
YUMA COUNTY CD

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Is This Happening With Your Trees?

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This is typical damage caused by iron deficiency in many trees when the midrib and leaf veins remain green and between the veins the leaf structure is yellowing. It is always best to test your soil before you plant the tree you want to plant in your landscape. There are some trees which are very sensitive to changes in pH. Once the pH of the soil gets to be between 7.2 and 7.5, the tree roots have difficulty absorbing iron. The iron is abundant in the soil, but combines with oxygen, hydroxide and carbonate ions which are not water-soluble and the roots cannot absorb these. Iron chlorosis is a complex problem and there are many reasons which contribute other than pH. These can be soil compaction, wet or dry soils and where plastic mulch is used. Any of those conditions restricts air movement in the soil. Cool soil temperatures are another contributing factor to iron deficiency. The following is a short list of trees/shrubs either highly or moderately susceptible according to Utah State University Extension: Red Maple, Silver Maple, Amur Maple, Pin Oak, Burnald Spiraea, Birch, Cherry, Peach.

The solution is to apply chelated iron and/or ferrous sulfate. The ferrous sulfate may have a slower response rate than chelated iron. Both have variable results. As I stated before, the best solution is to test your soil pH before planting the tree.

Trees that can moderately tolerate pH changes are Ash, Boxelder, Catalpa, Kentucky Coffee Tree, Cottonwoods, Poplars, Hackberry, Hawthorn, Honey locust, Linden, Norway and Canyon Maples, Elms and mot Oaks. One of the best trees that is not pH sensitive is a Tatarian Maple, *Acer tataricum*.

Iron plays two major roles in plants which are stated as follows:

1. Iron is a component of proteins and enzymes used during photosynthesis
2. Iron is used in respiration to break down stored food reserved releasing energy for the plant

If a plant cannot sufficiently create or release its own sugars and starches, then the plant will die because it cannot feed itself. Be sure to match your soil pH with the tree's pH range.

Come to our annual meeting on November 4 at Wray City Hall at 6:30 p.m. and hear about using drones in your ag business. Call 970-332-3173-X3 by October 26 for a reservation.

Inherent and Dynamic Properties of Soil

Soil has both inherent and dynamic properties, or qualities. Inherent soil quality is a soil's natural ability to function. For example, sandy soil drains faster than clayey soil. Deep soil has more room for roots than soils with bedrock near the surface. These characteristics do not change easily.

Dynamic soil quality is how soil changes depending on how it is managed. Management choices affect the amount of soil organic matter, soil structure, soil depth, and water and nutrient holding capacity. One goal of soil health research is to learn how to manage soil in a way that improves soil function. Soils respond differently to management depending on the inherent properties of the soil and the surrounding landscape.

Understanding soil health means assessing and managing soil so that it functions optimally now and is not degraded for future use. By monitoring changes in soil health, a land manager can determine if a set of practices is sustainable.

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## Soil Health Management

Soil works for you if you work for the soil by using management practices that improve soil health and increase productivity and profitability immediately and into the future. A fully functioning soil produces the maximum amount of products at the least cost. Maximizing soil health is essential to maximizing profitability. Soil will not work for you if you abuse it.

Managing for soil health (improved soil function) is mostly a matter of maintaining suitable habitat for the myriad of creatures that comprise the soil food web. This can be accomplished by disturbing the soil as little as possible, growing as many different species of plants as practical, keeping living plants in the soil as often as possible, and keeping the soil covered all the time.

### **Manage More by Disturbing Soil Less**

Soil disturbance can be the result of physical, chemical or biological activities. Physical soil disturbance, such as tillage, results in bare and/or compacted soil that is destructive and disruptive to soil microbes, and it creates a hostile environment for them to live. Misapplication of farm inputs can disrupt the symbiotic relationships between fungi, other microorganisms, and plant roots. Overgrazing, a form of biological disturbance, reduces root mass, increases runoff, and increases soil temperature. All forms of soil disturbance diminish habitat for soil microbes and result in a diminished soil food web.

### **Diversify Soil Biota with Plant Diversity**

Plants use sunlight to convert carbon dioxide and water into carbohydrates that serve as the building blocks for roots, stems, leaves, and seeds. They also interact with specific soil microbes by releasing carbohydrates (sugars) through their roots into the soil to feed the microbes in exchange for nutrients and water. A diversity of plant carbohydrates is required to support the diversity of soil microorganisms in the soil. In order to achieve a high level of diversity, different plants must be grown. The key to improving soil health is ensuring that food and energy chains and webs consist of several types of plants or animals, not just one or two.

Biodiversity is ultimately the key to the success of any agricultural system. Lack of biodiversity severely limits the potential of any cropping system and increases disease and pest problems. A diverse and fully functioning soil food web provides for nutrient, energy, and water cycling that allows a soil to express its full potential. Increasing the diversity of a crop rotation and cover crops increases soil health and soil function, reduces input costs, and increases profitability.

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## Keep a Living Root Growing Throughout the Year

Living plants maintain a rhizosphere, an area of concentrated microbial activity close to the root. The rhizosphere is the most active part of the soil ecosystem because it is where the most readily available food is, and where peak nutrient and water cycling occurs. Microbial food is exuded by plant roots to attract and feed microbes that provide nutrients (and other compounds) to the plant at the root-soil interface where the plants can take them up. Since living roots provide the easiest source of food for soil microbes, growing long-season crops or a cover crop following a short-season crop, feeds the foundation species of the soil food web as much as possible during the growing season.

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**SAVE THE DATE!!**  
**FARMING EVOLUTION**  
**FEBRUARY 18-19, 2016**  
**PHILLIPS COUNTY FAIR GROUNDS**  
Soil is a living and life-giving natural resource.

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### Falling Leaves

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Are the leaves on your trees starting to fall early? Do you have a tree in your landscape which normally does not have a chlorotic condition, but does this year? There are several reasons. Let me list them for you in order of occurrence as follows:

- November cold snap
- Warm periods in the winter
- Stress of a spring freeze
- Energy to releaf after a freeze
- Excess rainfall which pushes oxygen out of the soil

The last environmental issue of excess rainfall has caused a lot of chlorotic conditions in trees that normally do not have this condition. In the long run, trees are not producing the new cambium cells that they need. The cambium layer of the tree is now wood or the annual rings. Within this new wood are the vascular structure, xylem and phloem. Phloem is located on an outer ring closest to the bark and in time becomes bark. In the meantime, phloem transports food to the root system. Xylem transports water and nutrients to the leaves and is found deeper into the tree. Xylem is the sapwood of a tree.

There is no single tree species singled out this season. There are a number of different deciduous trees affected such as crabapple, red maple, ash, elms, pears, willow, aspen, cottonwoods and plums. There are many conifers showing chlorotic needles because of the lack of oxygen in the soil.

To add to this, the cooler temperatures at night which dip down to below 55 degrees F make the chlorophyll in the leaves unstable. The chlorophyll is the substance that masks all the other pigmentation in the leaves such as yellow, orange or red.

We will have to wait and see what happens through this winter and into next spring. Don't be surprised if a number of these trees do not make it through into spring.

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**Visit our web site at: [www.ycconservation.com](http://www.ycconservation.com)**

USDA is an equal opportunity provider and employer

## **Yuma County CD Annual Dinner Meeting**

**November 4, 2015 At Wray City Hall at 6:30 p.m.**

**We will honor 6<sup>th</sup> graders and the Outstanding Conservationist  
Chad Godsey will give a presentation on Drone use in Agriculture  
Call 970-332-3173-X3 by Oct 26 to make reservation**

