

Grow Your Best Crop, Ever.

# Bio-Sul Premium Plus

## WHAT IS BIO-SUL PREMIUM PLUS?

Bio-Sul is a sustainable blend of **70% recycled elemental sulphur** and **30% recycled Class A compost**.

Sulphur is a key component in the production of amino acids, and a vital component of a well balanced nutrient management plan. Essential to all crops, sulphur ensures the efficiency of ALL other nutrients in the plant.

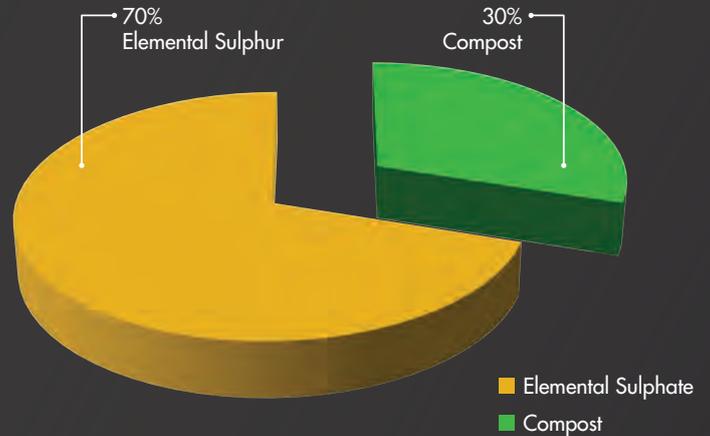
By utilizing compost as a carrier for the elemental sulphur, Bio-Sul provides crucial microorganisms that work to promote conversion and soil health.

The elemental sulphur in Bio-Sul Premium Plus is deliberately produced at varying particle sizes, allowing a slow, constant release of sulphur to the soil - over periods of up to 5 years!

## WHY DO I NEED SULPHUR?

Due to reduced emissions, the atmosphere is no longer a source of sulphur for plants. Modern farming practices have increased crop yields as well, increasing the required levels of sulphur. We now need to adopt sulphur management strategies to ensure all crops in our rotations are getting adequate levels of sulphur. After all, when one nutrient is deficient, it limits the efficiency of all other nutrients.

Sulphur is a component of numerous protein enzymes that regulate photosynthesis and nitrogen fixation. Without adequate sulphur, crops such as wheat cannot efficiently use N, P and other elements. This leads to decreased yield and protein in all crops - as much as 10 - 40% in canola. As a rule, crops with high protein generally need more sulphur.



## INVESTING IN SMART SULPHUR

Elemental sulphur with a varying particle size is the perfect sulphur solution for all soil types - especially sand and hills. How is this possible?

The smallest, microscopic particles convert quickly from elemental sulphur to plant-ready sulphate sulphur (SO<sub>4</sub>-S), providing immediate nutrition to the soil. The larger particles take longer to convert, providing sustained long-term release of sulphate to the soil. Phosphate, calcium, and macros all become highly available and protected when close to a sulphur particle, making them accessible to the root hairs.

However, elemental sulphur will only convert in optimal growing conditions. In waterlogged areas, microorganisms become dormant, pausing the conversion. This prevents leaching and runoff of the unconverted sulphur, as the particles remain solid on the soil surface until optimal conditions resume.



## CONVENIENT & LOGISTICAL SULPHUR SOLUTION

Because of the variable particle size and slow, sustained release of sulphate, Bio-Sul is applied at a 3-5 year application rate. In optimal growing conditions, growers can expect up to 25% conversion in year one, with each application increasing conversion speed as the level of microbes grow in the soil.

Bio-Sul can be surface broadcast in the fall, early winter (on up to 6" of snow), or early spring and after the crop has been seeded. The flexibility of application time leaves more opportunity to focus on seeding in the spring, and to spend more time on N, P, K, and micronutrients. Seeding after a Bio-Sul application will help to incorporate some particles into the soil, as will frost and rain.



## BALANCING NUTRIENTS

Balancing N:S Ratios is the first step in an aggressive fertility plan. If N is applied in an S deficient area, it could actually have a negative effect on yields. The proper N:S ratio is dependent on the crop.

The best ways to assess the needs of a crop are:

- 🌱 tissue testing
- 🌱 soil testing
- 🌱 visual inspection
- 🌱 4R Nutrient Strategy

### 4 R'S NUTRIENT STRATEGY



Apply nutrient from the Right Source



At the Right Rate



At the Right Time



In the Right Place!

Crop	Sulphur Uptake (lb./bu.)
Spring Wheat	0.2
Barley	0.16
Oat	0.13
Rye	0.28
Canola	0.54
Flax	0.56
Pea	0.25
Lentil	0.3
Potato	0.9
Alfalfa	6.0
Grass	4.2
Barley Silage	3.9

Crop	N:S Ratio
Canola	5:1
Cereals	10:1
Potatoes	10:1
Pulses	8:1
Grassland	8-12:1

## SWITCHING FROM AMMONIUM SULPHATE

Bio-Sul Premium Plus is an excellent and easy alternative to ammonium sulphate. Unlike Bio-Sul, AMS has a much higher salt content, higher acidity, and while it may be available sooner in the spring, it won't last until later in the season when it is needed for yield and protein building. It can be hard to handle, store, corrosive to equipment, and plugs up drills. Bio-Sul is a solution to all of these issues.

Application of synthetic fertilizers in the seed row can increase the salt index, and cause seed injury or decreased seed germination.

Each different form of sulphur must be managed accordingly.



## LOW PH & SALT LEVELS

Elemental sulphur requires soil bacteria to slowly convert it to sulphate. This slow process reduces the risk of abruptly increasing solid acidity. In fact, elemental sulphur in large amounts can be used to drive down pH levels.

Because it contains no harsh carrier chemicals, Bio-Sul has a low salt-index, which reduces the risk of seed injury and decreased germination. In addition, the sulphur helps to convert non-soluble sodium into water soluble sodium sulphate ( $\text{NaSO}_4$ ), helping to wash the salt out of the soils. This is an excellent feature for growers using irrigated systems that bring in sodium.

## CUSTOM APPLICATION & RATES

Our network of Trusted Applicators are agronomists, retailers and producers who are passionate about sustainable farming. While Bio-Sul may be self applied, we offer experienced and accurate custom application - leaving growers to focus on other things in the busy season.

Bio-Sul is broadcast on the soil surface using spin spreaders. There is no need to cultivate, as a simple rainfall will distribute the particles. Banding is not recommended or necessary. In terms of storage, BioSul can be placed directly on the ground, eliminating the need for costly storage..

The recommended application rate is 220lb/acre of BioSul Premium Plus, delivering 155lbs of actual sulphur to be dispersed into the soil over a period of years. Growers looking optimize production and maintain healthy S levels should surface broadcast large amounts of Bio-sul every 3-5 years. This long term application provides a low-cost sulphur solution.

To contact a dealer for more information, visit <https://aberhartagsolutions.ca/trusted-applicators>



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## TESTIMONIALS

### **Lajord Colony**

"The product quality was excellent, and we had no issues spreading" replied Wally Hofer when asked about his spring application. Wally loves the idea of taking two waste products, elemental sulphur (a by-product of the oil & gas industry) and compost; and combining them to create a viable product for agricultural use.

Creating long term value is a top priority at Lajord Colony, where ensuring soil health for future generations is their approach to farming. Bio-Sul is a perfect fit in their agricultural framework, providing essential sulphur with the compost, for the conversion to plant available sulphate.

"We're doing our part to alleviate the landfills, and think more people should be using Bio-Sul. The wheat is noticeably better, and it seems to have mellowed out the ground. The five year application & economics mean a lot less work, for a lower cost."

Lajord Colony has spread Bio-Sul on a third of their farm and has plans to apply on another third this fall.

Wally Hofer, Lajord Colony, Lajord, SK

### **JVM Van Staveren Farms Inc.**

"We are very, very pleased and satisfied with a long term investment in perennial sulphur via the elemental Bio-Sul product!"

Marcel Van Staveren

### **New Era Ag Tech**

"Had the absolute pleasure of touring the Bio-Cycle plant in Calgary today. Big thanks to Dan Aberhart. They use 50 or 60 mt of food waste a day that they get out of the local grocery stores and restaurants. This is turned into fertilizer which grows more food rather than being thrown into landfills. It was actually disturbing to see what is thrown away. I have posted pictures of food that isn't even past it's expiration date that has been thrown away. 60,000 mt of food waste is thrown out from City of Calgary alone a year. That is just commercial food waste not residential. Just think of the resources and carbon footprint that it took to create and ship this food around the world! From fertilizer, to fuel, to packaging and marketing!

THIS IS HOW YOU LOWER CARBON EMISSIONS in the world! Innovative thinking like this! NOT taxation! New Era Ag Technologies Inc. is very excited to offer this product in the Swan River Valley for the 2017 growing season. New Era Ag Research will be also working with Bio-Cycle. Very exciting stuff!"

RYAN IMMERSKAR, NEW ERA AG, Swan River, MB.

### **Milden Colony**

"Here at Milden Colony we are always looking for better products and ways to improve our farm. We found that Bio-Sul is one of those products. It's the right thing to do for our dirt, it helps with the sustainability of the land and grows some nice crops. We talked to the Erickson boys at Greenleaf Agriventures some more about the product and the application rate, and they proved to us that it can be spread evenly. We also found that by taking ammonium sulphate out of the drill, we have less plugging problems and can seed more acres per day since we are filling less. We did 3000 acres last fall, and are going to do another 3000 acres this fall."

Mike Hofer, Milden Farming Company, Milden, SK