

JOHN'S CORNER

Soil Amendments - Rice Hulls Ash-

By John Ferguson

Last week we talked about rice hulls as a soil amendment, so this week we are going to talk about another by-product of rice farming, rice hull ash. Many companies burn the rice hulls as a boiler fuel and the end product is rice hull ash. Worldwide there are millions of tons of ash produced that needs to be disposed of.

The volume of the ash varies between 17-25% of the rice hulls that were burned. The ash is mainly composed of silicon (Si) and carbon (C) molecules hence it is very stable in the soil. The ash can have over as much as 90% silicon dioxide (SiO₂) which is the same mineral that quartz is made of hence it is very inert. More commonly it is 65-70% silica with oxides of aluminum and iron that are also relatively inert in the soil.

The burning process changes the chemical structure and leaves the ash with a very high porosity that can reach 90%, hence there is a lot of pore space for water molecules to attach to or microbes to hide in. The ash is slightly alkaline with a pH of 7-9 and very fine in particle size (most often a fine dust similar to talcum powder).

Due to the high porosity and silicon content, it is often used as an amendment in making lightweight concrete, bricks, and other products. It is sometimes added to animal feed as a filler. It is also used as an absorbent due to the high porosity as the ash can hold many times its weight in water. Best usage would be in agriculture to help hold moisture in degraded fields.

Over the last few decades rice hull ash has surfaced several times as a soil amendment in the Houston area under different brand names, each making huge claims on how it works in horticulture to improve growth and plant health and usually at very high prices.



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Conclusion: Rice hull ash can be a useful soil amendment for many gardeners in small amounts. The most common usage is to mix it into a potting mix up to 5% by volume to increase its water holding capacity (Note: Rice hull ash works best with the low quality potting mixes sold at box stores and discount garden centers). It can also be tilled into heavy clays to physically change the soil properties before planting a new garden. It tends to be very messy to work with and should be lightly moistened before trying to use it. Provides very little benefit on good soil if any.

PROS:

- increases some potting mixes ability to hold water
- may improve soil physical properties
- may improve a soils aggregation, porosity, tilth
- easy to spread
- renewable resource

CONS:

- quality, type, and value varies greatly
- very dusty and dangerous to breath due to the high silicon content
- nutrient content is insignificant
- blows in wind and can create a mess
- limited availability.