Retailer Bulletin **Jan 2013**

Wolf Trax Magnesium DDP

A new way to provide magnesium to your crops

Although fertilizer experts routinely refer to magnesium as a "secondary nutrient", don't let the term fool you. There is nothing "secondary" about the role that magnesium plays in the plant.

Magnesium – a critical element for all crops

Magnesium has many roles in plants but the central one relates to photosynthesis. In fact magnesium is the "beating heart" of the photosynthesis process in crop plants. Crops that are deficient in magnesium cannot photosynthesize efficiently. And since photosynthesis (the process whereby plants turn sunlight energy into sugars) directly drives yield, the impacts of magnesium shortages are felt in yield. This is particularly the case in "intensive" crop management – where growers use higher levels of N, P and K with high potential genetics.

Crops that are short of magnesium cannot move sugars from the leaf to other areas of the plant such as roots. The impact of this on plants is profound and can be seen in the photos in **Figure 1.** Note how the roots in the "low magnesium" plants are growing poorly versus those in the "adequate magnesium" plants. Also note that a grower walking through a field with this root development issue would not know that it was occurring because top growth appears to be "just fine".

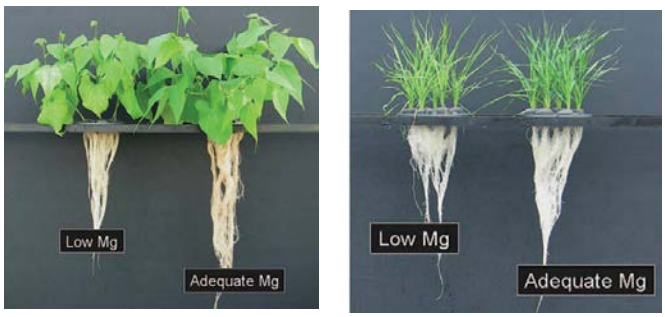

Figure 1 – Magnesium deficiency on crops – normal looking above ground growth but poor root development where Mg is deficient.

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Past efforts at feeding magnesium to crops – and the need for a better tool

In the past, growers used one of three fertilizer strategies for making sure their crops had adequate magnesium; (1) adding magnesium through adding Magnesium Oxide granules to their NPK blends, (2) adding magnesium in a two-way mix with potassium (K-Mg mixes) or (3) as an added element in lime through use of Dolomitic lime (dolomitic lime contains magnesium carbonate). All three have advantages and disadvantages, in terms of convenience, handling and availability. However, each contains only one form of magnesium, and there is much need for improvement in terms of getting magnesium to the crop early – when seedlings are young and emerging. As well, quality issues with some formulations have meant problems with "wet" fertilizer (some K – Mg combinations) and wide variability in particle size (some formulations of Mg Oxide).

Figure 2 – K and Mg mixes – some formulations can cause "wetting" in fertilizer.

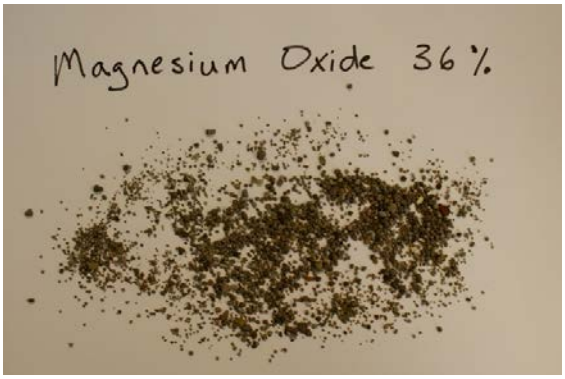

Figure 3 – Magnesium oxides – great variation in particle size in some formulations means poor distribution in blends.

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Wolf Trax Magnesium DDP coating– handling, uptake and crop benefits

Wolf Trax Magnesium DDP is applied as a coating on N, P, K or combinations. The product contains three forms of Magnesium plus surfactant designed to ensure even coating, good availability and to prevent "wetting" of fertilizer as has occurred with other Mg sources. The chart below summarizes performance data and observations from trials and handling tests for the product.

Three soil applied magnesium choices

Characteristic	Magnesium DDP	K Mg combination granules	Magnesium Oxide
Formulation	**Three forms of Mg** in Wolf Trax Magnesium DDP with surfactants and drying agents to maintain dry blends (30 percent). **Very dry** – no "wet fertilizer" issues.	One form of Mg. Granular formulation mixed in with N, P and K granules. Variable particles size means that it can be difficult to get even blending.	One form of Mg formulated as a granule with K. Some formulations may increase risk of "wetting" in fertilizer blend
Application technique	Apply as a coating on NPK to ensure **early uptake** of Mg as the crop emerges and grows	Apply in a mix (20 to 80 kg per tonne or 40 to 150 lbs per ton)	Apply in a mix (rate dependent on crop)
Uptake	Crop takes up Mg **every time** it accesses N, P or K.	Crop uptake occurs when the crop encounters a granule of Mg oxide.	Crop uptake occurs when the crop encounters a granule of the K/Mg granule.
Crop benefit and performance relative to one another	**Increase in early crop growth** – 22% total fresh weight of soybeans, up to 13% in corn.	Data on early uptake indicates that **Mg DDP outperforms** K/Mg formulations – 639 ppm in Mg DDP versus 572 ppm in K/Mg formulation	Data on early uptake indicates that **Mg DDP gave 9 percent more uptake** than Mg Oxide despite being used at a much lower rate

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For more information on the Wolf Trax DDP family of Innovative Micronutrients, please call toll free 855-237-9653, or visit us at www.wolftrax.com.