



Crop Talk



The Agrico Crop Talk newsletter features current hot topics making headlines in the agricultural industry today. The material presented in these newsletters includes viewpoints from industry specialists, Agrico agronomists and Crop Care affiliated members. The theme of this issue is Nitrogen on Soybeans - does it work?

Soybeans do respond to fertility. Deficient nutrient levels in the soil have become a yield limiting factor in soybean production. Soybeans remove large quantities of Nitrogen, Phosphorous and Potassium. The following table depicts nutrients removed in lbs. per bushel.

	N	P	K	
Soybeans	4.2	0.9	1.5	A 36-bushel crop of beans would therefore remove 200 lbs. of Nitrogen (100 lbs. produced by Rhizobia and 100 lbs. from other sources), 45 lbs. of Phosphorous and 87 lbs. of Potassium.
Straw	1.3	0.3	0.9	
Total	5.5	1.2	2.4	

If you want to maximize yield potential, it is necessary to have a soil test with optimum Phosphorous and Potassium levels. If soil tests are already optimum then I would encourage fertilizing, based on crop removal.

Many studies have been conducted in regards to Nitrogen on soybeans and results have been variable. Soybean yield increases to Nitrogen, applied at planting, have been variable and difficult to predict. Unless an over abundance of Nitrogen is applied at planting, I have never experienced a decreased yield from Nitrogen applications as high as 30 lbs/acre. As you are aware, soybeans are a legume and produce a portion of its own Nitrogen through Rhizobia bacteria. Several environmental factors may reduce the amount of nodulation. Oxygen limiting factors at the roots surface such as flooding, compacted or high CEC soils may limit Nitrogen fixing production. Temperature plays a major role in production. Rhizobia fixation throughout the season is affected by day and night time temperature. Since we have little control over environmental factors that may arise throughout the season, economic yield results when pre-plant Nitrogen fertilizer has been applied, have been variable and inconsistent across the province and many trial sites in different years. Research has also been done in regards to Nitrogen application in season, at first flower. Again, varied response but with some farm reports of 20 bushels better, the research continues. There is more yield potential in soybeans. Through increased management strategies, better yield averages are being achieved.

Starter fertilizer on Soybeans. I feel this is often a good idea, especially in the situation of cooler soils, no till or reduced tillage practices, high pH soils, high CEC soils and those soils with poor or lower nutritional levels. High yields are achievable when we increase early growth and development of the soybean. A small amount of fertilizer at planting can produce a significant yield advantage. The main factor to remember is to be careful with volume applied, fertilizer products used and placement as the germinating soybean is very sensitive to damage from salts. Recommendations will vary depending on soil tests but a couple good dry starter mixes are:

- Drill mix 5-26-11-5 Mg-11 S @ 50 lbs / acre (MAP, Kmag)
- 2 X 2 6-20-20-2 Mg- 7 S @ 100 lbs / acre (A/S, MAP, Kmag, KCl)

Consider topdressing additional Phosphorous and Potassium requirements to crop removal. Additional nutrients such as **Mn** and **Zn** can also be added, depending on soil test levels.

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