

K-Mag AGRI FACTS

Brought To You By IMC — Producers of Quality Crop Nutrients

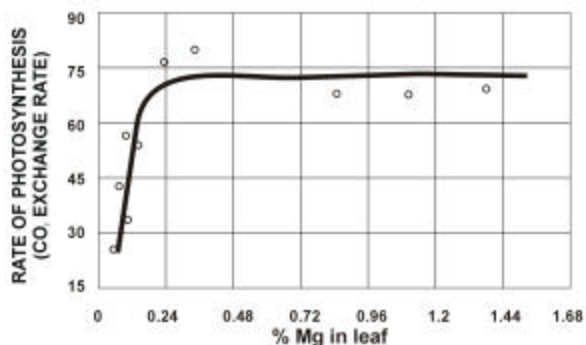
Fertilize Sugar Beets With K-Mag

K-Mag is an excellent source of magnesium for sugar beets. In addition to magnesium (11% Mg), this naturally-occurring product contains 22% potash (K_2O) and 22% sulfur (S). These essential nutrients are present in a water-soluble, highly-available form.

When we consider the roles of Mg in plant growth, it's easy to understand why K-Mag is so beneficial to sugar beets. Magnesium is a component of chlorophyll — the green coloring matter of plants. Chlorophyll is very important in plant growth because it's essential for photosynthesis, the process by which the plant combines carbon dioxide and water to form sugar. So when a plant is deficient in Mg, it is likewise deficient in chlorophyll, and its ability to produce sugars (photosynthesis) is reduced. This reduced rate of photosynthesis in plants low in Mg content has been conclusively demonstrated in a carefully controlled laboratory experiment — and the plant that was used in this study was sugar beet. (As can be seen in Figure 1 below, leaf levels of about 0.2% Mg, the rate of photosynthesis was markedly reduced.)



Figure 1. Effect Of Mg On Photosynthesis



Another reason why K-Mag is such an excellent sugar beet fertilizer relates to sugar beets very high demand for potash. Beets are frequently heavily fertilized with potash, and any time we apply high rates of potash, it becomes difficult for plants to absorb Mg. This effect of K on absorption of Mg is well known to plant nutritionists, and instances of K-

induced Mg deficiencies have been reported under a wide range of soil and cropping conditions. It is thus very important to maintain a proper balance between K and Mg, and this is especially true under high-yield conditions.

There really haven't been many experiments on Mg fertilization of sugar beets in the U.S. In Europe, however, many Mg field trials have been carried out. Several years ago an intensive study was conducted in Great Britain on a series of low-Mg, sandy soils. "Substantial" responses to Mg fertilization in terms of increased sugar production were observed. Results in Table 1 were typical.

Table 1. Effect Of Mg Fertilization On Yield Of Sugar

Mg applied (lb/A)	K_2O applied (lb/A)	
	120	240
0	51.4	56.1
40	60.0	61.7
80	61.2	59.2

What is the optimum application rate of Mg for sugar beets? That, of course depends on the Mg soil test level and yield goal. At a yield level of 30 tons of

beets per acre, sugar beets will absorb about 80 lbs of Mg per acre (about double the amount of phosphate absorption). That's equivalent to the amount of Mg in 730 lbs of K-Mag. Although we certainly wouldn't recommend such a high rate of K-Mag, this does point out the fact that sugar beets have a high requirement for Mg. Maximum responses to K-Mag on highly-responsive soils are usually observed at application rates of 200 - 300 lbs/acre broadcast. This rate can be about halved if the fertilizer is placed in the row at planting time.

Another way to look at K-Mag fertilization rates is to consider the ratio of K to Mg, because this ratio is so very important (as described above). Sugar beets absorb about 6 - 8 times as much K₂O as they do Mg. And this gives us a good "rule of thumb" when considering application rates of these two nutrients. Thus, if the recommended rate of K₂O application is 200 lbs/acre, apply Mg at a rate of 30 lbs/acre. These amounts can be approximately supplied as follows:

270 lbs K-Mag	=	30 lbs Mg	+	60 lb K ₂ O
230 lbs MoP (KCl)	=			140 lb K ₂ O
<hr/>				
Total		30 lbs Mg	+	200 lb K ₂ O