Can Improved Nitrogen Use Efficiency in Genetically Engineered Crops Help Reduce Nitrogen Pollution?

Nafisa Chowdhury

Environmental Studies Honors Seminar

Thesis Faculty Adviser: Jennifer Jacquet

Abstract

Excessive use of nitrogen fertilizer in agriculture and inefficient capture by crops has increasingly become a source of environmental damage. Particularly, the use of nitrogen fertilizer has led to runoff into nearby bodies of water and has led to the advent of dead zones in marine and freshwater coastal ecosystems. The development of genetically engineered crops with increased nitrogen use efficiency (NUE) proposes a solution for mitigating such environmental issues while also promising to help meet food security demands. This paper seeks to analyze the potential for multi-national research on genetically engineered crops with purported increase in nitrogen use efficiency to reduce nitrogen pollution. Through an analysis of current trends on research about genetically engineered NUE crops, the international and domestic legislative climate surrounding genetically modified organisms, the challenges of commercializing second-generation crops and issues with farmer compliance on nitrogen management this paper determines that nitrogen efficiency of genetically engineered crops alone cannot reduce nitrogen pollution.