

Impacts of Winter Cover Crop Seeding Rates and Soil Type on Soybean Production



¹Gentry, D.S. , ²Fultz, L. , and ³Adumusilli, N.

¹ Louisiana State University Agricultural Center, Baton Rouge, LA dsgentry@agcenter.lsu.edu

² School of Plant, Environmental, and Soil Sciences, LSU, Baton Rouge, LA lfultz@agcenter.lsu.edu

³Department of Agricultural Economics, LSU, Baton Rouge, LA nadumusilli@agcenter.lsu.edu

Introduction

Research has shown that the integration of annual winter cover crops into a cropping system can potentially improve soil health properties; however, there have not been consistent crop yield increases as a direct result. Information regarding the impact of seeding rates and specific soil types is limited and would assist growers in managing their cover crops specific to their location and economic situation.

Hypotheses

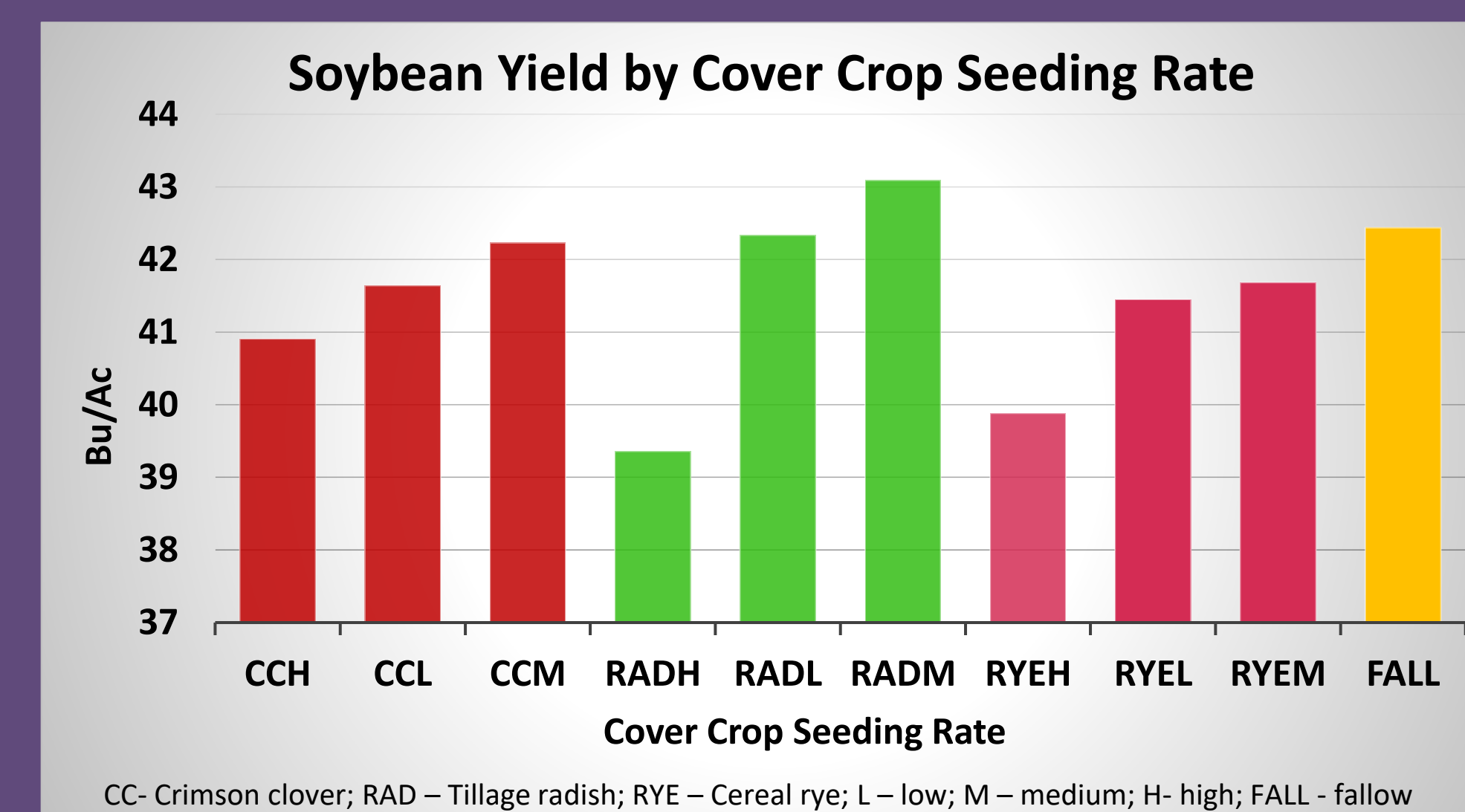
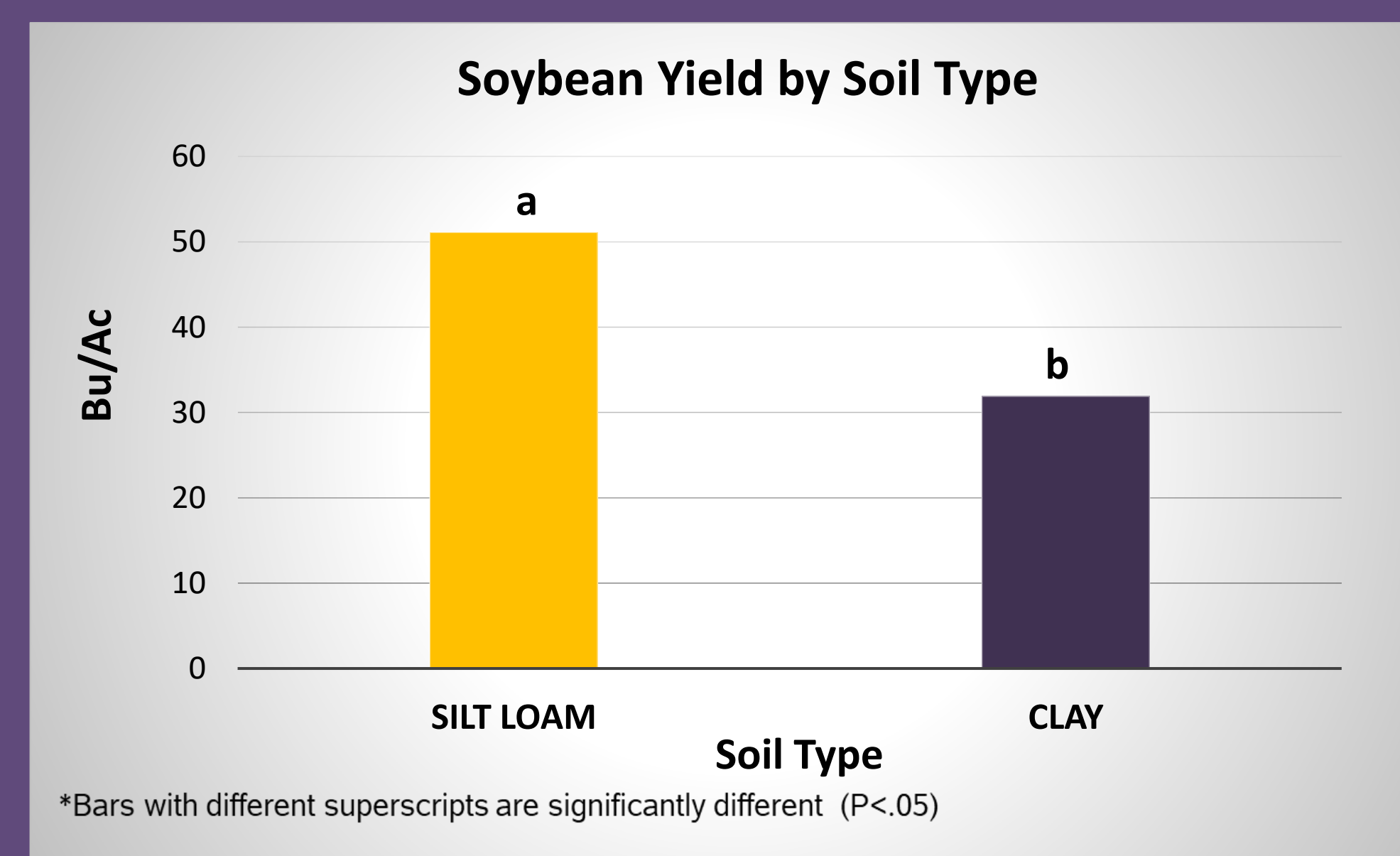
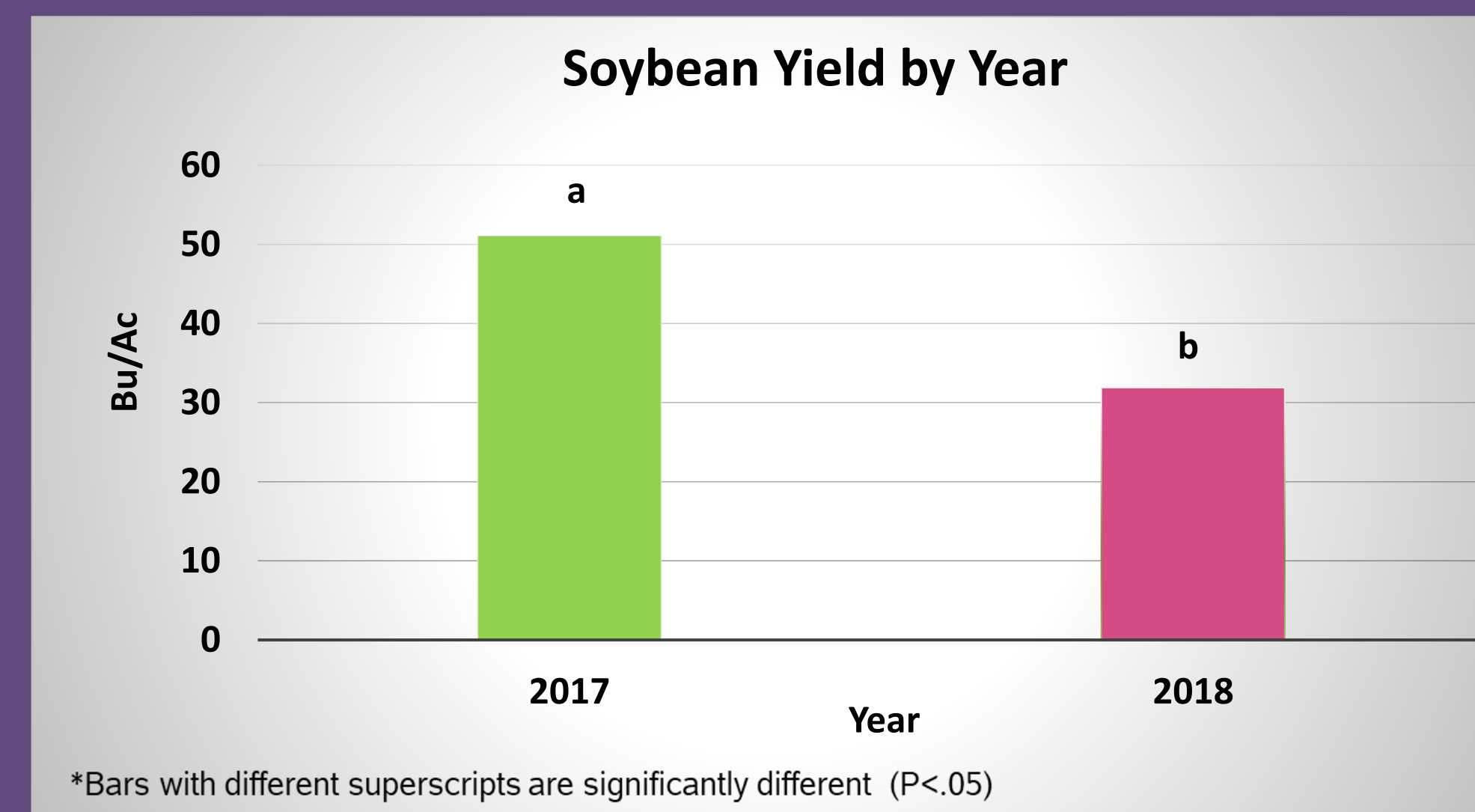
Higher seeding rates of cover crops will increase biomass, soil nutrient levels, and water holding capacity which will improve soil health and increase soybean growth and yield. Utilization of cover crops will significantly increase yields in Coushatta silt loam soils compared with Moreland clay.

Materials & Methods

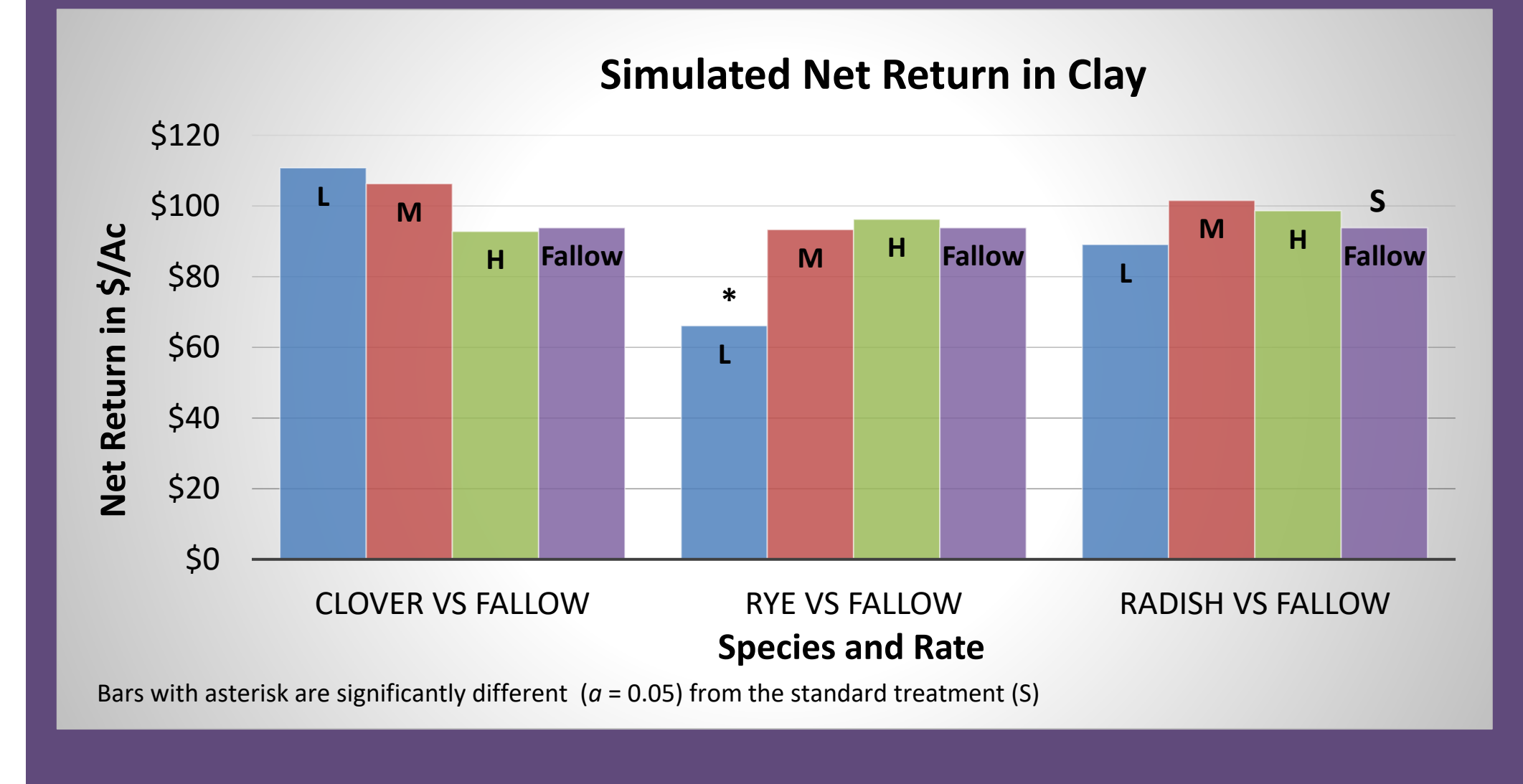
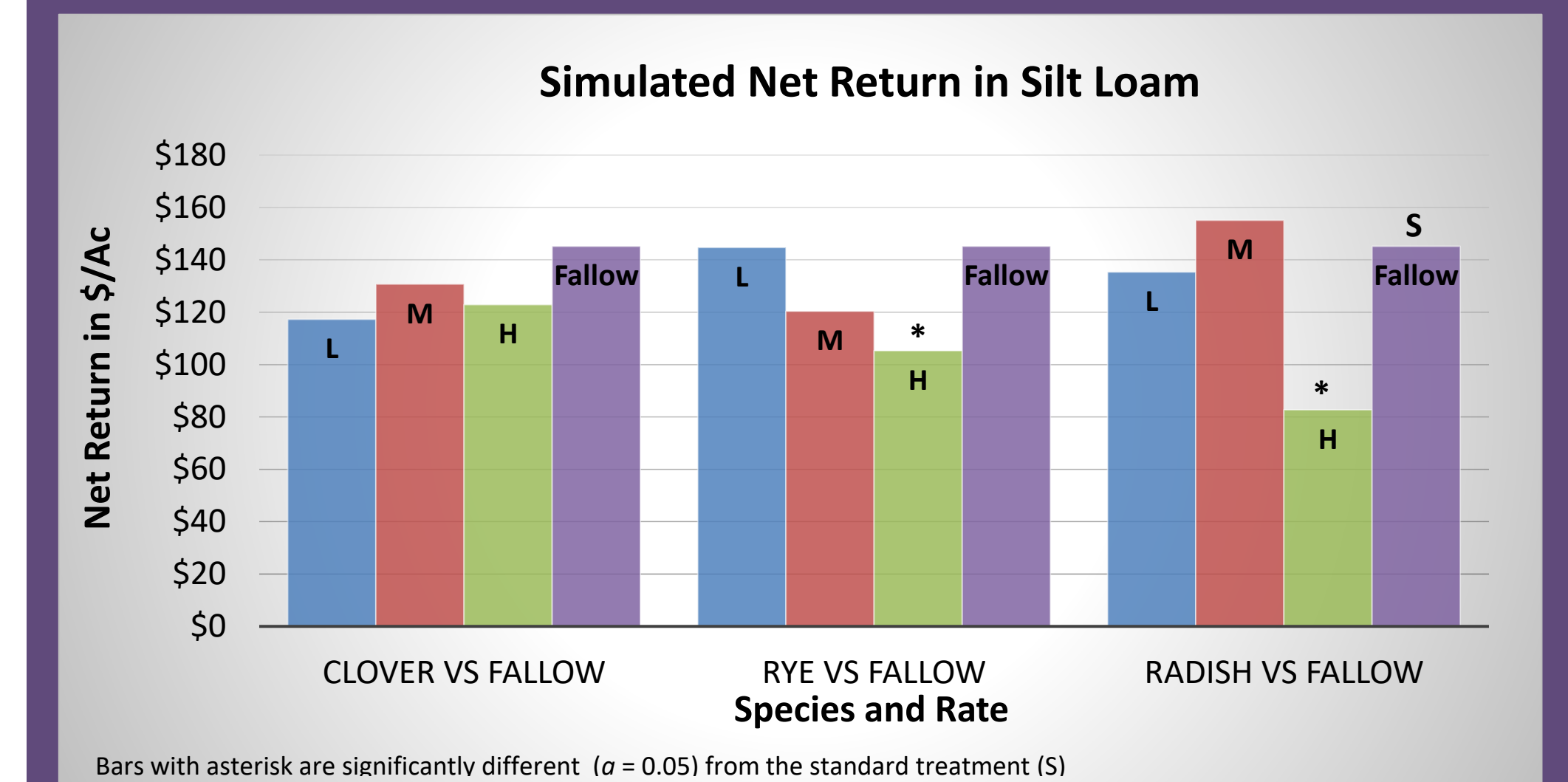
- Soil types included Moreland clay and Coushatta silt loam
- Plots were 0.001 acre
- Treatments included three broadcast seeding rates of cereal rye, crimson clover, and tillage radish with three replications
- Maturity group 5 soybeans were planted six weeks after cover crop termination and harvested in October of each year
- Data collected included plant population, plant height, grain yield, and estimated net profit return



Results



Results Continued



Conclusions

- Soybean plant population and height were affected by year and soil type but not cover crop seeding rate
- Soybean yield was affected by soil type with Coushatta silt loam yielding higher than Moreland clay but not cover crop seeding rate
- Soybean yield was impacted by year variability, with 2017 yielding 38% higher than 2018
- Simulated net returns were affected by cover crop seeding rate by soil type
- Low and medium rates of cereal rye and radish in silt loam were equally profitable to fallow; low rates of cereal rye in clay were least profitable
- Additional long-term research is needed to verify impacts from seeding rates in different environmental conditions

Acknowledgements

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