



TECHNICAL GRADE

Product Information Sheet

TECHNICAL GRADE is an organic biostimulant package containing an array of plant hormones that stimulate physiological processes which allow the plant to perform at maximum levels. It is designed to be used as a liquid plant food manufacturing component, and for processing or repackaging. TECHNICAL GRADE is a concentrate of naturally occurring plant extracts and liquid fermentation product, containing enzymes, microbial metabolites, plant hormones, and cellular protoplasm all formulated for compatibility as a component in the production of liquid fertilizers.

GUARANTEED ANALYSIS

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|----------------------|-----|
| Fermentation Culture | 34% |
| Plant Extracts | 14% |
| Inerts | 52% |

TECHNICAL GRADE contains natural organic compounds that cause or accelerate biochemical activity within a plant, increasing the efficiency of a plant or any of its parts, and increasing the uptake and availability of nutrients. When applied to soil or foliage as part of a fertilizer blend, TECHNICAL GRADE affects or accelerates chemical changes in living cells by which energy is provided for vital processes and activities, and new material is assimilated.

It is important to understand that plant hormones do not act singly but rather act in conjunction with, or in opposition to, each other such that growth and development represents the net effect of biostimulant balance. Generally plant hormones are thought to include five main classes: auxins, gibberellins, cytokinins, abscisic acid, and ethylene.

In the hormonal system, cells of different tissues and organs not only transmit signals, but they are also capable of detecting signals from elsewhere. Target cells, which translate the signals into a specific response, are equipped with a distinctive set of receptors for detecting a complementary set of chemical signals. Receptors are (glyco) proteins which specifically and reversibly bind chemical signals but, unlike enzymes, do not convert them chemically. Upon binding, the receptor molecules are transformed into an activated state. This causes the initiation of a molecular program that ultimately leads to the characteristic response. Thus, receptor proteins act both as signal detectors and transducers.



Hormones often have pleiotropic effects, i.e. different types of target cells which respond to the same set of signals, but in a different way. In many cases these types of target cells have similar perception and transduction mechanisms, but the molecular programs which are elicited by these mechanisms are different. In this example, receptor activation triggers a molecular program which is simply a direct activation of a distinct set of enzymes. If the set of responsive enzymes is different in another type of target cell, then the same signal elicits a different response via a similar perception and transduction chain.

Of course, hormones do not only modulate enzyme activities in target cells. In general, most chemical signals ultimately influence target cells either by altering the properties (activities) or rates of synthesis of existing proteins, or by altering the synthesis of new ones. Moreover, perception and transduction chains may be more complex than discussed above.

Although each hormone is detected by a specific receptor, transduction follows only a limited number of pathways. In one pathway the receptors are localized at the plasma membrane with the hormone-binding moiety facing outside the cell. These receptors function as sensory systems for external hormone levels and transduce the signal into intracellular signals.

In another pathway, the hormones are readily taken up by the target cells by simple diffusion through the plasma membrane. These target cells are equipped with internal receptors detecting intercellular hormone levels. These receptors are regulatory proteins which may directly interact with target cell specific non-histone proteins and DNA sequences of the chromatin. This interaction results in increased rates and/or altered patterns of gene transcription.

A complete fertility program should be built around an understanding of the needs of the growing crops and a conscious effort to meet those needs throughout the growing season. This involves an assessment of the soil resource, the climate, water availability, the crop being grown and cultural practices used. When nutrients are applied their uptake and availability will be enhanced by TECHNICAL GRADE—thus, resulting in better growth, higher yields and greater nutrient efficiency.

The benefits of using TECHNICAL GRADE:

- Improves root growth
- Stimulates growth and metabolism of beneficial soil microorganisms.



- Accelerates biochemical activity within a plant
- Increases the efficiency of a plant
- Increases the uptake and availability of nutrients
- Accelerates chemical changes in living cells
- Boost plants under nutrient stress
- Increases tolerance to stress
- Promotes yield potential