ILLINOIS NREC

From Peer-Reviewed Science to BMP's for On-Farm Adoption

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Illinois NREC Research Funding

Solicit proposals that focus on
- Improved nutrient efficiency
- Enhanced crop production
- Protect water quality

Council, Research Committee, and Independent Peer Review Team review applications

Projects are ranked on merit and availability of funds

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Funding and Progress to Date

- Since 2013
  - Over $26M invested in research projects
  - Four NREC publications: Turf Guide, Cover Crop Guide 1.0, Guide to MRTN, and Cover Crop 2.0
  - Annual Reports, Investment Insights, Field Notes, and videos, Research Forum
  - More than a dozen papers published in Professional Journals written by NREC-funded researchers
  - Many opportunities for collaboration on research and outreach projects

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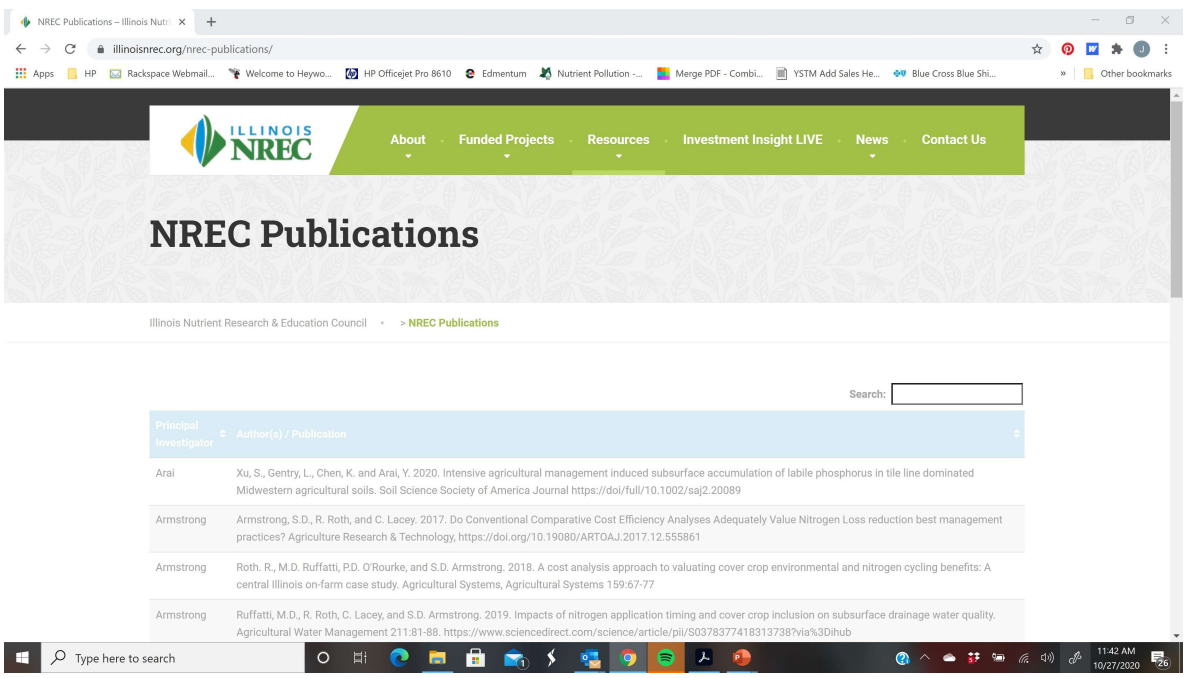

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2020/21 Research Priorities

- Continue studies testing the impact of N management systems on efficiency of N use.
  - Maintain statewide distribution of work on optimum N rate to meet the needs of the MRTN.
  - Evaluate the efficacy of combinations of (4R's) source, place, rate and time of application on N efficiency.
- Cover Crops: Evaluate the economics, feasibility, water quality impacts and best management practices of growing cover crops to address nitrogen and phosphorus loss as well as crop productivity. Proposals should address all aspects of cover crops from crop selection, seeding and grazing through crop termination and subsequent mineralization and nutrient release.
  - Cover Crop systems following soybeans and ahead of corn to maximize corn production and minimize nutrient losses.
  - Engineered cover crops/Cover crop options beyond cereal rye.
- Evaluate the agronomic and environmental benefits of reduced tillage/strip till/erosion control and the placement and timing of nutrient applications throughout the entire state
- Phosphorus – Continue studies testing the impact of Phosphorus management systems on efficient Phosphorus usage, the role of legacy Phosphorus, as well as placement and timing of Phosphorous applications in corn and wheat.
- Investigate the cause(s) of increased nutrient loads in the Illinois and/or Rock River watersheds identified in the latest NLRS Biennial Report.
- NREC is also very interested in research projects that go beyond the "known" into more innovative (novel, inventive, original) and forward-looking research.

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2021 Research

- $3.9 Million in research awards
- 33 total projects
  - 24 ongoing
  - 9 new
- Grants recipients:
  - University of Illinois
  - Southern Illinois University – Carbondale
  - Purdue
  - Western Illinois University
  - IFCA

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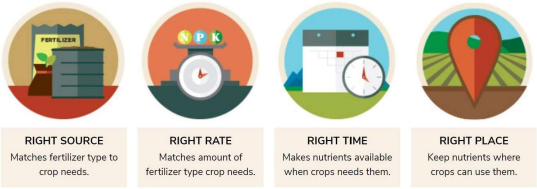
4R Nutrient Management

- Ongoing N-rate trials to support the MRTN
- Impact of timing on tile nitrate levels
- The role of mineralization and nitrate loss from 0 nitrogen trials
- 4R Nutrient research focus is both agronomic, economic and environmental
- Precision Ag for N-Management
- N placement
- Using stable isotropes to understand sources and cycling of nitrates



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Cover Crop Research

- Long-term paired watershed research
- N application timing and cover crops impact on Fate and Availability of N Fertilizer
- Extended rotation with cover crops
- Insect management in cover crop systems
- Utilizing cover crops in Southern Illinois for P and N loss
- Modeling projects to evaluate the suitability and benefits of cover crops
- Integrating grazing into cover crop systems

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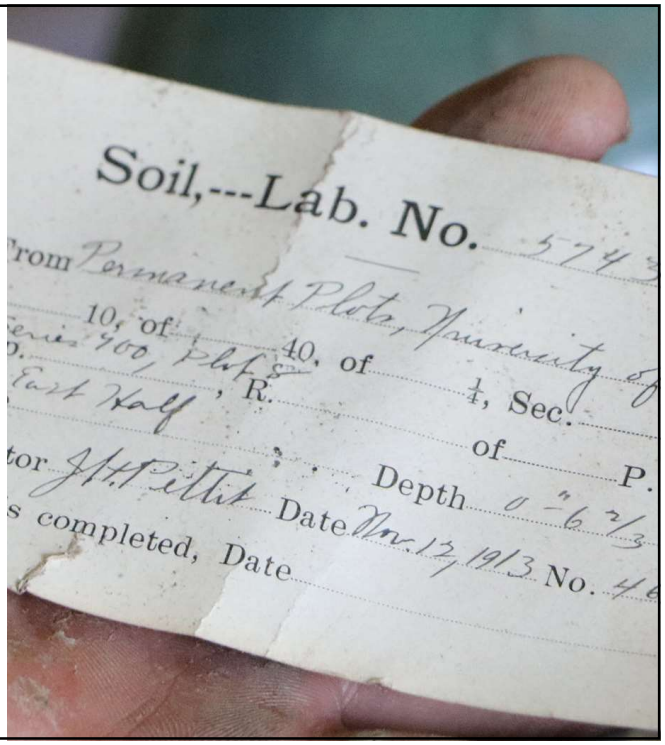
Phosphorus Research

- Struvite made from recycled P from wastewater treatment facilities as an alternative P Source
- Edge of Field P Filters:
- Freeze/Thaw Cycle Impact on P Loss in Cover Crops
- Designer BioChar for P removal
- The role of legacy P and utilizing 150 years of soil samples
- Evaluation of WASCOB's P Removal Potential
- Role of Gypsum in managing P losses



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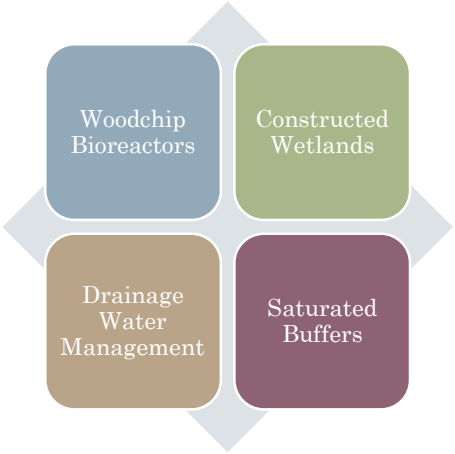
Edge of Field Practices



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Emerging Issues

- Dissimilatory Nitrate Reduction to Ammonium for Nitrate Retention in Agricultural Soils
- Tile Depth and Spacing
- White paper research related to P loading in Illinois River watershed
- Maize microbiome research

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Where can I get more info?

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