STOLLER
ENTERPRISES, INC.
4001 W. Sam Houston Pkwy N., Suite 100 Houston, TX 77043
Phone: 713-461-1493 FAX: 713-461-4467 www.keylate.com

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TO: Stoller Consultants

FROM: J. H. Stoller

SUBJECT: The Importance of Potassium and Magnesium During Stress Years

Research has shown that the deficiency of potassium or magnesium can increase the level of putrescine in plant cells by six-fold.

It has been increasingly evident to me that the accumulation of putrescine in the plant is more detrimental to plant cell functions than it is the accumulation of high levels of ethylene. Normally, both ethylene and putrescine build in the plant cell during the same type of stress conditions.

We have continually tried to explain why the side-dress application of potassium and magnesium to the corn plants has such a profound effect during drought stress conditions. It tended to keep the plant alive for a longer period of time and gave incremented yield increases in the range of 10-20%.

It now appears that the addition of potassium and magnesium prior to the reproductive stage in corn plants (or any other plant) could be the relief of plant stress due to high build up levels of putrescine.

The only other way to decrease the level of putrescine during stress years is the conversion of it into either spermine or spermidine. This is done through the use of ReZist.

One could make a good argument that treatments of plants during stress conditions should have an abundance of potassium and magnesium applied as a side-dress, a top-dress, or foliar applications of both potassium and magnesium.

One could also make a good case that during stress conditions, one could foliar apply ReZist.

If stress conditions persist on a crop, generally there is not enough time or equipment to side-dress or broadcast potassium and magnesium during the short window that is necessary in order to cover the numerous acres. This would make foliar application the only viable way to do so.

While one is conducting the foliar application of both potassium and magnesium, it would be very easy to apply 1 pint per acre of ReZist along with the potassium and magnesium treatment.

It has been noted over the last several years that the use of Harvest More Urea-Mate has had an economical yield impact on soybeans during stress conditions. This may be due to the fact that it contains 27% potash plus 2% magnesium.

If the above is true, the ideal foliar application for crops during stress conditions would be the use of Harvest More Urea-Mate in combination with ReZist.

JHS:kd