

Evaluating a Greensprouting Pre-Planting Treatment to Increase Seed Potato Yields and Crop Performance

Melissa Boersema, Evelyn Nowak, Nathan Nowak, Ben Sklarczyk, Alison Sklarczyk

Abstract

Seed potato minitubers were subjected to a “Greensprouting” procedure and planted at a variety of depths in order to establish the factors necessary for maximum yield potential of the seed potato crop.

Methods

“Greensprouting” was accomplished by removing hydroponically produced minitubers from a 35 degree storage environment several weeks before planting, then placing them in indirect light at 70 degrees. Minitubers were gently rotated every three days to ensure adequate airflow and light distribution throughout the seed. Visible short, green sprouts developed, indicating that the minitubers had broken dormancy and were ready to be planted. Control minitubers of the same age, variety, and size profile were stored at 35 degrees until three days prior to planting, at which time they received similar treatment of light, temperature, and rotation.

Minitubers were planted in a randomized block design at 1.0, 2.0, and 3.0 inch planting depths. Trials were replicated utilizing 15mm seed pieces, as well as 18mm. Trials were planted and observed under diverse growing conditions including fields in Gaylord, Michigan and Grenora, North Dakota. The same four varieties were tested at all locations.

Observations and data collected include plant vitality (stem counts, percent emergence, plant height), days to plant emergence, and yield (mass and tuber number).

Results

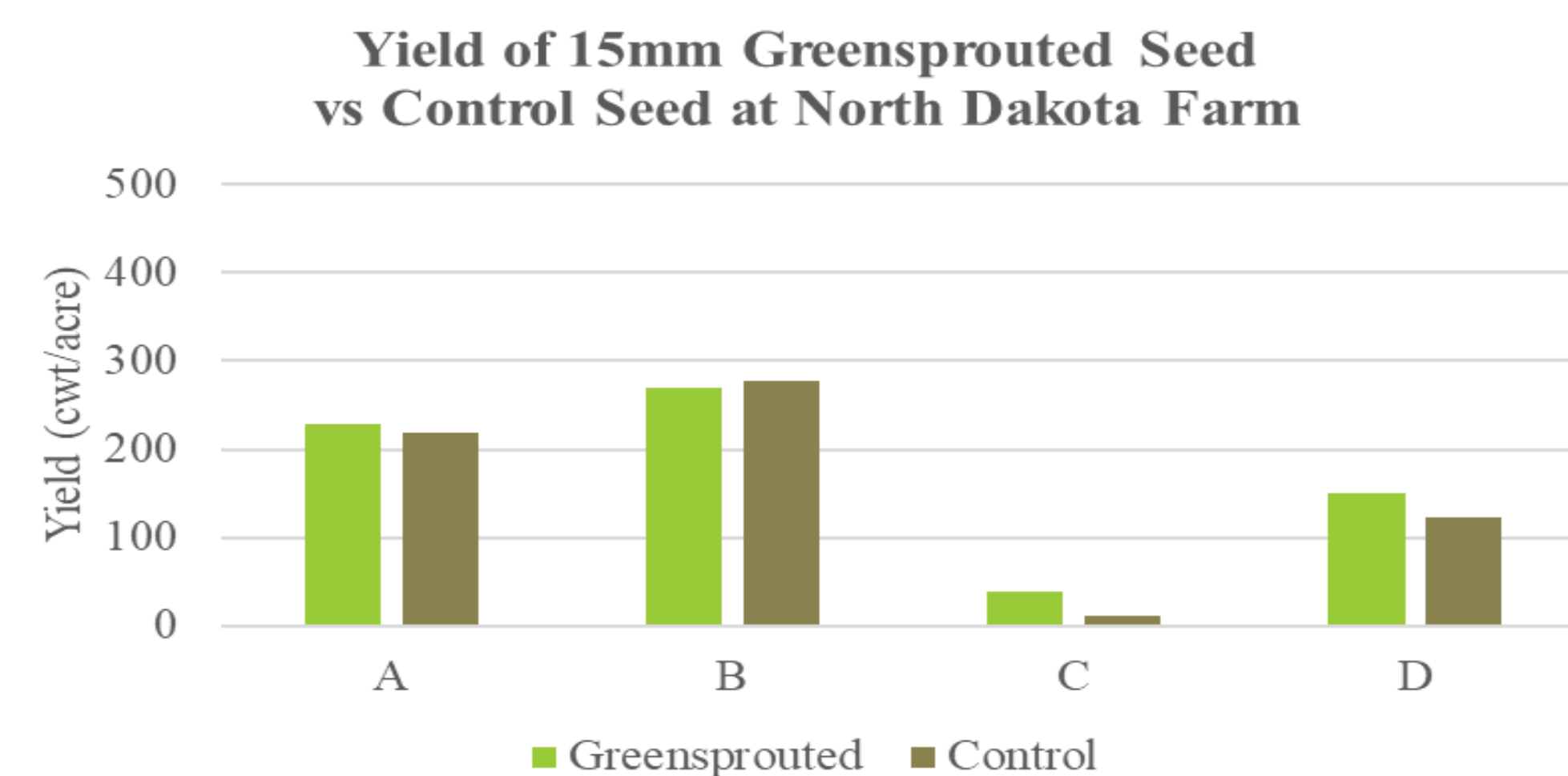


Figure 1: Varieties A, C, and D of greensprouted 15mm minitubers outperformed the control at the North Dakota site.

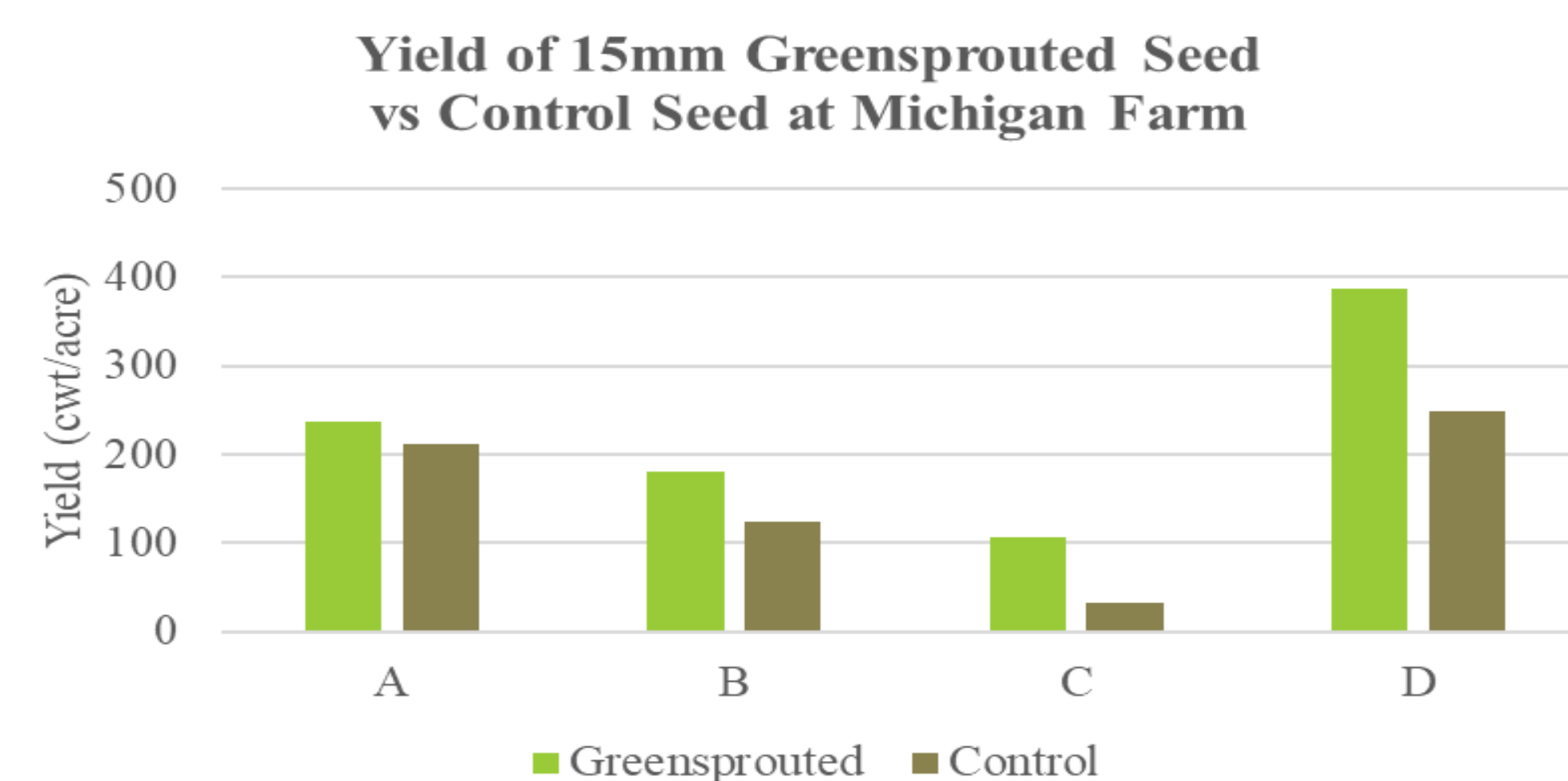


Figure 2: All varieties of greensprouted 15mm minitubers outperformed the control at the Michigan site.

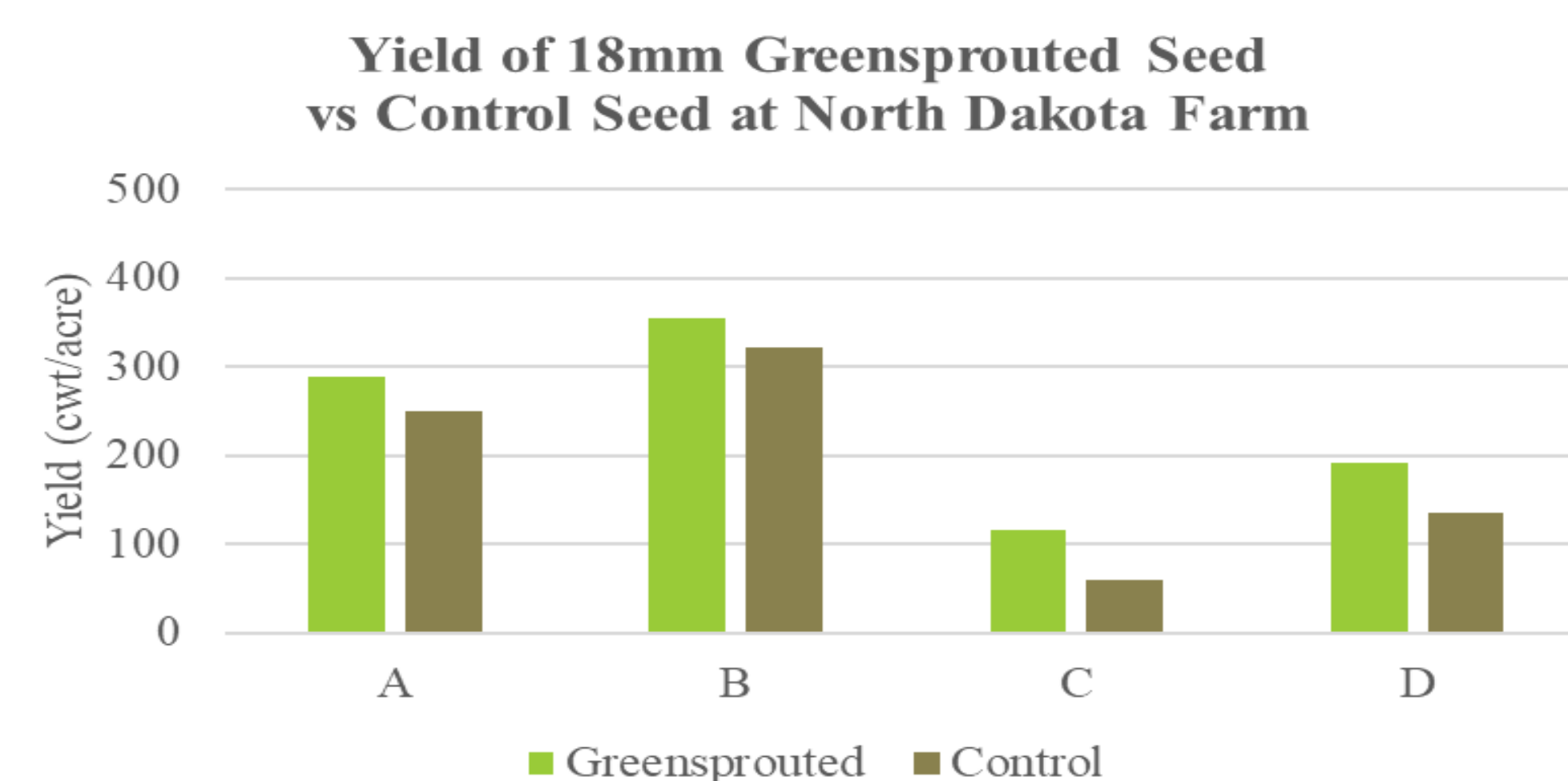


Figure 3: All varieties of greensprouted 18mm minitubers outperformed the control at the North Dakota site.

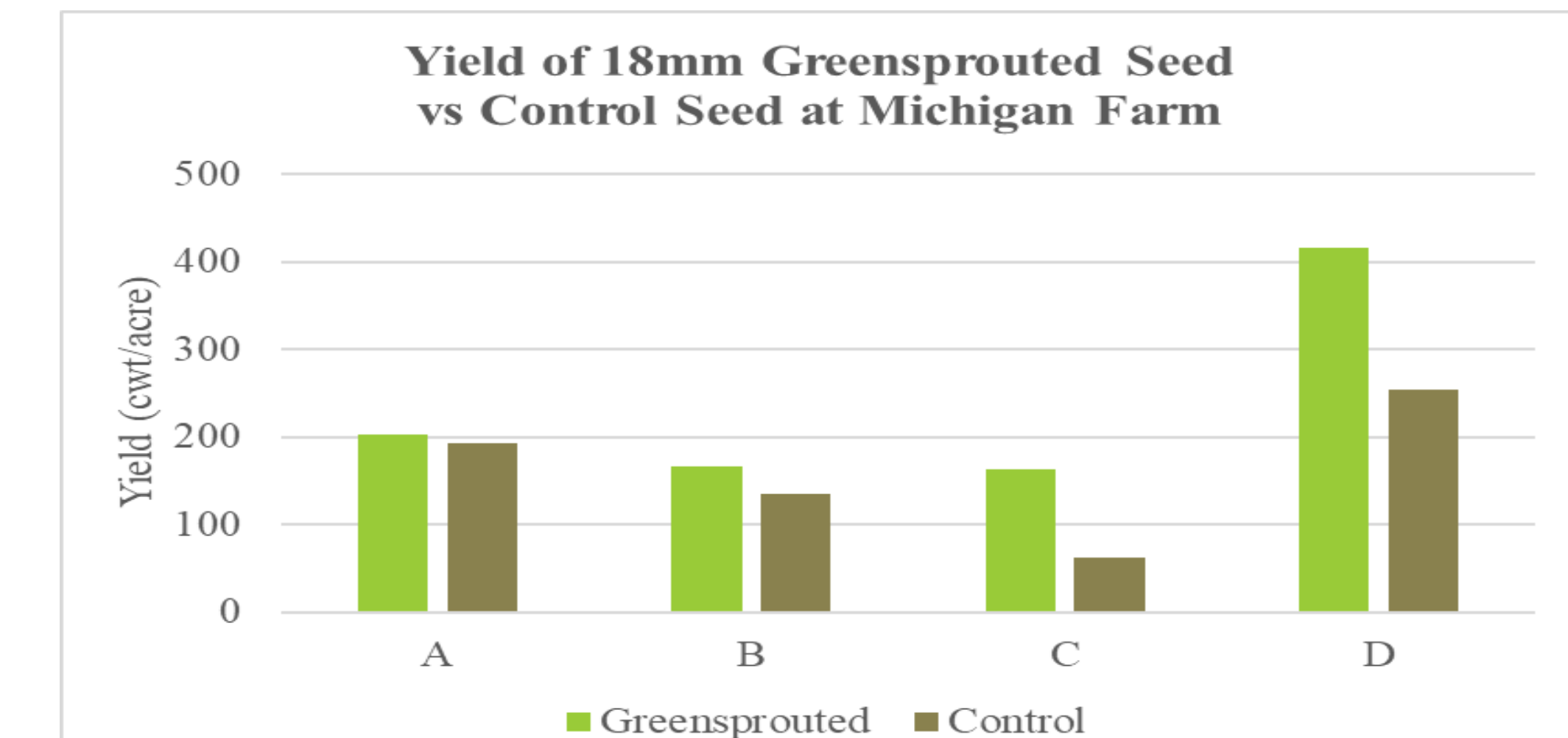


Figure 4: All varieties of greensprouted 18mm minitubers outperformed the control at the Michigan site.

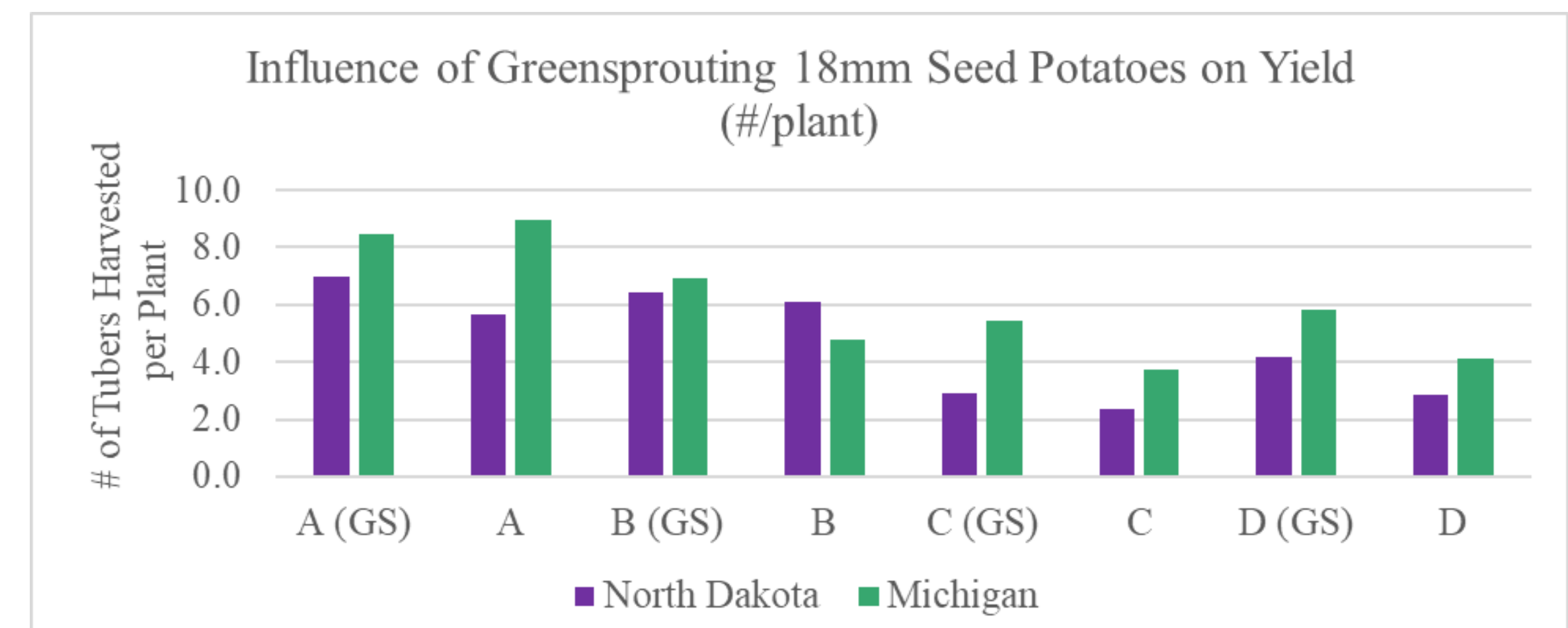


Figure 5: The effect on tuber number of greensprouted 18mm minitubers at both sites as compared to control.

Conclusions

Overall, Greensprouting minituber seed leads to a statistically significant increase in yield of year one seed potatoes.

Greensprouting practices have the potential to increase year one seed potato yields by up to 200%, depending on the age of the seed and the variety planted. Additionally, Greensprouting has a direct influence on the number and size of the year one seed potato crop produced. Further development may allow growers to adjust seed preparation practices in order to target a specific grade of potatoes.



For more information please contact Melissa Boersema at melissa@ssfseedpotatoes.com or call Sklarczyk Seed Farm (989) 732-5333

Project partially funded by the North Central Region Sustainable Agriculture Research and Education 2018 Farmer Rancher Grant

