

USDA Plains Area Internship

Location: Brookings, South Dakota, North Central Agricultural Research Laboratory (NCARL)

Pay: \$13.45/hour

Start Date: June 6, 2021

Mentor Scientist: Dr. Karl Roeder

Preferred experience and/or coursework:

Coursework in agriculture, biology, ecology, entomology, and/or environmental sciences is preferred. Prior experience with insects and/or crops like corn and soybean is preferred, but not required.

Description of Proposed Project:

Biological control of pest species via predation is one of the most important ecosystem services that native beneficial insects provide to cropped ecosystems. Quantifying this service and how much predation pressure is being exerted in the field is difficult though. Sentinel prey—artificial or live prey items whose consumption can be monitored over time—are a welcome solution to this problem and have been useful in providing a direct measure of predation under real, field conditions. However, many questions on best practices remain.

In this project, one undergraduate student (GS-3 level) will quantify predation levels of artificial caterpillars that mimic a variety of Noctuids (e.g. corn earworm) within corn and soybeans under conventional till and no-till practices. Duties will include: (1) preliminary reading of scientific literature on sentinel prey, (2) learning to make artificial caterpillars from modelling clay, (3) creating a reference database of attack marks on caterpillars in the lab, (4) behavioral observations of insect taxa attacking caterpillars, (5) deploying caterpillars to pre-existing field plots, (6) scoring predation marks on caterpillars, and (7) writing up a final progress report. The candidate will work in a team environment to achieve research objectives and will receive mentorship on experimental design, field methods, and data curation during weekly progress meetings with the principal investigator. The proposed project will occur in parallel with other research measuring insect communities and will indicate how predation of artificial prey correlates with other measures of natural enemy behavior.

Contact:

By 5:00 pm, April 21, please send a cover letter explaining why you are interested in this internship, along with your resume, to Karl.Roeder@usda.gov.