

Avery Cox

Mentor: Dr. Christine Palmer, Natural Sciences Department

“The Effect of Arbuscular Mycorrhizal Fungi on Micronutrient Concentrations in Bean Plants”

Arbuscular mycorrhizal fungi (AMF) are fungi that form intercellular symbiotic associations within the roots of vascular plants and are one of the most abundant soil organisms, forming relationships with an estimated 80% of terrestrial plants. This relationship is believed to have formed during the emergence of land plants some 460 million years ago. Research on these relationships have shown that AMF can benefit host plants in several ways such as increase growth rate, pathogen protection, nutrient acquisition, and rapid adaptation to changing environments. The significance of AMF is often overlooked in agriculture but has the potential to increase yield, reduce disease, reduce runoff of fertilizers, and produce crops with higher micronutrient concentrations. Today's agriculture practices rely on water-soluble fertilizers and agrochemical pesticides to grow crops. This study investigates the impact of mycorrhizal fungi on the growth and nutritional content of bean plants. This research will show how a single species of AMF (*Glomus intraradices*) affects macro- and micronutrient concentrations by quantifying the differences in bean plants with and without AMF to demonstrate possible benefits for agriculture. This work aims to create the groundwork for better understanding how supplementation of farm soils with mycorrhizal fungi can impact productivity and nutritional profiling of crop plants.