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MULCH CORNER

MULCHING PITFALLS PART TWO

By John Ferguson

This week we continue with gardening issues
associated with mulch. Previously we talked about the colored and ashen mulches being sold in and around Houston.

Last week I was asked if I could go into more detail as to why and how the barks and the colored or ashen mulches cause so many problems.

It starts with the soil and what plants require. Researchers have found that healthy fertile productive soils, with low insect and disease pressure all over the world have one thing in common, they have a carbon to nitrogen ratio (C:N) of 30:1 which means that there is 30 parts carbon for every part nitrogen. This ratio is a constant that we frequently see in nature (protozoa, earthworms, birds, humans, etc.).

1) To make the colored or ashen mulches the wood must be very dry hence old pallets, scrap wood, tree trunks, etc. will be used. These type materials contain very little nitrogen and have carbon to nitrogen ratios of 500:1 or more!

The microbes in the soil always eat first (use whatever nutrients that are in the soil to grow and reproduce) before the plants can get their share of nutrients.
For microorganisms to break down these type of mulch products with very high C:N ratios, they must use up all the available nitrogen in the soil leaving the plants very nitrogen deficient and stressed. This condition causes the plants to become much more susceptible to insects and diseases.

2) Barks whether Pine or Hardwood all have a C:N ratio of 500:1 to over 700:1. A question I love to ask when I am teaching is "Why does bark not rot on the tree?"
The obvious answer is that barks contain chemicals to kill microbes. In nature when a tree dies and falls over there is only a small amount of bark that is scattered over a large area thus it does not cause any problems. We have been taught to apply bark 3-4 inches deep around plants. This scenario does not occur in nature. As a result several things happen; first a lot of the microbes that prevent soil diseases are killed off by the

chemicals in the bark (turpentine's, waxes, phenolics, tannins, etc.) and secondly the high C:N ratio causes plants to become stressed as in the first case with the colored and ashen mulches.

A question I often hear is, "How did this practice of using bark mulches get started?" It started 40 years ago or so when we had millions of cubic yards of bark that had accumulated for years in East Texas as a result of the lumber and paper industry. These huge piles of bark had been sitting there for years essentially composting. As a result the toxic chemicals had been broken down and the C:N ratio had dropped to less than 100:1 as the material decomposed over the many years which resulted in a useful product. This stockpile of decomposed bark was used up many years ago hence all we have now is fresh bark. This is why some companies add boiler ash to chemically burn the bark dark so it resembles the composted bark of years ago so they can deceive customers into buying it.

Note: For comparison, good mature compost will have a carbon to nitrogen ratio of about 20-25:1 that plants love and a properly composted Native Mulch will only have a C:N ratio of 60-90:1. Hence they do not rob the soil of available nitrogen and have trillions of beneficial microbes in them.

An excellent source of information for homeowners and gardeners to learn more about the importance of soil biology in gardening is:

Teaming with Microbes, A Gardener's Guide to the Soil Food Web (Revised Edition), by Jeff Lowenfels & Wayne Lewis, Timber Press, 2006, ISBN-10: 1604691131; ISBN-13: 978-1604691139 Highly Recommended.