CASE STUDY

NITROGEN RETURN ON INVESTMENT WARRANTY



PRODUCTION CHANGE: Reducing nitrogen fertilizer application to science-based, university-recommended levels.

FOCUS REGION: Midwest

EXISTING INSURANCE OPTIONS:

Many farmers in the U.S. Corn Belt overapply nitrogen fertilizer beyond science-based recommended rates, primarily driven by the fear of profit loss due to insufficient nitrogen during high demand crop years. Nitrogen overapplication contributes to nitrogen losses that degrade water quality through nitrate leaching and increase greenhouse gas emissions through nitrous oxide (N_2O) emissions. The Federal Crop Insurance Program offers a Precision Application Coverage Endorsement, which covers farmers yield losses associated with weather disruptions to applying nitrogen fertilizer in a split-application system — a system that delivers nitrogen only at the critical times of plant need. Existing market programs including voluntary carbon market and food company sustainability programs offer financial incentives to implement fertilizer management practices. These programs help reduce the financial risk of improving fertilizer management.

INSURANCE GAPS:

Farmers lack insurance coverage to protect against the profit risk of reducing nitrogen fertilizer application. This insurance gap leaves producers with financial risk that some may perceive too high for fertilizer cost savings to offset.

To learn more:

business.edf.org/farm-finance/

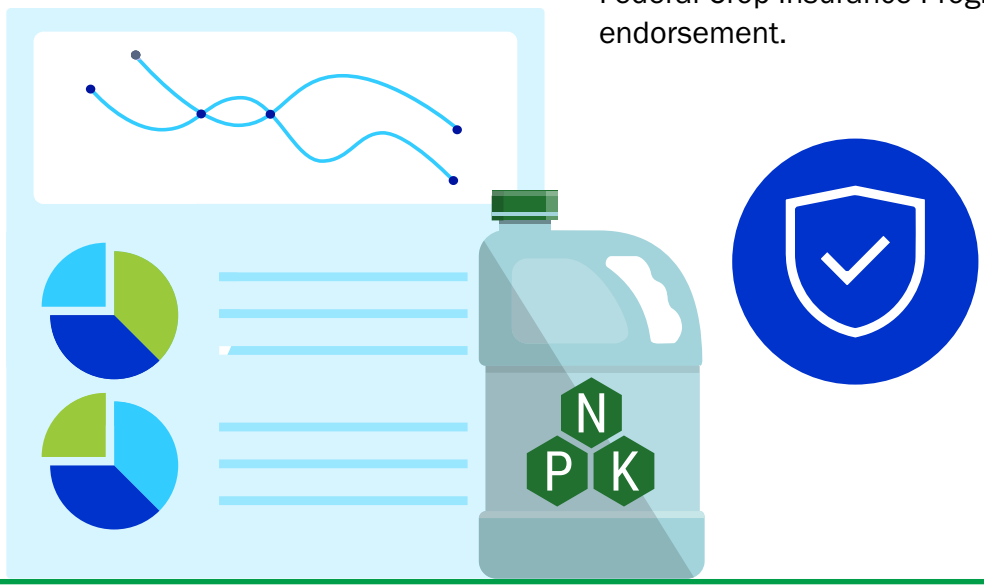
PROPOSED SOLUTION:

The Nitrogen Return on Investment (ROI) Warranty is a financial risk transfer product for science-based nitrogen use. The product offers protection against profit losses associated with reducing nitrogen fertilizer application below farmers' usual rate. The insurance payment is triggered if the profit from the insured area of a field is lower than the profit from a reference area within the same field managed using the farmer's usual fertilizer rate. The insurance premium is smaller than the fertilizer cost savings the producer achieves, offering a net cost saving on top of the profit risk protection. This market-based mechanism eliminates the fear of financial loss.

KEY STAKEHOLDERS:

Farmers, private insurers and reinsurers, agricultural retailers, companies with scope 3 goals, and carbon project developers.

Case study content provided by Purdue University (Dr. German Mandrini and Dr. Ignacio Ciampitti)



CURRENT STATUS:

Investor engagement and pilot ready.

Reducing fertilizer application to the most economically efficient level saves costs and protects water quality.

Insurance against yield loss from lowering fertilizer applications can protect farm profitability.

PATHWAY TO SCALE:

This solution can scale through the private sector via agricultural retailers, cooperatives, corporate Scope 3 inset programs, and Section 45Z tax credits, providing diversified financial support for farmers. It can expand to other crops and regions and ultimately inform integration into the Federal Crop Insurance Program as a nationwide endorsement.