

**Greenhouse Trail – Influence of SeedSpeed on Germination, rate of germination and the vigour of Wheat and Beans (Stellenbosch University) March 2012.**

**Hypothesis**

Can the germination percentage, the speed of germination and vigour be improved by AgriLibrium's SeedSpeed treatment prior to planting. Can more homogeneous growth and sprouting be observed in the treated seed.

**Treatment**

	Crop	Seeds per pot	Planting Depth (cm)	Treatment (SeedSpeed)	Control	Repetition
<b>Monocots</b>	Wheat	5	2	200mℓ/25 kg seed	Untreated	5
<b>Dicots</b>	Beans	6	1	200mℓ/25 kg seed	Untreated	5

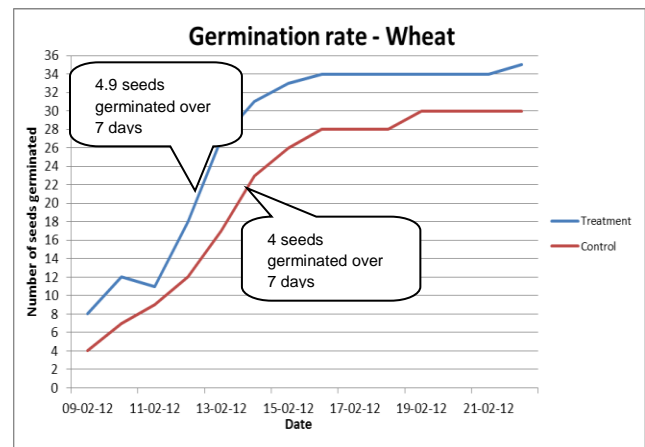
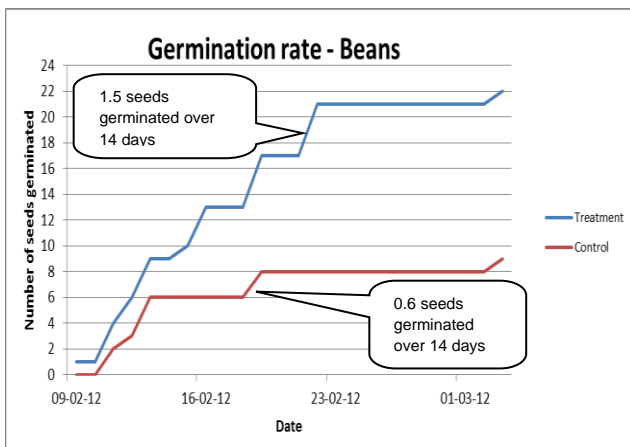
**SeedSpeed** is a balanced macro and micro mineral complexed fito-fulvic acid product. Our fito-fulvic acid is derived from a tree extract with strong wetting and water surface tension refraction properties. This means minerals are readily available for uptake as soon as seed germination takes place.

**Parameters measured:**

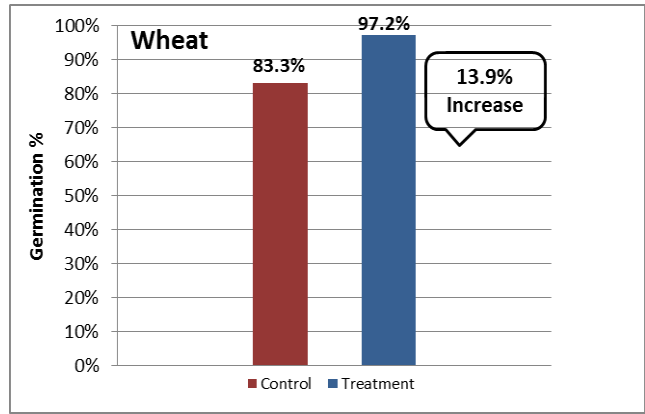
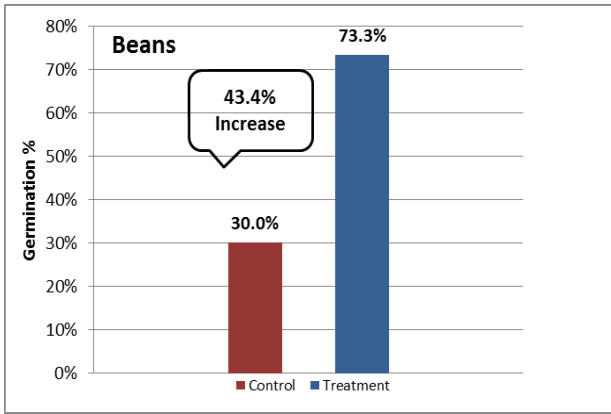
1. Rate of seed germination (monitored twice a day).
2. Percentage of seed germination.
3. Measuring chlorophyll from leaves.
4. 4/5 weeks after seed germination, plants are harvested:
  - a. Remove plants from pots to examine plant growth and root density
  - b. Standardize on the fifth leave for leave area measurements
  - c. Determine the mass of the leaves and roots separately
  - d. Determine the dry mass of plants and roots separately after drying for 24 hours at 80°C in a drying oven.

**Results**

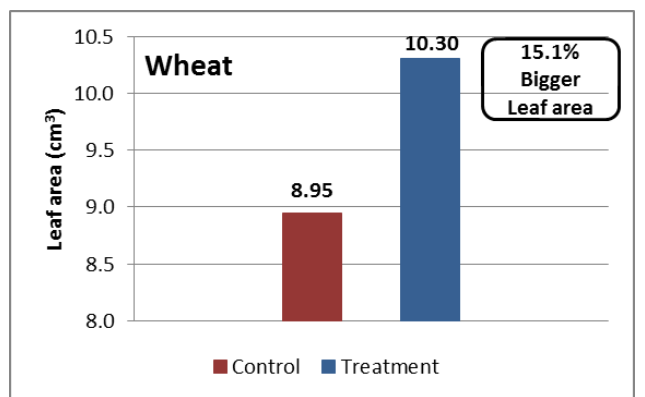
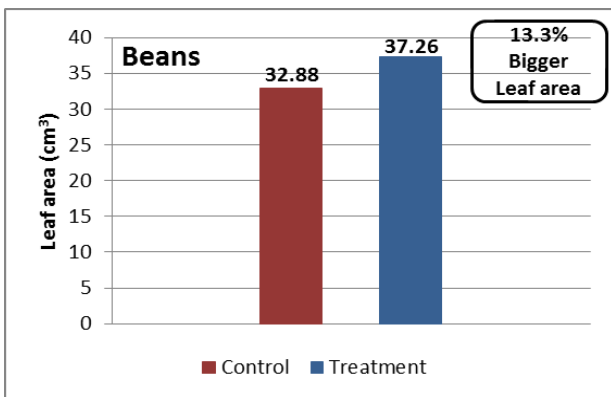
**1. Accelerated germination rate:**



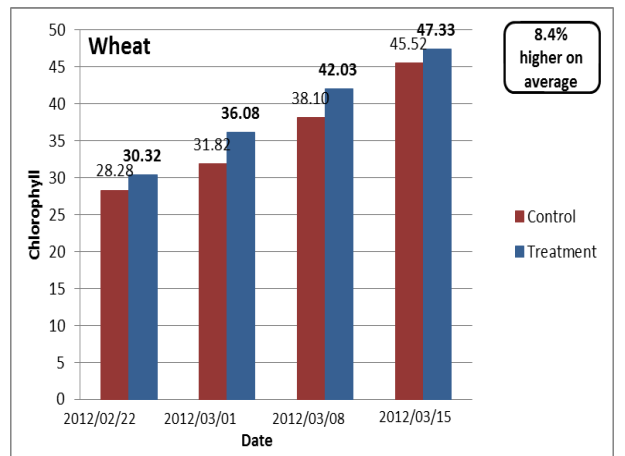
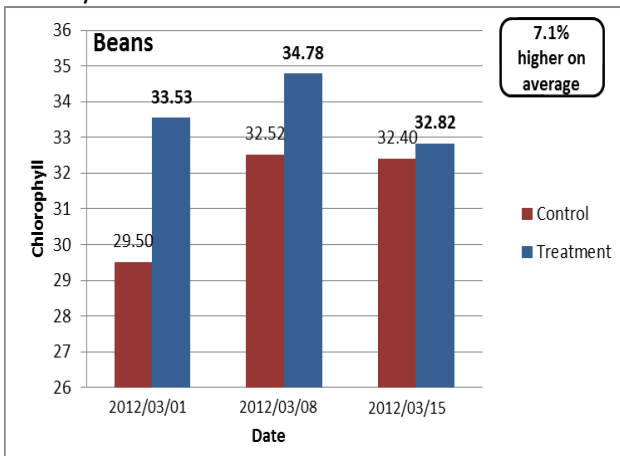
**2. Improved percentage of seed germination:**



**3. Bigger Leaf area:**

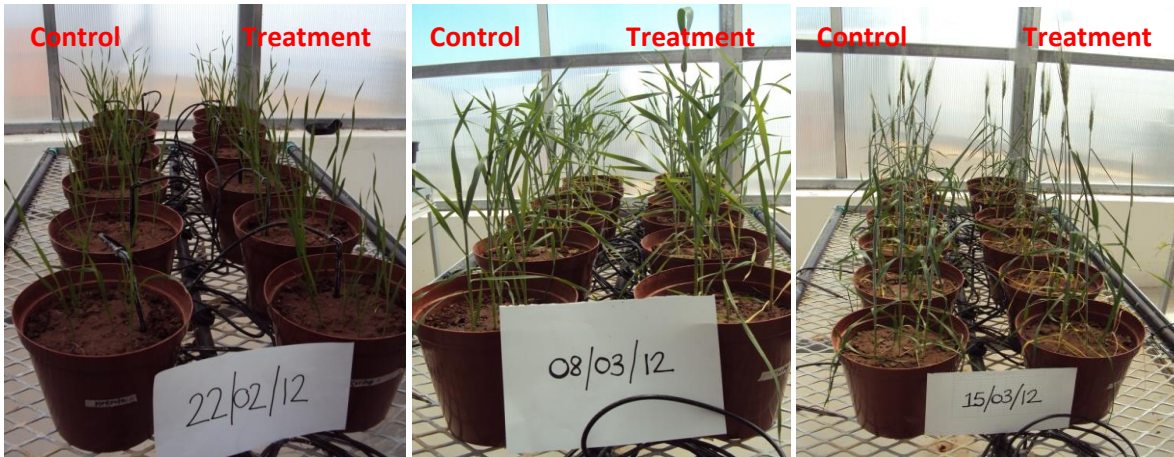


The larger leaf area and higher chlorophyll content (the measured chlorophyll content was consistently higher throughout the growth period for the treated pots than for the control pots) for the treated plants have a great influence on the plants ability of photosynthesize optimally and will affect the plant mass directly.



**4. Better Growth:**

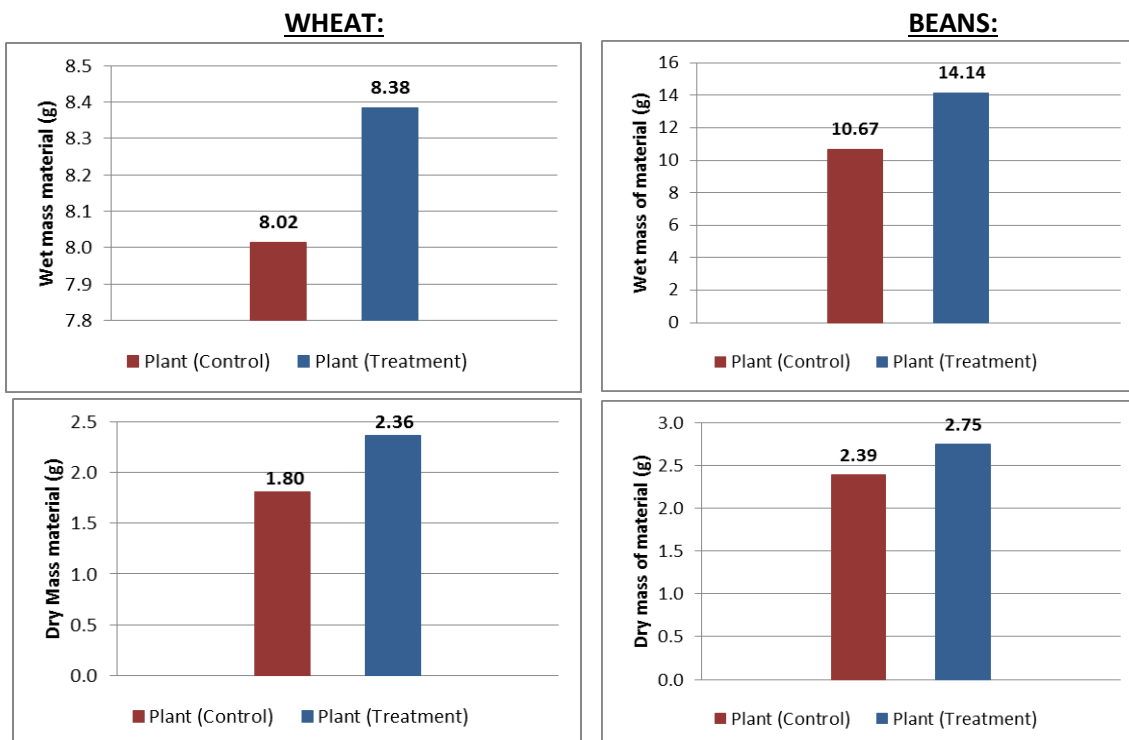
The **SeedSpeed** seed treatment accelerated the rate of germination, improved root development and enhanced growth, the results could be visually observed as is illustrated in the photographs below. (Control pots on the left and treatment on the right).



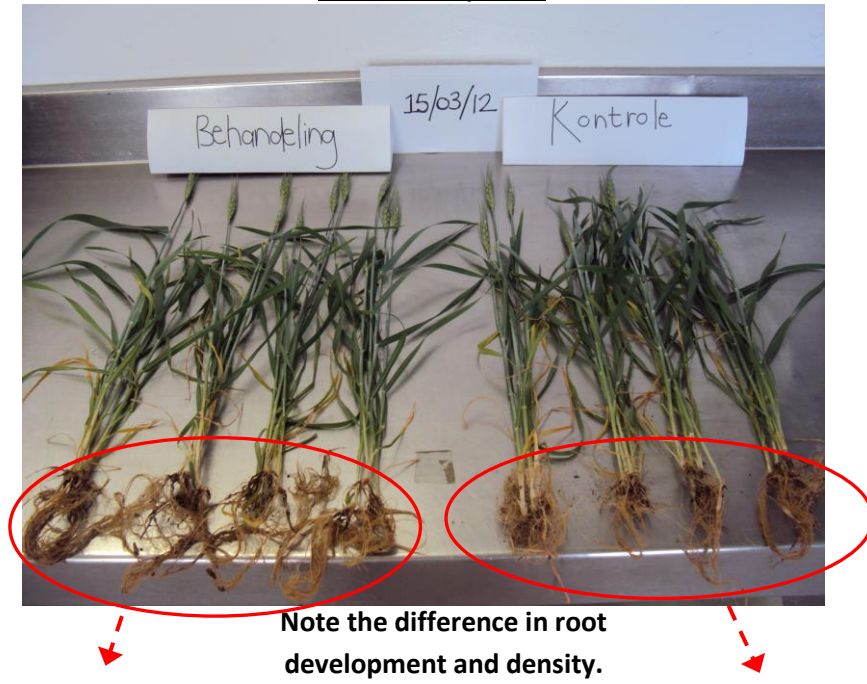
**5. Increase in plant mass:**

The accelerated germination rate and readily available nutrients during germination resulted in an increase in growth. The result was a higher volume of wet and dry plant material for both the top growth and roots.

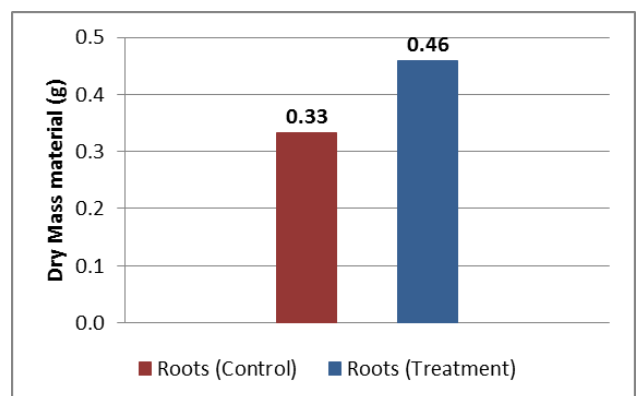
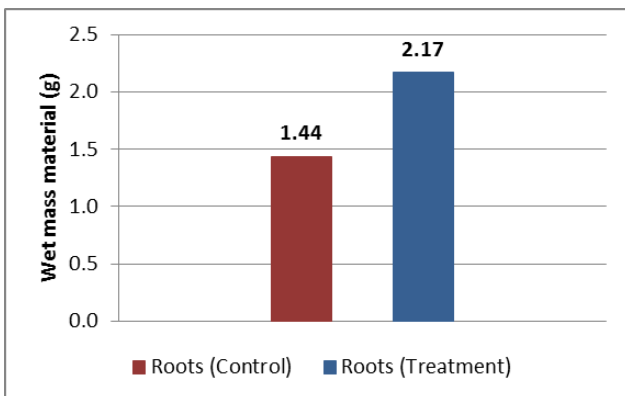
**Mass of plant material (g):**



**WHEAT**  
**Root development**



**Wet and dry mass of wheat roots (g):**



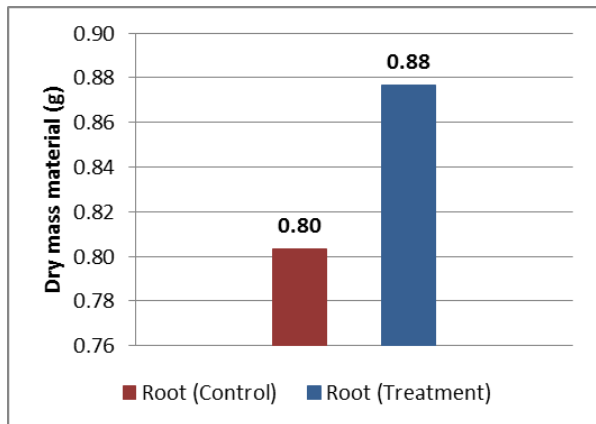
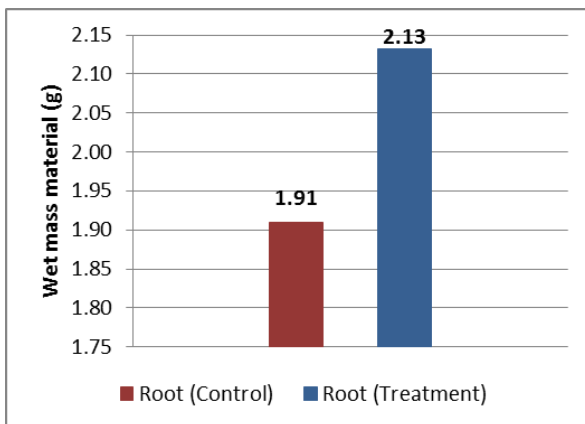
**BEANS:**  
**Root development:**



**A higher root density provides a greater surface area for absorption of water and nutrients, resulting in better growth.**



**Wet and dry mass of bean roots (g)**



## Controlled Germination Trails with SeedSpeed 2009

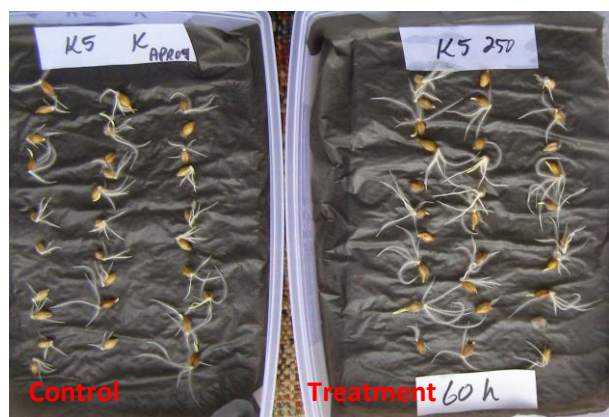
Two types of wheat cultivars were treated with 250mℓ/25kg (1000mℓ/100kg seed) **SeedSpeed**. Germination speed and percentage were determined. The photos below illustrate the difference in germination speed for both cultivars (K88 and K5) 48 and 60 hours after the commencement of the trail.

K = Control

250 = Treatment

K = Control

250 = Treatment



### Conclusion:

From the trials results above, it is clear that the use of **SeedSpeed** as a seed treatment for different crops of both the monocots and dicots families can have a significant impact on the germination rate, germination percentage, early seedling growth, photosynthesis capacity in terms of chlorophyll and leaf area; resulting in an increase in dry matter material. These results confirm and explain the improved yield and quality producers receive when using **SeedSpeed** prior to plant. An important contribution that **SeedSpeed** makes to the above mentioned results is the products ability to improve the development of the root system during the early stages of growth, thereby improving the plants ability to absorb water and nutrients.

**The effectiveness of SeedSpeed can be attributed to the specific components in the product:**

- The balanced nutrient composition, which includes micro- and macro elements, which is complexed with a high concentration of fito-fulvic acid,
- The fulvic acid has the ability to neutralize cations and anions so that these inorganic elements are not able to bind to each other and produce **insoluble** compounds which are not available for plant uptake
- Other biologically active biochemical components that stimulate plant growth
- The high surface tension breaking capacity and improved the wetting properties of the fulvic acid and ensures nutrients are evenly concentrated in the root environment of the seedling for efficient uptake and utilization. The surface tension of the fulvic acid was scientifically determined by using the du Noüy surface tension device (University of Cape Town).