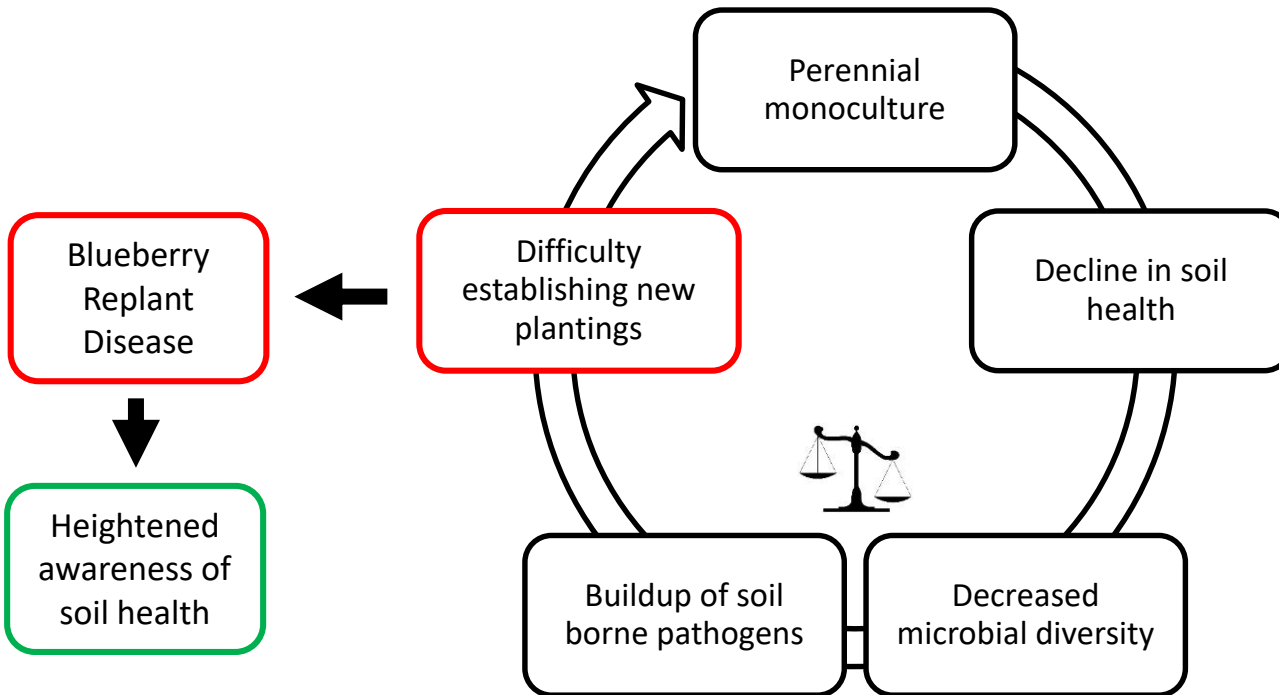


Impact of cover crops on weed populations
and soil health in highbush blueberry
(*Vaccinium corymbosum*)

Presented by: Kate Brown

Advisors: Dr. Peter Oudemans, Dr. Thierry Besançon

Declining soil health is likely the direct result of traditional cultivation practices



Improving soil organic matter benefits soil health

- Increase microbial diversity
- Increase water infiltration rate
- Increased water holding capacity
- Increased cation exchange capacity
- Improve soil aeration/decrease compaction
- Build soil structure to minimize erosion

Minimize plant stress → increased yield

Objective:

Improve soil organic matter content
with cover crops, compost, and mulch

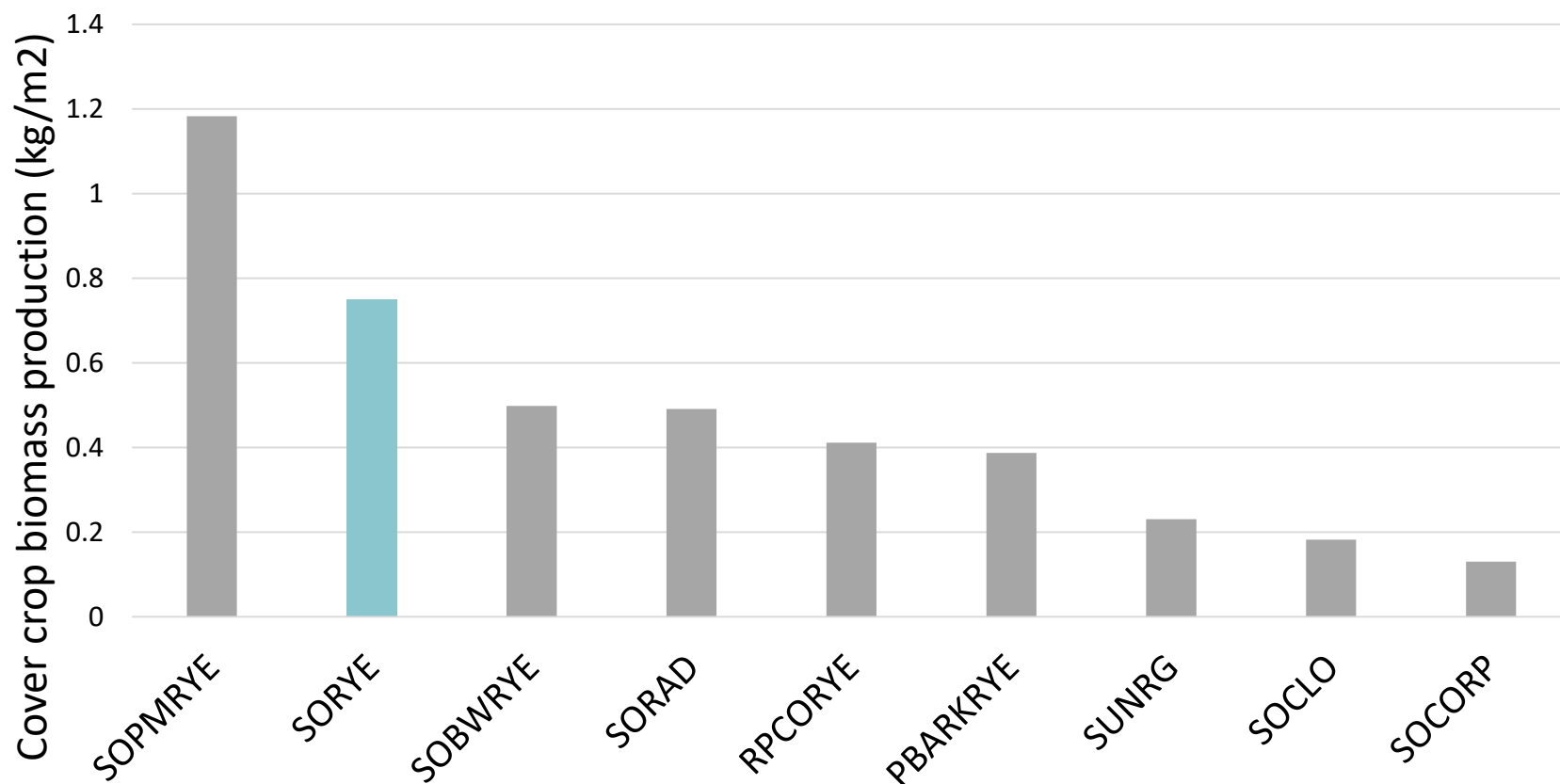


Method – (1) Develop a planting sequence to maximize seasonal opportunities

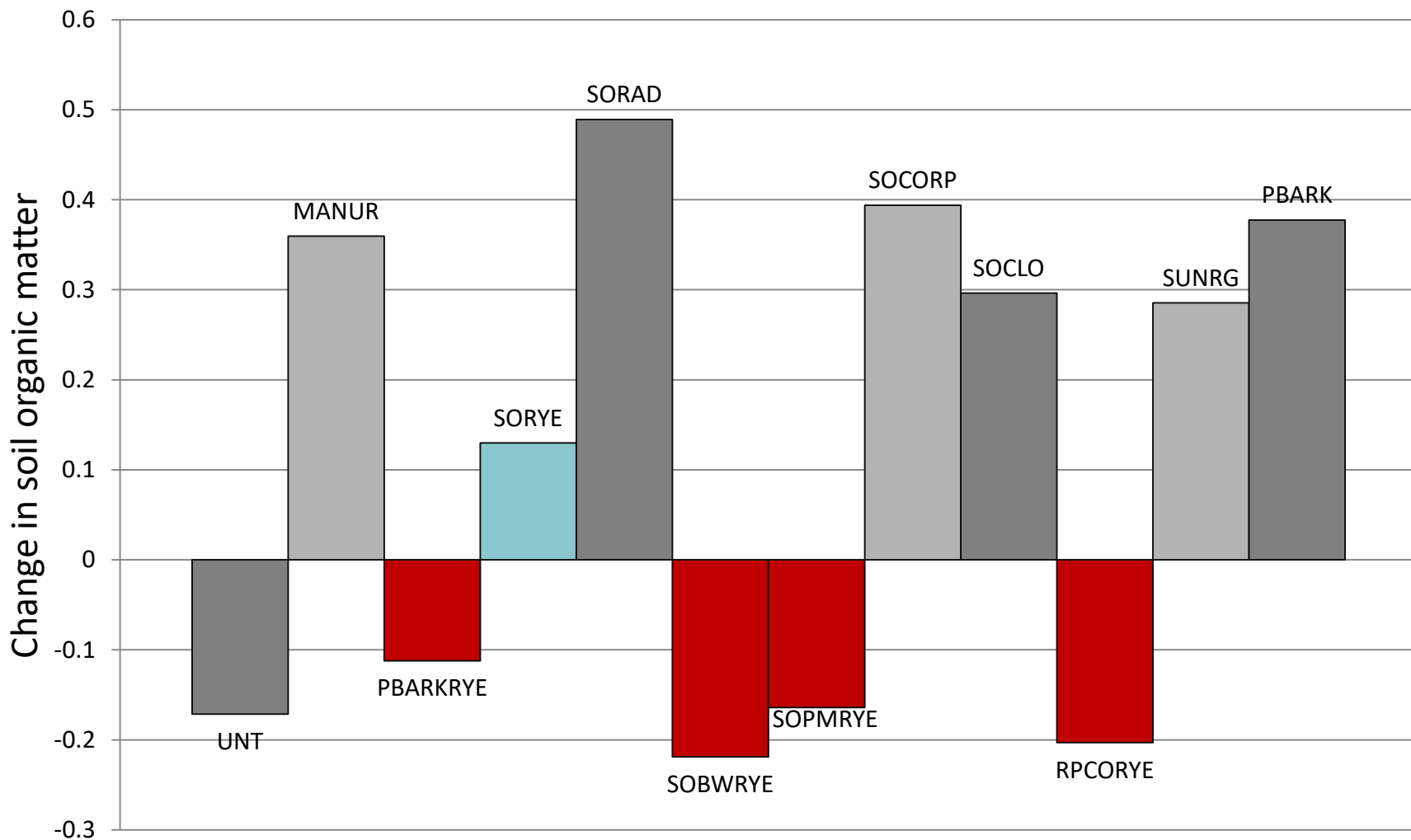
Treatment	Spring	Summer	Fall
UNT	Untreated control		
MANUR	Composted horse manure		
PBARKRYE	Pine bark mulch	Pine bark mulch	Cereal rye
SORYE	Sorghum-sudangrass	Sorghum-sudangrass	Cereal rye
SORAD	Sorghum-sudangrass	Sorghum-sudangrass	Tillage radish
SOBWRYE	Sorghum-sudangrass	Buckwheat	Cereal rye
SOPMRYE	Sorghum-sudangrass	Pearl millet	Cereal rye
SOCORP	Sorghum-sudangrass	Cowpea	Rapeseed
SOCLO	Sorghum-sudangrass	Sorghum-sudangrass	Crimson clover
RPCORYE	Rapeseed	Cowpea	Cereal rye
SUNRG		Sunn hemp	Annual ryegrass
PBARK		Pine bark mulch	

Emphasis has been on high yielding cover crops

Total Cover Crop Biomass Production (kg/m²) by Field Treatment in 2016



Change in Soil Organic Matter: April 2016 to November 2017

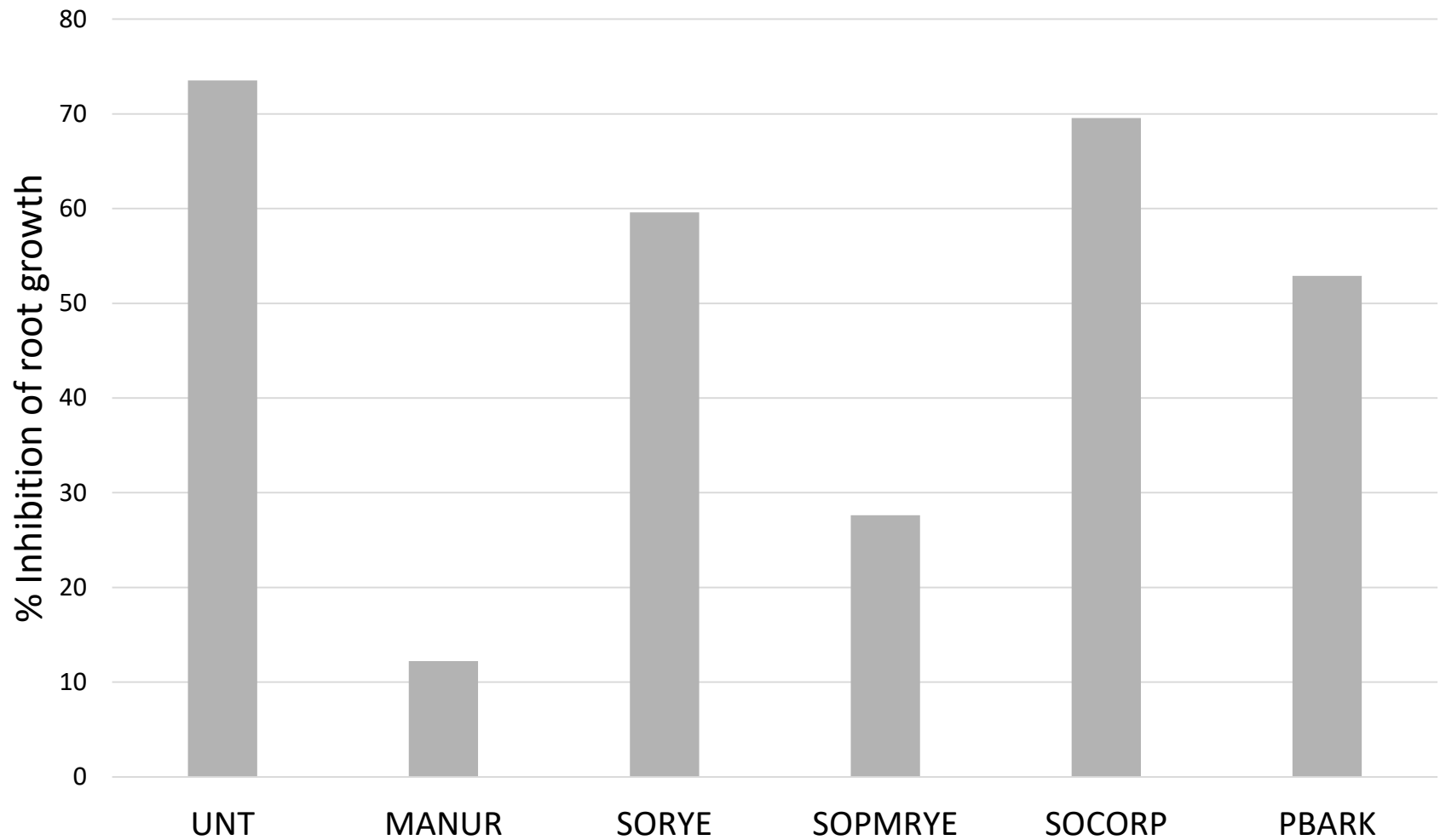


Testing Acquired Soil Suppressiveness to *Phytophthora cinnamomi***

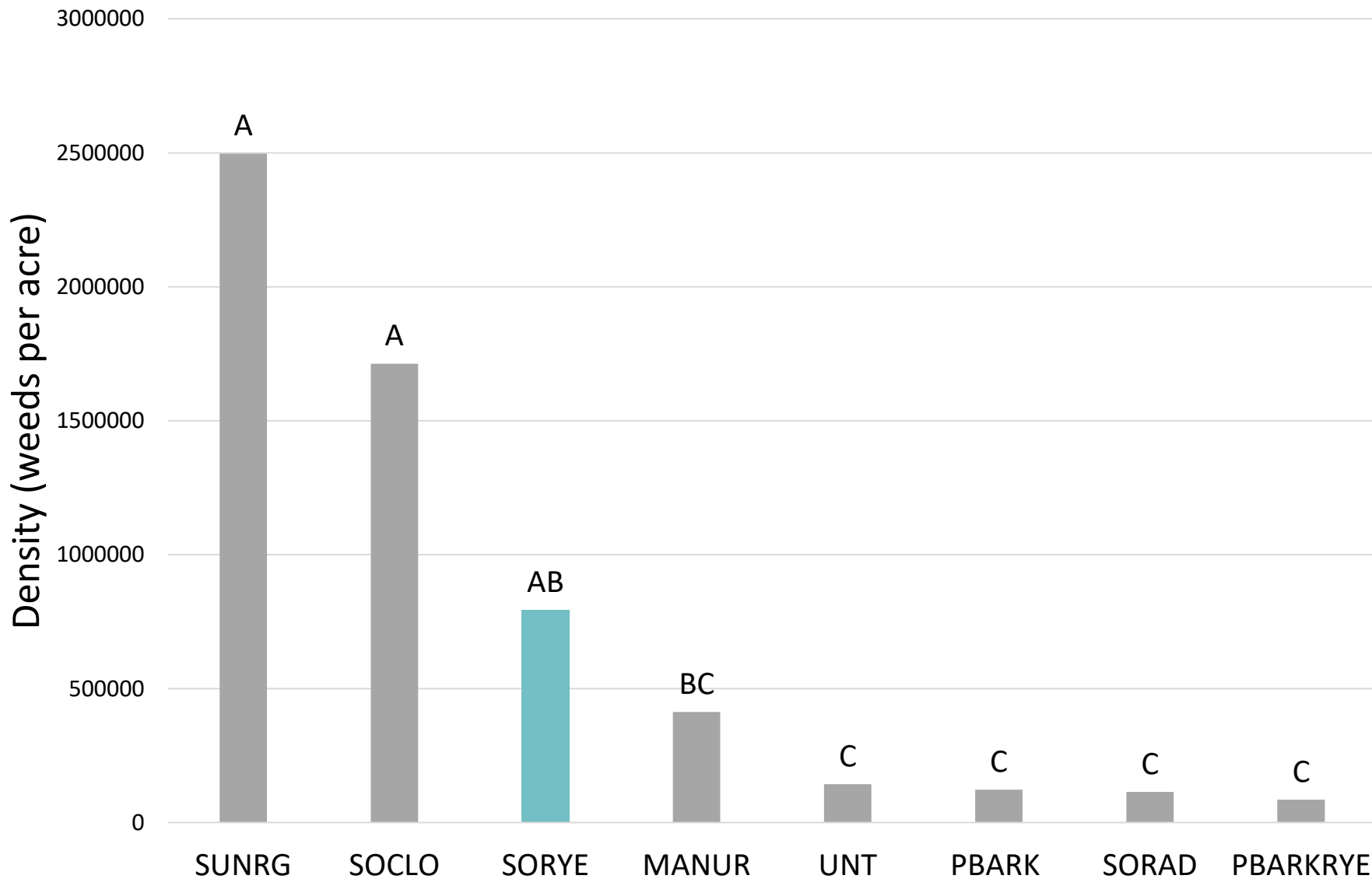
- Soil samples collected from demonstration plots
 - Six treatments selected
 - All six replications sampled
- One rooted blueberry cutting planted per pot
- Grown in greenhouse for twelve weeks
 - Pots placed randomly in flooded pools
 - Inoculations took place three times (once every two weeks for first six weeks)
 - Two isolates utilized
- Wash and weigh roots



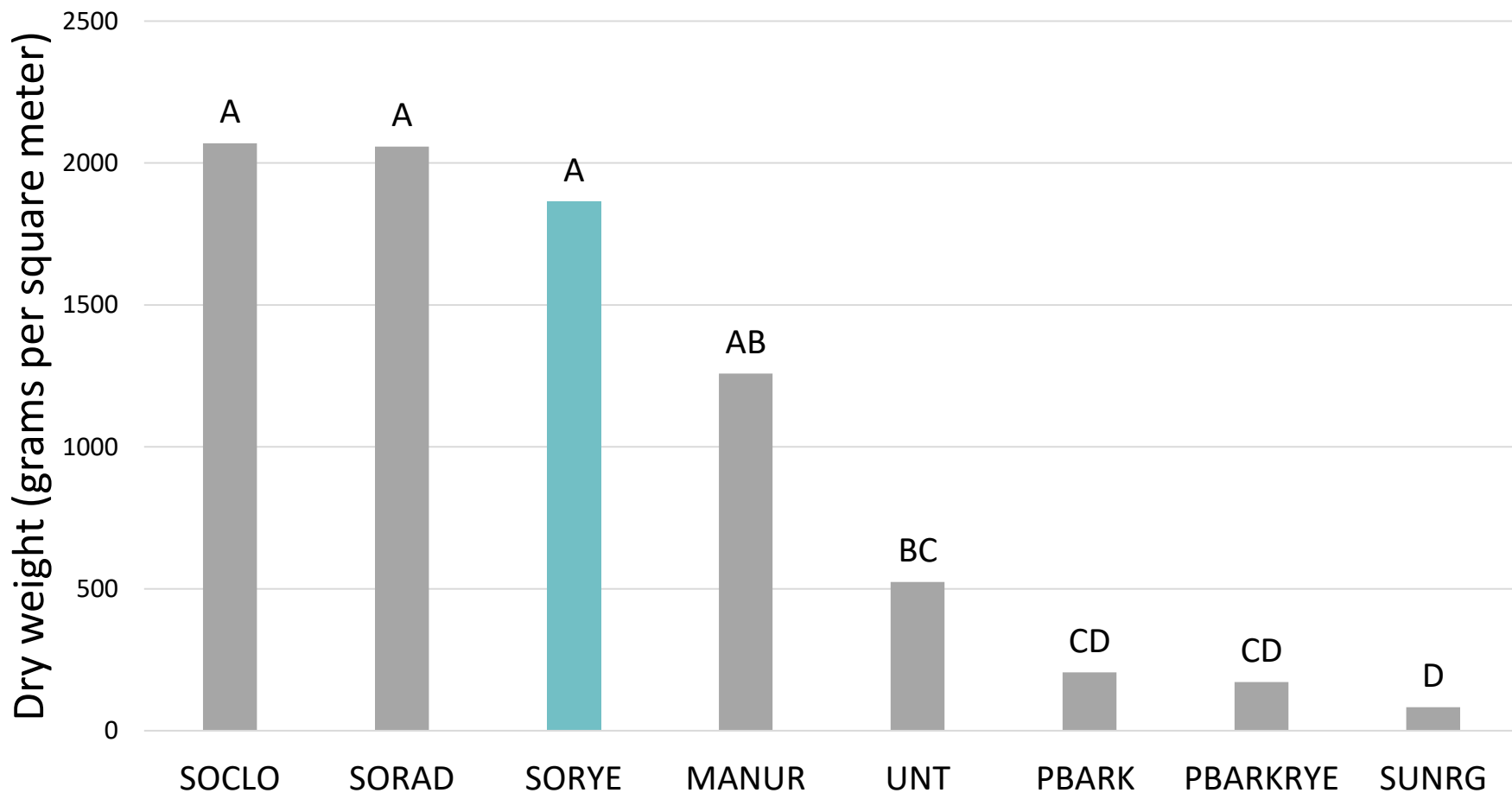
% Inhibition of Root Growth of Blueberry Cuttings Inoculated
with *Phytophthora cinnamomi*



Weed Density by Treatment: Broadleaf Weed Species



Dry Weight Biomass by Treatment: Grass and Sedge Weed Species



Conclusions and Future Plans

- Demonstration plots
 - Focus on cover crops with low C:N rather than high biomass production
 - Eliminate cereal rye
 - More weed species sampling dates
- Greenhouse bioassay
 - Include cover crop treatments with upward trending soil OM

