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Advice to Grow By … Ask Us!

GARDEN BAD GUYS – CHLOROSIS

By Nanette Londeree, Marin Master Gardener

Chlorosis, pronounced klo͝-rō'sis, is a fancy name for yellowing or bleaching of green plant tissue due to a loss of chlorophyll. When this happens, leaves don't have their normal green color; they may be pale green, yellow, or yellow-white. The affected plant has little or no ability to manufacture carbohydrates and may die unless the cause of the chlorophyll insufficiency is treated. Yellowing leaves are generally a good indicator that your plant is suffering. And it can affect just about any green plant, especially during a rapid growth stage.

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Symptoms of chlorosis can vary depending on the cause. Mild chlorosis usually starts as a paling (lighter green to lime-green color) of interveinal (between veins) tissue progressing to a yellow color in more serious situations. In some cases, only part of the plant may exhibit symptoms; it may be limited to new growth or impact only older leaves. Affected areas (or the entire plant) may be stunted or fail to produce flowers or fruit.

Many different situations can cause chlorosis; it may be a result of over watering or under watering, damaged or compacted roots, high soil alkalinity or a nutrient deficiency. Nutrient deficiencies can result from an inadequate amount of the material in the soil or its unavailability due to a high pH (alkaline soil). Chlorosis is aggravated by extreme soil temperatures and conditions that restrict air movement into soil like plastic sheet mulching and compaction along with soils that contain high levels of zinc, manganese, phosphorus or copper. One of the most common and easily correctable causes of this condition is insufficient nitrogen. Because nitrogen is naturally low in almost all California soils and plants utilize it so quickly, additional amounts are needed for optimal plant growth. Another frequent reason for yellowing leaves is low or unavailable iron. There may ample iron present in the soil, but due to high pH, it is in a bound form and unavailable to the roots.

Before you try to eliminate the chlorotic condition, look closely at the affected leaves to determine the cause. If a plant is iron-deficient, the symptoms are visible in its newest leaves and the interveinal areas show chlorosis while the veins remain green. Chlorosis resulting from nitrogen-deficiency display old leaves that are yellow, new leaves that are green and the veins are the same color as the rest of the leave. Oxygen deficiency, as a result of over watering or inadequate drainage, manifests symptoms where the veins of the leave will be yellow, while the remainder of the leaf is green. Once you've identified the cause of the malady, you'll need to remediate it.

Plants that are symptomatic of nitrogen deficiency can be treated directly by applying a nitrogen containing soluble fertilizer to the leaves of the plant (foliar fertilizing) for the quickest results, or indirectly by adding it to the soil. If the cause is oxygen deficiency, then evaluate watering, drainage or soil compaction, and correct the condition. Chlorosis resulting from a high soil pH can be adjusted with the addition of powdered

soil sulfur (this may require a lot of sulfur and a year or more to produce results) or soluble forms of sulfur with iron and manganese.

Soil that is lacking in iron can be corrected with the application of iron sulfate; this is the cheapest and most widely available type of iron fertilizer. Apply liberally, and scratch into the soil around the plant. If your soil has plenty of iron, it’s just not in a form that is available to the plant, then first correct the condition that may be causing the lack of availability (such as drainage), then add a chelated forms of iron. A chelating agent is a synthetic organic substance that can maintain iron (as well as copper, manganese and zinc) in a non-ionized, water-soluble form that is readily absorbed by plants. Scatter dry granules within the plant's drip line, then water thoroughly so the chelate soaks into soil around roots. Leaves should start to green up in two to three weeks.