

# Orchard Site Selection

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**College of Agricultural, Consumer  
and Environmental Sciences**  
Cooperative Extension Service

# Climate/Microclimate

- Growing season length
- Growing degree days
- Minimum winter temperatures
- Winter chilling

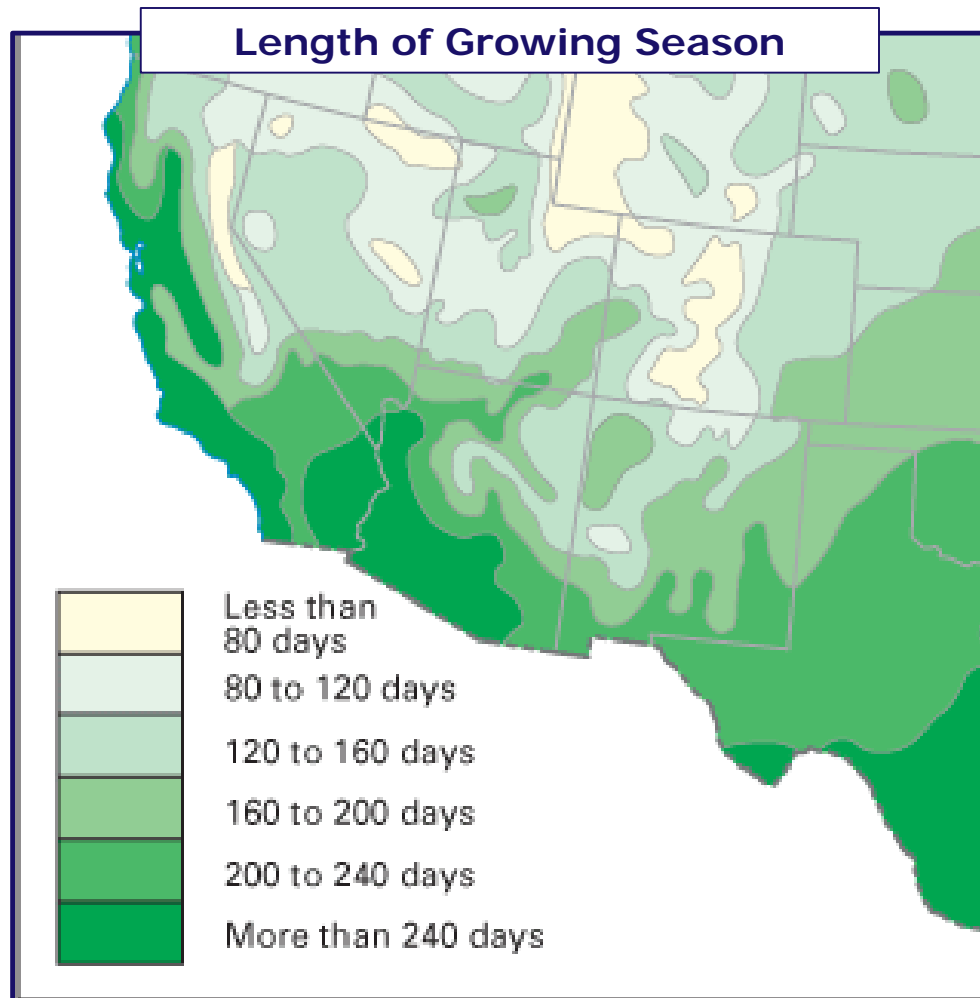


Photo: Dr. Mike Smith

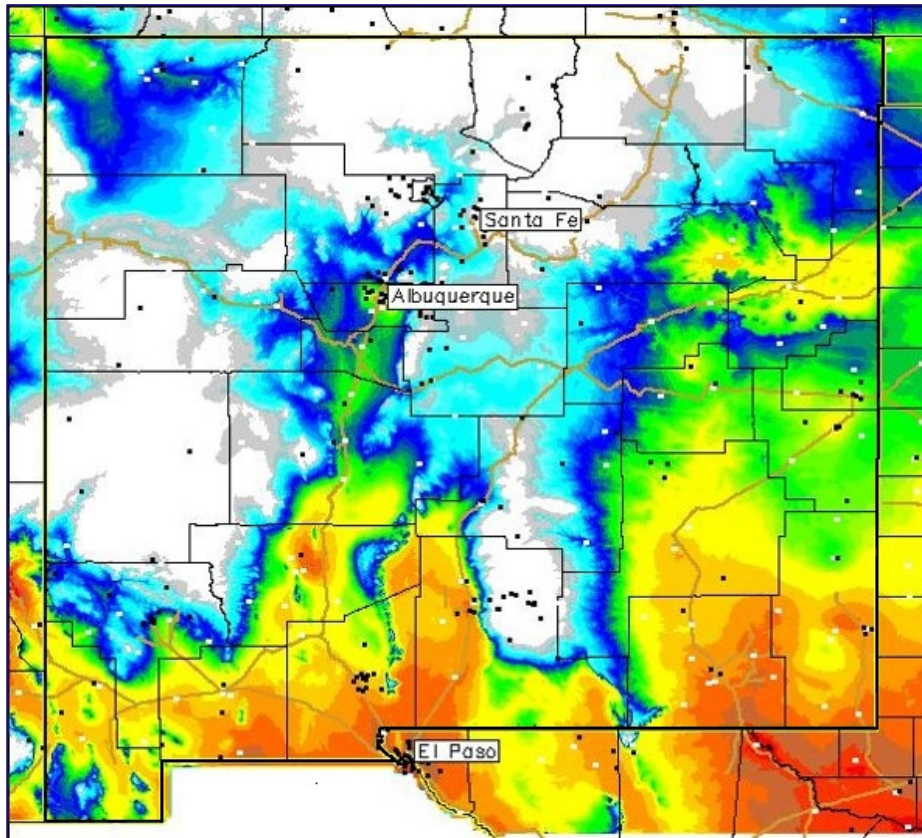
**Do Your Homework Before Planting!!**

# Length of Growing Season

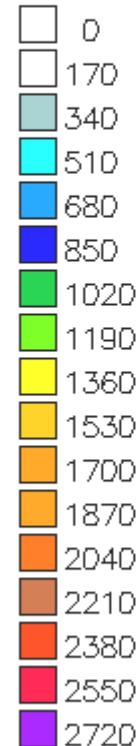
- Preferred Growing Season > 200 Days
- Minimum From Northern Midwest With Early Varieties = 180 Days



# Growing Degree Days



**New Mexico**  
degree-days  
1-1 to 12-31 Normals  
(65 F threshold)

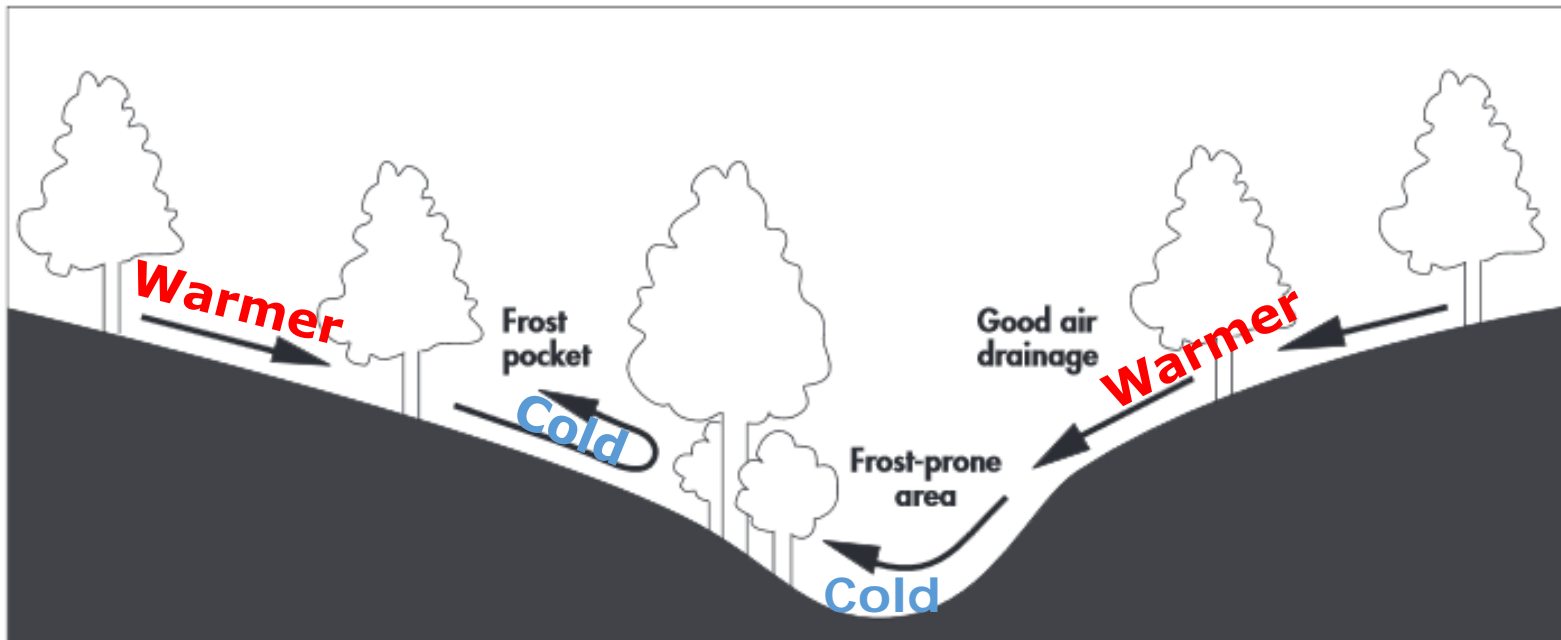


<b>Farmington: 866</b>
<b>Socorro: 1060</b>
<b>Albuquerque: 1207</b>
<b>Clovis: 1358</b>
<b>Tucumcari: 1505</b>
<b>Roswell: 1547-1790</b>
<b>Hatch: 1576</b>
<b>Deming: 1617</b>
<b>Lordsburg: 1670</b>
<b>Artesia: 1662</b>
<b>Las Cruces: 1954</b>
<b>Van Horn, TX: 1818</b>
<b>Fort Hancock, TX: 1968</b>
<b>El Paso, TX: 2286</b>

**Preferred (GDD > 1500): Orange through Red**  
**Acceptable (GDD ~ 1350): Yellow**  
**Marginal to Poor (GDD < 1200): Green, Blues, White**

# Orchard Siting

## Key To Minimizing Problems With Frost



--Sloping Ground Best: Aids in Cold Air Drainage

--Low Lying Areas Prone to Frost Problems

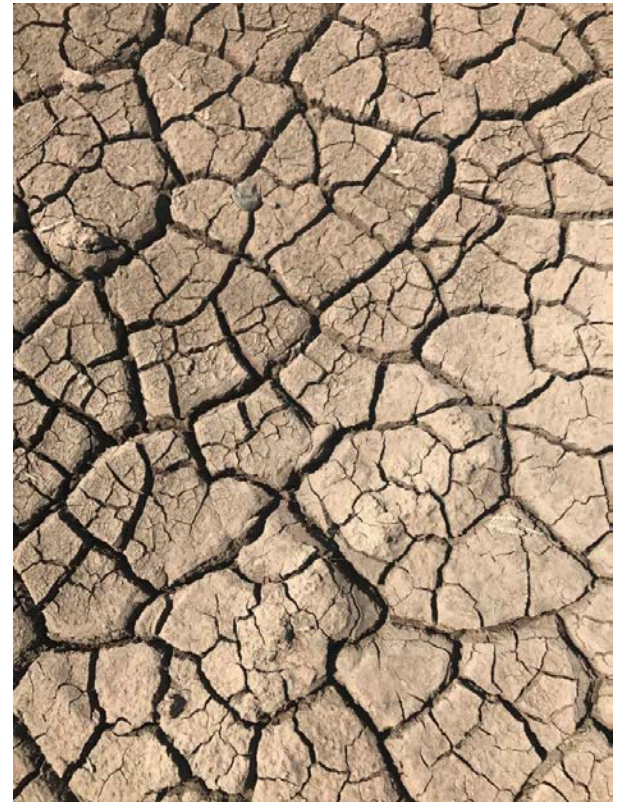
--Minimize Structures That Restrict Flow & Create Frost Pockets





# Soils

- Texture
- Barriers to Water Movement
- pH & Lime Content
- Salinity & Sodium
- Soil Fertility



**Do Your Homework Before Planting!!**

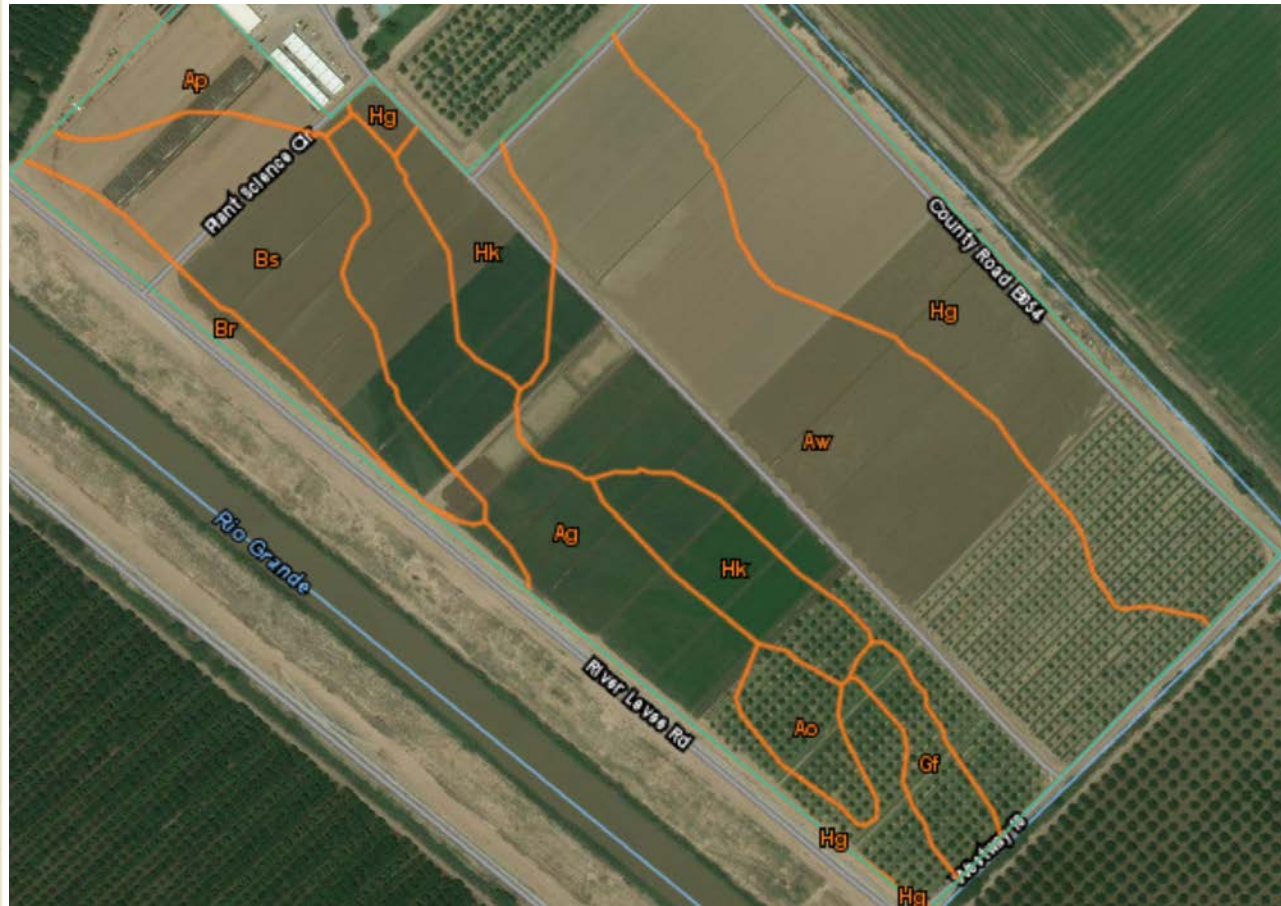
# Soil Maps

<https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>

## Dona Ana County Area, New Mexico (NM690)

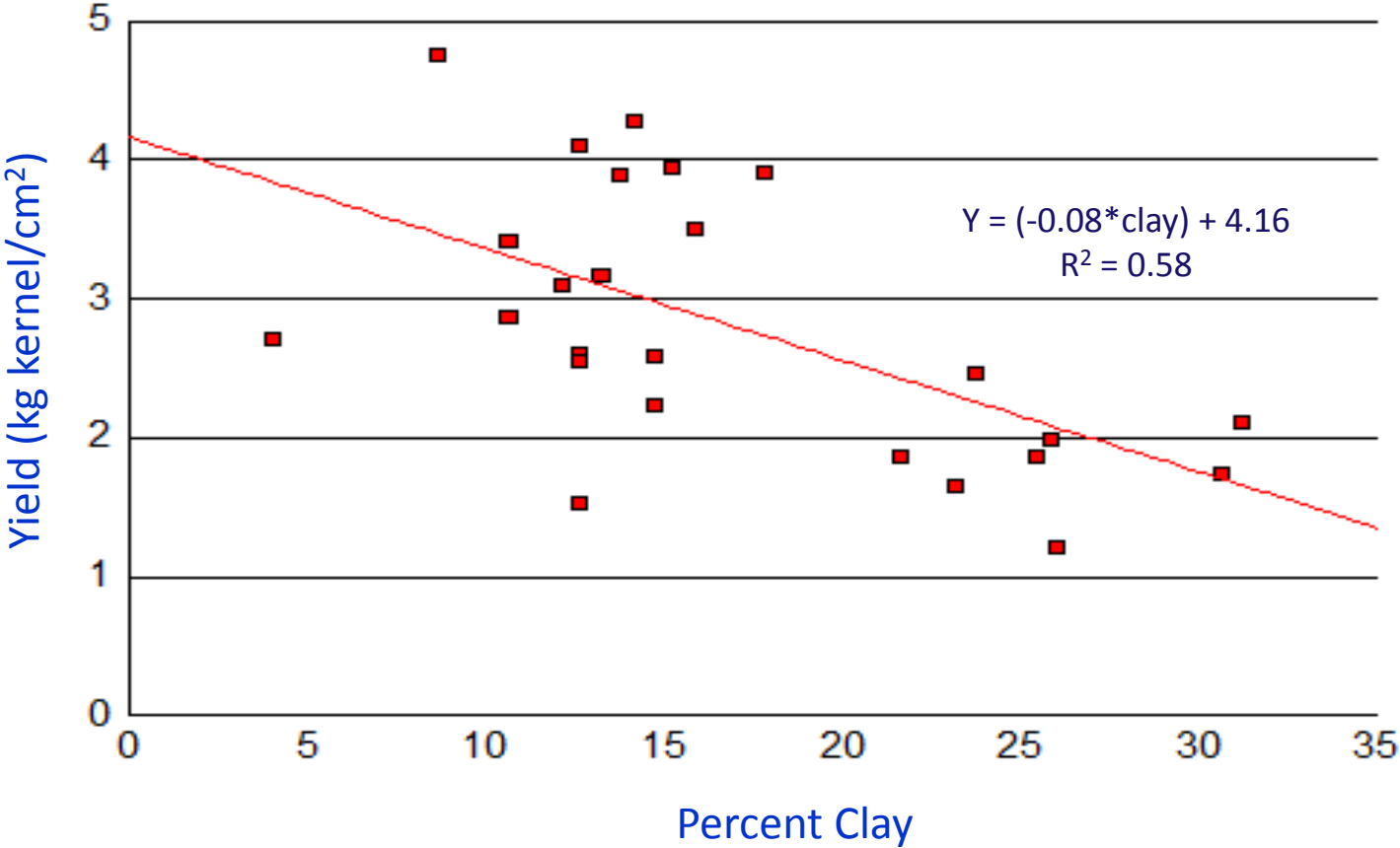
Dona Ana County Area, New Mexico (NM690)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ag	Agua silt loam, 0 to 2 percent slopes	13.6	14.2%
Ao	Anapra clay loam	2.1	2.2%
Ap	Anthony-Vinton fine sandy loams	3.4	3.5%
Aw	Armijo clay loam	33.6	35.1%
Br	Brazito loamy fine sand, 0 to 1 percent slopes	2.7	2.8%
Bs	Brazito very fine sandy loam, thick surface	10.1	10.5%
Gf	Glendale clay loam, 0 to 1 percent slopes	2.1	2.2%
Hg	Harkey loam	20.5	21.4%
Hk	Harkey clay loam	7.8	8.1%
<b>Totals for Area of Interest</b>		<b>95.7</b>	<b>100.0%</b>





# Soil Texture



# Dig Some Test Pits!



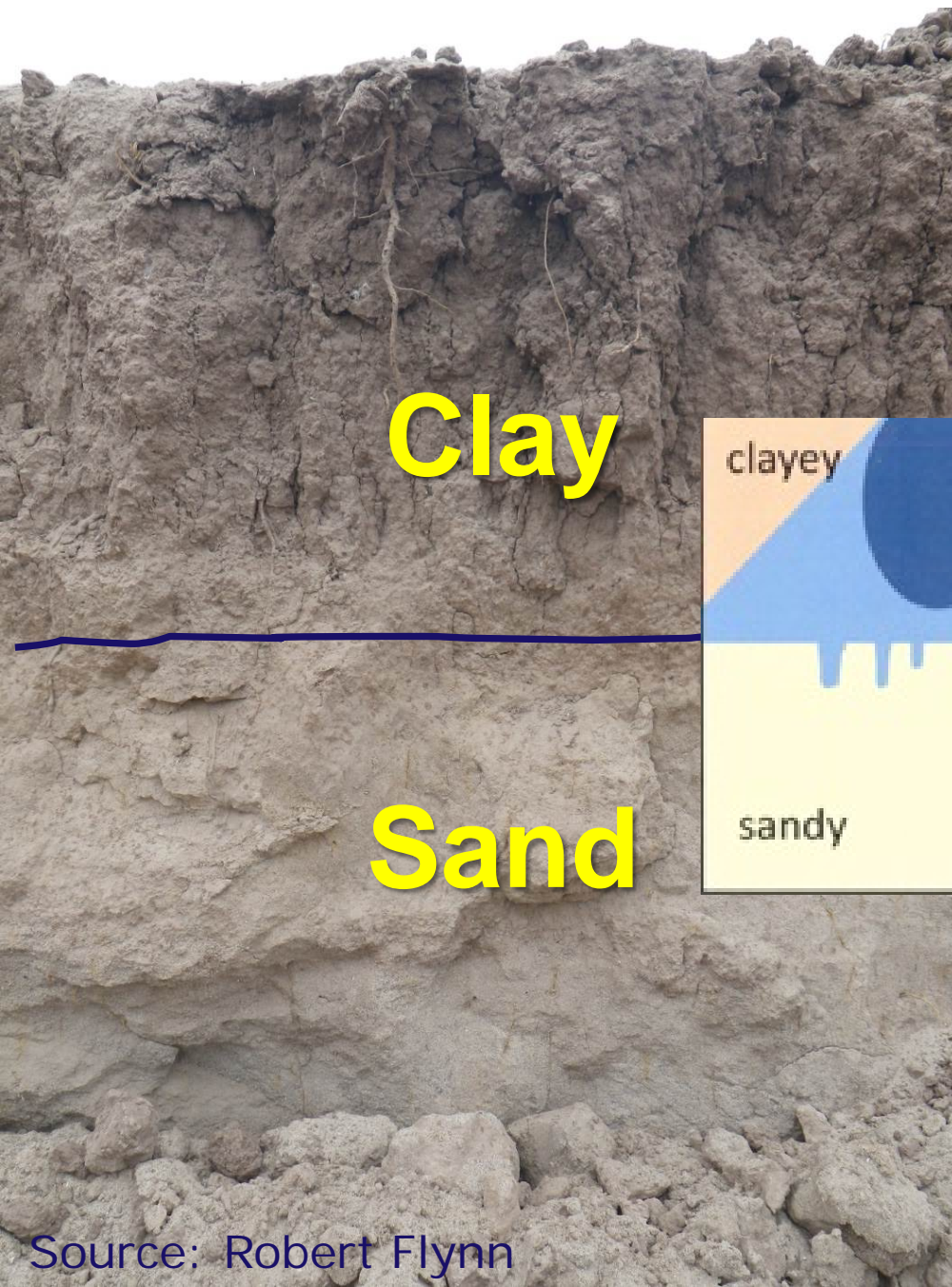


# Calcic Horizon (Caliche Layer)



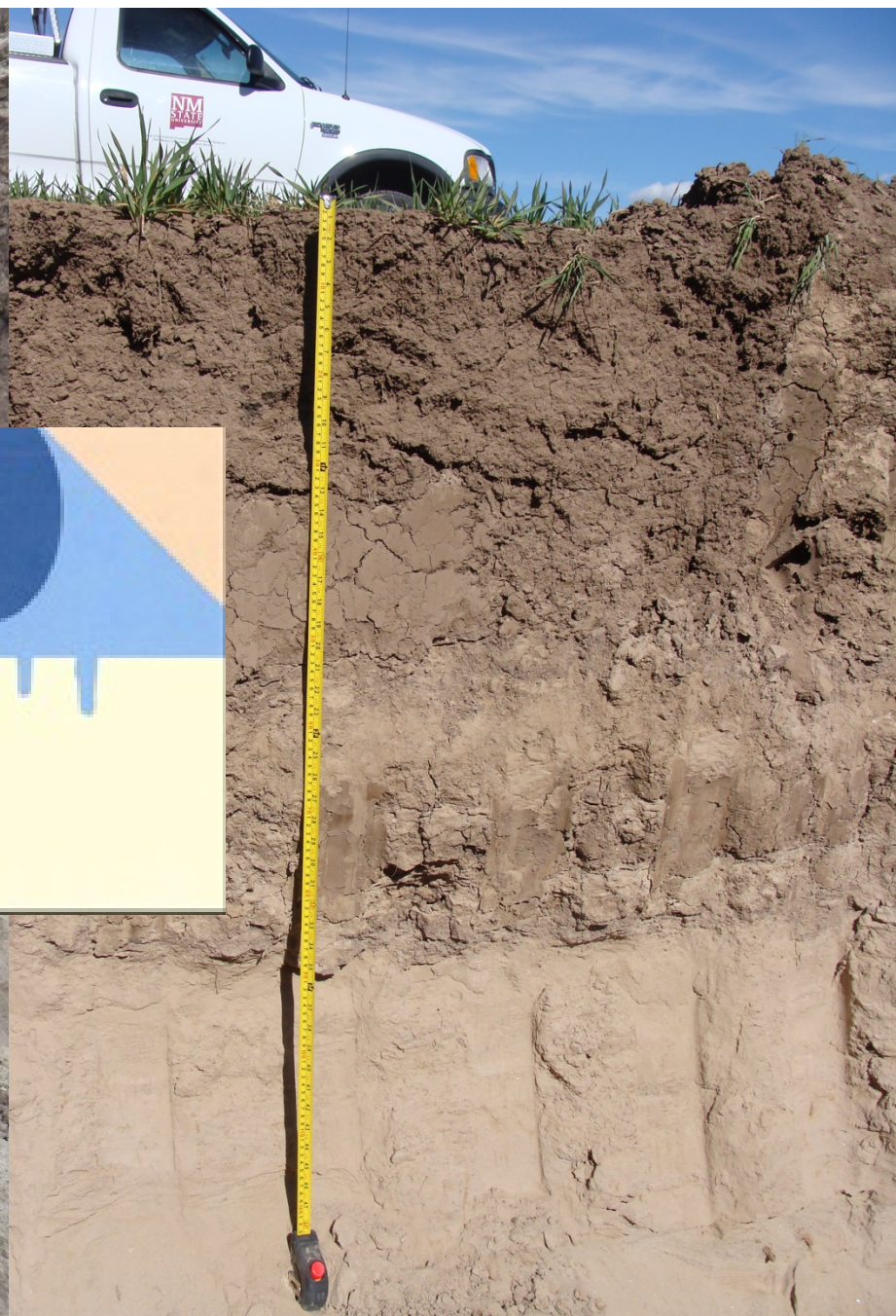
**Can be an impediment to root growth and drainage.**





**Clay**

**Sand**

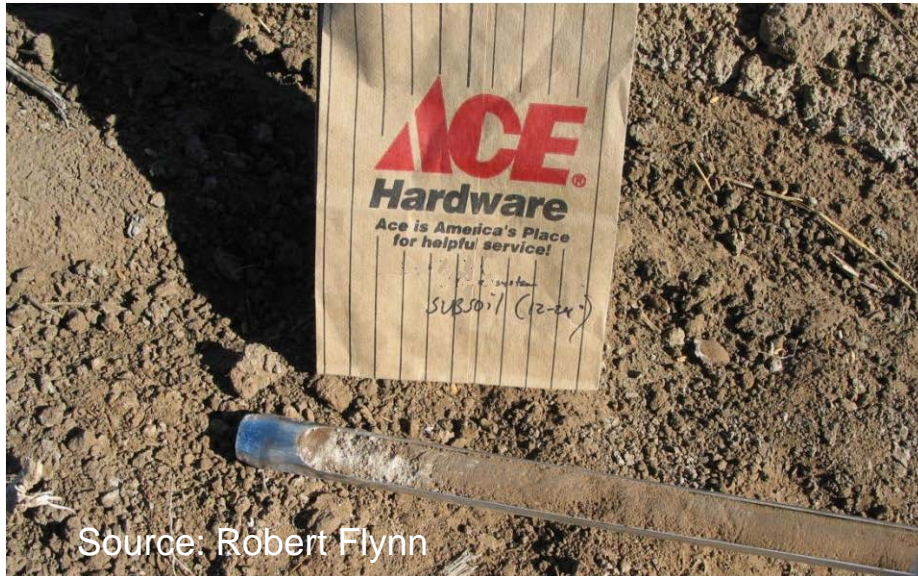




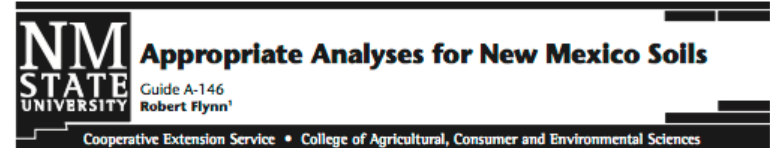
# Soil Testing

[http://aces.nmsu.edu/pubs/\\_a/A146.pdf](http://aces.nmsu.edu/pubs/_a/A146.pdf)

- pH & Lime Content
- Salinity & Sodium (SAR)
- Soil Fertility



Source: Robert Flynn



## INTRODUCTION

Soil testing helps us understand the soil environment in which our plants must survive. A complete understanding of the soil would include its physical, chemical, and biological properties. Physical properties relevant to plant production include soil texture, permeability, compaction, and water-holding capacity. Chemical properties include soil pH, salinity, and plant nutrients. Soil biology determines how efficiently nutrients are released from organic matter, how well organic matter is decomposed, and a host of other properties conducive to plant growth. Management practices affect all three of these categories.

Soil testing provides a "snapshot" of what conditions were like at the time of sampling, and this allows farmers and homeowners to plan their management practices for the coming growing season. Common questions like "How much manure should I add?" or "What fertilizer should I use this year?" or "Do I need to lower my soil pH?" can be answered with a soil test. It is most common to focus on the chemical and physical properties of soil, but the biological aspects are gaining more attention. Several tests have been developed to assess some of these properties. The USDA NRCS's Soil Quality Assessment webpage (<http://soils.usda.gov/SQI/assessment/assessment.html>) offers some insight into measuring certain biological properties.

The focus of this publication is to provide guidance for people interested in knowing more about their New Mexico soil from a chemical and physical perspective.

## OBTAINING A SAMPLE

A soil test is only as good as the sample from which it came. One core from the corner of a field, a fairway, or one's front yard does not represent the whole field, golf course, or yard. Samples should be taken from areas that can be treated as distinct units (management zones).



Figure 1. Feeling the soil while sampling can give information about soil moisture and texture across the area being sampled.

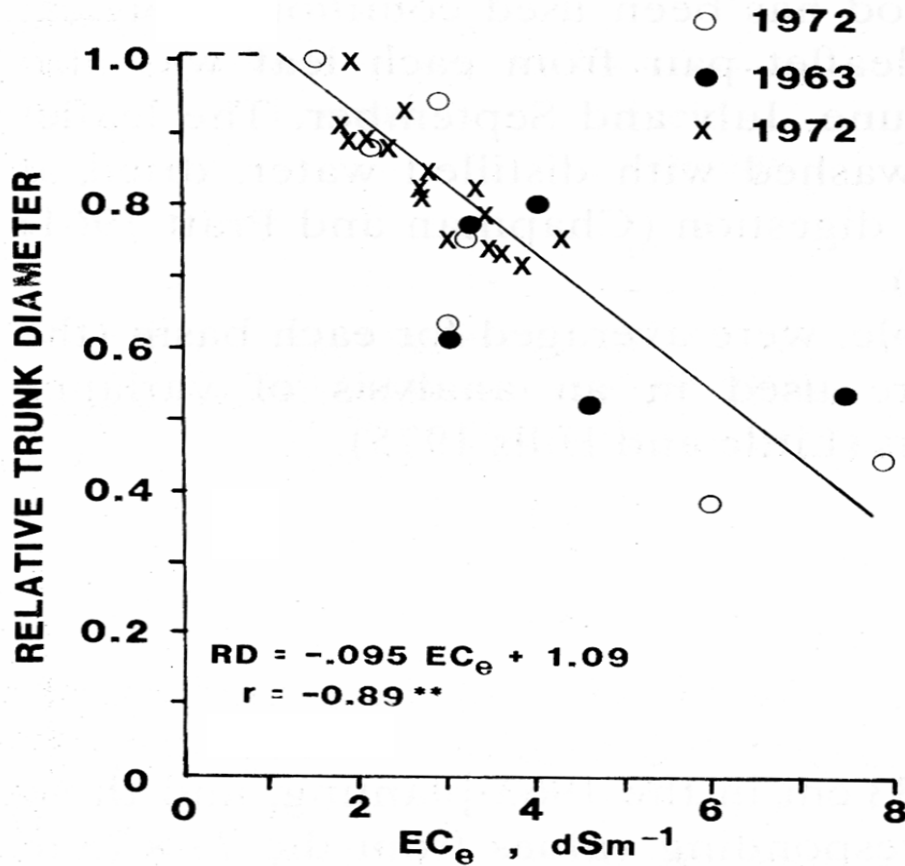
The rough on a golf course differs from the green, and some areas cross soil type boundaries that vary greatly in their physical and chemical properties. It usually takes 12 to 15 subsamples taken to the same depth and combined into one sample in order to be confident in the soil test results from any given lab (Figure 1). The recommended number of subsamples ensures that the sample is representative of a "management zone." This is an area that may be treated the same with regard to watering, fertilizer application, and yield potential.

The soil depth for sampling depends on tillage practices and the crop that is being grown. Areas that are not tilled, such as direct-seeded fields, orchards, vineyards, turfgrass, and perennial gardens, should be sampled to a depth of 6 to 8 inches. Any area that has been tilled, such as annual gardens, conventionally tilled production fields, or similar areas, should be sampled to a

Extension Agronomist, Department of Extension Plant Sciences, New Mexico State University.

To find more resources for your business, home, or family, visit the College of Agricultural, Consumer and Environmental Sciences on the World Wide Web at [aces.nmsu.edu](http://aces.nmsu.edu)

# Salinity



Salinity ( $EC_e$ in $dS/m$ )		
< 2	2 - 4	> 4
No problem	Increasing problem	Severe problem



# Water

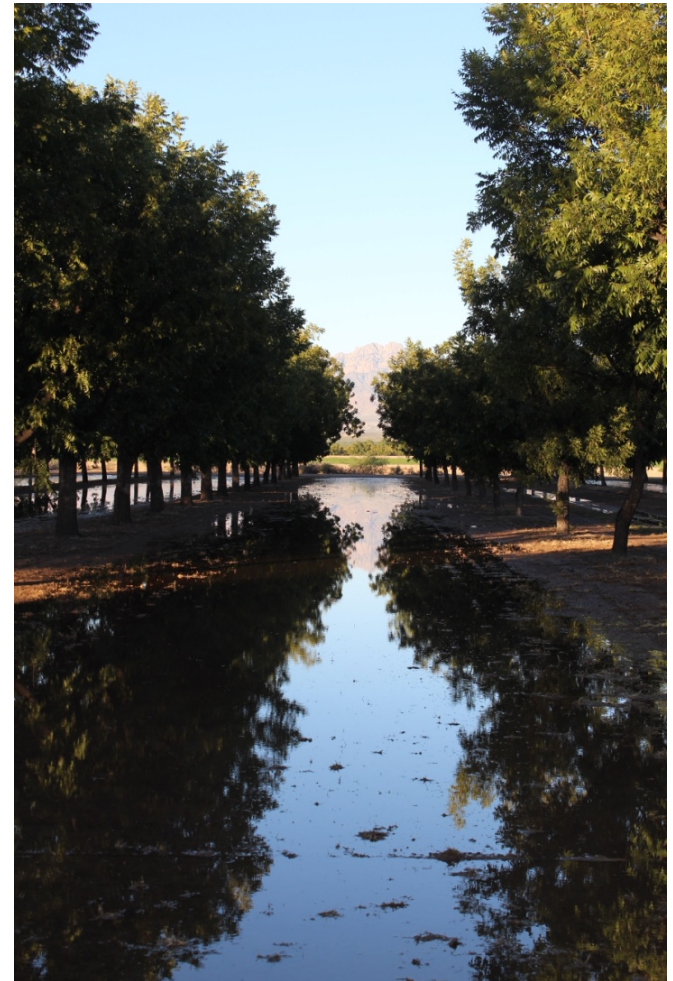
- Quantity
  - Will the irrigation system be able to deliver enough water to meet the maximum ET?
- Quality
  - Salinity
  - SAR
  - Other (may depend on irrigation system)



**Do Your Homework Before Planting!!**

# Water Quality

- Clay/clay loam →  
EC < 1 dS/m, SAR < 3
- Loam →  
EC 1-2 dS/m, SAR 3-8
- Sand/loamy sand →  
EC 2-2.5 dS/m, SAR 8-10





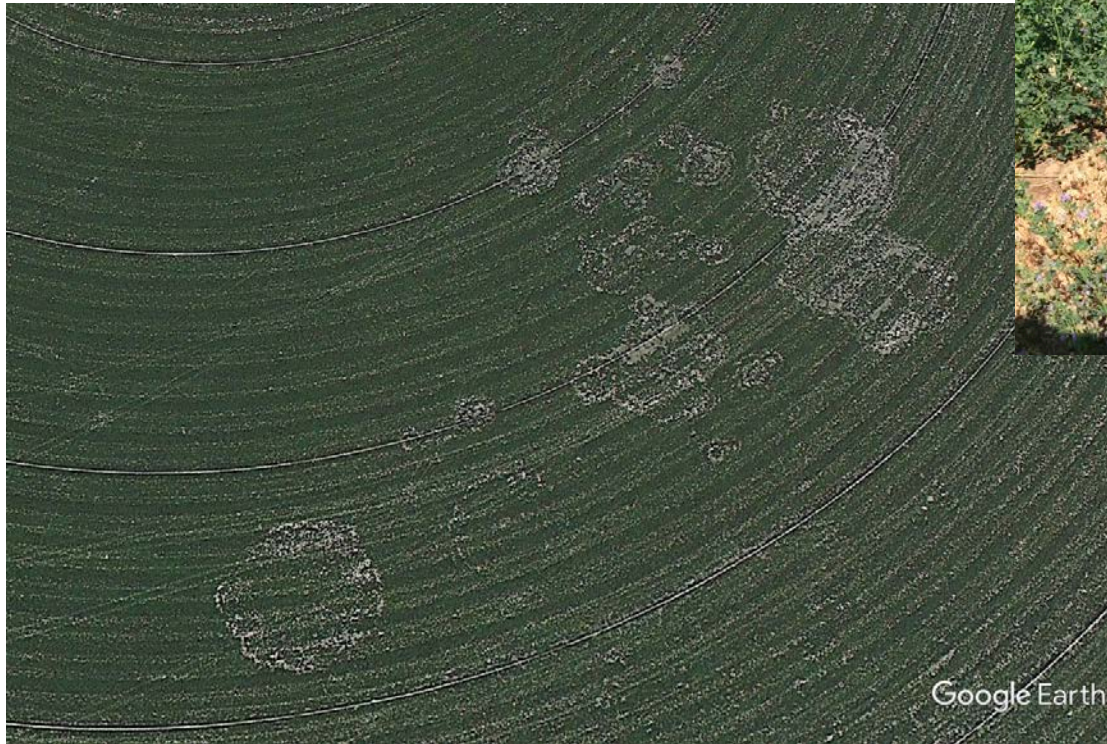
# Pests & Diseases

- Pecan nut casebearer
- Pecan weevil
- Cotton root rot



# Cotton Root Rot

- Inspect aerial images
- Plant alfalfa as an indicator





# Thank you!



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# Winter Chill

Required for Proper Floral and Reproductive Development

- **Traditional Measure**

- Hours < 45°F
- Pecan Chill Requirement
  - Very Low to Questionable
  - 400-500 Hrs

- **Adequate Chill**

- N. Mexico: 1600-2200 Hrs
- Arizona: 500-1600 Hrs

