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: Plant Stress

After completing a great many hours, over the period for the last six months, the investigative research has shown that all plant stresses happen and result in the following manner:

1. Proteins are hydrolyzed to ammonia and ammonium in the plant tissues. These products would, of course, become toxic if they were not scavenged in the plant during the stress period.
2. The ammonia and ammonium are scavenged inside the plant and formed as an amino acid called arginine.

   (As one can readily see, the more nitrogen that is applied to any plant, which increases the level of protein, will result in a greater stress due to the build up of ammonia and ammonium.)
3. The arginine is then converted to putrescine. The putrescine is the actual toxic product within the plant. It occupies the binding sites in the cell membrane, which is normally occupied by calcium. The plant then becomes calcium deficient in each cell membrane.
4. The more calcium that is in the plant cell membranes, the more putrescine that it takes (more stress) in order to replace the calcium. It will, however, do so if the stress period is great enough and long enough. No amount of calcium will protect the plant against stress.
5. It is imperative that the putrescine that accumulates from the stress be further decomposed into spermine and spermidine (polyamines). The only way that I know how to do so is with the application of ReZist + Stabilizer.

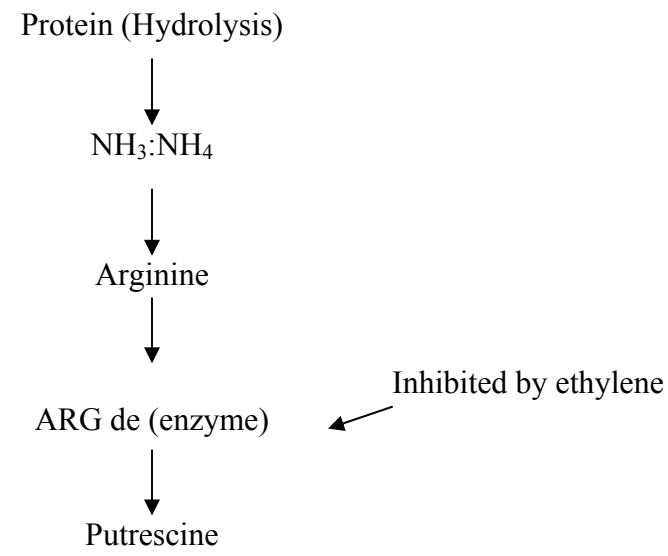
If the above model has any fact, ReZist + Stabilizer should be foliar applied at 14 day intervals. The application should begin when the plant is small and continued up to harvest.

If the target crops will not support this type of a program, then it should only be used during the stress periods of the season. You must be aware, however, that the plant will never become a perfect functioning organism unless this is done on a continual basis for the plants whole life.

If the above is correct, this is a major and significant breakthrough in understanding plant stress and how the plants can adapt to the environmental changes.

JHS:kd

PLANT STRESS

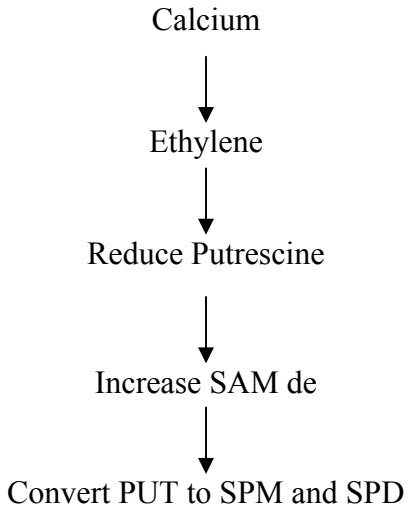


A. Attaches to membrane binding sites.
B. Replaces calcium on binding sites.
C. When converted to SPM and SPD,
D. Calcium can return to some binding sites.

Calcium produces ethylene to inhibit stress formation (above) of putrescine.

Plants always increase ethylene in response to stress due to any factor.

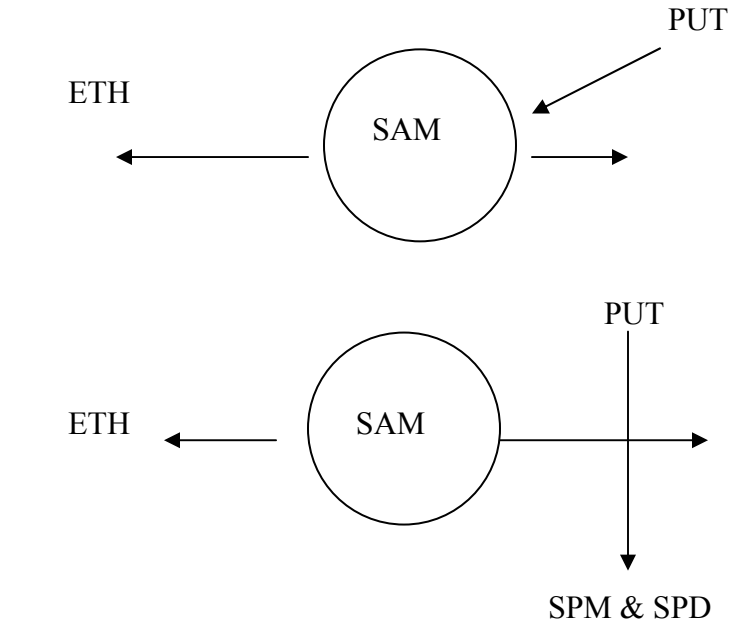
Modes For Stress Resistance

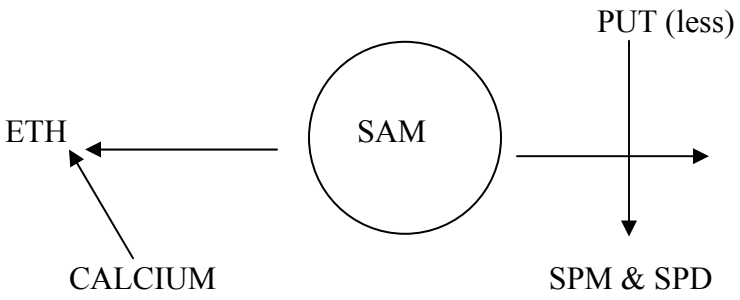


The extremely high levels of PUT, during stress, cause weak cell membranes.

Effectiveness of ReZist

Only when excessive PUT is present.





Ethylene is increased by auxin
and
Calcium, which causes auxin transport.

Stress ethylene is caused by the significant amount of
PUT, which results from hydrolysis of protein.

ReZist is only necessary to control stress ethylene…not regular ethylene.

Will continuous small doses of ReZist maintain a balanced SAM
cycle by not allowing high amounts of PUT to accumulate?