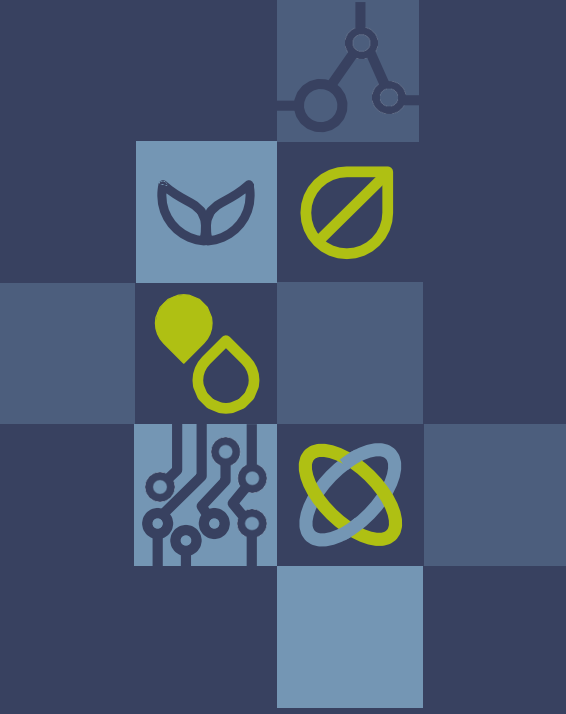
Global Crop Nutrient Removal Database



agmatix

ifa INTERNATIONAL FERTILIZER ASSOCIATION

WAGENINGEN UNIVERSITY & RESEARCH

General Background

- Nutrient concentrations in harvested crop parts and in biomass remaining in the field can vary widely across and within regions, as influenced by soil, climate, varieties grown or management practices

- Crop nutrient optimization across multiple production environments requires **large amounts of high-quality data**

- In an innovative research project, **Wageningen University (WUR)**, the **International Fertilizer Association (IFA)** and **Agmatix** are collaborating to analyze crop nutrients big data

- The aim of the project is to create a **global, open and comprehensive database of the relations of inputs and outputs of nutrients in crops** under an array of production and environmental conditions

- To do so, data on nutritionally and industrially important crops is collected from **multiple researchers and institutes**

Global Crop Nutrient Removal Database

What Is It?

A comprehensive database of nutrient concentrations in crops under varying environmental conditions to determine the total amount of nutrients removed from the field in the harvested portion of the crop

Nutrient removal is calculated by taking the concentration of each nutrient in harvested material and multiplying by the harvest yield.

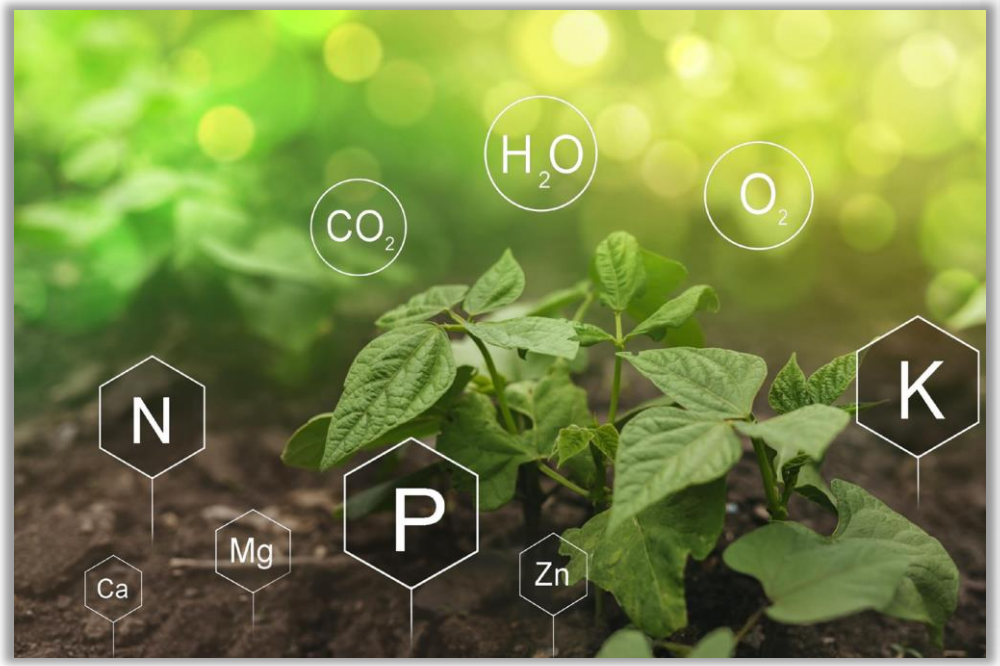
Different data sets from a wide range of researchers and institutes, standardized and harmonized with the Agmatix technology platform (per GUARDS protocol*)

Field trial's data of nutrient content, yield of crop products, residues and other data associated with those experiments

First stage - Maize, Rice, Soybeans and Wheat (N, P and K as the primary target nutrients)

* GUARDS (Global Universal Agronomic Data Standard) protocol aims to translate the unique way each researcher preserves raw agronomic data into one common standardized language that can be understood by any researcher in the world. GUARDS is based on the FAIR data principles by focusing on the interoperability and reusability of the data.

Global Crop Nutrient Removal Database



What Is It For?

- Improving crop management through estimating crop nutrient removal in a novel manner, accounting for region specific conditions
- Better assessment of crop nutrient removal rates, long-term trends of nutrient demand, economical budget planning and more
- Optimizing nutrient application, sustainable agriculture, food security and environmental quality in arable crop production worldwide
- Promoting open-science and collaboration by making the database accessible for researchers looking to improve knowledge on crop nutrient uptake and removal
- Development of decision support systems to determine how to optimize crop production in a sustainable way under changing environmental conditions

Global Crop Nutrient Removal Database

You can lever off all the other data we have as shown here: https://www.precisioncropnutrition.net/global-crop-nutrient-removal-database/

What's In It For Data Contributors?

Cost and time savings in your analyzing data - our professional data scientists team will combine all your data into one standardized format cost-free

New insights from your data - perform meta-analysis to get better insights into your products. analysis your data across different trials, locations and fertilizer types

Advertise your organization and product - data contributors will be advertised on the database website when it is published

Strengthen your company's environmental credentials – publish your organization's contribution to a global initiative that has far-reaching environmental and social impacts

Intensify your fertilizer support tools – the database will be available, allowing your organization to use worldwide data to strengthen its fertilizer support tools

The Database Is Accessible Via Agmatix Insights Interface

- Fusion of **multiple data sources**, fully **standardized** and **enriched**
- All aggregated and standardized data are structured in **one unified place** and can be accessed, viewed and downloaded
- Equipped with a simple **ontology-guide** showing the GUARDS hierarchy, which describes the origin of the data
- Data can be analyzed, across different trials, with the platform's **statistical and descriptive analysis tools**
- **Agronomic-centric analytics** widgets and workspaces

The project will be managed in several channels, working simultaneously

Data Fusion

Monthly meeting

- Agmatix - Alon Vamos, Agronomy Team Leader
- WUR - Cameron Ludemann, Agronomic Data Scientist

Resources

- Data sets transfer via folders in *Microsoft Teams*
- Updates via email
- Data pipeline management at Agmatix via *Monday.com*
- Managing communication stream with researchers via WUR

Marketing & Management

Bi-Monthly meeting

- Agmatix - Lior Grunhaus, Eitan Revel & PMO
- WUR*- Martin K van Ittersum & Cameron Ludemann (report to the CPCN)
- IFA - Achim Dobermann

Resources

- Agmatix – Website; social media: Summits
- WUR – Website; academic conferences; scientific journals
- IFA – Website; professional forums and events; networking
- Additional possible marketing channels (webinar, podcast, video content, etc.)

Analysis & Modeling

Bi-Monthly meeting

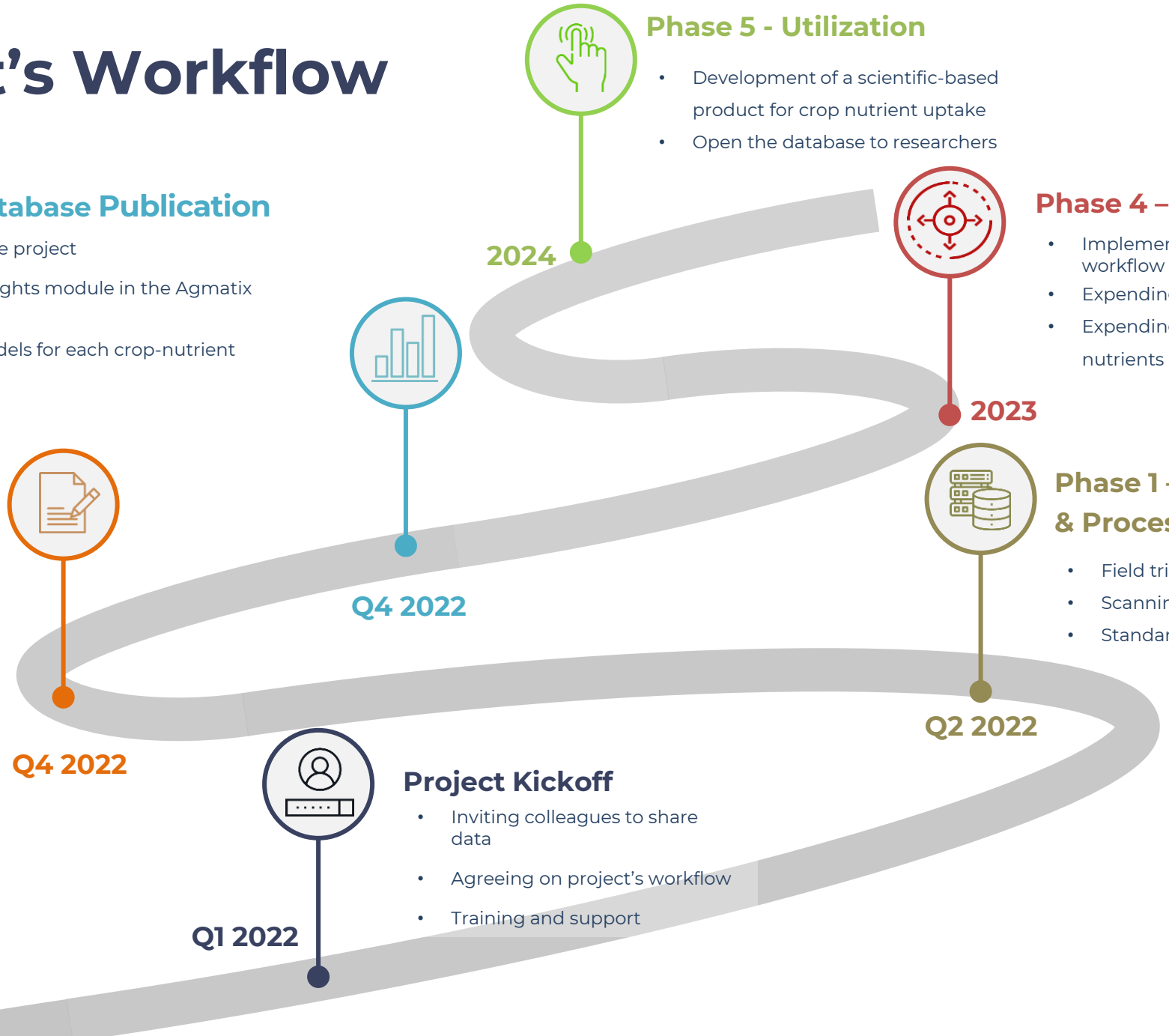
- Agmatix - - Alon Vamos, Shai Sela
- WUR - Martin K van Ittersum & Cameron Ludemann
- Scientific working group

Resources

- Coordinating data sets, meta data and communication information
- *Insights* module in the Agmatix platform; tech support
- Other modeling tools

* As the trusted representative of the CPNC

Project's Workflow



Phase 5 - Utilization

- Development of a scientific-based product for crop nutrient uptake
- Open the database to researchers

2024

Phase 4 – Expansion

- Implementing improvements to the workflow
- Expending the database to more crops
- Expending the database to more nutrients

2023

Phase 3 – Database Publication

- Mini-site for the project
- Link to the Insights module in the Agmatix platform
- Prediction models for each crop-nutrient combination

Q4 2022

Phase 2 – Scientific Publication

- Publishing an academic article on the database

Q4 2022

Phase 1 – Data Aggregation & Processing

- Field trial data of nutrient
- Scanning and processing literature
- Standardization process (GUARDS)

Q2 2022

Project Kickoff

- Inviting colleagues to share data
- Agreeing on project's workflow
- Training and support

Q1 2022

Thank you

For more information:
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