

Guide for Placing Soils in Capability Classes in California

Capabi- lity Class	Effec- tive Soil Depth (in.) ¹	Climate Thornth- waite 1948 indices (in.)		Surface Layer Texture		Perme- ability ²	Draina- ge Class ³	Availa- ble water Capaci- ty ⁴	Slope		Erosion Hazard	Flooding Hazard	Salinity ECx1U @ 25 C ⁸	Alkali ESP ⁸	Toxic Sub- stances ⁹	Frost Free Season
		Irr ETp 32 F	Dry 4ETa	Irrigated	Dryland				A _{5, 6, 7}	B						
1	>40	>20	>20	Sandy Loam thru Clay Loam	Sandy Loam thru Clay Loam	Mod. Rapid thru Mod. Slow	Well or Mod. Well >60"	>=7.5 in. avg. AWC total, or >=0.13 In/In.	<2 %	<2 %	None or slight	None or rare	>4 mmhos (none)	None	None	>140 Days
2	>40	>14	>16	Loamy Sand thru Clay, may be Gravelly	Sandy Loam thru Clay, may be Gravelly	Rapid thru Slow	Some- what Poorly thru Some- what Excess- ively >36"	>=5.0 in. avg. AWC total, or >=0.08 In/In.	<5 %	<8 %	None thru Mod.	None thru Occas.	<8 mmhos	<25	None or Slight	>100 Days
3	>20	>10	>12	Any, may be Gravelly or Cobbly	Sandy Loam thru Clay, may be Gravelly or Cobbly	Rapid thru Very Slow	Poorly thru Excessi- vely >20"	>=3.5 in. avg. AWC total, or >=0.06 In/In.	<8 %	<15 %	None thru High	None thru Occas.	<16 mmhos	<50	None thru Mod.	>80 Days
4	>10	>6	>8	Any, may be Very Gravelly, Very Cobbly or Stony ¹⁰	Loamy Sand thru Clay may be Very Gravelly, Very Cobbly or Stony ¹⁰	Any	Poorly thru Excessi- vely >20"	>=2.5 in. avg. AWC total, or >=0.04 In/In.	<15 %	<25 %	Any	None thru Frequent ¹¹	<16 mmhos	<50	None thru Mod.	>50 days
5	>20	>6	>8	Any, may be Extreme- ly Gravelly, Extreme- ly Cobbly, V. Stony	Any, may be Extreme- ly Gravelly, Extreme- ly Cobbly or Very Stony	Any	Any	>=3.0 in. avg. AWC total	<2 %	<2 %	None or Slight	Any	<8 mmhos	<25	None or Slight	Any

Capability Class	Effective Soil Depth (in.) ¹	Climate Thornthwaite 1948 indices (in.)		Surface Layer Texture		Permeability ₂	Drainage Class ₃	Available water Capacity ₄	Slope		Erosion Hazard	Flooding Hazard	Salinity ECx1U @ 25 C ⁸	Alkali ESP ⁸	Toxic Substances ⁹	Frost Free Season
		Irr ETp 32 F	Dry 4ETa	Irrigated	Dryland				A _{5, 6, 7}	B						
6 ¹²	>10	>4	>6	Any, may be Extremely Gravelly, Extremely Cobbly or Very Stony	Any, may be Extremely Gravelly, Extremely Cobbly or Very Stony	Any	Any	>=2.0 in. avg. AWC total	<25 %	<50 %	Any	Any	Dry Land <16 mmhos Irr. Any	Dry Land <25 Irr. <50	Dry Land Slight Irr. Slight thru Mod.	Any
7 ¹³	Any	>2		Any	Any	Any	Any	>=1.0 in. avg. AWC total	<50 %	<75 %	Any	Any	Any	Any	Any	Any
8 ¹⁴	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any

¹ Clay pans with permeability less than 0.06 in/hr will be treated as limiting the effective depth.

² Permeability of the least permeable subsurface horizon

³ Depth to water table during growing season

⁴ Available moisture between field capacity and wilting point

⁵ Use erosion hazard to help determine upper slope percent.

⁶ In existing mapping units 9% and 30% can be substituted for 8% and 25%.

⁷ Column A is used for soils with K factors of 0.37 or greater and soils subject to rill and gully erosion, such as soils formed from granitic parent material or with clay pans. Other soils are in group B.

⁸ For salts and alkali to be a major limitation, there should be other soil limitations, such as slow permeability or high water tables.

⁹ Such as boron and magnesium that leach with difficulty

¹⁰ Coarse fragments interfere with tillage but do not prevent cropping.

¹¹ Frequent flooding that does not prevent normal cropping

¹² Range and woodland. Mechanical practices can be applied to class 6 land.

¹³ Range and woodland. Mechanical practices can be applied to class 7 land.

¹⁴ Class 8 lands have limitations that preclude their use for commercial plant production and restrict their use to recreation, water supply or esthetic purposes.

Guide to Placing Soils in Capability Subclasses in California – Guides A and B

(Only soils in capability classes 2 through 7 are assigned to a subclass.)

Soil Properties	Guide A – For placing soils inland capability subclasses where wind velocities are low and/or soils are irrigated					Guide B – For placing soils in land capability subclasses where high wind velocities occur and the soil is not irrigated.				
	Subclass by Slopes ¹					Subclass by Slopes ¹				
	0-2%	2-9%	9-15%	15+%		0-2%	2-9%	9-15%	15+%	
1. Moderately slowly, moderate, moderately rapidly, rapidly and very rapidly permeable; moderately well, well, somewhat excessively and excessively drained soils (over 20" deep) with the following surface textures:										
a. Fine and very fine textured	s	e	e	e		s	e	e	e	
b. Moderately fine textured	s ^{2,3}	e	e	e		e	e	e	e	
c. Medium textured	s ^{2,3}	e	e	e		e	e	e	e	
d. Moderately coarse textured, with or without textural B	s ^{2,3}	e	e	e		e	e	e	e	
e. Coarse and very coarse textured with textural B	s	e	e	e		e	e	e	e	
f. Coarse and very coarse with little or no textural B	s	s	s	e		e	e	e	e	
2. Slowly and very slowly permeable soils (over 20" deep): ⁴										
a. Well and moderately well drained	s	e	e	e		s	e	e	e	
b. Somewhat poorly drained	w	e	e	e		w	e	e	e	
3. Wet, poorly and very poorly drained soils:										
a. Moderately coarse to fine textured surface soils includes claypans and fragipans	w	w	w	e		w	w	w	e	
b. Coarse textured soils with little or no textural B ⁵	w	w	w	e		w	w	w	e	
c. Deep organic soils ⁵	w	w	w	e		w	w	w	e	
4. Excessively, somewhat excessively, well and moderately well drained, shallow and very shallow soils:				15-50%	50+%				15-50%	50+%
a. 10 to 20" to bedrock	s	e	e	e	e	s	e	e	e	e
b. 0 to 10" to bedrock	s	e	e	e	e	s	s	s	s	e
5. Somewhat excessively, excessively, well and moderately well drained saline and sodic soils (moderate to severe salinity and sodicity)	s	e	e	15+%		s	e	e	15+%	
				e					e	
6. Very and extremely cobbly; very and extremely gravelly; and very and extremely stony surface layers	s	s	s	15-30%	30+%	s	s	s	15-30%	30+%
				s	e				s	e
7. Soils subject to damaging overflow	w	w	w	e		w	w	w	e	

¹ For soils in capability classes 2 through 7. Class 1 land excluded.

² These soils over 40" deep are generally class 1.

³ Use "C" only for dryland if soil is class 1 irrigated.

⁴ Permeability of the B horizon or control section.

⁵ Including somewhat poorly drained soils.

Guide for Placing Soils in Capability Units in California

Capability Unit	Principal Soil Property or Limitation
1	Potential or actual wind or water erosion hazard.
2	Drainage or overflow hazard. (swp or poorly drained, flooded or ponded)
3	Slowly or very slowly permeable subsoils or substrata.
4	Coarse or gravelly textures.
5	Fine or very fine textures.
6	Salinity or alkali, sufficient to constitute a continuing limitation or hazard.
7	Stones, cobbles, or rocks sufficient to interfere with tillage.
8	Hardpan or hard unweathered bedrock within the root zone.
9	Low inherent fertility, associated with strong acidity, low calcium-
10	High organic matter content - peats and mucks.
11	Coarse sandy or very gravelly substrata limiting to root penetration and moisture retention.