

TRANSFORMING MANURE TO CEDAR MULCH, FROM “WASTE” TO “WORTH”

DWFI-Supported Student Research

Each year DWFI leverages Robert B. Daugherty Foundation funds and additional donor funds to support graduate and undergraduate student research and creative activity. Funds are matched one-to-one by their DWFI Faculty Fellow advisors. This year we had to cancel our annual research forum, scheduled for April 2, and missed seeing the students present their work in person.

To celebrate the incredible research being done, students have shared a brief summary of their work and its impact. We're excited to share their work with you here. View more research from DWFI's supported students » <http://dwfi.us/Gx3150ze6F5>



Student: Agustin Olivo, M.S. in Biological Systems Engineering

Advisor: Amy Schmidt, Assistant Professor, Biological Systems Engineering & Animal Science, University of Nebraska–Lincoln

WHAT?

In areas of intensive livestock production like Nebraska, animal feeding operations generate significant amounts of manure that are sometimes considered a “waste” product. Eastern red cedar (*Juniperus virginiana*) encroachment has become a real economic and ecological threat in Nebraska. Removal of trees can help control its expansion, but this can be expensive and creates an additional challenge in determining how to dispose the “waste” wood. Manure and cedar mulch have shown potential to be used as soil amendments to improve soil properties, as well as crop productivity.

SO WHAT?

An on-farm research study was initiated in 2019 in 4 locations across Nebraska. Treatments included application of cattle manure and cedar mulch. Results for the first year of the study indicate that single manure applications can make significant contributions of N, P and K, constituting a reliable resource to replace inorganic fertilizers. Depending on initial soil quality, manure can also increase soil organic matter, pH, and soil electrical conductivity. Surface applications of cedar mulch did not show evidence of soil acidification or N immobilization. Physical properties were not impacted by single applications of manure or woody biomass in most of the sites.

Also during the first year of the project, a program including activities at the on-farm research sites, classrooms lectures, visual demonstrations and hands-on activities was created and delivered to FFA students at three schools. Results from surveys delivered at the end of the program showed that visual demonstrations and field assessments of soil health parameters successfully increased students' scientific understanding and awareness about the importance of soil health.

NOW WHAT?

Two more years of research will be conducted. With all the information collected we hope to better understand which are the soil conditions that maximize the benefits of applying these organic amendments. We also hope to further engage farmers and high school students in the research process, to promote the implementation of BMPs at the farm level, and increase citizen support of agricultural research.