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Getting Legume Cover Crops to Work in Mid-Atlantic Crop Rotations

Introduction

In the mid-Atlantic region, the inclusion of double-crop soybean (*Glycine max* (L.) Merr.) in wheat *Triticum aestivum* (L.)-soybean-corn (*Zea mays* L.) rotations limits legume cover crop adoption due to the shortened window for establishing cover crops after the soybean harvest. Double-crop soybeans are harvested in mid-November; however, legumes must be seeded by early October in this region to ensure establishment and high biomass production. This limitation is problematic because a cereal rye-legume cover crop mixture could provide erosion control during the fall and winter and nitrogen to the following corn crop in the spring. Interseeding could transform growers' ability to integrate legume cover crops into a grain rotation and offset inorganic nitrogen fertilizer needs in the corn phase.

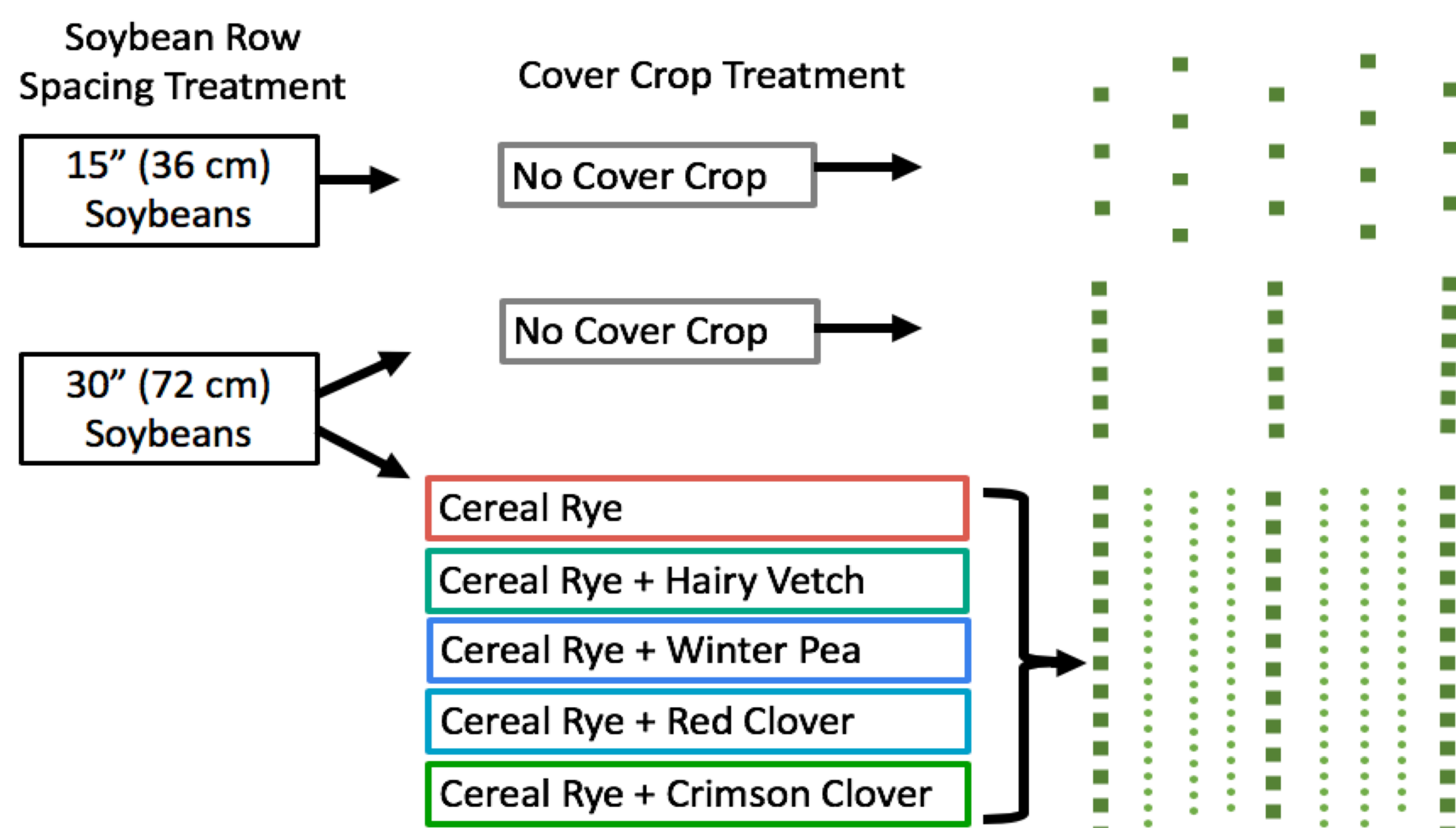
Interseeding Method



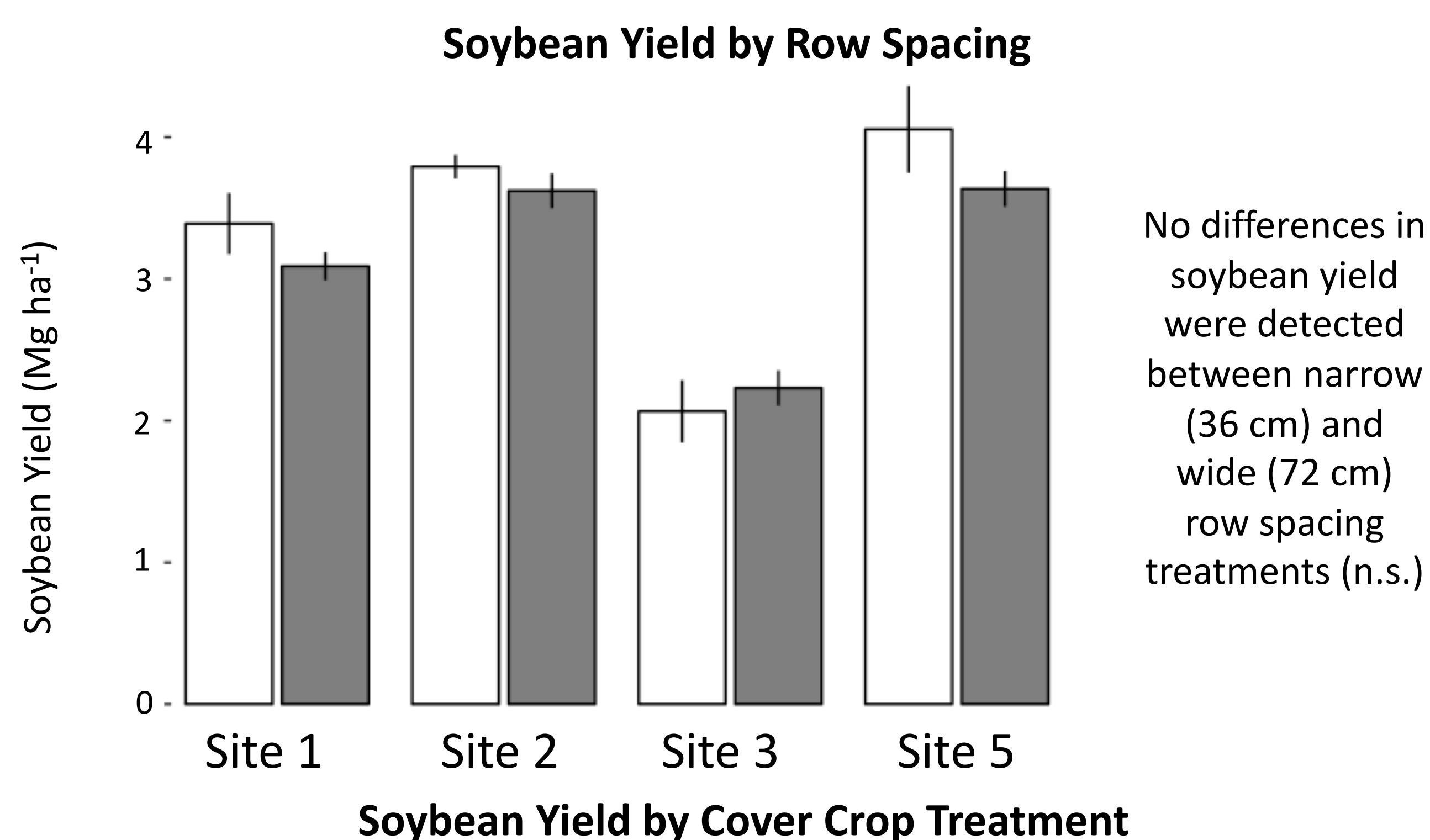
Cover Crop Survival

Field	Year Planted	Cover Crop Survival	Light Transmission
Site 1	2017		15%
Site 2	2017		6%
Site 3	2018		40%
Site 4	2018		40%
Site 5	2018		4%

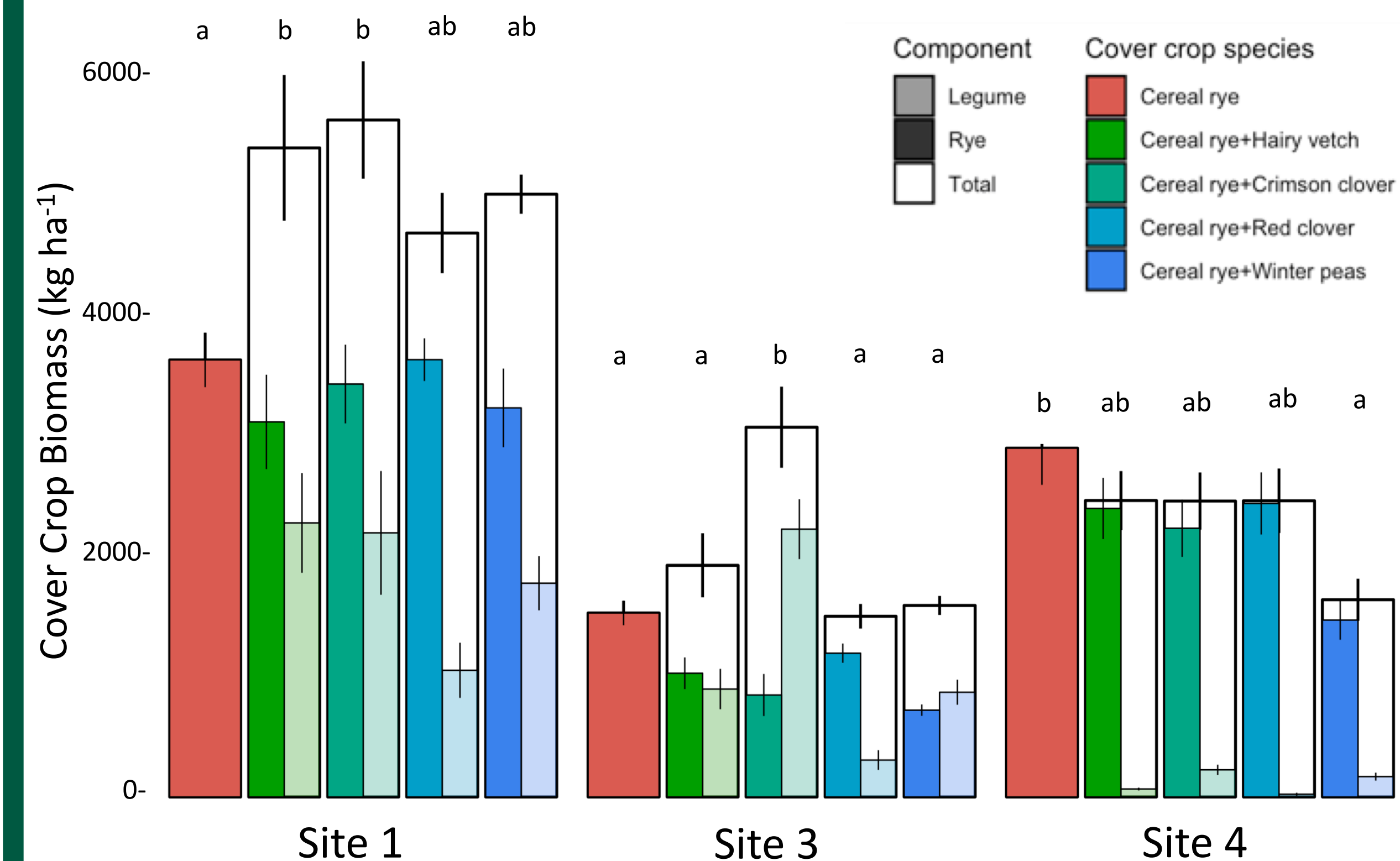
First Year – Double-crop soybeans interseeded with cover crops



Soybean Yields

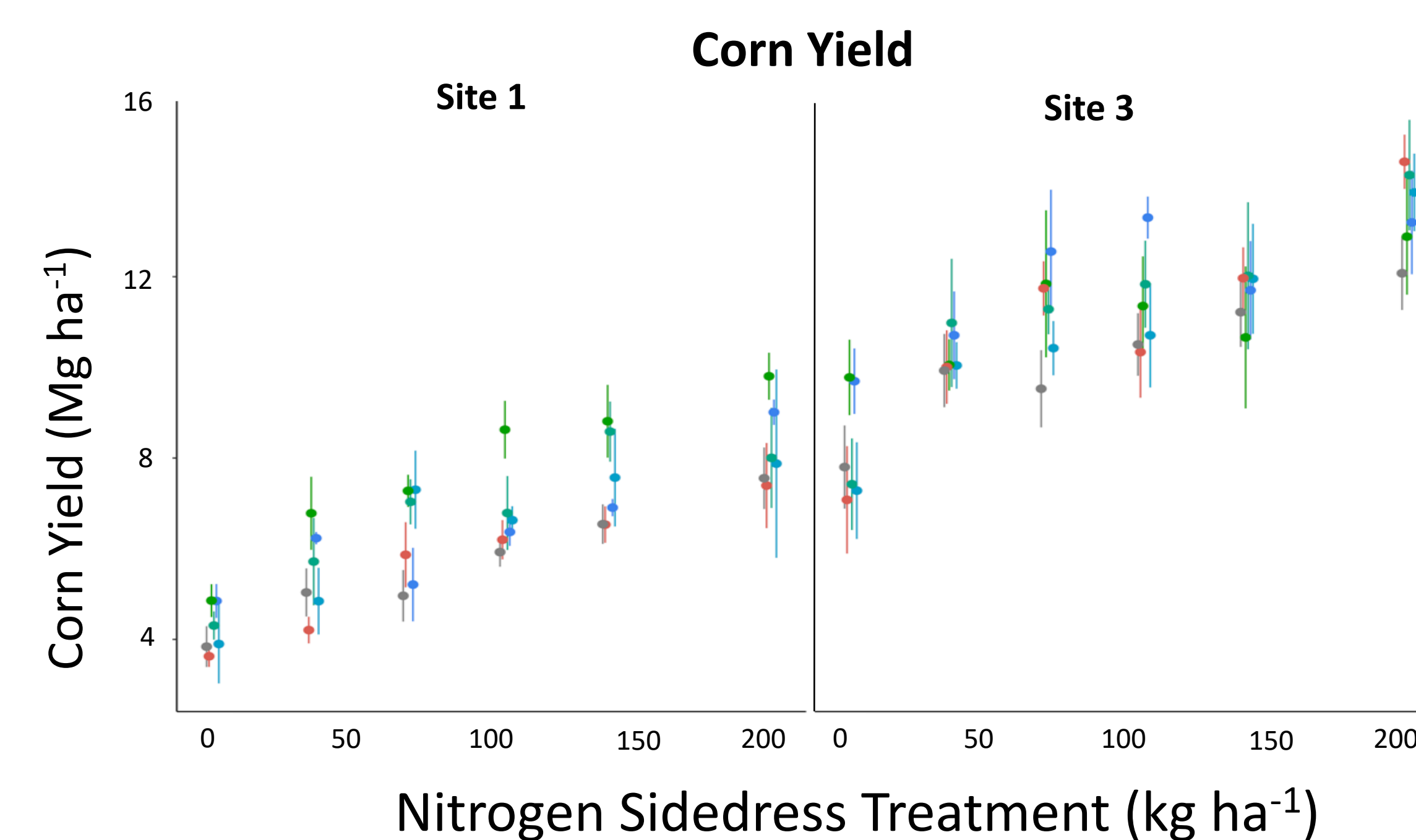
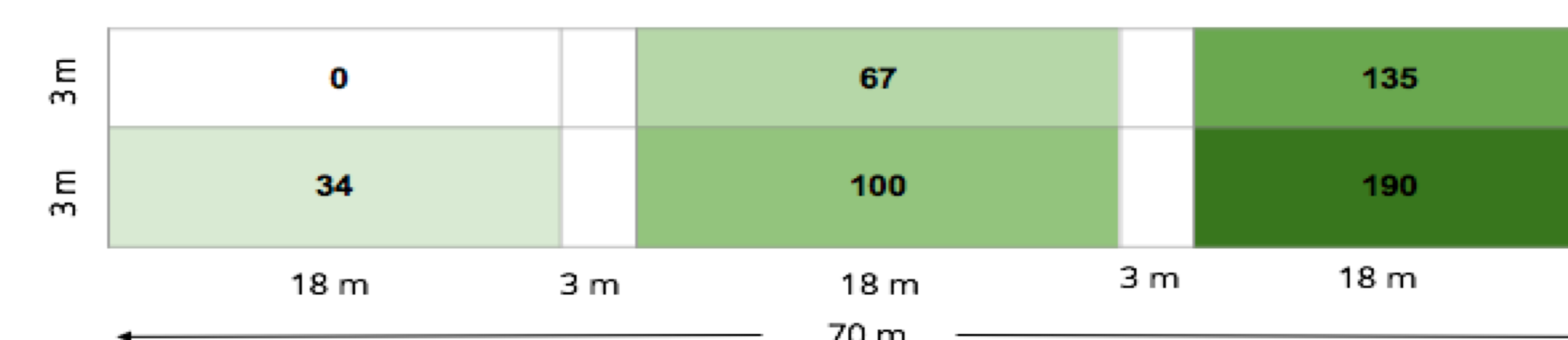


Cover Crop Biomass



Corn Yields

Second Year – Corn yield response to cover crop treatments
Each cover crop plot divided into six split-plots for sidedress N
All corn received 34 N kg ha⁻¹ at planting



Results and Future Analysis

- Overall, double-crop soybean yields were not different between row spacings or cover crop treatments
- Cover crop biomass between treatments at each site.
- Cover crop biomass N content will be measured and compared.
- Corn yields will be analyzed for response to cover crop and N treatments.