USING THE SOIL SURVEY MAP

By

Chester C. Conley, Farm Advisor

LOCATION: Township and Range lines will enable you to locate the township which is composed of 36 sections. Each section is composed of 640 acres and is usually divided by legal description down to the 40 or 20 acre parcel.

Township lines designated "T" divide the county into strips from N to S. They run E and W.

Range lines divide the county in vertical strips from E to W.

The square formed by Range and Township lines is a Township which consists of 36 sections each of 640 acres. Sections within Townships are always numbered in the same order. Starting at the NE corner with Section 1, the numbers run to the left, drop a tier and run to the right; drop a tier and run to the left and continue until they reach Section 36 in the SE corner.

Within the section (640 acres) the legal description for a 40 acre parcel described as follows: SE 1/4, NW 1/4, Sec 8, T8S, R14E could be located by checking T and R lines to find Section 8:

SE 1/4 NW 1/4 Sec 8 (40 acres)

(over)

STORIE INDEX

This method of soil rating, known as the Storie Index, is based on soil characteristics that govern the land's potential utilization and productive capacity. It is independent of other physical or economic factors that might determine the desirability of growing certain plants in a given location.

Percentage values are assigned to the characteristics of the soil itself, including the soil profile (factor A); the texture of the surface soil (factor B); the slope (factor C); and conditions of the soil exclusive of profile, surface texture, and slope--for example, drainage, alkali content, nutrient level, erosion, and microrelief (factor X). The most favorable or ideal conditions with respect to each factor are rated at 100 per cent. The percentage values or ratings for the four factors are then multiplied, the result being the Storie Index rating of the soil.

A.
The characteristics of the soil profile (factor A) are essentially the features of the subsurface layers. For California purposes the soils have been divided into nine profile groups.[1] For example, soils that are deep and readily pervious to roots and water (listed in profile group 1 in the soil-rating chart) are rated at 100 per cent. Profiles with dense clay subsoils (listed in profile group IV on the soil-rating chart) are rated lower. Primary or residual soils (listed in profile groups VII, VIII, and IX) are rated in accordance with the depth to bedrock.

B.
Next, the soils are rated on the basis of the texture of the surface soils (designated as factor B). Medium-textured soils, such as the loams and the silt loams, are rated highest; the extremes in texture, such as sands and clays, lower.

C.
Rating of the slope of the land is considered in factor C. Nearly level or gently sloping land is rated at 100 per cent. As the slope increases, the rating for this factor decreases. As shown in the soil-rating chart, single letters are used to indicate simple slopes, and double letters to indicate compound slopes. The percent slope expresses the number of feet rise or fall for 100 feet horizontal distance.

X.
Conditions exclusive of profile, soil texture, and slope are considered in factor X on the soil-rating chart. These conditions consist of drainage, alkali or salt content, general nutrient level, acidity, erosion, and microrelief (surface regularity). If two or more conditions exist that are listed under factor X, the ratings for each are treated independently; that is, they are multiplied in order to secure the factor X rating.

SOIL RATING FOR A TRACT OF LAND

The index for each soil type in the tract is calculated separately, and then a rating for the entire tract is obtained by weighing each

[1] Page 15 Soils of Eastern Merced County

soil index according to the proportion of the acreage of that soil in the tract.

1. Index for the area (soil symbol 3, Honcut fine sandy loam) nearly level: This is a recent alluvial soil, deep, smooth, well drained.

		Rating in Per Cent
Factor A:	Honcut, profile group 1.....	100
Factor B:	Texture, fine sandy loam.....	100
Factor C:	Slope A, nearly level.....	100
Factor X:	No other modifying factors.....	100

Index rating = 100% x 100% x 100% x 100% = 100%

2. Index for soil symbol 163 (Snelling sandy loam, undulating):

		Rating in Per Cent
Factor A:	Snelling series, profile group III.....	90
Factor B:	Sandy loam texture.....	95
Factor C:	undulating topography.....	90
Factor X:	No other modifying factors.....	100

Index rating = 90% x 95% x 90% x 100% = 77%

A tract of 40 acres composed of 26 acres of Honcut fine sandy loam and 14 acres of Snelling sandy loam would be evaluated as follows:

	Index		Acreage	
Honcut fine sandy loam.....	100	x	26	= 2600
Snelling sandy loam.....	77	x	14	= 1078
			40	3678

Index for tract $\frac{3678}{40} = 92$

SOIL RATING CHART

(Storie Soil Index rating = factor Axfactor Bxfactor Cxfactor X)

Factor A--Rating on character of physical profile

	Per Cent
I. Soils on recent alluvial fans, flood plains, or other secondary deposits having undeveloped profiles.....	100
x-shallow phases (on consolidated material) 2 feet deep.....	50-60
x-shallow phases (on consolidated material) 3 feet deep.....	70

Factor A - Rating on character of physical profile Cont*d:

		Per Cent
I.		
	g-extremely gravelly subsoils	80-95
	s-stratified clay subsoils	80-95
II.	Soils on young alluvial fans, flood plains, or other secondary deposits having slightly developed profiles	95-100
	x-shallow phases (on consolidated material) 2 feet deep	50-60
	x-shallow phases (on consolidated material), 3 feet deep	70
	g-extremely gravelly subsoils	80-95
	s-stratified clay subsoils	80-95
III.	Soils on older alluvial fans, alluvial plains, or terraces having moderately developed profiles (moderately dense subsoils)	80-95
	x-shallow phases (on consolidated material), 2 feet deep	40-60
	x-shallow phases (on consolidated material), 3 feet deep	60-70
	g-extremely gravelly subsoils	60-90
IV.	Soils on older plains or terraces having strongly developed profiles (dense clay subsoils)	40-80
V.	Soils on older plains or terraces having hardpan subsoil layers at less than 1 ft.	5-20
	at 1 to 2 feet	20-30
	at 2 to 3 feet	30-40
	at 3 to 4 feet	40-50
	at 4 to 6 feet	50-80
VI.	Soils on older terraces and upland areas having dense clay subsoils resting on moderately consolidated or consolidated material	40-80
VII.	Soils on upland areas underlain by hard igneous bedrock	
	at less than 1 foot	10-30
	at 1 to 2 feet	30-50
	at 2 to 3 feet	50-70
	at 3 to 4 feet	70-80
	at 4 to 6 feet	80-100
	at more than 6 feet	100

Factor A - Rating on character of physical profile Cont'd:

	Per Cent
VIII. Soils on upland areas underlain by consolidated sedimentary rocks at	
less than 1 foot	10-30
at 1 to 2 feet	30-50
at 2 to 3 feet	50-70
at 3 to 4 feet	70-80
at 4 to 6 feet	80-100
at more than 6 feet	100
IX. Soils on upland areas underlain by softly consolidated material	
at less than 1 foot	20-40
at 1 to 2 feet	40-60
at 2 to 3 feet	60-80
at 3 to 4 feet	80-90
at 4 to 6 feet	90-100
at more than 6 feet	100

Factor B - Rating on basis of surface texture:

	Per Cent
Medium-textured:	
Very fine sandy loam	100
Fine sandy loam	100
Loam	100
Silt loam	100
Sandy loam	95
Loamy fine sand	90
Silty clay loam	90
Clay loam	85
Heavy-textured:	
Silty clay	60-70
Clay	50-60
Light-or coarse-textured:	
Coarse sandy loam	70-90
Loamy sand	80
Very fine sand	80
Fine sand	65
Sand	60
Coarse sand	30-60
Gravelly:	
Gravelly fine sandy loam	70-80
Gravelly loam	60-80
Gravelly silt loam	60-80
Gravelly sandy loam	50-70
Gravelly clay loam	60-80
Gravelly clay	40-70
Gravelly sand	20-30

Factor B - Rating on basis of surface texture Cont'd:

	Per Cent
Stony:	
Stony fine sandy loam.....	70-80
Stony loam.....	60-80
Stony silt loam.....	60-80
Stony sandy loam.....	50-70
Stony clay loam.....	50-80
Stony clay.....	40-70
Stony sand.....	10-40

Factor C -- Rating on basis of slope:

	Per Cent
A - Nearly level (0 to 2%).....	100
AA - Gently undulating (0 to 2%).....	95-100
B - Gently sloping (3 to 8%).....	95-100
BB - Undulating (3 to 8%).....	85-100
C - Moderately sloping (9 to 15%).....	80-95
CC - Rolling (9 to 15%).....	80-95
D - Strongly sloping (16 to 30%).....	70-80
DD - Hilly (16 to 30%).....	70-80
E - Steep (30 to 45%).....	30-50
F - Very steep (45% and over).....	5-30

Factor X - Rating of conditions other than those in factors A, B and C

	Per Cent
Drainage:	
Well-drained.....	100
Fairly well drained.....	80-90
Moderately waterlogged.....	40-80
Badly waterlogged.....	10-40
Subject to overflow.....	Variable
Alkali:	
Alkali-free.....	100
Slightly affected.....	60-95
Moderately affected.....	30-60
Moderately to strongly affected.....	15-30
Strongly affected.....	5-15
Nutrient (fertility) level:	
High.....	100
Fair.....	95-100
Poor.....	80-95
Very poor.....	60-80
Acidity: according to degree.....	80-95

Factor X - Rating of conditions other than those in factors A, B and C

	Per Cent
Erosion:	
None to slight	100
Detrimental deposition	75-95
Moderate sheet erosion	80-95
Occasional shallow gullies	70-90
Moderate sheet erosion with shallow gullies	60-80
Deep gullies	10-70
Moderate sheet erosion with deep gullies	10-60
Severe sheet erosion	50-80
Severe sheet erosion with shallow gullies	40-50
Severe sheet erosion with deep gullies	10-40
Very severe erosion	10-40
Moderate wind erosion	80-95
Severe wind erosion	30-80
Microrelief:	
Smooth	100
Channels	60-95
Hogwallows	60-95
Low hummocks	80-95
High hummocks	20-60
Dunes	10-40