Biostimulant Product Evaluation and Comparison Trials (2025-2027, Year 1)

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Introduction

Biostimulants are natural, climate-smart products that enhance crop performance by stimulating plant processes when applied to seed, foliage, or the rhizosphere. Research shows they can improve nutrient uptake and water retention, increase tolerance to environmental stresses and disease, strengthen root systems, and induce systemic resistance. Common products include humic and fulvic acids, seaweed extracts, beneficial microbes, and inorganic compounds like silicon.

This study will run small-scale, field-plot trials at three diversification centers in Manitoba (Melita, Carberry, and Portage la Prairie) during the growing seasons of 2025-2027 to evaluate the impact of five commercially available biostimulants on soybean growth, yield, and seed quality.

Objectives

- To compare the relative performance of five biostimulant products on soybean growth, yield, and quality at testing sites in Manitoba over the course of three years (2025-2027).
- Use biochar as a comparative to biostimulants.
- To study the impact of weather and soil quality on the biostimulant performance.
- Produce unbiased scientifically sound results from the response of these products relative to existing published results by manufactures, this can assist producers with sustainable farm decisions.

Methodology

- Untreated/Control: No product
- Treatment 1: EcoTea
- Treatment 2: Humic Acids (HA)
- Treatment 3: Seaweed/Algae
- Treatment 4: Bacillus Bacteria
- Treatment 5: Chitosan
- Treatment 6: Biochar

- Soybeans (S007-Y4, Syngenta RT)

Table 1: *Biostimulant (biological) product treatments*

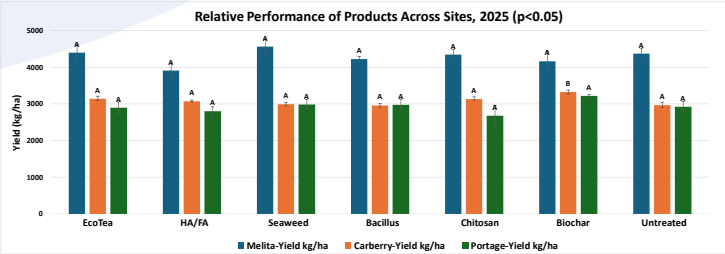
Figure 1: *Carberry site*

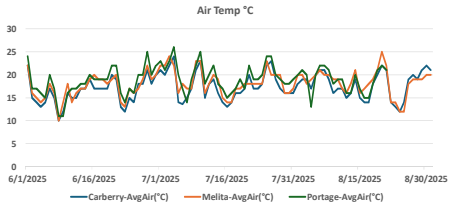
Rep 4	Guard	Biochar	EcoTea	Untreated	Chitosan	HA	Bacillus	Seaweed	Guard
		401	402	403	404	405	406	407	
		Alleyway							
Rep 3	Guard	Chitosan	Untreated	Seaweed	Bacillus	Biochar	EcoTea	HA	Guard
		301	302	303	304	305	306	307	
		Alleyway							
Rep 2	Guard	Bacillus	Biochar	Chitosan	Untreated	Seaweed	HA	EcoTea	Guard
		201	202	203	204	205	206	207	
		Alleyway							
Rep 1	Guard	EcoTea	HA	Seaweed	Bacillus	Chitosan	Biochar	Untreated	Guard
		101	102	103	104	105	106	107	

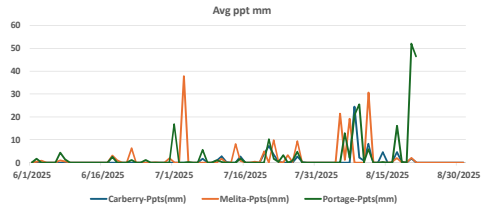
Results, Summer 2025

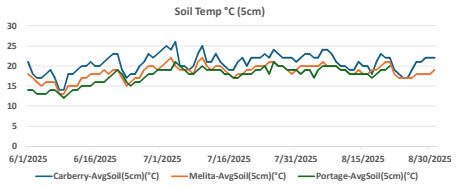
Syngenta highlights the S007-Y4 variety as a consistent, high-performing variety that responds well to intensive management practices and is adaptable to various growing conditions. Performance can vary depending on local growing conditions, soil type, and weather conditions. Average yield range from 2548-3396 kg/ha in Manitoba.

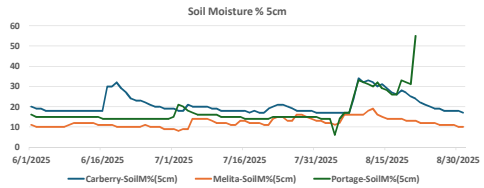
Table 2: *Product yield comparison*











Conclusion

1. **Melita produced the highest yields** across all treatments, outperforming Carberry and Portage and showing the strongest response to the tested products or environmental parameters.
2. **Most treatments performed similarly** across sites, with no major yield differences amongst EcoTea, HA, Seaweed, Bacillus, and Chitosan. Biochar applied plots showed statistically significant yield differences at Carberry site (indicated by the 'B' grouping). However, further research will be carried out to clarify if the yield differences are because of Biochar application or environmental parameters.
3. **None of the treatments outperformed the untreated control by a statistically significant margin**, suggesting that while treatments caused yield variation, their effects were not strong enough to surpass the natural site-by-cultivar performance of the untreated baseline.
4. **Rainfall was sporadic,** but a late-August spike of about 30mm at Melita likely supported a grain filling and helped maintain relatively high yields across treatments.

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