UNCERTAINTIES OF ATRAZINE LEACHING AND ACCUMULATION IN THE VADOSE ZONE UNDER FUTURE CLIMATE SCENARIOS

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**

Water*for*Food
DAUGHERTY GLOBAL INSTITUTE
at the University of Nebraska

Student: Chuyang Liu, for a Ph.D. in Civil Engineering

Advisor: Yusong Li, Associate Professor, Civil Engineering, University of Nebraska–Lincoln

WHAT?

As one of the most widely used herbicides to control weeds on agricultural lands, atrazine is commonly detected in groundwater and threatens public health as an endocrine-disruptor. With increasing demands on food production systems and depleting groundwater resources, it is essential to understand the impact of future climate change on the leaching and accumulation of atrazine beneath agricultural production areas. Predictions of atrazine leaching and accumulation in the future will be subject to uncertainties related to transport and reaction processes, as well as uncertainties from various future climate scenarios.

SO WHAT?

We will use an integrated modeling approach to estimate transport of atrazine beneath a center pivot-irrigated cornfield in Nebraska's Management Systems Evaluation Area (MSEA) under various future climate scenarios. We also evaluate the uncertainties related to such predictions.

Preliminary findings indicate that the atrazine application schedule and irrigation management strategies influence its accumulation and transport. Different future climate scenario models impact the uncertainties of the prediction.

NOW WHAT?

Our modeling results will guide on evaluating/developing adaptive crop management plans to maintain resilient farmland and clean water. Utilizing an adaptive crop management plan, people living near cropland will have reduced potential for impaired water quality. This is important as groundwater is used as a drinking water source in most of Nebraska.