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JOHN'S CORNER

Soil Amendments - Pumice

By John Ferguson

Over the years I have noticed that many of my gardening books and magazines have recommended pumice as an ingredient in potting mixes. So what is pumice and how and why is it used?

Pumice is a volcanic glass produced when lava (super heated molten rock) under high pressure with lots of dissolved gasses in the lava is erupted from a volcano. When erupted into the air at normal air pressure the dissolved gasses expand creating bubbles in the molten rock (think of what happens when one opens a bottle of soda pop or champagne). The rock quickly cools and hardens hence mineral crystals do not have time to form. We call this type of rock a volcanic glass. It is primarily composed of silicate minerals of aluminum, sodium, potassium, calcium, magnesium and iron.

Pumice is typically light in color ranging from grey to browns and even white, blue or black. Due to the air bubbles many types of pumice are lighter than water and will float. Porosity of some types of pumice can reach 90%!

Pumice is found all over the world in large quantities and is a very common type of rock. Pumice is mined, crushed and then screened into various sizes depending on the desired usage.

The Romans used a type of pumice mixed with lime to form a plaster-like concrete they used to build with that has lasted for centuries. It is found in many products: lightweight concrete, insulation and low density cinder blocks. It is also used in water filtration products, chemical absorbents, pumice stones in beauty shops, toothpaste, soaps and hand cleaners (such as Lava), horse stalls and in horticulture.

Plant roots require oxygen hence the high porosity of pumice allows carbon dioxide produced by the roots to escape, and air (oxygen) to enter the soil. Plants also require the soil to hold water, but excess

water needs to drain off. As a result, pumice is often used in soil mixes for growing orchids, cactus and succulents that have high aeration and drainage requirements. It is also used in growing many tropical plants (think of the lush tropical paradise of Hawaii where most of the soils are high in pumice and lava rock).

Another usage is as a mulch around some plants as slugs and snails do not like its rough texture and will not cross it to nibble on your plants. In arid areas it is often used as a mulch instead of other rocks or gravels due to its great insulating properties (keeps the soil and root zone much cooler).

In potting soils it is typically blended in between 10 and 50% by volume depending on the plant species and other components of the soil mix.

It is also used as an packaging media for storing bulbs and tubers. A University of Illinois study found that many of the properties of pumice to be similar to perlite in horticulture.

In some areas of the country it is used in soil media for green roofs due to its light weight.

PROS:

- will not break down (rot or decompose)

- does not compact

- gives beneficial microbes a place to live (bacteria, fungus, protozoa, nematodes, etc.)

- has no offensive odors

- aerates the soil or potting mix

- provides excellent drainage

- loosens the density of heavy clay soils

- neutral in pH so it does not change the acidity or alkalinity of soil

- free of pathogens

- reduces crusting , cracking and swelling of soils

CONS:

- for the Gulf coast it must be shipped a long way

- higher cost than other soil media with similar properties

- dries out quicker than other soil amendments

- has a low buffer capacity to prevent pH changes