Data solutions to transform agriculture: progress and experiences

Lulseged Tamene (CIAT) on behalf of Coalition of the Willing members (lt.desta@cgiar.org)

Introduction

Data is an infrastructure to make informed decisions. There are no standardized databases in Ethiopia despite the effort to collect soil/agronomy data since the 1960s. This undermines the performance of agriculture costing the country millions of dollars. Developing soils/agronomy database and establishing system to facilitate data access and sharing can reduce duplication of effort and promote innovation in analysis. We ventured into an ambitious effort to bring all available soils/agronomy data in the country together to enable advanced data analytics and support informed decision-making. We are on course to build soils/agronomy database following FAIR principles to facilitate data access and sharing in the country.
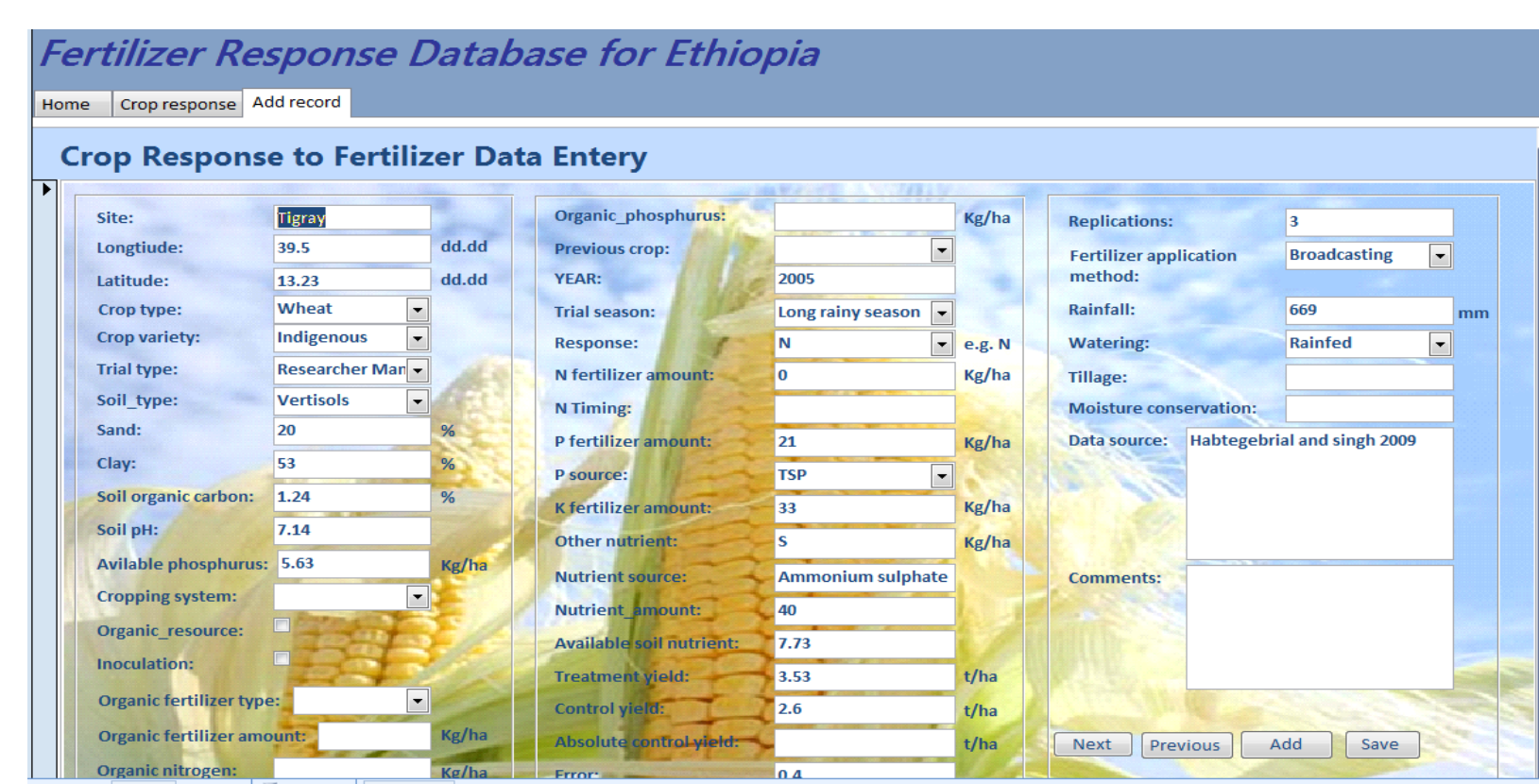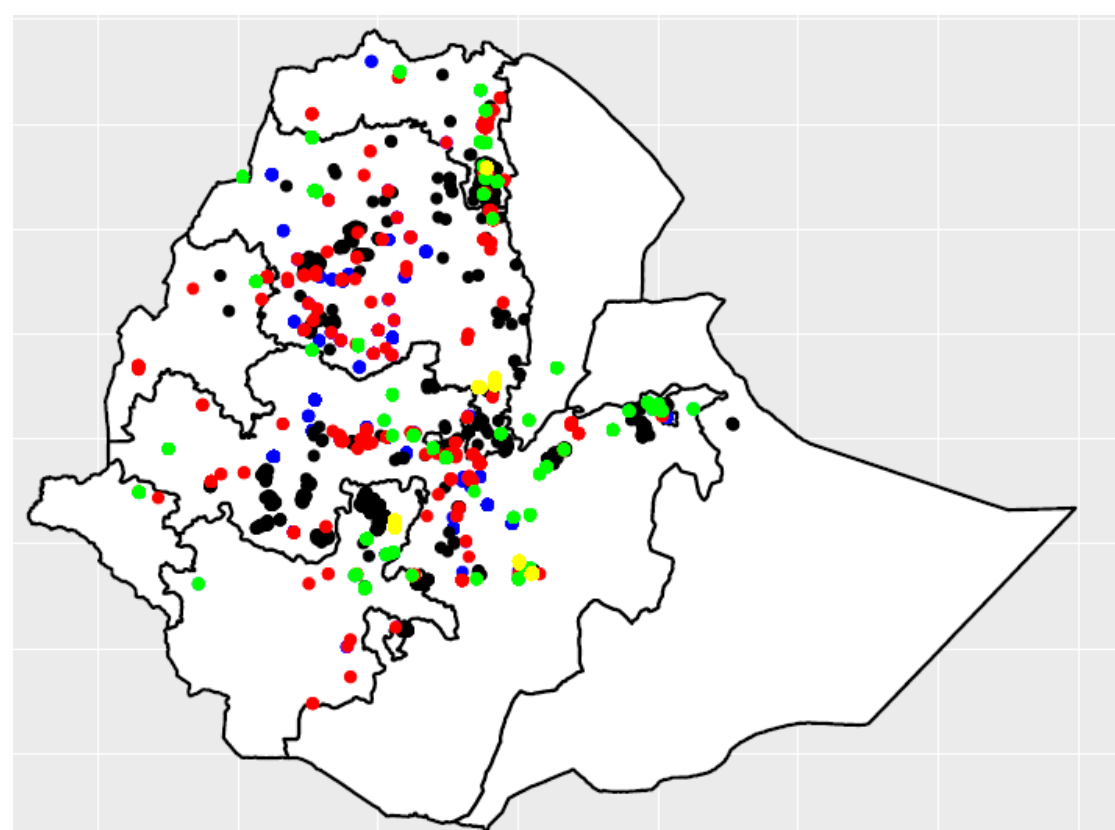
Major Activities

"What does it take to develop fertilizer recommendation DSS?"

- **Where are the data?**
- **Data sharing?**
- **Bilateral discussions**
- **Meetings/workshops**
- **Collate data**

- **Soils/agronomy database**
- **Inventory, map and characterize legacy data**
- **Build capacity in data analytics**

Key Achievements

- Formed <u>coalition of the willing (CoW)</u> and taskforce

- CoW data access and data sharing <u>guideline</u> developed

- <u>Dataset collated.</u> <u>Database</u> built at EIAR.

- Soils/agronomy <u>data standardization guidelines developed</u>

  - ❖ Agronomy and Soil Fertility
  - ❖ Soil Survey
  - ❖ Soil Biology
  - ❖ Soil, Plant, Water Analysis
  - ❖ Agricultural Water Management
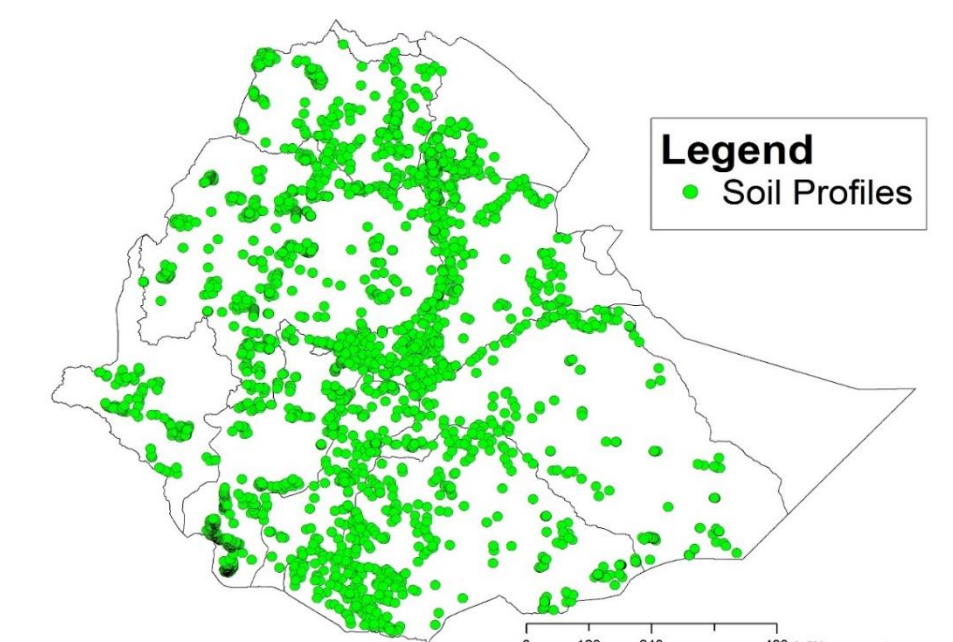 - ❖ Integrated Watershed Management
  - ❖ Cross-cutting

- Created <u>geospatial analysis</u> community of practice
  - ▪ Crop yield estimation
  - ▪ Land suitability analysis tool
  - ▪ Actual irrigation mapping
  - ▪ DSS for investment planning
  - ▪ Knowledge management
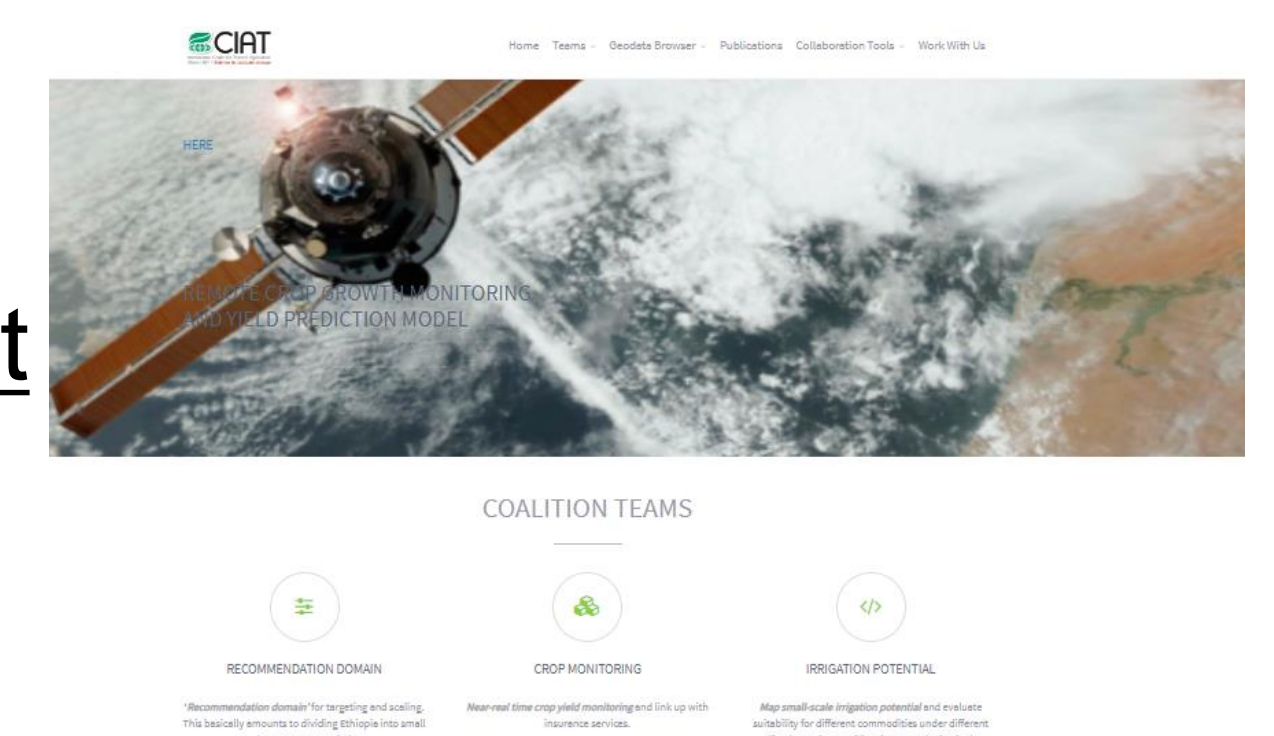
- Built team of <u>Data Scientists</u> (AI, ML, DL

- Legacy <u>data mapped</u> and <u>characterized</u>

Legend • Soil Profiles

- <u>Built capacity</u> of CoW members on data mining techniques. Papers ready for <u>Special Issue</u>!

- Influenced Development of <u>National Soils/Agronomy Data Sharing Policy</u>

- <u>Knowledge Management System</u> being developed
  http://geoscow.org.et/

Integration and links with national R&D system

- ➤ **EIAR:** Natural Resources Research Directorate, Climate, Geospatial, and Biometrics Research Directorate
- ➤ **MoA:** Soil Fertility Improvement Directorate, Ethiopian Soils Research Institute, ATA
- ➤ Ethiopian Agr. Research Council Secretariat
- ➤ **MoA:** Soil Resource Information and Mapping Directorate, Extension Directorate
- ➤ **NGOs/ROs:** CASCAPE, SG2000, CGs, GIZ

Bottlenecks/challenges

- Difficulty to get all available data
- Absence of data quality control
- Lack of data sharing experiences
- Limited integration between efforts

Way forward

- Build comprehensive database + analytics
- Create portal to facilitate data access and sharing
- Build national capacity
- Scale to other sectors - demand