicity and some minimum climatic requirements. For example, a Class I soil cannot be coarser in texture than a sandy loam, or finer than a silty clay loam. It must be at least 40 inches deep and have an available water holding capacity of at least 7.5 inches. It must have a slope of 0-2% and a permeability of MS, M, or MR. A soil that does not meet the standards for one or more of these factors will be placed in Class II or lower, depending on the severity of the limitation.

When more than one capability class is listed for a soil series, it means that some members of the series are less favorable than others in one or more of the soil characteristics listed. In all cases where Class II, III, or IV are shown, the primary limitations that place the soil in those classes are listed beneath the class.

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