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# Leaves Tell A Story

When walking around the personal landscape, look closely at the leaves of the trees, shrubs, roses, vegetables, and other kinds of plantings. Perhaps they jump out at you with their odd color or striations, and other abnormalities. Are many of the leaves a pale green to yellow? Or perhaps the indoor plants are thriving, but have a bit of yellow on the leaves, or have some light brown edges. These plants need some nutrition, maybe more light, or perhaps they are receiving too much water

## NUTRIENTS

Nitrogen, phosphorus and potassium, (or potash) are the three most important nutrients plants need to thrive. All the stages of growing plants need nitrogen. In the West, nitrogen needs to be replaced every three- (3) weeks. Fish emulsion and manure teas are quick remedies. Long-term slow-release sources are compost, cottonseed meal, soybean meal, and aged manure.

## MAKING COMPOST

When making compost, leaves will decompose quicker by shredding or bruising them first. Put the leaves in a bag and drive over the bag several times. When the leaves are crushed, they are easier to handle. Also shredded and/or crushed leaves are less likely to mat in the compost pile. You have no place to get leaves? Request the brochure "Home Composting In The Desert". It will give you ideas of what to use to replace leaves.

## NITROGEN DEFICIENCY

Leaves of green plants that are yellow from the tips toward the stem or yellow from the bottom up signals the plant is showing nitrogen deficiency. Growth is usually stunted. Organic matter, which in a forest is produced by fallen leaves, must be applied. Home landscaping in Pima County seldom contains trees that are deciduous. If compost is to be made of leaves only, extra nitrogen must be added. Use five (5) parts of leaves to one (1) part manure. If manure is not available, cottonseed meal can be used, but use several cupfuls more of the meal to leaves.

## IRON DEFICIENCY

A yellow leaf with green veins can be suffering from a deficiency of iron. The difference between lack of iron and that of nitrogen is this: the plant is pale or yellow beginning at the top. Iron deficiency is very noticeable especially in our alkali desert soils. Then a visit to a garden center or nursery is necessary, right? Pick up a bag of iron sulfate, iron oxide or iron chloride, right? WRONG, WRONG, WRONG! These products can produce a soluble salt, ferrous sulfate. This substance is injurious, or even toxic, to most plants. Use an organic iron source, available at some garden centers. Foliar sprays are a quick solution to iron deficiency. Use good quality fish emulsion or liquid kelp. Mix with water according to package directions. Feed every two weeks. Long-term release of iron sources are dried chicken manure, compost, and greensand.

## POTASSIUM DEFICIENCY

Potassium deficiency begins with gray-green lower leaves, yellow on the margins, and perhaps mottling. Then the leaves turn brown. Again a quick solution is foliar feeding with fish emulsion or other liquid fertilizer. To feed plants for several months, sprinkle on composted manure, greensand, or rock phosphate. Sturdy root systems require potassium. As the fruit develops, it requires more potassium, therefore add compost once a month as mulch. Manure in the compost will keep the roots nourished for a good harvest.

## PHOSPHORUS DEFICIENCY

Phosphorus is necessary for plant stem strength, and it increases how fast a crop matures. Fruiting, flowering, seed formation and root branching are more reasons a plant needs phosphorus. Usually plants

grown in acid soils show signs of needing phosphorus. The plant may look healthy but may not have flowers or fruit. Or the stems are purple, and are very thin. Spraying with fish emulsion will give the plant quick food. Composted manure and rock phosphate are steady foods. Greensand is a mineral product of the ocean. Five (5) to six (6) percent of available potash is found in greensand. Other ingredients in greensand are silica, magnesia, and at least thirty other elements. Similar to compost, greensand releases the nutrients slowly. It is a powdery substance, so can be spread freely around the plant. Use about one eighth (1/8) of a pound to one (1) square foot of dirt. Greensand can be added to the compost pile and it will act with the compost to hold water in the soil.

Another product that may be easier to find at local garden centers is rock phosphate. The directions for applying to the plants are on the package. Call garden centers near your home. Many trace minerals are also in rock phosphate. Because the rock phosphate particles are small, the plant roots can easily and quickly incorporate the minerals. Again, use with compost around the plants to enhance the long-term availability of the minerals and allow the minerals to be used by the plant faster. Do read the contents of the package, as twice as much soft rock phosphate is needed to that of hard rock phosphate.

#### MAGNESIUM DEFICIENCY

Magnesium deficiency is usually not a problem in alkaline soils. But if the lower leaves are yellow with green veins, this may be the problem. The edges of the leaves turn from yellow to orange to brown. Brittle leaves curl up and may die. Compost again is the answer. A quick solution is to dissolve (1) one cup Epsom salts into (1) one gallon of water and use weekly. Fish emulsion or compost tea can be used also.

#### USE OF ZINC

Zinc is a micronutrient that helps other nutrients be of use to plants. Many times alkaline soils need a boost of zinc. Using compost helps plants use micronutrients that would normally be unavailable. Applications of composted manure will maintain proper zinc levels. Foliar feeding with seaweed extract every two (2) weeks has a side benefit. A serious problem is preventing disease from spreading. But spore reproduction seems to be stopped by spraying with seaweed. Liquid fertilizer has other advantages. The roots can use the food immediately. If directions are followed, there will be no burning of the plants. Foliar feeding is easy, no heavy bags to handle, just add water.

#### APHIDS

Leaves can also tell you pests may be the problem. First the leaves curl, then they pucker and finally turn yellow. Aphids have attacked the plant. Many times ants are running up and down the stems. The most obvious reasons for aphid infestations are using too much nitrogen fertilizer, too much pruning of fruit trees, and use of pesticides that kill the beneficial insects. There are many kinds and colors of these tiny insects. Some have wings. With a hard spray of water, try to dislodge the aphids. If this doesn't work, use insecticidal soap every 2-3 days. For bad infestations, use pyrethrum spray. As with all sprays, be sure to get the undersides of the leaves as well as the tops. Plant nasturtiums as a trap crop. However this plant grows only in cool weather. A sticky trap made from Tanglefoot placed near plants will give notice aphids are present.

#### MITES

Mites on the plants cause stippled yellow and dry leaves. Sometimes white or pale yellow dots appear. If a hard spray of water doesn't knock them off, use an insecticidal soap spray. Use the water method once every three (3) days for three times. The soap spray is used three (3) times, once every five (5) to seven (7) days. Usually the Safer brand is available at garden centers. If you wish to use beneficial insects, look for the big-eyed bug, the rove beetle, or lacewings, all of which devour mites. Ladybugs control spider mites.

#### NEMATODES

Almost invisible to the naked eye, nematodes are tiny worms. This pest attacks the roots. Many species of nematode exist. Yellow leaves and stunted plants may indicate nematodes are present. Compost, and kelp meal encourages the growth of fungi that attack nematodes. Use a spray of fish emulsion to repel nematodes. French marigolds (*Tagetes patula*) inhibit root-knot nematodes. The best varieties are Tangerine and Park's Nemagold. One way to control nematodes is to let the bed lay fallow for a season, do not plant the area, and do not water during the hot months.

## WHITEFLIES

Whiteflies are common problem in the Western Region. Look for a mothlike, dusty, white winged insect about the size of a pinhead. Shake the plant gently. If white falls like dandruff, whiteflies are present. The eggs are laid on the underside of leaves, which turn yellow and die from the sucking of plant juices. Sometimes in the West, whiteflies are called leafhoppers, as they flit around. To prevent whitefly, early in the planting season, spray with insecticidal soap.

Nicotiana (*Solanaceae*), an ornamental flowering tobacco, can be planted nearby, except for the nightshade family, because the whiteflies like the sticky leaves. Another deterrent for a small infestation would be Tanglefoot or Tack Trap. With a heavy infestation, such as the warm moist days of July and early August, use the insecticidal soap 2 times, three to four days apart. Be sure to get under the leaves where the eggs are laid. Always spray early in the morning before the sun touches the leaves. By spraying with seaweed or kelp extract, the whiteflies seem to be repelled and cannot reproduce.

Walk around the landscape again. Perhaps these suggestions will help the "food factories" (leaves) of the plants to revitalize. If you want to prevent pests, feed your plants the proper food and watch for pests. It is easier to get rid of a few pests than than clear a bad infestation. When pests are a problem, one day after using the soap or other means of getting rid of the pests, spray (foliar feed) with a liquid fertilizer to help the plant recover. Prevention is the best cure

*Lois H Lockhart March 2003 References: How to Grow More Vegetables, John Jeavons; Rodale's Garden Problem Solver by Jeff Ball.*