



# Woodchips, Sawdust, and Woodash for Home Garden Use

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The increased use of wood-burning stoves and fireplaces has prompted many inquiries concerning the beneficial or harmful effects of applying wood ashes, woodchips and sawdust to garden soils. Many homeowners are seeking disposal methods for these waste products. At the same time, active gardeners are seeking new materials to add to their soil to increase organic matter and improve tilth.

Both the vegetable garden and flowerbed can provide a disposal site, while benefiting the plants growing within. The key to success lies in understanding the composition of the materials, and which materials should or should not be used.

## WOODCHIPS AND SAWDUST

Wood residues have been used for many years to improve soil tilth. When mixed with garden soils, wood chips and sawdust make the soil more friable and provide an additional moisture-holding component. Wood is organic. It creates humus when allowed to decay in the soil. Because wood is high in lignin (fiber), it will produce more humus than most other organic sources such as green manures or grain straw. When woodchips and sawdust are used regularly, soil tilth, moisture and aeration of most garden soil is improved.

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Soil bacteria and fungi that decay and break down woody tissues require nitrogen for growth and reproduction. Soil containing large amounts of organic matter such as decaying wood residues creates a favorable environment for soil organisms. They utilize so much of the available soil nitrogen that garden plants are often starved. Therefore, it is necessary to apply supplemental nitrogen fertilizer to provide sufficient nutrition for garden plants when wood residues are used as soil amendments.

Common wood residues are sawdust, bark, woodchips and shavings. Some wood residues contain toxic substances that interfere with plant growth. However, if growth is poor, **the usual cause is lack of nitrogen**. Wood residues that are known to be toxic are **cedar** (juniper) and **black walnut**. The toxins they contain may severely limit growth, even causing death of some crops if the wood residue is used fresh. **Redwood** sawdust may react in a similar way until it becomes weathered.

Woodchips from hardwoods (maple, elm, ash, oak, etc.) should be composted 30-60 days to remove any toxic substances. Woodchips from soft woods (such as pine) have been used successfully without composting.

Compost woodchips and sawdust as follows: Form a pile, alternating 6-inch layers of wood material with 1-inch layers of soil. Keep moist and turn monthly. Fertilizer may be added to speed decomposition. When the material is spongy, dark, and decomposed, it can be worked into garden soil.

Following are recommendations for use of woodchips and sawdust:

(1) **Chip mulch on fruit trees and shade trees:** Use enough chips to give a covering 5 to 6 inches deep.

(2) **Chip mulch on berries:** A 4- to 6-inch mulch effectively curtails weed growth on raspberry plantings. A 3- to 5-inch mulch between strawberry rows is recommended. Runners will root in a sawdust mulch. Acceptable rooting will not occur in a coarse chip mulch.

(3) **Vegetables and flowers:** Apply 2 to 3 inches of sawdust or equivalent amounts of woodchips. Mulch

can be spaded in to build up soil organic matter. In general, when such a mulch is used, you should double the amounts of nitrogen applied in fertilizer. For instance, if 2 pounds of 6-8-4 fertilizer per 100 square feet is recommended with no mulch, use 2 pounds of 12-8-4 per 100 square feet following wood mulching.

Like other mulches, woodchips protect soil from erosion, stabilize soil temperatures, and reduce moisture losses. They save on labor costs by controlling weeds.

## WOOD ASHES

Wood ash and the ashes remaining after any type of plant is burned is of value to gardeners for the potash (potassium) it contains. It should be used dry. Potassium leaches from ashes readily, and rain-soaked ashes from an outdoor fire have little nutrient value. Coal ash contains little fertilizer but may have value as a soil conditioner or to aid drainage in heavy soils.

Wood ashes are comparatively high in lime content. They also contain some phosphorus, magnesium and small amounts of other elements — all of which are affected by leaching if the ashes are not protected from rain and melting snow. The composition of wood ashes varies considerably, depending upon whether they are derived from softwoods or hardwoods. Unleached hardwood ashes contain up to 6 percent potash, 2 percent phosphorus, and 30 percent lime.

Wood ashes may be beneficial to soil in moderation due to its soil-conditioning and aerating properties. Applying ashes to soil provides a method of disposal for this waste product. **Because wood ashes are high in lime (calcium) they should not be**

**used in large quantities on North Dakota soils**, most of which are already very high in calcium. One inch of ashes applied to the soil surface is a safe application rate. Repeated application of wood ash could result in accumulation of sufficient salts or calcium to cause toxic effects, especially on heavy textured, poorly drained clay soils.

Lignite coal ashes are high in lime and may contain substantial sodium. Sodium applied to soil increases puddling and crusting, water tends to run off rather than penetrate sodium saturated soils, especially clay-type soils.

## CONCLUSIONS:

(1) Woodchips and sawdust are beneficial to soil as a source of organic matter. Their high lignin (fiber) content is an excellent source of humus.

(2) Woodchips and sawdust from hardwoods (elm, maple, ash, and oak) should be composted 30-60 days to remove toxic substances. Softwoods (such as pine) may be used without composting.

(3) When using woodchips and sawdust in the soil, additional fertilizer must be applied. **When using large quantities of sawdust or wood chips in the soil (a 2-inch layer), double the nitrogen rate.** Composted sawdust or woodchips will require less additional nitrogen.

(4) Wood ashes do provide some soil aeration benefits in moderation. However, **since wood ashes are high in lime (calcium), large quantities could be harmful to North Dakota soils already containing excess lime.** Potential risks may outweigh the benefits. If a disposal is needed for wood ashes, one inch applied to the soil surface followed by tilling is a safe application rate.