



GROWERS BULLETIN

ULTRA GRO PLANT FOOD COMPANY

Potassium

Potassium is an alkaline metallic element represented by the letter K in the NPK designation of fertilizer content. Actually the K value is for K_2O (potash). The name potash comes from pot ashes: wood ashes which have been a source of potassium since antiquity. It is mentioned in the bible as the word "meter". The symbol K derives from the Arabic phrase "Herba kali" which means burned plants; hence the Latin Kalium. Present economic sources of potassium are the Carlsbad deposits and brine lakes such as Searles lake at Trona, CA and the Dead Sea.

Potassium is available in a number of salt forms. About 90% of this potassium chloride (muriate), which is usually the cheapest. However, the chloride portion of the compound can have several negative actions in soil: chloride can decrease microbial activity in soil and it does add to the salt level.

Potassium is unique in that it does not form any compounds in plants. It serves as a catalyst for chlorophyll formation. This material brings about the combination of carbon, hydrogen, and oxygen from the air into plant materials by photosynthesis. Potassium plays a major role in the movement of carbohydrates within the plant. Without this action plants would be deficient in sugar, starch, and cellulose. As an example, sugar levels in fruit can be raised by several percent by a foliar application of K within the week preceding harvest. Ultra Gro 2-17-17 is an excellent example of such material. K plays a large role in obtaining size, color, and flavor of many fruits and vegetables, and is important in oil production in oil-bearing plants. There are also many examples of potassium's role in plant resistance to many diseases.

Potassium is a highly soluble cation with a single positive charge. This is similar to sodium. Ideally K

should have a 3% saturation in the cation exchange capacity. Over saturating of K can depress the uptake of calcium and magnesium in legumes. The presence of boron in soil can lessen these effects.

The pH of the soil and the organic matter content have a great effect upon both the recovery of K from locked up storage sources and use of natural mineral sources which may be applied. At pH above 6.5 there are few negative sites left on the soil colloid. Thus, it is very difficult for K to remove the hydrogen from the colloid and attach itself. Since K has only a single positive charge and is easily displaced from the colloid by both calcium and magnesium which have double charges. What this means is, at pH over 6.5 mineral salts of K will not be effective in building potassium levels and fertilizer blends should be used.

One problem with CEC levels of K exceeding 3% is that if the levels of K and sodium total 10% or more it interferes with manganese entering the roots of plants. Manganese is needed for grain formation especially soy and dry beans and wheat. Also excess K can tie up magnesium which is the co-factor for the chlorophyll molecule.

K helps get reserves into roots and is needed for winter hardiness, wall construction and cell development and reduces lodging of stalks. However if sodium is too high in relation to potassium, the plant will take up sodium into the cell walls. When the weather gets hot and humid, the sodium causes cell walls to break and this can kill the plants. This often shows up in legumes such as peas and beans.

K is required in the opening and closing of stomata which govern water usage and produces better xylem vessels in the roots of plants. Potassium is most

required by plants high in carbohydrate content such as sugars and starches. Where the entire growth is removed at harvest large amounts of K are lost. Potatoes, sugar beets and celery are examples of these. Corn, tomatoes, melons, orange, and most forages are also high K removers from the soil.

Written by Dr. Dominic Colasito for Ultra Gro Plant Food

Did you Know?

Many growers ask, “what is so different about Ultra Gro Plant Food, compared to regular liquid fertilizers?” The answer is, **ingredients**. Unlike many liquid fertilizers, Ultra Gro Plant Food ingredients are completely **safe** to seed and plant.

Our **Phosphorus** is food-grade 100% ortho-phosphoric acid. It is very pure and safe for the plant and is commonly used as a food ingredient. Our **Potassium** is food-grade potassium hydroxide. It is free of chlorine and is non-corrosive to equipment and storage facilities.

Ultra Gro provides a **readily available** phosphorus and potassium and contains several trace minerals plus several other complexes to make it the most **effective** starter fertilizer on the market. Also our products have very **low salt indexes** and low levels of chlorine which is a big factor in the utilization of the complete N-P-K mix. Because they are **highly soluble** they are also utilized in our **foliar** mixes.

Remember that so called “low cost” phosphate fertilizers are not always the best way to fertilize a growing crop, whether they are being applied to the soil or foliar.

For the highest utilization of N-P-K's and results, use **Ultra Gro Plant Food** in all your crops.