

Soy protein-based seed coating acts as biostimulant

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Cornell researchers have found a new green source that shows promise as a seed coating. Soy flour was tested as a component of a seed coating blend with broccoli seedlings, and results showed multiple benefits to plant growth and nutrition. The work was a collaboration between green materials scientists and seed technologists.

Masoume Amirkhani, corresponding author of a study published in the September 2016 issue of *HortScience*, said that [seed](#) coatings provide an excellent delivery system for materials to be applied at the time of sowing. "These materials have the potential to enhance seedling and plant growth," she explained. Researchers at Cornell University investigated the effect of [soy flour](#), a plant-derived biostimulant, on coated broccoli seed. "An added advantage of soy flour is that it is inexpensive and commercially available in most parts of the world," Amirkhani said.

The experiments involved a 10% suspension of soy flour used as a seed treatment binder in all coatings. The solid particulate filler was composed of mixtures of soy flour, cellulose, and diatomaceous earth (together called SCD). The researchers measured several growth characteristics: seed germination, seedling and plant growth, and nitrogen (N) content.

Results showed enhanced plant growth and development through measurements of biomass, plant height, leaf area, leaf development, and chlorophyll content. Soy flour-coated seeds had greater seedling root and

shoot growth compared with the noncoated control, and soy flour applied at 30%, 40%, and 50% in the SCD coating formulation increased the total N per plant compared with the noncoated control. "The SCD coatings improved plant growth and development at the whole plant and plant nutrition levels, which was attributed to enhancing the physiological processes in the germinating seed and plant," the authors explained.

The authors said that soy flour acted as a biostimulant to enhance [plant growth](#) and uptake of N in the broccoli plants. "Seed coating technology is widely used in agriculture and the biostimulant material could be applied as a component of a seed coating blend," Amirkhani said. "This biostimulant is a natural plant material and could be adopted for organic crop production, and may also reduce the need for high levels of N fertilizer, as the biostimulant can enhance N uptake efficiency."

More information: ASHS *HortScience*: hortsci.ashspublications.org/content/51/9/1121.abstract

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