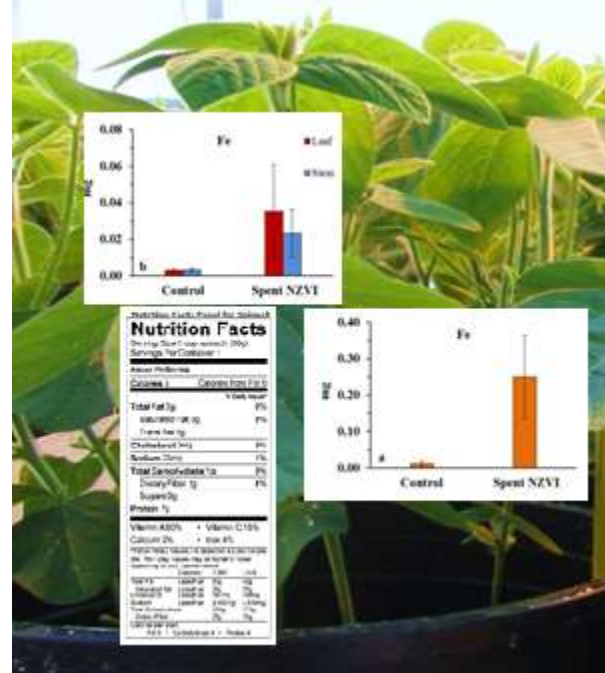


# NDSU Engineering Grand Challenge Project Examples

## Want to Engineer More Nutritious Food?

The food items we consume are not rich in some micronutrients. Anemia (deficiency of red blood cells) affects 500 million women of reproductive age worldwide and half of them suffer from iron deficiency. What are the solutions? We can give them iron tablets! Any other ideas? We can possibly fortify food crops with iron. How about we use nanomaterials? However, nanomaterials may be toxic! Will that harm us or the environment?

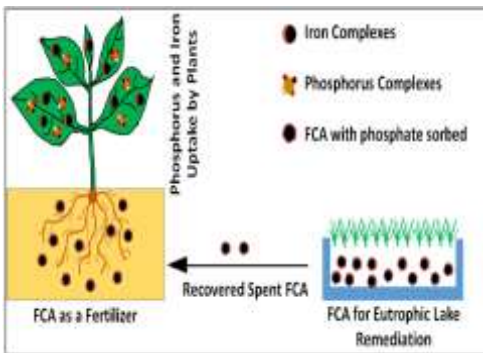
We can find answers to these questions by conducting some experiments spread over couple of years. Such a research is exciting because we will explore the unknowns and possibly contribute towards world nutrient security!



## Mining Phosphorus in Neighborhood Lakes

Eutrophication (or gradual death) of lakes and waterbodies happens because of excess plant nutrients like phosphorus (P) and nitrogen (N) in water. Phosphorus present in even low concentrations ( $>30 \mu\text{g/L}$ ) can lead to profuse algae growth in lakes. We sure don't like the green slimy layer in our lakes. It is also important to recognize that P is nonrenewable resource (currently mined as phosphate rocks) and there will be a short supply of P in the world in around 2033. Our agricultural production will go down while we will have more people to feed.

This is a perfect time to work on these problems and possibly start a business of mining P from waterbodies! Well, if we can create a process/product to recover P from lakes and use that as fertilizer then that will be a win win!!



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