



Agro Services International Inc.

Fertilizers and Animal Health

Pasture growers are interested in feeding animals. Their main concern is not the appearance of the grass but its yield and nutritional value. A good fertilizer program must therefore address these two requirements.

Yield.

Nitrogen is possibly the most commonly applied nutrient as it is commonly deficient in pastures that do not contain legumes. Numerous studies have shown high responses to applied nitrogen with yield increases greater than 200 % being common.

Phosphorus and potassium are also important, the extent of the response depends on how serious the deficiency is. Applications of these nutrients have increased pasture yields by over 100 % in cases of serious deficiency.

The response to secondary and micro-nutrients can be as great as or greater than to the macro nutrients. There are records of yield increases of over 80 % due to magnesium fertilization, 40 % due to sulfur application and 45 % due to the application of copper and zinc.

Quality

High yields are of no value if the pasture cannot provide the nutrients that animals need.

A grass with the genetic potential to produce high levels of protein cannot do so without an adequate supply of nitrogen. In one experiment, nitrogen fertilization was shown to increase protein levels from 8.0 to 11.7 %.

Sulfur is a critical component of amino acids and therefore influences the quality of protein produced. Sheep fed a low sulfur diet experience loss of appetite, reduced gains, reduced wool growth and shedding wool. In one trial, lambs fed grass without adequate sulfur had weight gains of 46 g per day while those fed grass fertilized with adequate sulfur had weight gains of 144 g per day.

Phosphorus and its balance with calcium is critical for animal health. Animals fed with grass grown on phosphorus deficient soils suffer from loss of appetite, bone abnormalities, reduced growth, poor fertility, reduced milk production, weakness, and even death.

In animals, potassium helps regulate the nervous system, maintain healthy blood vessels, and muscle contractions including the heart. Pasture grass with low potassium levels has been shown to reduce feed intake in sheep.

Pasture grown on copper deficient soil can cause serious health problems in animals. In sheep it causes stillbirths, the birth of small, weak lambs and bone abnormalities. It results in poor general health and causes loss of condition and rough coats in cattle and ill-thrift, infertility and reduced milk production in dairy cows.

Grass grown on magnesium deficient soil leads to low magnesium levels in animal blood. This condition can cause tetany in cattle, a serious disease with symptoms including nervousness, decreased milk yield, staggering, twitching skin, convulsions, coma and death. Because of this, magnesium fertilizer is sometimes applied to pasture even when yield increases are not expected.

Improper application of one nutrient in the field can induce imbalances of other nutrients in animals. High levels of potassium or nitrogen fertilization and/or low levels of soil phosphorus reduce the magnesium level in the animal blood and can induce tetany. Excessive amounts of sulfur or molybdenum fertilizers (often applied to legumes) can reduce copper absorption in cows.

It is clear that a balanced pasture fertilization program is essential for optimum animal health. This involves the proper application of all of the required nutrients including secondary and micro nutrients. It is also necessary to apply only the nutrients that are needed as excess levels can reduce plant growth and induce imbalances in animals.

It is therefore not surprising that most agricultural institutions promote pasture fertilization based on soil analysis. It is not possible to select the proper amounts of nutrients needed without knowing the nutrient levels in the soil. Fertilizing by guess can have a serious effect on animal health.

Further reading:

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© Agro Services International Inc.
205 East Michigan Avenue
Orange City, Florida, 32763-2332
Tel 386 775 6601 Fax 386 775 9890
E-mail agro@agroservicesinternational.com
www.agroservicesinternational.com