

MULCH CORNER

WOOD CHIP MULCHES (SINGLE SPECIES)

By John Ferguson

Last week we talked about using compost as a mulch since we had some questions on the subject. This time we are going to continue our discussion on some of the other types of organic mulches a gardener may want to use.

Sometimes recyclers will grind up one single species of tree into chips that can be used as mulch. Research has shown that these types of mulches may retard the growth of some species of plants. As mulch decomposes it releases chemicals that affect plant growth, good or bad.

Cypress - Cypress mulch became popular during the first part of this century for two reasons ; it is very rot resistant and would last for years (just the opposite of what plants require for good health) and the heartwood of a mature tree is pink (our first colored mulch). It takes decades for a cypress tree to mature enough to get the colored heartwood hence it is not sustainable. Mulch producers dredged up old cypress trees from the bayous around New Orleans to make mulch out of them and this significantly added to the flooding after the hurricane as the storm surge could move in much easier without the trees blocking the flow. The old cypress trees have been used up and we get plantation grown trees now. These young trees do not have the colored heartwood and have a very high C:N ratio of close to 500:1 which causes nutrient tie-up problems. Studies have shown that Cypress mulch slows the growth of a range of woody plants such as hydrangea, spirea, viburnum and compared to plain pine bark which is a low quality mulch.

Eucalyptus - Eucalyptus mulch most commonly is made from *Eucalyptus grandis* and has been found to be phytotoxic to the germination of a range of seedlings. It is plantation grown which reduces native habitat for wildlife, it is slow to breakdown, has a very high C:N ratio, does not support a wide range of beneficial microbes required for good soil health and generally bad for plants in hot moist humid areas like the gulf coast.

Black Walnut - This mulch (*Juglans nigra*) inhibits the growth and even kills some plants. It contains the toxic chemical jugalone which is a known herbicide.

The Tree of Heaven - This tree (*Ailanthus altissima*) has been found to contain the allopathic chemical Ailanthone which is known and used as a herbicide.

Straw - "Straw" is the dried stalks of grains (which are actually types of grasses) after the seed heads have been harvested. Straw often has a shiny pale gold color and is a good mulch for many purposes. As it breaks down it encourages a good balance of beneficial bacteria and fungus that many of our common vegetables require. It is generally applied 4-5" deep in ornamental beds and 8-10" in vegetable beds. It protects soil, improves soil as it breaks down, offers good winter protection. Researchers have found that Colorado potato beetles had a much more difficult time finding potato plants mulched with straw as compared to un-mulched plants (other research has shown significantly less eggs and larva also). The whitish reflective nature is also beneficial. It is reported to protect tomatoes against soil dwelling diseases.

Hay - "Hay", which is used to feed animals, is a mixture of grasses (and sometimes clover), that is cut dried and baled with the seed heads intact (includes any weeds present). Hay is often a dull brownish-green color. Hay can be used as a mulch but the seeds in it often germinate becoming weeds. Apply 3-4" deep in ornamental beds and 5-6" in vegetable beds. It will protect the soil and improves soil as it breaks down, and is good for winter protection. Many hay fields are now sprayed with a herbicide called picloram which is sold under the brand names Grazon and Tordon. This herbicide is used to kill broadleaf weeds and persists in the environment on the hay. It is reported that if hay has been treated with herbicide is later applied as mulch, the treated hay will still kill many plants (even trees) years after application. To test the hay to see if it is safe to use as mulch, place some in at least a 1 gallon bucket and soak in water for a few hours. Next pour the liquid on any broad leafed plant and see if they become stressed or die. Peanuts and beans are very sensitive hence make good indicator plants. When contaminated hay is used on plants they will have more insect and disease problems even if they are not killed outright.

Newspapers (and other paper products) - they work best if shredded first and apply 4-6" thick. It is generally free and can protect plants from frosts. Research at the University of Vermont has found a 6" layer of shredded newspaper exceptionally good at suppressing weeds for up to nearly 2 years. Best used as a special purpose mulch. Note: Avoid colored paper as some inks may still contain toxins and heavy metals. Most colored inks used on newspapers are now safe and biodegradable however unless you know for sure it's better to be safe.

As part of the recycling effort, pelletized newspaper is available in some areas and should be a fair quality mulch if not contaminated. Sometimes available in different colors and with fertilizer added. Often recycled paper mulches contain toxic forms of aluminum that leaches into the soil and prevents

plants from absorbing phosphorus hence greatly reducing the plants growth. This problem becomes worse on acid soils. Repeated use often leads to aluminum toxicity in the soil.

"Kraft Paper", the kind of brown paper that grocery bags are made from and cardboard are more effective at preventing weeds than newspaper. Two sheets thickness of Kraft paper or 1 layer of cardboard will work well. A two year study at Ohio State University has found that 6-8" shredded newspaper increased yields of sweet corn, soy beans, and tomatoes over bare ground (unmulched) or 6-8" of straw. A University of Missouri study found that raspberries mulched with shredded newspaper out performed those with black plastic mulch or those without any mulch.

A group of market gardeners found that Kraft paper brushed with used cooking oil warmed the soil by 60F while black plastic only raised soil temperature 30F. Also in a few weeks the warming effect of the coated Kraft paper went away preventing the soil from getting too hot. The Agricultural Research Service has found that brown Kraft paper coated with soybean or linseed oil, has all the advantages of plastic mulch but costs less and degrades harmlessly in a few months with no mess to clean up.

Kraft Paper - Medium quality mulch used 1-2 layers thick. Easy and quick to apply, combines some of the benefits of plastic with those of organic mulches, made from recycled material, breaks down easily. It can be applied by mechanized equipment which is useful for large applications. It is expensive as compared to other mulches. Air and water does not penetrate as well as loose mulch but better much better than plastic, as with plastic the edges need to be secured. It tends to break down in less than 1 season allowing weeds to grow through. Some light will penetrate allowing some weed seeds to germinate as compared to other mulches. The weeds can generate enough force to tear the paper away from the soil within a few weeks of planting (Journal of Sustainable Agriculture, V13,#2). This is relatively new to market, only lasts one season at best, limited research published at this time. One study indicates that Kraft paper is more effective in short season areas compared to hot weather areas with high rainfall. Kraft paper is becoming available in various colors like black (allows warming of soil for earlier crops like black plastic but is biodegradable).