

Abiotic Disorders of Plants

Richard Smith

**Vegetable Crop and Weed Science Farm Advisor
University of California Cooperative Extension
Monterey, Santa Cruz and San Benito Counties**

Disorders of Plants

- **The causes of plants disorders are many fold:**
- **Biotic: pathogens (fungi, bacteria, viruses), nematodes, arthropods, and vertebrate pests**
- **Abiotic: nutritional, physiological, genetic mutations, chemical damage, and environmental extremes**

Abiotic Disorders of Plants

- **We rely upon symptoms on the plant to provide an indication of what the cause may be**
- **There are many types of symptoms, but it is important to carefully examine the plants to look for causes:**
 - **Signs of infection, yellowing, necrosis on the leaves, insect frass**
 - **What part of the plant is this occurring on**
 - **What age of tissue, when did the problem first occur**

Soil Effects

- **Biological factors**
 - Soilborne pathogens:
 - wilt organism, phytophthora, others
- **Soil condition:**
 - Compaction, drying, drainage
- **Nutrition**
 - Deficiency and excess of nutrients, pH
- **Toxicity**
 - Salt, specific ion (Cl, Na, B), toxins, herbicides

Root Problems Give Foliar Symptoms



Soil Compaction



Normal

Compacted

Soil Condition



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Soil compaction

**Stunting and poor growth
is a common symptom
of soil problems**



Poor Drainage

Water Stress



Wilting





Nutrient deficiency:

- In this case nitrogen deficiency on citrus. Nitrogen deficiency occurs on the oldest tissue as the nutrient is remobilized to supply younger tissue**

Nutrient excess:

- In this case manganese is in excess because the soil pH was low which allowed this element to be more available to the plant



Nutritional/Physiological Disorder

Calcium Deficiency



Salt toxicity:

This is a common malady in some areas. The first symptom of salt problems is stunting. Foliar symptoms show up later in the development of the problem.



Yellowing and
Burning on leaf
margin



Viruses can have symptoms that look nutritional



Beet Western Yellow Virus on Lettuce

Physiological Disorders

Edema



**Swelling of tissue breaking through the epidermis
Can be caused by poor growing condition – poor
drainage**

Environmental Extremes

cold wind



Skin deep



Purpling is a very common response to various stresses (i.e. nutrition, temperature, poor drainage, etc)

Environmental Extremes

Frost damage



California

Sunburn



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Wind Abrasion



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Genetic Problems

Chimeras



Rare in fields and usually occurs on individual plant

Chemical Damage

Herbicides and others



**Spotting
from contact
herbicides**



**Crinkling
Some herbicides affect
the physiology of the
plant and can give
bizarre symptoms**



**Roundup on rose
Causes yellowing and
strapped shaped leaves**



**Thank you for your
attention**