

# Using Horn Manure (BD #500) When Seeding & Transplanting: A Pfeiffer Center Student Research Project

**Carol St. John**

What effect would BD #500 have when used as a moistening agent for potting mix during the seeding phase, was a question that arose during my year as a student in the 2015 biodynamic training course at the Pfeiffer Center in Chestnut Ridge, New York. At the time, I was also interning three days a week at Blueberry Gardens\* in Ashton, Maryland. Since they had experienced inconsistent germination rates with spinach and knowing that BD #500 (horn manure) promoted germination and root growth, I wondered what effect it would have if I used stirred BD #500 to moisten the soil block mix during seeding and transplanting. I also wondered if using the BD #500 in the potting soil mix for the spinach planted both inside and outside the hoop house would show any differences in color, general health and growth. This became my project for completion of the one-year, part-time “Practical Training in Biodynamics” course.

The questions I chose to investigate were:

- Does adding BD #500 to the soil blocks at the time of seeding and then transplanting to 2” soil blocks make a difference in the germination rate and the overall strength of the plant?
- What are the differences in the spinach grown in the hoop house versus in the open field?

## Methodology

The methodology for the trial was as follows:

### SEEDS

Biodynamic Turtle Tree, Butterfly Spinach seed, buried during the Holy Nights.

### SOIL MIX FOR MICRO BLOCKS

Three 10-quart buckets of biodynamic compost, three buckets of premium peat moss, and 2 tablespoons each of colloidal rock phosphate, glacial rock dust and greensand.

### SOIL MIX FOR 2” BLOCKS

See sidebar

### SOIL BED AMENDMENT

I amended the soil inside the hoop house with Aeromaster Humus Compost from Penn Valley, PA, as this was the current practice where I was working as an intern. I amended the soil outside with biodynamic compost. The grounds inside the hoop house and outside are sprayed with BD #500 in both the fall and spring.

### SEEDING

All seeds were planted into micro blocks made with the same soil mix on 3/27/15, a flower day, sun in Pisces (water) and moon in Gemini (air). One packet of seeds was planted in the soil mix moistened with stirred BD #500 (test). The other packet of seeds was planted using the same soil mix that was moistened with plain well water (the control).

### GERMINATION RATE

On April 9 (14 days later), 208 of the BD #500 treated seeds germinated versus 171 seeds in the control.

### TRANSPLANTING

Spinach was transplanted to 2” soil blocks on April 9 (leaf day). The soil mix in the test blocks was moistened with BD #500 treated water. The control was moistened with untreated well water.

### Blocking Mix Recipe

A standard 10-quart bucket is the unit of measurement for the bulk ingredients. A standard cup measure is used for the supplementary ingredients. This recipe makes approximately 2 bushels of mix. Follow the steps in the order given.

- 3 buckets brown peat (standard peat moss, use a premium grade)
- 1/2 cup lime. Mix ingredients together thoroughly.
- 2 buckets coarse sand or perlite
- 3 cups base fertilizer (equal part mix of blood meal, colloidal phosphate and greensand). Mix.
- 1 bucket garden soil
- 2 buckets well-decomposed compost. Mix ingredients together thoroughly.

Moisten the mix thoroughly using one part warm water for every three parts blocking mix. Successful soil block making depends on the mix being wet enough, rather than wet like soil mix in traditional flats. The mix should have the consistency of soft putty or wet cement, so that a small amount of water oozes through small openings in the blocker as the blocks are made, and that the individual soil blocks cling to the blocker without falling out prematurely.

From *The New Organic Grower*, by Eliot Coleman (JSS part #9899).

## TRANSPLANTING INTO THE GROUND

On April 23 (flower day), the spinach was planted into the ground in the hoop house and outside the hoop house. Half of the BD #500 treated soil blocks were planted inside the hoop house and the other half were planted outside. Likewise, half of the untreated control was planted inside and the other half into the ground outside.

## HARVEST

On May 13 the first spinach was harvested, 47 days from seed to harvest.

## Observations

The germination rate for the untreated spinach was lower than the BD #500 treated spinach. Leaves of the untreated spinach curled and discolored from hoop house temperatures reaching 86 degrees for six-seven days. Lost spinach plants were not harvested. The germination rate was 21% higher for seeds grown in the BD #500 treated soil mix. The plants did not suffer stress damage from the heat in the greenhouse; as noted by Rachel Zuses, hoop house manager, "BD #500 facilitates the uptake of nutrients so the seedlings were stronger and unaffected by the stressors of heat." The leaves of the spinach planted outside were deeper green, beefier, thicker and heartier than the treated plants in the hoop house. The spinach in the hoop house did not grow as fast as the outdoor spinach whether treated or untreated.

## Notes

Due to my work schedule in the hoop house, I was unable to do all of the planting on the preferred "leaf" days. The soil in the hoop house was amended with Aeromaster Humus Compost. The soil outside was amended with biodynamic compost. Using a soil test kit from AccuGrow, I tested the soil inside the hoop house and outside before and after amendments were added. One observation was the soil that was amended with biodynamic compost tested higher in nitrogen



Heat-damaged untreated spinach in hoophouse

than the soil amended with the purchased humus from Penn Valley. However, the Penn Valley humus-amended soil tested higher in phosphorus and potassium.

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\*Blueberry Gardens was featured in the Fall 2006, Issue No. 54 of *Applied Biodynamics* and has been farmed biodynamically for almost twenty years. It is a family-run produce and U-Pick blueberry farm, owned and operated by the families of Robert True and Howard Zuses.

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Carol St. John grew up on a conventional dairy farm in the Finger Lakes region of New York State in the 1960s. From there she became an educator on Long Island. After completing Waldorf teacher training at the Rudolf Steiner Centre in Toronto, Canada in 2004, she began teaching in the Acorn Hill Waldorf Kindergarten and Nursery School in Silver Spring, Maryland. As a teacher in the Waldorf School, she began stirring biodynamic preps with children and applying them to the school gardens. As a result, she joined the Chesapeake Biodynamic Network that led her to take the one-year, part-time biodynamic course at the Pfeiffer Center. Carol now lives in Durham, North Carolina where she volunteers two mornings a week at the Emerson Waldorf Farm and is actively involved with the Triangle Biodynamic Network in the Chapel Hill/Durham area.



Spinach in hoop house; plants at the bottom of photo were untreated; those to the top were treated with BD #500