Stoller Enterprises, Inc.

Nitrate Balancer

9.0% Boron (B), 0.005 Molybdenum (Mo)

NITRATE BALANCER controls the effects of excessive nitrate in plants and increases the flow of sugars from leaves to fruit / seeds / storage tissue.

When plants take up an excess of nitrate nitrogen (due to weather conditions, moisture conditions or high application rates of both organic and inorganic nitrogen) the plant produces hormones that encourage vegetative growth, and reduce the plants ability to transport sugars out of leaves. This limits the plants ability to send sugars to the seeds / fruit / storage tissue that usually constitute the crop. It also makes the plant go into 'vegetative growth mode'.

NITRATE BALANCER works in two ways. Firstly it promotes the conversion of nitrate Nitrogen into other forms of Nitrogen that give higher yields and fruit filling not rank vegetative growth. Secondly it improves sugar transport and metabolism, and seed and fruit development.

Using **NITRATE BALANCER** will increase the size and quality of the parts of the crop that are harvested. This means valuable nutrients are producing profit - not being used for the growth of other parts of the plant.

NITRATE BALANCER can be used throughout the season to control excess growth; pre-harvest to bulk up tubers, grain, or fruit; or post harvest to send sugars into woody tissue prior to dormancy in trees and vines.

Benefits of **NITRATE BALANCER** include:

- Stops rank vegetative growth in trees, vines and agronomic crops.
- Improves sugar transport.
- Higher yield
- Better quality
- Disease resistance

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NITRATE BALANCER ON POTATO

FASTER BULKING and BETTER SKIN SET

Tuber development on a potato plant is similar to the development of a foetus in an animal. The foetus receives its nourishment from its mother and has a growth period (gestation) dictated by genetics.

The growth of the tuber begins when the stolon starts to swell. If there is proper nutrition, and the mother is not stressed, the stolon becomes a tuber. If not, it aborts.

Sucrose for Growth

As long as the mother plant sends bountiful supplies of sugars to the tuber, it grows rapidly. It will continue to grow and develop throughout gestation period, preparing for the separation from the mother's supply of nutrients. This development is dictated by *hormones.*

It's important to realize that the tuber is juvenile until it approaches the end of its gestation period. Its skin set is not tightly set and the level of starch in the tuber is lower. It is still in the growth mode, which is controlled by *hormones.*

Transporting Sugar

Transfer of sucrose form the leaves to the tuber is vital. Normally, leaves make more sugar than their ability to transfer it…*before the period of senescence* (the period from full maturity until death.) This inability is due to the lack of membrane permeability through which the sugars must move.

In other words, it's difficult for the sugar to get out of the leaves. High levels of nitrates in the leaves will add to this problem. If the membrane become more permeable, more sugar will move out of the leaves…before leaf senescence. This is a hormone-controlled process. The result of more movement from the leaves is → *more tubers and bigger tubers before the normal bulking period.*

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What Dictates Skin Set?

As mentioned above, the hormone balance in the mother plant dictates the juvenility of the tubers. When the plant is killed early for table stock potatoes or for seed, the tuber has not yet reached its gestation age…it still has a young one's hormones and skin set is more of a problem. If the mother plant is growing vigorously (hard to kill), the skin set problem will be even more sever. This, again, is dictated by *hormones.*

Nitrates: The Road Block

Both functions, faster bulking and skin set, are related to the control of IAA (Auxins) from the growing points of the mother plants stem and the control of nitrates in the leaves. **Nitrate Balancer** is a liquid formulation that can help control these processes. The product is foliarly applied approximately 3 to 4 weeks before plant termination. It is specially designed to control and reduce nitrates in the plants. If the mother plant tends to grow too fast (aborting tubers), the growth can be controlled by periodic applications of Nitrate Balancer during the growing season.

Nitrate Balancer is not a hormone. It does, however, affect the hormone balance in the mother plant and tubers.

Recommendations

- For all vegetables and fruits:

  150 cc – 200 cc per 100 liters of water. Foliar spray at beginning of flowering. Repeat application every 10 - 14 days as needed.

- Additional use only on Potato and Onion:

  It is recommended to foliar spray 9 liters per hectare at 30 -40 days before harvest for "Potato and Onion".

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