CONTRA COSTA MASTER GARDENERS

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# Wood Ashes Change Soil Chemistry

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## Adding wood ashes to Contra Costa soil or compost can negatively affect plants.

**SUMMARY**

**Gardening books and web sites may lead you astray with advice on using wood ashes as a soil amendment. Wood ashes can make our already alkaline soils even more so, and can also increase salinity. Both have detrimental effects on plants.**

If you are thinking about using those wood ashes you have accumulated over the winter in your garden or compost pile, proceed with caution. Though many gardening books and websites encourage homeowners to add wood ashes to garden soil or compost, in Contra Costa County, there are several good reasons why doing this may not be advisable. Too many ashes can cause an excess of alkalinity and salinity.

**Ashes May Increase Alkalinity:**

Contra Costa County has over 50 named soil series ranging from loamy sands to mucky clays, nearly all of which have a pH of 7.0 or greater. This is considered neutral or alkaline. Adding wood ashes, which contain 25% calcium carbonate and as a result are very alkaline with a pH of 10 to 12, increases soil alkalinity that creates an adverse condition for growing plants. Many plants prefer a slightly acidic environment to absorb nutrients from the soil.

When soil alkalinity increases and the pH rises, necessary minerals such as phosphorus, iron, boron, manganese, copper, zinc and potassium become chemically bound to the soil and are not available for plant use. In time, due to this change in the soil chemistry, plants will exhibit mineral deficiencies by producing abnormal leaves, stems and flowers. A common symptom of plants growing in alkaline soil is interveinal chlorosis, a yellowing of normally green tissue.

**Ashes May Increase Salinity:**

About 80 to 90 percent of the minerals in wood ash are water soluble. This means that when wetted these minerals wash out of the ash and into the soil in the form of salts, which are harmful to plants. This is especially true if ash is left in a lump as the leached salts are concentrated in one area. These salts contain less than 10% potash, 1% phosphate and trace amounts of micronutrients such as iron, manganese, bo-

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ron, copper and zinc, but they also contain heavy metals such as lead, cadmium, nickel and chromium, depending on the material burned. Seedlings in particular are very sensitive to salt injury and their growth can be stunted and their foliage turn yellow. In broadleaf plants, necrosis (death and discoloration of tissue) and defoliation can occur. Excess salts can also cause medium to fine soils to lose their aggregated structure, becoming impervious to air and water. Also, if fertilizers such as ammonium sulfate, urea, or ammonium nitrate are combined with wood ash, they produce ammonia gas, a severe respiratory irritant detrimental to the health of the gardener.

**Disposing of Wood Ashes:**

Before disposing of wood ashes, wait until they and the hot coals buried under them are completely out and cold. This may take several days. You may need to pour cold water over the ashes. Do not transport or store ashes in plastic or paper bags. While working slowly and carefully, use a metal tool to scoop the ashes and a covered metal pail to remove them from a wood-burning stove or fireplace and store them away from flammable materials. Do not place cold ashes in the green recycling bin. Completely extinguished ashes can be disposed of in the trash bin and placed at curbside on garbage collection day.

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