



PRODUCT INFO
& DATASHEET

BIO - STIMULANTS (BS) & Plant Growth Regulators (PGR) Introductory comments

ADDITION OF PLANT GROWTH REGULATORS & BIO-STIMULANTS (B-S) TO FOLIAR FERTILISERS

Foliar feeding with water soluble fertilisers is effective in delaying the natural senescence processes at the end of reproductive stages of growth. Other compounds are also effective in delaying these processes.

We would like to say a few words about the addition of plant growth regulators to foliar fertiliser formulations. The most common materials being used are **gibberellic acids** and another is **cytokinin**. These naturally occurring compounds may be added in very small amounts either individually or in combination. They are each one of five classes of naturally occurring plant growth regulators, the others being **auxins**, **growth inhibitors** and **abscission agents**.

Gibberellic acid is one of the most active of a group of plant hormones called gibberellins, which were discovered in the 1920's. It is produced commercially from the fermentation culture of the fungus gibberella fujikoroj, a micro-organism which produces gibberellin.

Gibberellic acid has a profound effect on many plant growth processes when used at very low rates.

It is most often used to promote uniformity and increased flower, fruit set and size of fruit or seed.

It is used in some crops to break senescence and to end the juvenile growth stage and bring about the reproductive stage of growth. It is used to enhance blossom set and even to produce seedless fruit in some crops.

Gibberellic acid has also been used to stimulate root growth and shorten the length of internodes, thereby producing a more compact plant.

Cytokinins are cell division promoters. They are used to stimulate root development and for the retention of fruit forms to increase fruit (seed) size. The benefits of application are manifested especially when growing conditions are such that root growth is stressed.

The effectiveness of growth regulators depends greatly on the concentration, timing of application and environmental factors. Their effects differ among plant species and even within species when applied at different stages of growth. Extremely small amounts are used—often rates are only a few grams per hectare.

The question has arisen as to whether or not these products have to be registered under the various Pesticide Regulation schemes. Certainly plant growth regulators that affect the height and size of a plant might come under this scheme in some countries, but **foliar applications of the B-S products are designed to act as super fertilisers and need only comply with fertiliser regulations**, they have been through the pesticide regulation scheme in the U.K. / E.U. which is one of the strictest in the world and **have been passed fit for use as fertilisers and in no way come into the world of pesticides.**

GUIDE TO BS-70 AND BS-48 (cytokinin containing products)

Physiological effects of cytokinin

* The major function of cytokinins in plants is to promote cell division. Plants produce some of their own cytokinin. BS-48 is used as a seed treatment because the increased levels on the seed will promote lateral root development in the young seedling. Early in a plant's life the internally produced cytokinin is depleted and externally applied cytokinin is necessary for continued rapid growth.

* Cytokinins have been shown to promote cell expansion. Increased leaf surface area results in an increase in photosynthesis and consequently chlorophyll production.

* Cytokinins promote lateral bud break and help to overcome apical dominance. The results of this phenomenon are increased blooms and fruit set.

* Cytokinins initiate sink (reservoirs) mechanisms at the lateral buds which promote the transport of nutrients, vitamins, minerals and other growth substances which will stimulate the growth of that lateral bud.

* Cytokinins have been shown to delay or prevent leaf senescence (death). They do this by helping to maintain the integrity of the cell membranes. The longer the leaves stay healthy, the higher the level of chlorophyll production will be. The ability of cytokinins to promote nutrient translocation in plants is responsible for increased plant metabolism, which results in faster maturity.

* Some vegetable crops benefit from applications of cytokinins because of the delayed leaf senescence resulting in longer shelf life and reduced rot. The crops are cabbage, lettuce, cauliflower, asparagus, broccoli, celery, Brussels sprouts and other vegetables such as endive, escarole, spinach, radish, carrots, parsley and all onions.