



STOLLER ENTERPRISES, INC.

...World leader in crop nutrition...

Which Function Has The Greatest Effect On Yields? – Growers Meeting, Holland on May 20, 2003 - Page 1 of 2

Which Function Has The Greatest Effect On Yields ... Rate Of Photosynthesis Or Transfer Of Photosynthates From Leaves To Seed?

The major reason that fertilizer is used is to increase the rate and amount of photosynthesis. As the plant makes more food in the leaves, there will be more food for the filling of seed. There is a lot of research that proves this fact.

Yet, many growers will declare that fertilizer does not act the same way every year. Big plants often have smaller yields. Plants which receive higher fertilizer treatments often do not yield more than plants with lower rates of fertilizer.

How often do we hear, "The highly fertilized plants look a lot better ... but there was no Yield difference" Why?

Photosynthates are transferred from the leaves to the stalk or stem. They then move to the Seed. When this process begins, roots begin to die.

The seed can only "accept" a limited amount of photosynthates per day. This depends on the size of the tissue that carries photosynthates into each seed. Each seed can only size so much a day ... under the same conditions. If the plant has more seed, the amount of photosynthates will be divided among more seeds ... each day.

It appears that the total amount of photosynthates is limited to the seeds ... each day ... under the same conditions.

If roots die early, the number of days that seed fill will be limited. It makes no difference if leaves make more food. If plants die early (under stress), the number of days to fill seed are limited. The lower rate of fertilizer will provide the same amount of food to the seed as the higher fertilized plants. The yield difference will be small.

On the other hand, if plants do not "early die", the highly fertilized plants will have more food to transfer to the seed. The yields will be higher.

Under stress conditions, plants will "early die." Fertilizer has much less effect upon yields. Leave usually have enough food for the seed ... for the limited days for seed filling. Return on fertilizer cost is less.



STOLLER ENTERPRISES, INC.

...World leader in crop nutrition...

Which Function Has The Greatest Effect On Yields? – Growers Meeting, Holland on May 20, 2003 - Page 2 of 2

Under non-stress conditions, the amount of food that is produced in the leaves is very important. The seeds have more days to fill. The seeds can use more food from the leaves. Return on fertilizer cost will be greater.

If it is desirable to get more consistent yields and always get a higher return on our fertilizer, we must have more days to transfer the photosynthates from the leaves to the seeds more effectively.

In order to do this, we must learn to control "early dying" of our plants.

Every day that the plant stays alive during seed filling, yield can be increased 4% to 6% *per day*.

The early dying of the plant is a hormonal problem that is caused by stress. If stress is controlled, the problem is controlled.

This is the Language Of The Plant.