

Crop Information

This content is only available in English.

Peaches and Nectarines Deficiency Symptoms

This TECH BULLETIN is for visual observation use and reference only and may make the grower more aware of the visual symptoms that occur in the orchard. "CAUTION" should be taken in that some symptoms do look alike and a misdiagnosis could be possibly disastrous. Confirm all of your observations with Laboratory analysis.

Nitrogen

Leaf symptoms range from a pale green to yellow over the whole leaf surface. Symptoms occur quite uniformly throughout the tree and along a shoot. Red and brown spots often develop on leaves leading to a "shot hole" appearance or a red tinge especially on basal leaves. Leaf size is reduced.

Shoot growth is markedly restricted. Shoots become spindly and have a very characteristic red coloration. Leaf senescence occurs earlier in the fall and colors are brighter. Trees are more susceptible to winter cold injury, but heavily fertilized trees that are delayed from going into dormancy and K levels are out of balance are more prone to winter injury than a well balanced tree.

The reduced shoot growth and decreased flowering tend to lower production. Fruit are smaller, even when trees are thinned to the same fruit load as a tree with better nutrition.

However fruit quality may be enhanced, showing a greater degree of redness. Fruit maturity is also enhanced by N deficiency. Prolonged N deficiency will lead to peach decline.

Phosphorus

Leaf symptoms may start with a dark green color that eventually turns bronze or reddish purple. Leaves develop a very characteristic leathery texture. A red coloration appears on petioles and young shoots. Eventually leaf size is reduced, and premature defoliation may occur, beginning with basal leaves.

Yield and fruit sizes are reduced by P deficiency. The fruit is redder and maturity is advanced, but fruit quality is negatively affected. Fruit is disfigured by gumming, skins crack, and the flavour is very unpleasant. Low Phosphorus will also increase early fruit drop.

Potassium

Potassium is found in quite large quantities in both leaf and fruit tissues of peaches and nectarines. It appears to have an important role in fruit growth, since fruit size is markedly reduced by K deficiency. Potassium deficiency is not uncommon and is encountered frequently on very sandy soils or a very heavy crop load can increase the likelihood of K deficiency. Initial symptoms occur on midshoot leaves in early summer. Leaves are pale with a characteristic upward curling or rolling. Margins become chlorotic and then necrotic, leading to a marginal scorch. Affected leaves eventually develop cracks, tears, and necrotic spots. Potassium-deficient trees have reduced flower bud formation and fruit size. Fruits are much less red or exhibit a dull, dirty looking, orange color and have poor flavour and storage quality. An orchard that has K deficiency will have a greater incidence of canker and will be more prone to winter injury.

Calcium

Calcium deficient trees exhibit reduced shoot growth due to shortened internodes. This is followed by defoliation and twig dieback. Leaf blades often roll inward and upward and may develop large chlorotic areas before they abscise. Fruit will have a poor shelf life, reduced flavour and the tree will have reduced vigour.

Magnesium

Magnesium deficiency often occurs in sandy soils or soils that are naturally low in Mg (soils less than 10% saturation Mg). Heavy applications of K or K applications in the spring that do not contain Mg can also induce it. Leaf symptoms start with a marginal interveinal chlorosis

that may develop into necrosis. The center of the leaf stays green along the midrib creating an inverted "V" pattern. Basal leaves are most severely affected and generally abscise by late summer, leaving the bases of shoots bare. Until the deficiency becomes severe, shoot and fruit growth are not reduced, although early fruit drop may occur.

Sulfur

Sulfur deficiency is not common in Peaches. Uniformly yellow leaves at the shoot tip characterize sulfur deficiency. Symptoms are similar to those of N deficiency except for the location along the shoot; N-deficient plants are more uniformly affected along the shoot.

Iron

The characteristic symptom of Fe deficiency in peach and nectarine is an interveinal chlorosis with the veins remaining distinctly green. As the severity increases, leaves can become almost white, eventually turning necrotic and abscising. Terminal leaves are affected before basal leaves, so some shoot dieback may occur.

Zinc

Zinc deficiency is common in peaches. It has often been called "little leaf", because rosettes of small pointed leaves form at shoot tips. The first symptoms of Zn deficiency are a chlorotic interveinal mottling that appears on older leaves. As the deficiency becomes more severe, internode and leaf growth at the shoot tip are greatly curtailed, leading to the little-leaf rosetting. Leaves often develop a very characteristic crinkled or wavy margin. Basal leaves eventually abscise, leaving tufts of small pointed leaves at the tip. Growth will generally be delayed the following spring, and extensive shoot dieback occurs. Flower bud formation is greatly reduced, and the few fruit that develop are small, misshapen, and of very poor quality.

Manganese

The characteristic symptom is an interveinal chlorosis extending from midrib to margin. Broad bands of green remain along the veins, giving a herringbone pattern. Symptoms tend to be general over the whole tree, although apical leaves often appear less affected. Severe deficiency causes some defoliation and shoot dieback. Moderate symptoms, however, don't seem to induce a reduction in shoot growth or yield. Temporary deficiency symptoms can occasionally be found in the spring under conditions of poor root growth induced by low soil temperatures.

Copper

Copper deficiency is very rare in peach and nectarine orchards. Symptoms include long narrow leaves with interveinal chlorosis. Early cessation of terminal growth and shoot dieback may occur. Often several buds start growing below the dead tip, leading to a "witches-broom" effect.

Boron

The characteristic symptom of this disorder is a terminal dieback of twigs. New, weak growth is forced below these dead tips. Leaves that subsequently develop are small, thick, misshapen, and brittle. Flower buds are particularly sensitive to B deficiency, so production is substantially reduced. Fruit develop dry, corky areas near the pit, and some cracking along the suture may occur. Low B will increase the amount of split pit in early varieties. Boron deficiency is often undetected because of the effects that are undetected. Poor pollination, small cracking of the bark on new growth leaving the tree open to other infection and poor uptake of K in dry years. Boron also helps the bud over winter when supplied late in the season.

Mobilization of Ca to fruit and formation of new roots throughout the season are also affected by boron nutrition.