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JOHN'S CORNER

Organic Fertilizers and Nutrients –13 Potassium Sulfate (Potash)

By John Ferguson

One of the major nutrients that plants require is potassium. It is listed as the third number on a bag of fertilizer (N-P-K). Potassium (K) is the soil cation required in the largest amount by plants and is very important. Large amounts of potassium are used by plants to regulate water movement, balance internal cation/anion ratios, in enzyme activation, photosynthate translocation, and protein synthesis. Potassium increase a plants tolerance of stress from frost to drought and heat. It also helps plants reduce stress from insect and disease.

There are many sources of potassium available to home gardeners and today we are going to look at Potassium sulfate (KSO_4) sometimes called potash. Gardeners have known for centuries the importance of potassium and created their own by taking wood ash (hardwoods work best) and boiling it in large iron pots. The liquid was poured off and allowed to evaporate leaving the "potash" that was rich in potassium.

There are two main sources of potassium sulfate today that are approved as an organic fertilizer. The first comes from lakes like the Great Salt Lake or Dead Sea. The mineral rich water is pumped into drying beds where the water evaporates leaving the minerals behind. This mineral cake is then washed with fresh water to remove the sodium (Na) and other impurities, and then processed for sale.

The second comes from ancient dried up ocean beds that form deposits known as "langbeinite" which have become buried under hundreds of feet of sediment. There is only a few locations around the world and one of the largest is near Carlsbad, New Mexico. The mineral is mined, washed and processed to remove sodium and then processed into various particle sizes for sale. Langbeinite is also sold as feed grade dietary source of potassium (K), magnesium (Mg) and, sulfur (S) for animals and poultry. Chemically langbeinite is ($K_2SO_4.2MgSO_4$) and is about 21-22% K_2O, 10-11% Mg, 21-22% S and is pH neutral.

In agriculture where crops are harvested and removed the potassium that was in them must be replaced. In most of our gardens where we grow ornamentals or turf grass there is not the same need to replace the

potassium as in agriculture. Also good mulches (i.e. native mulch) or compost can run between 1-2% potassium and as they decay they naturally provide this nutrient without the need for additional fertilizers. For example, according to the USDA, one cubic yard of an *average*compost will contain over 9 pounds of potassium!

NOTES:

One should not apply potash unless a chemical soil test report indicates that it is needed.

Smaller particle sizes are more water soluble and available to plants but cost more to produce.

Potassium chloride (KCl) is sometimes marketed as potash, however it is not certified as organic and the chloride portion is often toxic to plants and microbes.

SUMMARY:

Potassium sulfate can be a good organic fertilizer if it is certified as "Organic" and used only when needed. Best use is in an organic fertilizer where it is blended with other ingredients to make a more balanced and complete product. Other products are a far more cost effective method of adding potassium than potassium sulfate.

PROS:

- pH neutral hence does not affect soil acidity
- does not burn root systems
- used in better quality organic fertilizers
- relatively inexpensive
- works well ONLY IF REQUIRED
- several natural sources

CONS:

- some types are slowly water soluble
- too much can cause other nutrients to be locked up and unavailable
- must be transported a long way to the gulf coast

- rarely needed in local gardens as compared to agriculture
- many other local sources of K (compost, greensand, granite sand, etc.)