

Part B – Plant Growth Promoting Rhizobacteria (PGPR)

PGPR interacts synergistically with nitrogen fixing bacteria (inoculant) to **promote improved nodulation and nitrogen fixation.**

Phytohormones produced by the VIGOR PGPR, have been shown to promote epidermal-cell differentiation in root hairs that increase the number of potential sites for rhizobial infection, leading to the enhanced nodulation and nitrogen fixation, among many other biological benefits.

Most importantly, VIGOR is designed to deliver premium inoculation with the backup co-inoculation of PGPR, giving the crop a better start and hastened stand establishment.



Soybean Nutrient Demand

The demand for nutrients depends on the soybean growth stage. Since the soybean seed has high levels of protein, demand for nitrogen is extremely high during seed formation.

	Nutrient	Concentration—lbs of nutrient per bushel raised			Total Crop Nutrient		
		Grain	Straw	Total	50 bu	60 bu	70 bu
Primary NPK	Nitrogen	4.20	1.30	5.50	275	330	385
	Phosphorus	0.40	0.13	0.53	26.5	31.8	37.1
	Potassium	1.25	0.75	2.00	100	120	140
Secondary Nutrients	Calcium	0.20	1.50	1.70	85	102	119
	Magnesium	0.23	0.22	0.45	22.5	27	31.5
	Sulfur	0.20	0.25	0.45	22.5	27	31.5

Untreated vs. Treated with VIGOR

Treatments	Stem Length	Root Length	Nodules N° p/Plant	Nodules N° Principal Roots	Nodules N° p/Secondary Roots	Yield (bushels/acre)
Untreated	24	37	23	9	14	31.4
Inoculant Alone	26	39	29	15	14	40.4
VIGOR®	30	41	34	20	18	46.2

Part C – Synergist

Synergist liquid activator is a **nutritional and stabilizing agent** for use with the VIGOR tri-pak system. Synergist protects and enhances VIGOR's nitrogen fixing bacteria (Part A) and plant growth promoting bacteria (Part B) to sustain viability of bacteria and extend on-seed stability up to 90 days after inoculation.



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VIGOR FOR SOYBEANS

Vigor®



www.vigorforsoybeans.com





Contains	
Part A - Bradyrhizobium Japonicum	10 billion (1 x 10 ¹⁰)
Part B - Azospirillum Brasilense	1 billion (1 x 10 ⁹)
Part C - Liquid Activator and Stabilizer Synergist	

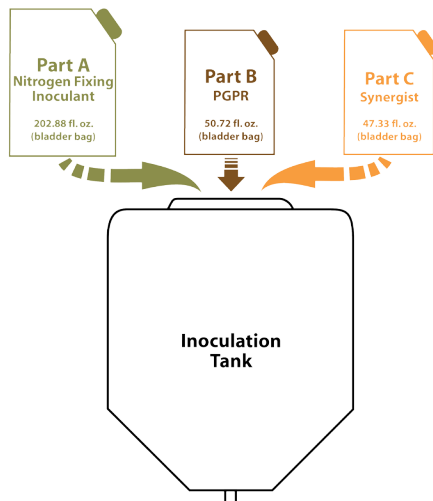
Vigor is an at-planting-time soybean seed enhancer.

Vigor inoculates and hastens early growth and establishment of the crop, delivers two types of bio-active performance (nitrogen fixing inoculant/plant growth promoting rhizobacteria) has a high level of viable bacteria, has advanced on-seed survival and has yield proven results.

tri-pak

The tri-pak contains a three-part system.

When the three parts of the system are combined, the resulting mixture is a ready-to-apply seed treatment, designed for application at the time of planting or up to 90 days prior to planting.



Directions For Use		
IMPORTANT! Prepare only as much VIGOR as will be applied to seed that day. DO NOT OPEN PACKAGE UNTIL THE TIME OF APPLICATION. Once all components have been mixed, it is recommended that this product be applied to seed within 24 hours. If mixed in a dedicated inoculant tank, on-seed survival of 90 days or more can be achieved. Seed treatment products are recommended to be applied sequentially for best results. If mixing VIGOR in same tank with fungicide or insecticides, apply to seed within 4 hours.		
Use Rate	3 fluid ounces per 100 pounds of seed	Formulated to inoculate 200 units of soybean seed.

Part A – Industry Leading Count of Viable Bacteria

Contains a **nitrogen fixing inoculant concentrate**.

VIGOR for soybeans ultimately delivers living bacteria to the seed that hastens the plant’s ability to fix and manufacture the nitrogen it needs to grow.

VIGOR is very concentrated so that more viable bacteria can be available for effective inoculation when the plant is ready. Specifically, 1 x 10¹⁰ bacteria cfu/ml means that every milliliter of VIGOR nitrogen fixing product contains 10 billion viable bacteria! As a result, VIGOR for soybeans delivers an industry leading count of viable bacteria to the seed when properly applied and used according to label instructions.

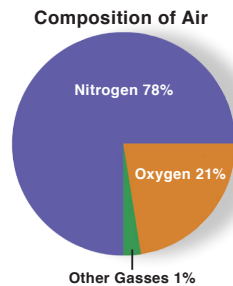
In addition to improving the inoculation rate under a broad range of conditions, the concentrated VIGOR product results in a very high number of bacteria delivered per seed regardless of the seed size.



**Soybean Inoculation–
The Most Efficient Way To Fertilize Soybeans
With Nitrogen**

Soybeans need nitrogen to grow just like all other plants. However, soybeans and other legumes, like alfalfa, clover, and peas, can manufacture their own nitrogen through a process called **nitrogen fixation**.

Nitrogen fixation occurs when a rhizobia bacteria in the soil infect legume plant roots, initiating plant response to nodulate and begin a plant process of pulling needed nitrogen from the air.



Nitrogen Fixation Taking Place



What Happens:

Seedling roots grow and inoculating bacteria multiply.

The bacteria take nitrogen from the air and convert it to nitrogen fertilizer for the plant.

The bacteria colonize root nodules creating a life giving nitrogen rich environment for the plant.

Formation of nodules on the roots.



Large, dark pink/red nodules indicate active nitrogen fixation is taking place within the plant. This is caused by leghemoglobin in the plant nodules; very similar to hemoglobin in the blood of vertebrates. Dark pink/red means alive and functioning!