Mission 1: Measurement & Demonstration of Environmental Progress by Iowa Farmers

- INRS Progress Tracking System - Ongoing
    - A statistically representative, random survey of ag retailer sales records and field notes detailing farmer adoption of nutrient management practices outlined in the Iowa NRS science assessment. INREC and ISU are the collaborators on this public-private partnership. INREC collects confidential farmer data on practice adoption levels across Iowa and provides this data in aggregate form to ISU to estimate nutrient load reductions to Iowa streams and lakes and track progress towards the INRS goals.
    - Tracking System Status:
        - Pilot Project – Completed
        - 2017 Crop Year Survey – Complete
        - 2018 Crop Year Survey - Complete
        - 2019 Crop Year Survey - Complete
- 1980-1996 N & P Historic Baseline Nutrient Load Estimate – Completed (Final Report)
    - An assessment of the N & P loads delivered to Iowa surface waters during the 1980-1996 period, which is the starting point for measuring progress of the 45% N & P reduction goals of the Iowa NRS against. Report details a 22% reduction in P loads by agriculture, and 5% increase in N loads from the time of the baseline period to when the INRS was released.
- GIS Structural BMP Mapping & Historical Analysis – Completed (Project Overview)
    - Detailed mapping of structural conservation practices (terraces, ponds, water & sediment control basins, grass waterways, contour strip cropping, contour buffer strips) for every watershed in Iowa detailing past and current status of practices across Iowa.

Mission 2 – Facilitate New Environmental Technology, Research & Performance Validation

INREC facilitates neutral-science based performance assessments of new and existing environmental technologies and serves to help identify and foster innovation of new technologies and expansion of science-based options for meeting water quality goals. Science leadership is facilitated by INREC with Iowa State University.

Completed Projects

- Assessing Surrogate Measures of Nitrate (Sawyer, Helmers)
    - Project that assessed potential of alternate means to measure nitrate concentrations in-field to assess performance of various practices on reducing nitrate losses.

- Assessing Weather Variability Impact on BMP Performance (Helmers, Christianson, Waring)
    - Project that details the amount of variability in practice effectiveness on reducing nitrate losses, detailing that the largest factor affecting amount of nitrate loss in any given year is the weather.
- Assessing Patterns in Nutrient Transport and Load (Crumpton, Green, Stenback)
    - Project that provides a comparative assessment of the N & P loads from point and nonpoint sources which details temporal patterns in the relative magnitude of loads from both.
- Optimized Water Quality Wetlands
    - IDALS grant project that consisted of a mix of approaches to demonstrate innovative implementation methods for water quality wetlands and to identify new siting and design methods targeted at enhancing nitrate removal capacity of wetlands while decreasing implementation costs.

Ongoing Projects

- Research on Dedicated Cover Crop Practices for Use with Liquid Swine Manure (ISU)
    - Project assessing the effectiveness of using cover crops as a dedicated management practice on manured fields as compared to early and late fall manure applications without cover crops.
- Evaluation of the Phosphorus Availability of Wastewater from Phosphorus Reduction Processing (Mallarino, Thompson, Sawyer)
    - Project assessing the P content and availability of material recovered from wastewater processing. Assessments include testing to determine if the recovered material is suitable for ag land application.
- Assessing Water Quality Impact of Microbial N Nutrient Sources (Helmers, Crumpton, Hall, Castellano, Archontoulis)
    - Project assessing the potential for a new microbial N source to reduce nitrate losses.
- Accurately Characterizing N & P Loads from Ag Landscapes (Crumpton, Helmers, Isenhart, Green, Stenback)
    - Project assessing the appropriate watershed scale at which N & P loads from agricultural sources can accurately be measured and tracked.
- Assessment of Nutrient Losses Stemming from Uncontrollable Factors

    - Project that assesses the amount of N & P losses that are beyond human ability to control, such as large amounts of N leaching and P loss due to excessive rainfall events and P loads generated by in-stream processes from bed and bank loads. (ISU)

- Scaling Up Capacity to Implement Water Quality Wetlands

    - IDALS grant project seeking to develop and demonstrate a model for increasing the technical and landowner services capacity for delivery of water quality wetlands in a manner that is scalable across Iowa. Project seeks to tap into the existing capacity of drainage district boards of trustees and their associated drainage engineers and demonstrate their ability to facilitate water quality wetlands implementation at large scale across Iowa.

Mission 3 – Outreach & Education to Enhance Environmental Impact of Ag Retailers & Crop Advisers

The environmental footprint of Iowa's hundreds of ag retailers and estimated 5,000+ crop advisors who essentially "meet with every farmer, concerning every field, every year" is enhanced by INREC dedicated outreach and education to help with advising farmer decisions regarding environmental technologies and practices.

- Conservation College at Agribusiness Showcase & Conference (ASC)

    - Dedicated environmental programming targeted to crop advisers annually at ASC. Sessions provide crop advisers with information and training on the latest environmental technologies available to assist their farmer customers.

- Iowa CCA Summer Field Day

    - Annual summer field day offering agronomic and environmental programming to crop advisers.

- Iowa Agribusiness Environmental Partnership

    - Dedicated effort of Iowa ag retailers and agribusinesses to provide leadership in assisting farmers and landowners to advance environmental stewardship, and progress toward meeting environmental goals.

- 4R Plus Partner

    - 4R Plus provides outreach and education on the suite of practices from in-field to edge-of-field that help to increase productivity, improve soil health, and improve water quality.

- Iowa Seed Corn Cover Crops Initiative

    - IDALS grant project focused on outreach/education to farmers, crop advisors and retailers towards enhancing the adoption of cover crops on seed corn production lands.

- Numerous invited presentations at conferences, seminars and meetings.