



# On-Farm Precision Agriculture Data to Support Variable Rate Technology

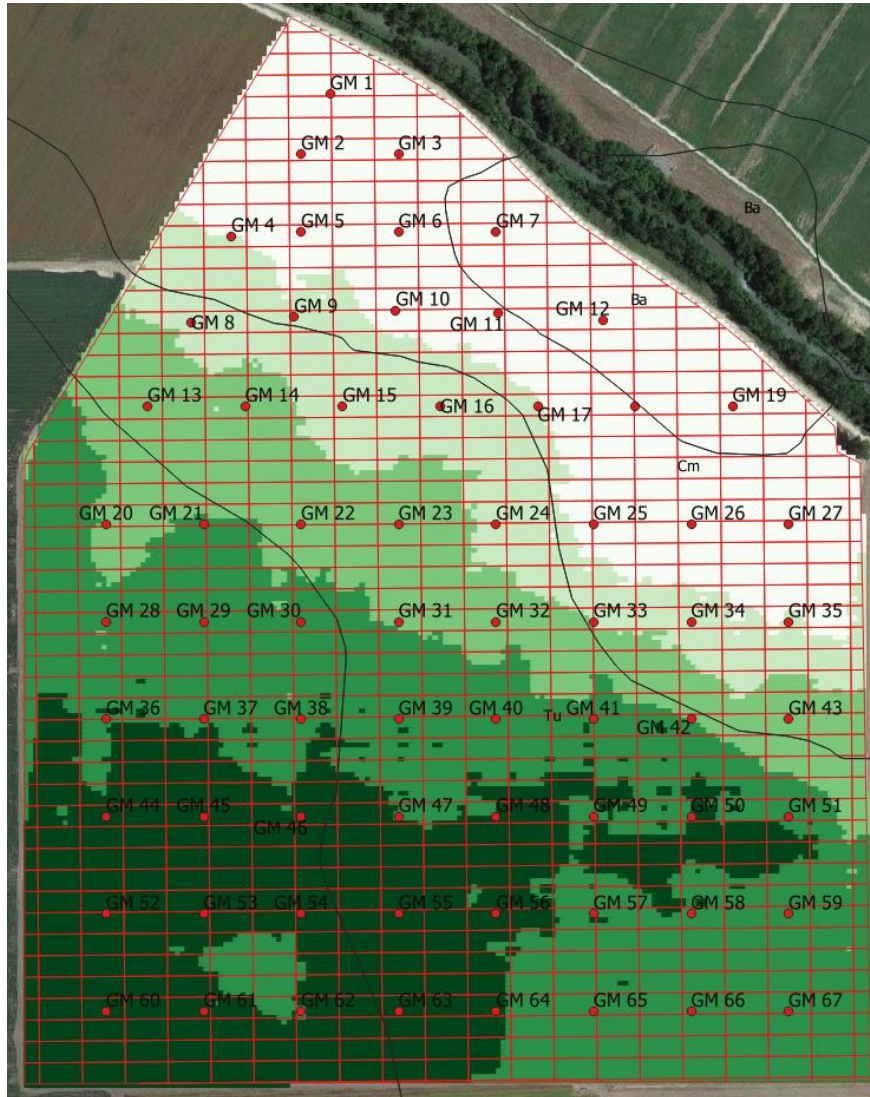


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# Summary

- Why on farm data for precision agriculture useful?
- DIFM Project (Data Intensive Farm Management): Scope and type of data generated from on farm precision experimentation
- Who will benefit from these type of experiments?
- Proposition for Louisiana

# Why ON FARM data for precision agriculture use?



- Need of **large areas** to evaluate spatial variability
- Experimental condition of **small plot on station** are very **different** from farmers fields
- **Better farm equipment**, pesticides, crop scouting and conducting compared to university standards
- We need to analyze those **colorful maps** with right statistical procedures
- We have to work with a **large amount of data** to support VRT applications
- Help farmers be **profitable** and competitive



# Data Intensive Farm Management Project (2017-2020)

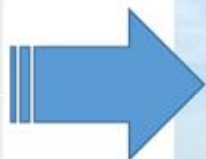
- USDA National Institute of Food and Agriculture Food Security Program grant, award number 2016-68004-24769



Data-Intensive Farm Management (DIFM) is a project with 30 researchers at five US universities, counting with collaborators in Argentina, Brazil, Canada, and Colombia. It consists on a large-scale, on-farm “checkerboard” trials.



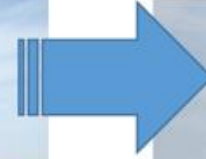
Trial Design



pounds Urea  
86.9565217391304  
130.434782608696  
176.086956521739  
217.391304347826



Variable rate application equipment allows participating farmer to implement the deigned experiment

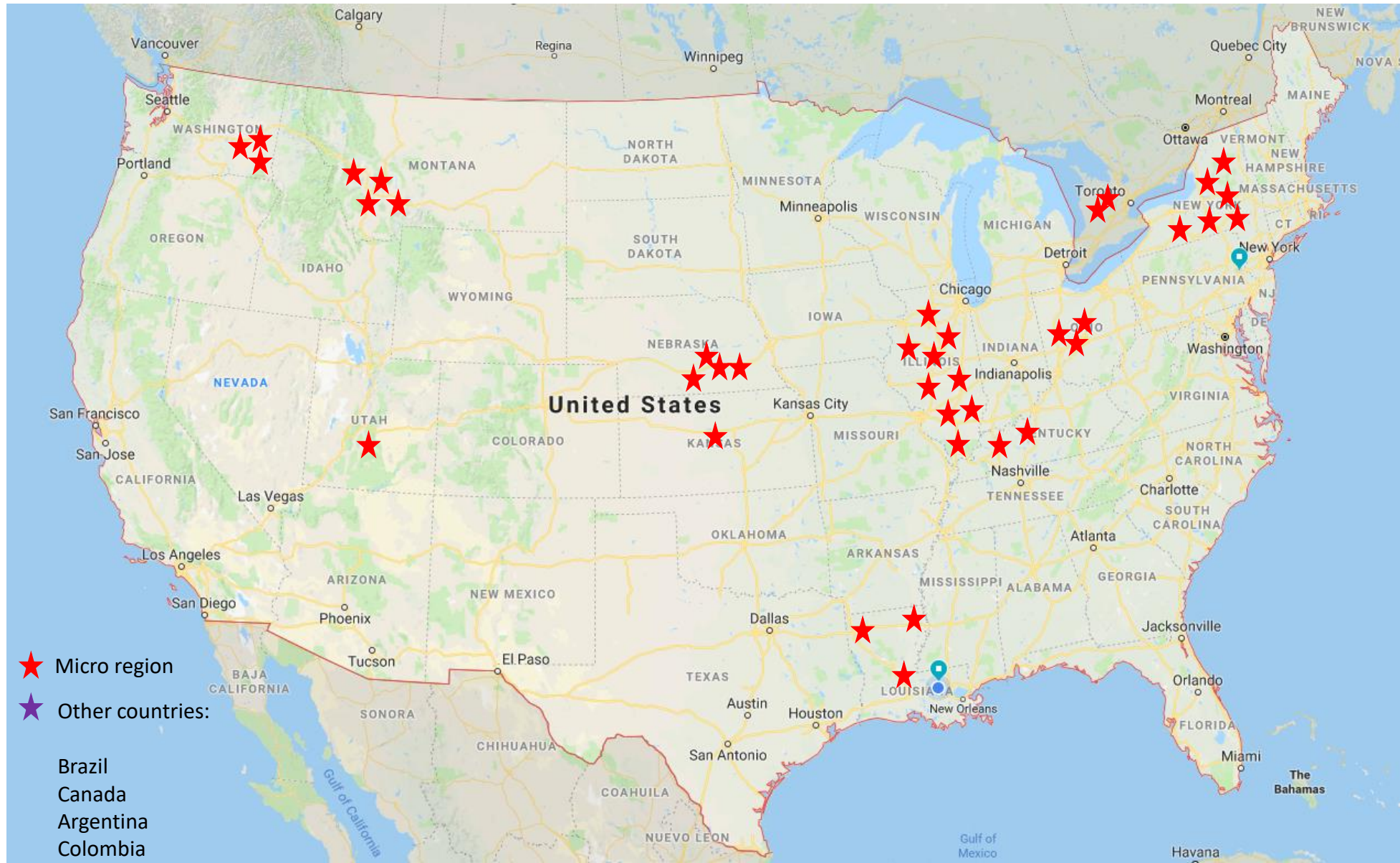


Yield monitor generates yield data

Source: Alexandre Ormiga Barbosa, 2019

# DIFM commitments since 2017

100 farmers fields (entire field around 50 acres)

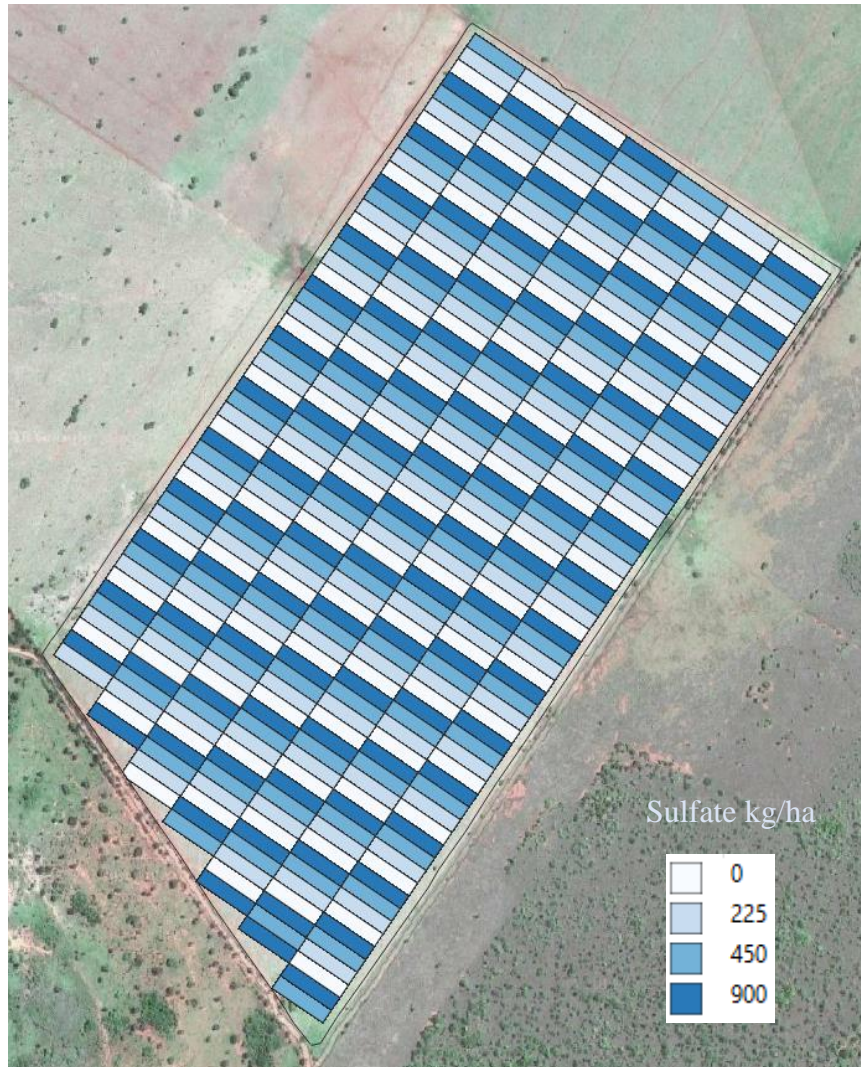




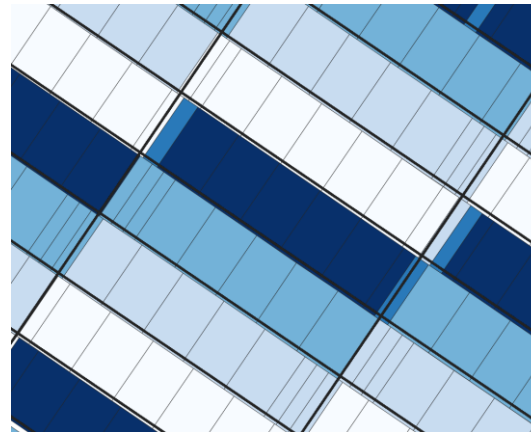
# Scope and type of data generated from on farm experimentation

Example 01 – Mato Grosso (2018) - Brazil

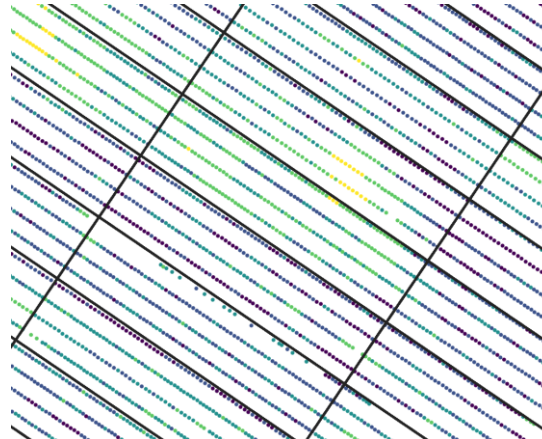
N rates



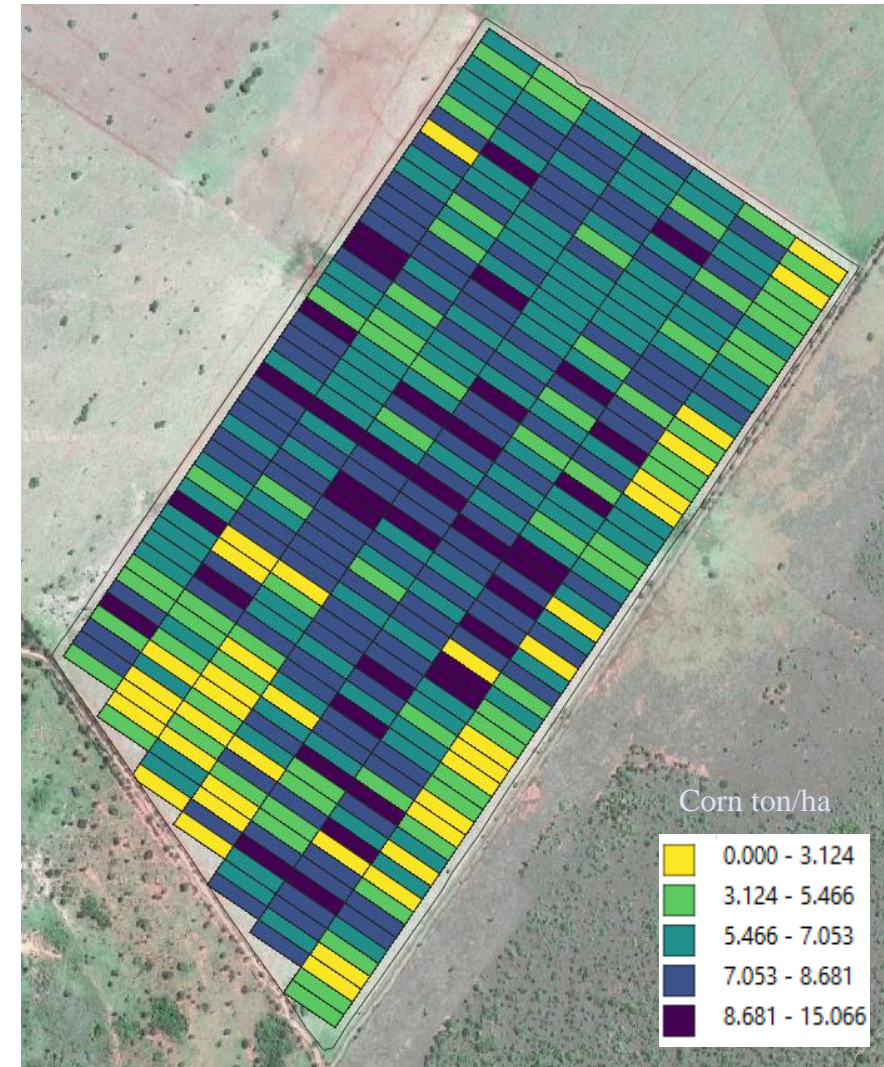
As applied maps



Yield point data

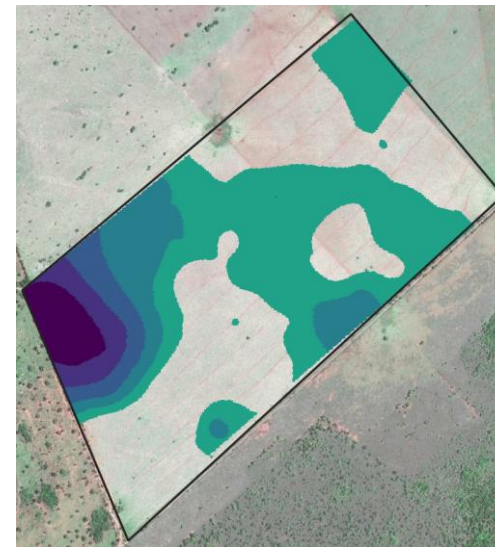
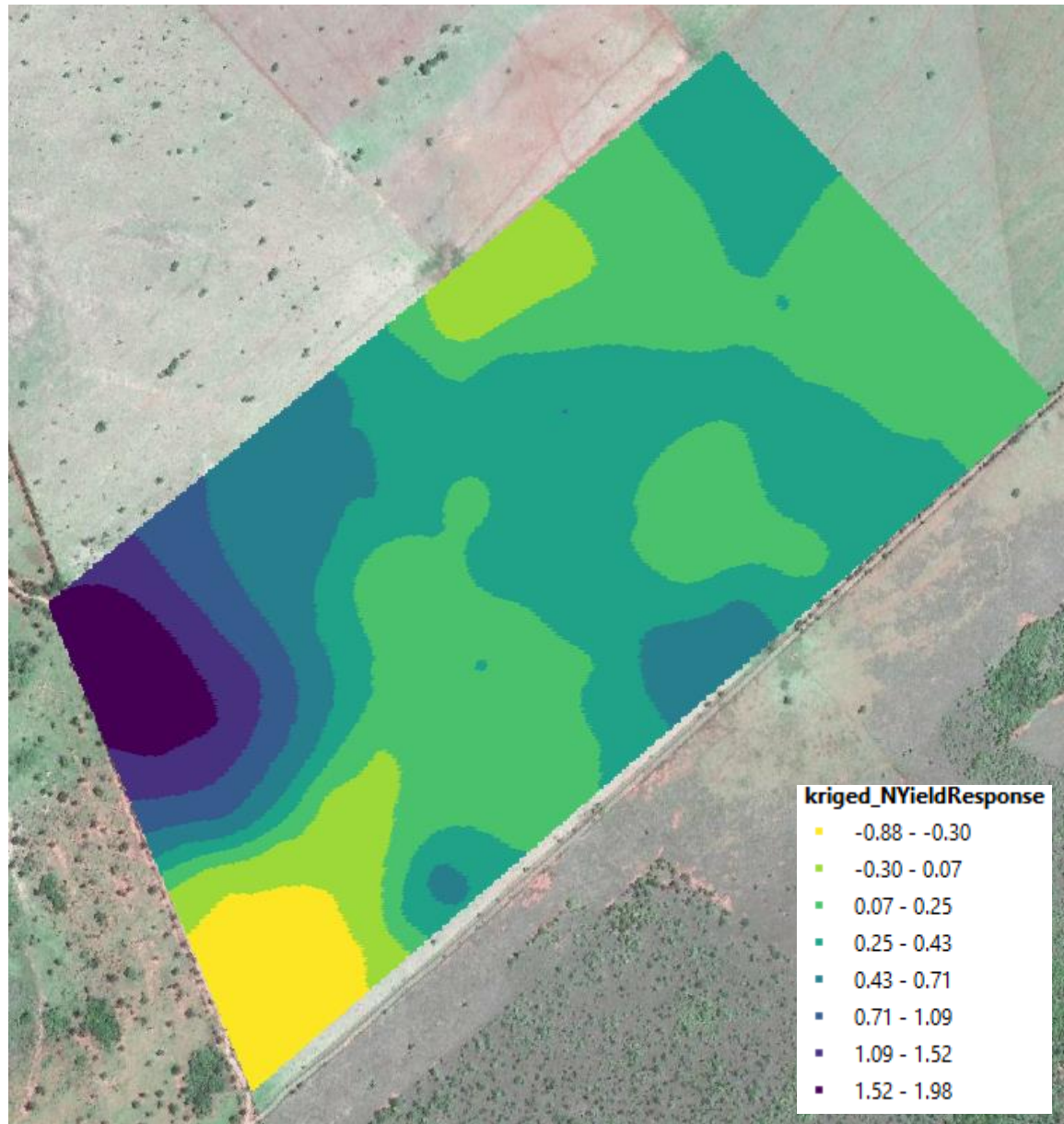


Corn Yield

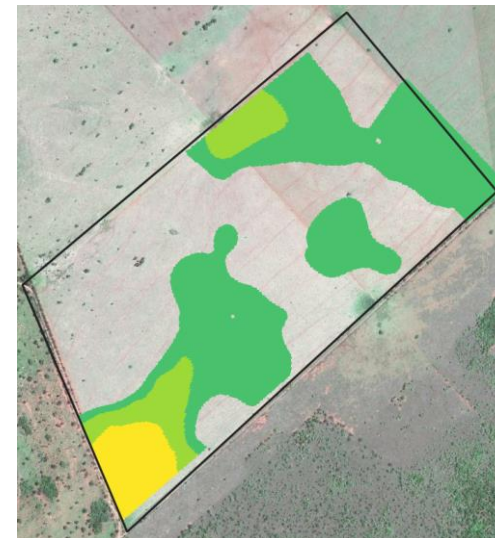




# Optimum Prescription N rate Map based on Yield response



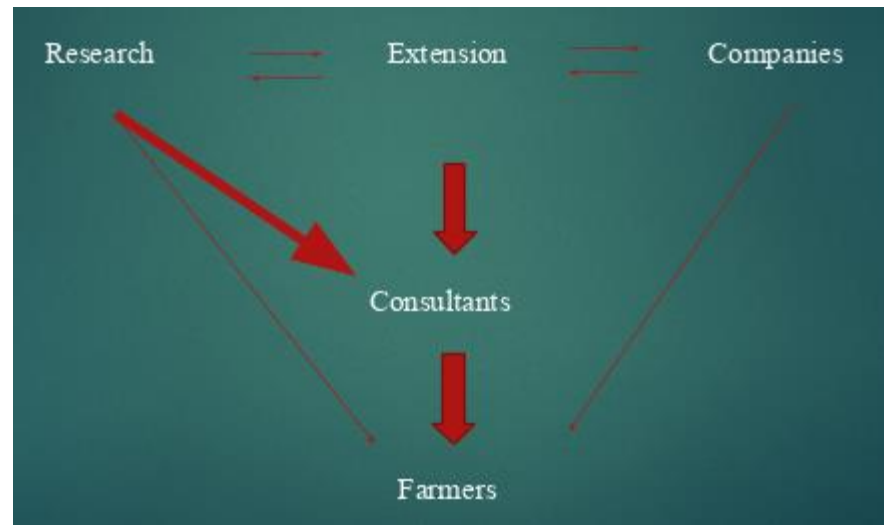
200-400 kg N Sulfate/ha



0-200 kg N Sulfate/ha

# Who will benefit from these type of experiments?

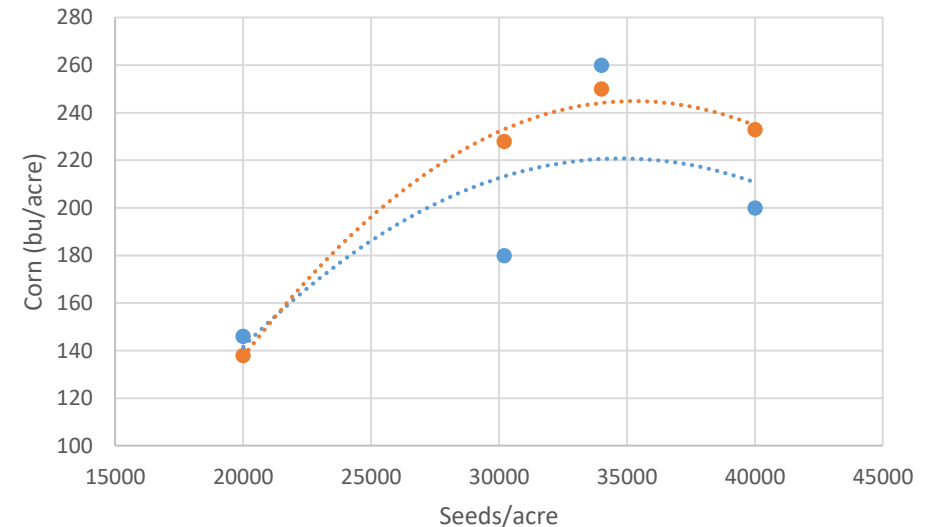
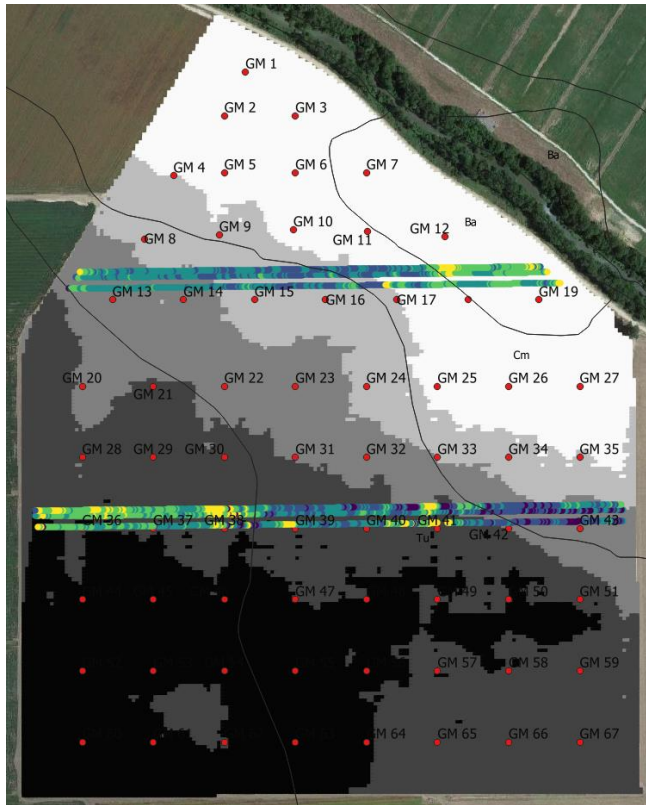
- 1) **Farmers** directly involved with field experimentation can have details and algorithms customized for their reality and conditions
- 2) **Consultants** and **extension** personnel from universities and **cooperatives** that provide services can be benefited by the results of the project
- 3) **Commodity Groups** that are participating in the project can have new tools for their portfolios and people training on the understanding on how spatial variability of several variables affect the crop yield
- 4) Researchers, faculty and students involved with **Precision Ag/Digital Ag initiative**.





# Proposition for Louisiana

- 1) Customize the on farm experimentation design for **Louisiana conditions** and specifics. The project DIFM that Dr. Luciano Shiratsuchi is a Co-Pi will compensate the farmers with yield loss due to whole field plots and give US\$500 for the farmer to participate in the network, just to answer emails and send yield data.
- 2) Validation and generation of algorithms for **local consultants and companies** to use



THANK YOU  
Questions??