

The Language of the Plant - Part I

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Getting to the Root of the Matter

The first organ that appears on the seed when it germinates is a root. It is the cell division and the cell differentiation in this root that will dictate how the plant grows for the rest of its life.

All plant nutrients are absorbed by the newly formed root tissue of a plant. This is the only part of the roots that can absorb nutrients. If the root does not have continuous growth, it is impossible for the plant to absorb nutrients from the soil or soil and water.

It is only in the new tissue of the root that the plant synthesizes four of its five major plant hormones. If the root does not have continuous new growth, the plant cannot maintain hormone balance all over the plant for normal development.



After plant seed germinates, it undergoes a vegetative growth stage. It is during this vegetative growth period where rapid root growth occurs. Many roots and root hairs develop during the vegetative growth stage. The roots are primarily lateral growing roots. They rapidly absorb nutrients as new tissues develop at the tips of all of the roots.

After a plant flowers or pollinates, root growth is substantially decreased. As the reproductive growth stage

advances, the root systems tend to decline at a greater rate. Therefore, there is less nutrient uptake by plant roots during the reproductive growth stage than there is during the vegetative growth stage of any plant. This is why nutrient insufficiencies will primarily occur during the reproductive growth stage of any plant.

The classical method of making new fertilizer nutrient recommendations is to soil test and determine the level of nutrients that are in the soil. Then, adequate fertilizer is applied to the soil in order to guarantee nutrient uptake for the plants complete growth cycle.

Is this true? *No.*

This is not true because the root system during the reproductive growth stage can decline at such a rapid rate that it cannot absorb an adequate amount of nutrients - regardless of how high the soil tests and nutrient applications indicate.

The most essential part of plant growth that will ultimately determine the degree of growth is the maintenance of aggressive root growth during the plants life. This is particularly important during the reproductive stage of growth.

Any plant goes through a tremendous hormonal change as it transitions from the vegetative growth stage to the reproductive growth stage. This begins at flowering or pollination. If there is not continuous new cell division at the root tips, the plant will become hormonally unbalanced. This can be easily observed from the lack of flowers, retention of flowers, and retention of fruit. The hormonal imbalance of a plant will also limit the



Jerry Stoller is the President and CEO of the Stoller Group. In agri-business for over 40 years, Stoller is dedicated to helping producers enhance crops by maximizing the genetic expression of plants.

amount of seed formation and seed quality. The lack of hormonal balance will also result in malformed fruit or

fruit with numerous physiological malformations. The ability of the plant to maintain aggressive root growth is primarily determined by climatic factors. Soil moisture availability, adequate temperatures, and plant population

will normally (lack of sunlight) will normally determine how plant roots will grow and the sustainability of plant root growth. Therefore, it is becoming increasingly evident that plants should be treated in such a manner that they will be able to more easily adjust to the changes in soil moisture content, be able to adjust to a change in temperatures, and be able to adjust to the shading effect that occurs in high plant populations. This should be the ultimate goal to achieve maximum yields for any commercial crop that is raised by growers. ❖

Stoller, headquartered in Houston, Texas, is actively researching and developing plant performance products in more than 50 countries.

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