



BIOCAT™ STUBBLE **Post Harvest Decomposition Accelerator**

Product Information Sheet

BIOCAT™ STUBBLE is specially formulated to accelerate the rate of crop residue decomposition of crop through the microbial breakdown of organic residues such as stubble and other cellulosic materials. The product is compatible with soil conditioners, surfactants and most pesticides and fertilizers. If exogenous bacteria are to be added as well, they should be added at the same time as **BIOCAT™ STUBBLE**.

GUARANTEED ANALYSIS

Nitrogen (N)	6.0%
Sulfur (S)	3.0%
Magnesium (Mg)	3.0%
Boron (B)	0.02%
Copper (Cu)	0.10%
Iron (Fe)	1.00%
Molybdenum (Mo)	0.0005%
Zinc (Zn)	2.00%

Derived From: Urea, Ammonium Nitrate, Magnesium Sulfate, Sodium Borate, Copper Sulfate, Ferrous Sulfate, Sodium Molybdate and Zinc Sulfate. Fully chelated with Citric Acid and partially hydrolyzed vegetable protein.

Also Contains Non-plant Food Products: 5% Humic Acids from Leonardite; decomposed plant and animal residues; and liquid fermentation product (a natural source of fermentation substances such as enzymes, amino-acid, vitamin-B complex, and microbial metabolites.)

BIOCAT™ STUBBLE accelerates the decomposition of post-harvest crop residues by enzymatically breaking the chemical bonds of the residue, thus increasing its decomposability and by stimulating the growth and metabolism of naturally occurring microflora that, in turn, break down organic compounds such as lignin, proteins, starches and sugars. Nutrients tied up by the crop residue are released through the natural process of organic decay thereby increasing soil fertility. In addition, use of **BIOCAT™ STUBBLE** contributes to the formation of beneficial humus in the soil thus improving soil structure, tilth and water infiltration.

As yields continue to increase and as conservation practices become more wide spread, the farmer will be continually impacted by crop residues which can limit a following sea-



son's development and yield unless the organic decay process is completed before the following season's crop exercise their nutrient demand. The reason for this is that the organic decay process requires more nutrients than can be supplied by the crop residue, thereby curtailing the availability of nutrients and putting the following crop into stress. The simple truth is that the microorganisms completing the organic decay process always out compete the following crop for available nutrients.

When crop residues are tilled into the soil, soil organisms temporarily tie up available nitrogen in the decomposition process thus limiting the availability of essential plant nutrients for the following crop.

The bacteria in the soil exist on a very simple diet, i.e., carbon and nitrogen, but they want them in a particular ratio of 11 parts carbon to 1 part nitrogen. If the ratio of carbon to nitrogen is not met by the stalks and straw that are plowed into the soil, the bacteria will gobble up available nitrogen to match the carbon supplied by the stalks and straw. They will do this by regulating their intake to 11 parts of carbon to 1 part of nitrogen.

Most crop residues that are returned to the soil have a high carbon to nitrogen ration requiring additional nitrogen to maintain the appropriate ratio. For example:

MATERIAL	CARBON TO NITROGEN RATIO
Alfalfa (young)	12:1
Manure (rotted)	20:1
Green rye	36:1
Corn stover	60:1
Wheat straw	80:1
Sawdust	400:1

The practical importance of carbon and nitrogen ingestion by soil organisms is that these bacteria are stronger competitors for available nitrogen than are plant roots. In other words, the bacteria arrive first at the table and take the first grab on available nitrogen. Therefore plants can suffer nitrogen shortage when large amounts of un-decomposed, high-carbon residues exist in the soil.

Alternative solutions are to remove the crop residue, increase the levels of fertilization or speed up the decomposition of the crop residue. It is the latter alternative that **BIOCAT™ STUBBLE** addresses. This is accomplished by enzymatically breaking chemical bonds in the plant residue and increasing the activity of the soil bacterial action thus causing the decomposition process to be completed in a shorter period of time.

BIOCAT™ STUBBLE also contains 6% nitrogen. However, depending upon the carbon/nitrogen balance in the soil, it may be necessary to apply additional fertilizer nitrogen



as a balancing agent at the time **BIOCAT™ STUBBLE** is applied. The nitrogen addition, either in dry or liquid form, can bolster the nitrogen side of the carbon/nitrogen balance. As a guide, one should apply approximately 20 lbs. of actual nitrogen per one ton of residue (10 Kg/MT).

Use of **BIOCAT™ STUBBLE** accelerates the natural process of organic decay thus making nutrients available for the following crop. The mode of action causes the organic decay process to accelerate from the inside out of the crop residue leaving the outer lignin as a soil cover to reduce erosion and to trap moisture.

DIRECTIONS FOR USE

Shake well before diluting with water. Dilute at least 50 parts water to 1 part **BIOCAT™ STUBBLE**. Product can be applied by ground rig or back pack sprayer or through irrigation water.

For best results **BIOCAT™ STUBBLE** should be applied to crop field residues just prior to plowing or discing the stubble, straw or stalks. Ground moisture will enhance the activity of **BIOCAT™ STUBBLE** and hasten decomposition of crop residues. In any event applications should be made as soon after harvest as possible.

BIOCAT™ STUBBLE is nonphytoxic when used as directed and is compatible with most fertilizers and pesticides. Pilot test compatibility of all chemical mixes. If necessary dilute **BIOCAT™ STUBBLE** in 5 gallons (20 L) of water and add to mixture after all other chemicals have been mixed.

The rate of application of **BIOCAT™ STUBBLE** is also tied to the amount of residue present.

Rate of Application

Reduce potassium (potash) additions to no more than 10 lbs./A (11 Kg/Ha) or less and apply **BIOCAT™ STUBBLE** as follows—

Small Grains and related crops — multiply the yield in bushels/A (liters/Ha), as a measure of volume, by .35 (.30 metric) to determine the **BIOCAT™ STUBBLE** rate in oz/A (ml/Ha).

Corn and related crops — multiply the yield in liters/Ha, as a measure of volume, by .28 (.24 metric) to determine the **BIOCAT™ STUBBLE** rate in oz/A (ml/Ha).

COMPOSTING - Apply 8-10 oz/50 cubic feet of material (300 ml/4 cubic meters of material).