

# The True Value of Sulphur



Sulphur is an essential nutrient for plant growth and provides many benefits such as increased nitrogen utilization, improved phosphate and micronutrient uptake (high pH soils), increased chlorophyll production, protein, oil, and vitamin production.

With uncertainty in the commodity markets, many producers are concerned about their input costs and what can be done to provide a well balanced fertility program while not breaking the bank.

## Balanced Fertility for Maximum Crop Production

The economics of supply and demand dictates that as demand outpaces supply prices increase, while oversupply results in a decrease in price. The fluctuation of fertilizer prices is an example of the supply and demand law. In the case of elemental sulphur, the primary driver is the manufacturing of phosphate fertilizer, and the supply and demand of the fertilizer. Elemental sulphur plays a critical role in the production of phosphate fertilizer (0.44 tons of elemental sulphur is required for 1 ton of DAP or MAP phosphate fertilizer) and is the single largest use of the sulphur element.

## The Value of Nitrogen Loss

Recently a lot of attention has been given to controlling the rate of release of nitrogen in order to improve the uptake of nitrogen and prevent less loss to the atmosphere and by leaching out of the soil zone. This is significantly important for environmentally sensitive zones such as water sheds and protected environmental zones. The loss of nitrogen typically runs at 20-50% under average growing conditions. **The loss of nitrogen can be costly as we can see losses of \$90 – \$250 per tonne not being utilized by the crop, and lost to the environment.**

## Sulphur Improves Nitrogen Utilization and Crop Value

Tiger-Sul products conducted corn research with Dr. Roy Stephens at Arise Research in Martinsville Illinois to research the effectiveness of TIGER® sulphur on improving nitrogen use efficiency.

**The results were dramatic showing that the loss of nitrate nitrogen was reduced by 18 – 30% with the use of TIGER® sulphur fertilizers.** Similar research showed improvement in crop yield as well as quality when sulphur was applied to the standard NPK blends. In 2007 research was conducted on a variety of crops such as soybeans, snap beans, carrots, and corn to demonstrate the effectiveness of sulphur even when 20% of the NPK was reduced in the blend the yields remained as good as the full rate NPK applications. **(See below)**

NPK or NPK + S?		
SOYBEANS		
Treatment	Yield/acre	% Nitrogen
NPK	41bu	4.10%
NPK + TIGER 90® CR sulphur (30lbs)	43.5bu	4.50%
20%< NPK + TIGER 90® CR sulphur (30lbs)	43.8bu	4.50%
CORN		
NPK	170bu	8.40%
NPK + TIGER 90® CR sulphur (30lbs)	180.85bu	9.20%
20%< NPK + TIGER 90® CR sulphur (30lbs)	175.95bu	9.10%
SNAP BEANS		
NPK	5945lbs	3.70%
NPK + TIGER 90® CR sulphur (30lbs)	7830lbs	4.60%
20%< NPK + TIGER 90® CR (30lbs)	7685lbs	4.60%
CARROTS		
NPK	8163lbs	2.60%
NPK + TIGER 90® CR sulphur (30lbs)	10730lbs	3.30%
20%< NPK + TIGER 90® CR sulphur (30lbs)	10164lbs	3.30%
*NOTE: Tiger-Sul does not recommended reducing NPK application. Graph illustrates sulphur importance on NPK utilization. Arise Research, Dr Roy Stephens, Martinsville, Illinois.		

## The Economics of Sulphur Applications

With nitrogen efficiency in mind, the value of sulphur can be easily seen as it doesn't take a considerable loss of nitrogen to offset the cost of a sulphur fertilizer application. Sulphur as a nutrient is used by plants in similar amounts to phosphate fertilizer. Rates of application of sulphur as a nutrient generally range from 20 to 100 lbs / acre as a nutrient. Soil amendment applications (amending soil pH and or sodium removal from the soil exchange) are generally higher to achieve the desired effect for improving the soil. Rates generally range from 100- 1000 lbs/ acre as a broadcast treatment. Banded treatments at lower rates can be done to create concentrated zone of acidification that would be near the plant for reduced

application rate and overall cost. Generally the cost of a sulphur application as a nutrient can be recovered by minor yield increases of 1 bu/acre or less of corn or wheat. Applications of sulphur on oilseed crops generally see similar economics. Responses to sulphur applications on oilseed crops are high due to the high demand of sulphur for crop yield and quality (oil formation).

Recent research on high fermentable corn varieties at Arise Research by Dr. Roy Stephens has also shown that sulphur improves the corn yield and starch content thus improving the value to the ethanol production facility.

## The Added Value of TIGER® Sulphur Fertilizers

**TIGER 90 CR®** sulphur and **TIGER 50CR®** sulphur / sulphate fertilizers provide many additional values as a plant nutrient sulphur source as can be seen by the benefits below.

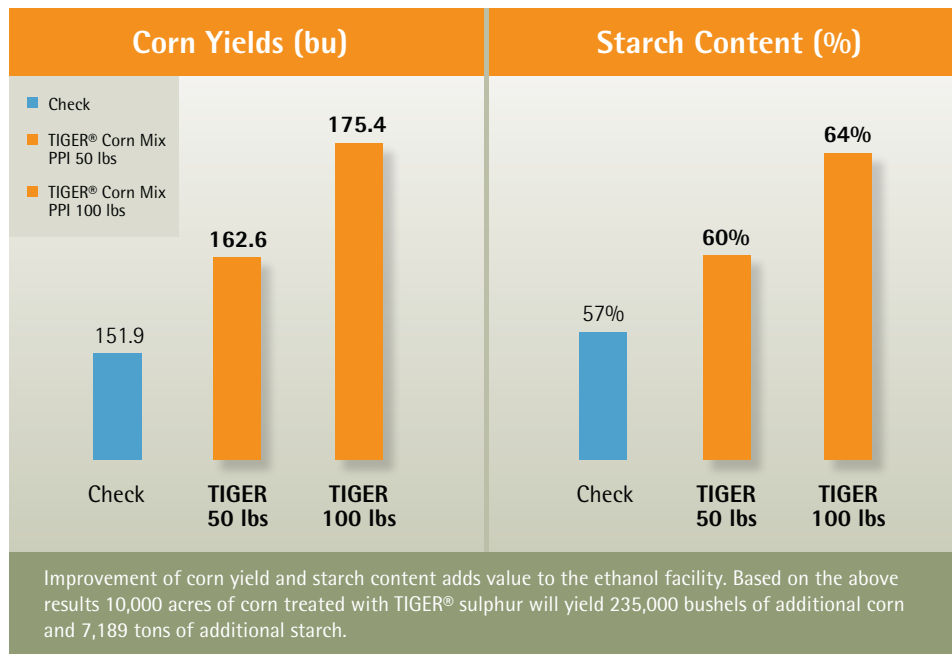
- Season long availability of plant nutrient sulphur ensuring plants is not depleted.
- Increased nitrogen and phosphate use efficiency increasing crop yield and quality.
- High analysis formulation reducing transportation costs.
- Improved micronutrient availability on high pH soils by reducing soil pH.
- Soil amending properties that improve water penetration (removal of Na) and enhancing soluble calcium availability.

The application of sulphur for balanced fertility is more important than ever as it clearly shows the true value of sulphur by improving crop yield, and quality vs. NPK only applications.

**NPK + TIGER 90 CR® sulphur,  
fully developed corn cob.**



**Check – NPK only treatment, note  
aborted tip on cob development.**



Tiger-Sul Products is the world leader in degradable sulphur and degradable sulphur based micronutrients. Based out of Calgary, Alberta, Canada, and Atmore, Alabama, USA Tiger-Sul has produced sulphur based fertilizers since 1984.

**Tiger-Sul Products (Canada) Co.**  
Calgary, Alberta, Canada  
1-877-299-3399  
403-203-4524 Ph Direct

**Tiger-Sul Products LLC**  
Atmore, Alabama, USA  
1-800-239-3647  
251-368-2560 Ph Direct

[www.tigersul.com](http://www.tigersul.com)



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