



## Why are some mulches so cheap!

In Houston there are many types of mulch available at prices very cheap to over \$40 per cubic yard. *The real question is why are some of these mulches so cheap?*

Many vendors **cut quality in many ways to reduce price** and the customer ends up suffering the consequences and added or hidden costs.

1) Modern soil science tells us that good healthy fertile soils with high productivity and low insect and disease pressure have 30 carbon atoms to one nitrogen atoms. This is known as a 30 to 1 carbon to nitrogen ratio (C:N = 30:1).

All organic materials that were once alive have a C:N ratio. For example bark mulches (both pine and hardwood) have a C:N ratio of near 500:1. Colored or dyed mulches use dry raw wood to absorb colorant and have a ratio of over 300:1.

The first problem a landscaper or gardener encounters is nature will break down these mulches over time but it requires a lot of nitrogen. To do this the microbes use nitrogen in the soil taking it away from the plants. As a result the plants become stressed resulting in increased disease and insect pressure. To reduce this problem requires a lot of toxic expensive synthetic fertilizer resulting in hidden costs and which creates other problems.

The 2<sup>nd</sup> problem a landscaper or gardener encounters is both plant and soil diseases. Barks have chemicals in them to kill microbes and prevent decay. These chemicals include turpentine's, phenolics, tannins, etc. that kill the good microbes needed for plants to be healthy and absorb nutrients from the soil. Without the good microbes the pathogens have no natural control and expensive and toxic fungicides are required. Again, another hidden cost.

Third, pine bark mulches tend to float away in a rain and make a messy situation that customers do not like. Hardwood bark mulches tend to become hydrophobic and repel water keeping it from entering the soil. They also seal the soil with ugly fungus mats and slimes preventing air (oxygen) from entering the soil. Again we get increased disease, drought stress (wilting), poor growth and increased insect damage. Again this requires expensive and toxic pesticides to control the problem. A lot of plants die and require expensive replacement (another hidden cost). Microbial inoculants will not work well as the chemicals in the bark kill off the good microbes almost as soon as it is applied. To offset the lack of water entering the soil, expensive irrigation must be run frequently to water the beds. The excess water runs off into the lawn creating conditions that favor brown patch and other turf diseases.



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Forth, to darken or color the mulches toxic chemicals and dyes must be used. Boiler ash is a hazardous waste that is commonly used to chemically burn mulches black over night. It is very alkaline, contains a lot of salt, and toxic to many species of plants. Black does not occur in nature under healthy conditions. Black only occurs in nature when anaerobic conditions are present a process better known as fermentation. Fermentation causes alcohols to be produced and as little as 1 ppm of alcohol kills plant feeder roots. This again causes poor plant growth, loss and additional expenses. Many of the colorants used also contain heavy metals that are toxic to humans and pets. They are some organic dyes available but they are much more expensive and the mulch will have to sell for over \$40/cy to cover the increased costs.

**Native Mulches** are generally recognized by soil scientists as the best type to use. However, even in this category many vendors take shortcuts that results in a inferior low value mulch.

1) The trunk of the tree and larger limbs will have a C:N ratio of 300:1 or more which creates the problems listed above. The smaller branches and limbs will have a 90:1 ratio which is much closer to the correct amount. The reason deer, beaver, squirrels and other animals eat branches and limbs for food is that it is full of nutrients such as minerals, protein, vitamins, enzymes, etc. The large wood does not have the nutritional benefits of the smaller material. To save money most vendors use the whole tree and large limbs as it creates a lot more mulch to sell. It also costs more to separate out the low value big wood from the smaller branches and limbs and most vendors do not want to do this important extra step.

2) Some vendors due not compost the native mulch and use boiler ash to darken it again resulting in the above problems and hidden costs.

3) If the native mulch is composted *long enough* it will turn a beautiful deep chocolate brown color and the cambium layers of the limbs and the leafs turn into a rich compost. The heat of the composting kills all the weed seeds that might have been present and all any pathogens. The composting process allows the beneficial microbes required by all plants to increase to very high densities to help create good soil structure and prevent disease. It also provides a medium that microbial inoculants can thrive in. It provides food for earthworms that aerate the soil, reduce compaction, and eat weed seeds, kill soil diseases, and kill human pathogens like e-coli, etc. Composting the mulch requires both time and money plus storage requirements and management of the piles while the composting process is going on. The composting process is similar to making a good wine (cheap grape juice versus a good valuable flavorful wine which take time to age properly).

Most vendors do not do this extra step as it costs money and they do not care about the results or problems landscapers and gardeners experience.



4) Many vendors just grind the trees and sell the mulch. Better vendors after composting will pass the mulch through a screening process that removes all the larger pieces and results in a beautiful uniform mulch. Most vendors skip this step to reduce their costs and leave it to the landscapers or gardeners to incur the cost and headaches of removing unsightly pieces.

5) The soils in around Houston tend to be low in the nutrients calcium and sulfur and have lots of salt (sodium) in them. All plants require sulfur and calcium to grow strong and healthy. Many weeds grow best in soils low in calcium. If calcium is present it will replace sodium in the soil allowing the sodium to leach away creating a better soil for plants to thrive in. The extra calcium also allows for the nutrients in organic fertilizers to be absorbed by the microbes and on the cation exchange capacity of the soil particles and humus. Hence the organic fertilizers become more effective. Better vendors will add calcium and sulfur to the mulch as it is composted so it is incorporated by the microbes and available to the plants. This extra step costs more but it results in a much more valuable mulch that eliminates many problems for landscapers and gardeners and helps produce a beautiful and healthy landscape.

6) A composted native mulch readily allows water and air to enter the root zone reducing water requirements and helping prevent root diseases. Again preventing a landscaper or gardener problems and saving time and money as a result.

As in all products one gets what they pay for. Experienced successful landscapers and landscape architects cannot afford the hidden cost of using cheap low value products if they want to make money and have happy customers.