



MULCH CORNER

COLORED MULCHES, PART 2

By John Ferguson

Last week we looked at specialty plastic so this week we are going to review some of the research on plastic mulches.

Effects of Colors:

This is a new area of research that we are beginning to understand. The color of mulch and other materials affects plant growth. Research at Texas A&M University studied trees that were planted in paving bricks (pavers) of three different colors; a light (blond), medium (red-brown), and dark (charcoal). The light and medium colored bricks reflected the most photo synthetically active (growth promoting) radiation. The air temperature above the plants was less for the lighter colors as compared to the darker colors. In the fall and winter on sunny days the air temperature was as much as 35 degrees (Fahrenheit) higher, which could make the trees (plants) more susceptible to damage from sudden cold snaps. In addition, the darker the color the more root growth was decreased in the upper portions of the soil, which resulted in reduced growth above ground. This effect was more pronounced in the shallow rooted species.

Genetic Effects:

The USDA has found that a plant's gene activity changes with the type of mulch applied and with the type fertilizer used. Some of the research was done on tomato plants and they found at least 10 different genes were affected. For example when an organic mulch like mown hairy vetch was used instead of black plastic, the tomato plants lived longer and developed less fungal disease. When the organic vetch mulch was used, two genes for plant defense (immune system) and two genes for regulation of aging greatly increased their activity. The researchers also found that fields mulched with mowed vetch receiving only half as much fertilizer produced larger yields than conventional plastic mulch fields with the full amount fertilizer. The fields mulched with mowed vetch also provided other benefits such as reduced erosion, decreased disease and the delays in plant aging. One of the genes studied produces chitinase (an enzyme that dissolves the walls of attacking fungi) along with osmontin



(another defensive compound) and extra activity of receptors for cytokinins that regulate plant ageing. The mowed vetch mulched tomatoes more developed root systems that allowed for better nutrient absorption.

Note - many gardeners have reported that a one inch later of good compost and topped off with 4-5 inches of hay gave the best results (increased yield and flavor). Dried hay combined with compost would have similar properties to the mowed vetch hence the above research may explain part of their observations.