

UNIVERSITY OF CALIFORNIA  
AGRICULTURAL EXTENSION SERVICE  
AMADOR COUNTY

RANGE SOILS  
OF  
AMADOR COUNTY

A FIVE YEAR STUDY OF THE  
NITROGEN  
PHOSPHORUS  
SULFUR  
NEEDS OF THESE SOILS

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Soils of Amador County

A I K E N   S O I L   S E R I E S

Description:

The Aiken soils are deep soils developed from basic volcanic or similar kinds of rocks with a conifer and associated vegetation. The surface soil is a dark reddish brown, slightly acid, very granular loam. The subsoil is a moderately acid reddish brown to nearly red clay. Soil depth to hard rock is over five feet deep.

Location:

Occur in Amador County at elevations between 1800 to 4800 feet in the Fiddletown, Volcano, Pine Grove, Pioneer areas.

Use:

Mainly for timber production. Cleared areas are used for range, apples, walnuts and irrigated pasture.

Fertility:

Laboratory tests indicate:

pH of 6.3  
low to borderline phosphate values  
high exchangeable potassium

Field tests indicate: (McLaughlin Ranch-Daffodil Hill)

Nitrogen, phosphorus, and sulfur all caused the grasses to respond. Best results were obtained when all three were used together.

Range Fertilization:

Best application appears to be 100 lbs. of nitrogen and 50 lbs. of phosphorus with sulfur per acre.

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A U B U R N   S O I L   S E R I E S

Description:

The Auburn soils are moderately shallow soils developed from basic metamorphic rocks with an oak grass vegetation. The surface soil is a brown toward reddish brown, light clay loam, and the sub soil is a reddish brown light clay loam. Soil reaction is often slightly acid throughout. Soil depth to hard rock will range from 15 to 30 inches.

Location:

Occur at elevations of 300 to 2,000 ft. in the northern half of Amador County, near Willow Springs, Plymouth, and Fiddletown.

Use:

Used primarily for grazing.

Fertility:

Laboratory tests indicate:

pH 6.0 - 6.3  
low phosphate values  
adequate exchangeable potassium

Field tests indicate (Gianandrea Ranch, S. Cuneo Ranch)

Grasses respond to sulfur on some areas but not others. Some soils respond to nitrogen by itself but others require both nitrogen and phosphorus.

Range Fertilization:

Due to variability of this soil, please see the Farm Advisor for individual recommendations.

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D O R A D O   S O I L   S E R I E S

Description:

The Dorado soils are shallow soils developed from slate or schist rocks with an oak-grass vegetation. The soil is brown or near reddish brown, gravelly or stony, loam or silt loam. Soil reaction is often slightly acid throughout. Soil depth is 8 to 15 inches.

Location:

Occurs from Carbondale to Plymouth and north to the Consumnes River.

Use:

Range pasture, mostly for cattle, for which the soils are well suited.

Fertility:

Laboratory tests indicate:

pH 6.2 Adequately supplied with sulfur. Both phosphate and potassium have high values.

Field tests indicate:

No sulfur response and very little phosphate response except on clover. Nitrogen gave good response by itself.

Range Fertilization:

50 lbs. of nitrogen per acre does very good job.

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EXCHEQUER SOIL SERIES

Description:

The Exchequer soils are shallow soils developed from basic metamorphic rocks with an oak grass vegetation. The soil is brown, light brown or near reddish brown gravelly loam. Soil reaction is often slightly acid. Rock outcrops generally occur in most areas. Soil depth to hard rock will range from 6 to 12 inches.

Location:

Occurs at elevations of 300 to 2000 feet in the northern half of Amador County near Willow Springs and Plymouth.

Use:

Used primarily for grazing.

Fertility:

Laboratory tests indicate:

pH of 6.0  
Borderline to low phosphate values  
High exchangeable potassium

Field tests indicate: (H. Muller Ranch, Willow Springs)

Best results were obtained by using both nitrogen and phosphorus.

Range Fertilization:

Best application appears to be 50 pounds phosphate and 25-50 lbs. of nitrogen per acre. Fertilizer used should contain sulfur.

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H O L L A N D   S O I L   S E R I E S

Description-

Holland soils are deep soils developed from granitic rock with a conifer and associated vegetation. The surface soil is a slightly acid dark brown toward dark reddish brown coarse sandy loam. The subsoil is a moderately acid reddish brown coarse sandy clay loam. The decomposed rock below the subsoil is a coarse sandy loam. Soil depth to hard rock is generally over five feet. Rock outcrops are common to most areas.

Location-

In Amador County these soils occur from 1800-4500 feet.

Use-

Mainly for growth of commercial timber, winter and summer grazing, and home fruit orchards, and irrigated pasture.

Fertility-

Laboratory tests indicate:

pH of 5.6 - acid. Adequate phosphate and high exchangeable potassium.

Field tests indicate: (R. Evitt, New York Ranch)

Very little response to phosphate. Marked response to nitrogen and to sulfur.

Range Fertilization-

300 pounds of ammonium sulfate per acre.

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H O N C U T   S O I L   S E R I E S

Description:

The Honcut soils are deep well drained soils developed from recent alluvium with a grass woodland vegetation. The alluvium was derived from a number of kinds of rock but mainly from basic igneous rock, and was deposited on flood plains of recently active streams in the area. The soils are brown and slightly acid to neutral throughout and over six feet deep.

Location:

The Honcut soils in Amador County are the principle bottom soils of Jackson Valley and Ione Valley. They also occur as small isolated pockets near some of the smaller streams throughout the county.

Use:

The principle use is for irrigated crops and dryland cereal crops and hay. The isolated areas are generally used for hay or dryland pasture.

Fertility:

Laboratory tests indicate:

There is a wide range in pH, running from 6.0 to 8.1. The high pH's occur where the soil was overlain with minetailings and later removed, and in the Martin bottoms of the Arroyo Seco Ranch. The Honcut soils in the Jackson Valley have low phosphate values while those in Ione Valley have an adequate supply. All soil tests show high exchangeable potassium.

Field trials indicate:

(Bamert Estate Pardo Unit, R. Thompson, Fiddletown)

Small to slight response to phosphate and sulfur. Nitrogen gave good to excellent response. Response was in proportion to the amount applied.

Range Fertilization and Crop Fertilization:

Due to variability of this soil, please see the Farm Advisor for individual recommendations.

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L A S   P O S A S   S O I L   S E R I E S

Description:

The Las Posas soils are moderately deep and have developed from basic metamorphic rock with a grass woodland vegetation. The surface soil is a slightly acid, brown toward reddish brown loam. The sub-soil is a neutral to slightly acid, reddish brown clay loam toward clay. Soil depth to hard rock will range from 30 to 40 inches.

Location:

Las Posas soil occurs between the Mokelumne River and Waits Stations at the 300 to 700 feet elevation. It occurs in relatively small areas.

Use:

Dryland range pasture

Fertility:

Laboratory tests indicate:

pH of 6.1    ACID  
Very low phosphate values  
High exchangeable potassium

Field trials indicate: (Arroyo-Seco Ranch-Mule Town)

Some response to nitrogen by itself  
Some response to phosphate by itself  
Slight response to sulfur by itself  
Good response to nitrogen and phosphorus together  
Slight residual phosphate response after three years

Range Fertilization:

Best application appears to be 50 - 100 lbs. nitrogen combined with 25 - 50 lbs. phosphorus per acre.

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M A R I P O S A   S O I L   S E R I E S

Description-

The Mariposa soils are moderately shallow to shallow and have developed from slate and schist rocks with a shrub or woodland grass vegetation. The surface soils are slightly acid gravelly loams and the subsoils are slightly acid to moderately acid reddish brown gravelly loams to gravelly clay loams. Soil depth to hard rock will range from 10 to 20 inches. Tombstone-like outcrops are common to some areas.

Location-

East of Highway 49 to East of Fiddletown.

Use-

Most areas are used only for pasture and rangeland. A few areas are in cultivation to fruit and grain.

Fertility-

Laboratory tests indicate:

pH- 6.1    Adequate phosphate and potassium  
Sulfur 7.2 ppm

Field tests indicate (Bakman Ranch, Fiddletown)

Nitrogen or phosphorus by themselves did not do much, but when combined they gave excellent growth. Sulfur and phosphorus both helped clover growth. When combined they caused good growth, but a marked chlorosis appeared in clover leaves. Excessive growth probably caused deficiency of available potassium.

Range Fertilization-

Probable best application appears to be 50-60 lbs. of nitrogen and 30 lbs. of phosphorus per acre. Material containing sulfur should be used. Clovers will benefit from 300 lbs. of single super phosphate per acre.

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M A R T E L L   S O I L   S E R I E S

Description:

The Martell soils are moderately deep soils developed from a basic volcanic mud flow with a grass woodland vegetation. This volcanic mud flow consists of rounded cobbles of andesite cemented together with a volcanic tuff. The surface soil is a brown toward reddish brown, slightly acid, gravelly loam toward clay loam. The subsoil is a slightly acid, reddish brown cobbly clay loam. Soil depth to the partly cemented mud flow is 30 to 40 inches deep.

Location:

This soil occurs between 1500 and 2500 feet

Use:

Summer and winter range, dryland grapes, irrigated pasture, and family orchards.

Fertility:

Laboratory tests indicate:

pH 5.8. Low phosphate values and high exchangeable potassium.

Field tests indicate: (C. Dondero, Ridge Road)

Very small phosphate and sulfur response.  
Moderate to good nitrogen response.  
Nitrogen-phosphorus treatment was very good.

Range Fertilization:

Straight nitrogen fertilization at 100 lbs. per acre appears economical, but addition of 50 pounds of phosphorus helps increase growth and improve composition.

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M O K E L U M N E   S O I L   S E R I E S

Description:

The Mokelumne soils are clay pan soils developed from sandstones and clays of the Ione formation, with a grass woodland vegetation. The surface soil to a depth of 10 to 15 inches is a yellow brown slightly acid, sandy loam. The subsoil extending from 15 to about 30 inches is a moderately acid, pale brown clay, which is very dense and very hard when dry. The substratum below the subsoil is a moderately acid to strongly acid, pale brown, partly cemented sandy clay loam.

Location:

From Ione westward and southwestward to the Sacramento County line and south of Ione to the Mokelumne River at Lancha Plana.

Use:

Principally grazing. Production very low. Most ranges in poor condition due to poor drainage and waterlogging.

Fertility:

Laboratory tests indicate:

pH 5.5 acid. Very low phosphate values. Adequate to high potassium exchange

Field tests indicate: (Arroyo-Seco-Old Stockton Road)

No sulfur response. Small nitrogen response. Phosphate response on filaree. Marked response to nitrogen-phosphorus combination. Cattle preferred areas where nitrogen equalled or exceeded phosphorus and where sulfur was applied. Lana vetch grew well first year but failed to produce the second year. After one year residual phosphate and nitrogen evident.

Range Fertilization:

More economical to fertilize the better soils, however, 100 pounds nitrogen and 100 phosphorus will produce extra feed.

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PERKINS SOIL SERIES

Description:

The Perkins soil is a deep soil developed on gravelly river terraces with a grass woodland vegetation. These terrace materials are above the present flood stage of the active streams in the area. The surface soil is a slightly acid, brown toward reddish brown, gravelly loam to gravelly fine sandy loam. The subsoil is a slightly acid, reddish brown, gravelly clay loam. The soil material below a depth of about three feet may be a very gravelly sandy loam. The gravels are mainly quartzite and chert with a small percentage of granite and volcanic rock.

Location:

They occur in Amador County on nearly level, low terraces under grass-woodland vegetation at elevations from 250 to 500 feet. They are found on the areas surrounding the Jackson and Ione Valleys.

Use:

Most of the Perkins soil is dryland pasture, however, most adapted crops can be grown successfully under irrigation.

Fertility:

Laboratory tests indicate:

pH of from 6.0 to 6.1 - ACID  
Very low phosphate values  
Very high exchangeable potassium

Field trials indicate:(Summary of plots located on C. Scully, Strohm Bros., and G. O'Brien ranches)

Small response to nitrogen by itself  
Small response to phosphorus by itself  
Very small response to sulfur by itself  
Good to excellent response to combination of nitrogen and phosphorus

Range Fertilization:

Best application appears to be 40 - 50 lbs. of nitrogen and 40 5- 50 lbs. of phosphorus per acre

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RED BLUFF SOIL SERIES

Description:

The Red Bluff soils are deep well-drained soils developed from gravelly river terraces with a woodland grass vegetation. The surface soil is a slightly acid to moderately acid, reddish brown, gravelly loam. The sub-soil is a moderately acid to strongly acid, reddish brown, gravelly clay loam. In places this gravelly soil rests upon the sandstones and clays of the Ione formation. The gravels are mainly quartzite and chert with a small percentage of granite and volcanic rock.

Location:

Occurs on nearly level, high terraces under grass or woodland-grass vegetation at the 200 to 500 feet elevations between the Mokelumne River and Consumes River.

Use:

Mainly for range but with some dry-farmed grain production.

Fertility:

Laboratory tests indicate:

pH- Acid  
low phosphate  
adequate potassium

Field trials indicate: (Arroyo-Seco Ranch on Galt Road)

Good response to nitrogen by itself  
Good response to phosphorus by itself  
Best response to nitrogen and phosphorus together  
Best application appears to be 50 lbs. of nitrogen  
and 25-50 pounds of phosphorus per acre

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RYDBERG SOIL SERIES

Description:

The Rydberg soil is a deep well-drained soil developed from recent alluvial deposits with woodland grass vegetation. The alluvium was washed for the most part from soils developed from the Ione Formation and occurs along narrow flood plains of short streams. The soil is often a pale brown, slightly acid, fine sandy loam throughout.

Location:

Most of the Rydberg series occurs between Jackson Valley and Carbondale at the 250 to 500 elevations.

Use:

Dryland pasture

Fertility:

Laboratory tests indicate:

pH of 5.6 to 5.7 ACID  
Very low phosphate values  
Adequate exchangeable potassium

Field trials indicate (H. Lemley Ranch)

Some response to nitrogen by itself  
Some response to phosphorus by itself  
Slight response to sulfur by itself  
Good response to nitrogen and phosphorus together  
Residual phosphate response visible after three years

Range Fertilization:

Best application appears to be 40-50 lbs. nitrogen and 40-50 lbs. phosphate per acre.

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S I E R R A   S O I L   S E R I E S

Description:

The Sierra soils are deep soils developed from granite rock with a woodland grass or shrub vegetation. The surface soil is a slightly acid, brown toward reddish brown, sandy loam to coarse sandy loam. The subsoils are slightly acid to moderately acid, reddish brown, sandy clay loams toward sandy clay. The substratum below the subsoil and above the rock may be a moderately acid, reddish brown, coarse sandy clay loam or coarse sandy loam. Soil depth to hard rock is generally over four feet deep. Granitic rock outcrops may be common to some areas.

Location:

The majority of the Sierra soils are located in and around the Shenandoah Valley east of Plymouth.

Use:

These soils are used for a variety of crops and in general are quite productive. Uses include dryland walnuts, grapes, prunes, stone fruits, grains, native pasture and irrigated pasture.

Fertility:

Laboratory tests indicate: (Summary of six tests)

pH 6.0 to 6.5 (Ave. 6.35)

Very high phosphate values

Very high exchangeable potassium

Small isolated areas of boron deficiency which show up in grapes and walnuts.

Nineteen areas - grape petiole tests indicate adequate magnesium and calcium.

Field tests indicate: (No range fertilizer plots, but extensive cereal grain and forage trials)

50 lbs. of nitrogen per acre increased oat hay production from 1.95 tons to 4.10 tons per acre.

Extensive grape petiole tests indicate need for approximately 30 lbs. of nitrogen per acre.

Fertilizer Recommendations:

Due to the wide range of crops and conditions, please see your Farm Advisor for fertilizer recommendations.

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WHITEROCK SOIL SERIES

Description-

The Whiterock soils are shallow soils developed from the slate rock with a grass woodland vegetation. The soil is generally a moderately acid, light gray brown, gravelly loam throughout. Soil depth to hard slate rock is 6 to 15 inches deep. Tombstone-like rock outcrops occur in most areas.

Location-

Willow Springs area usually in grass oak areas at the 300 to 500 elevation. Occur in same general area as the Auburn soils. Not mapped separately yet.

Use-

Primarily for grazing.

Fertility-

Laboratory tests indicate:

pH of 5.8. Adequate phosphate and potassium.

Field tests indicate: ( G. Gianandreas- Willow Springs)

No apparent response to phosphate or sulfur. Nitrogen by itself gave a good response.

Range Fertilization-

Best application appears to be 50 lbs. of nitrogen.