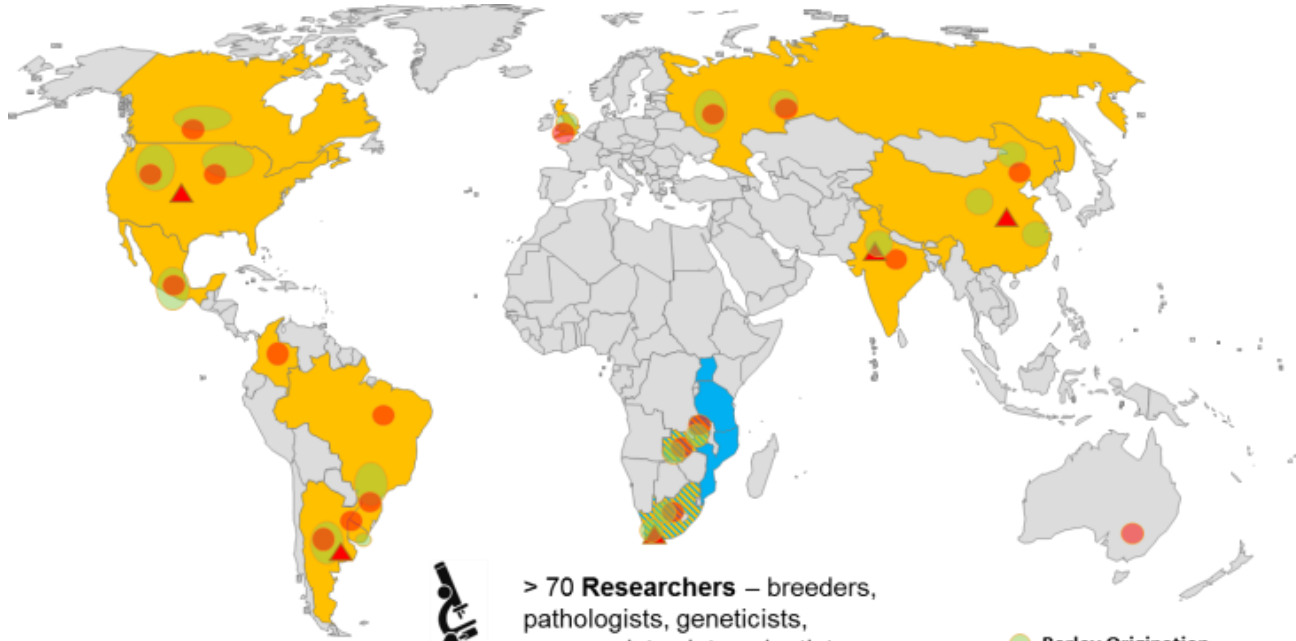
Leveraging digital solutions for sustainability in agriculture

October 2017

Global agriculture development footprint



Crops

- Barley
- Hops
- Rice
- Maize
- Sorghum
- Cassava

> 70 **Researchers** – breeders, pathologists, geneticists, agronomists, data scientists

> 100 **Agronomists** – working directly with growers across the globe

> 4500 **Growers** – participated in SmartBarley since 2014

- Barley Origination
- Barley Research
- Barley Research + LAB
- SmartBarley
- Smallholder - cassava, sorghum & maize

Enablers

- Research
- Agronomists
- Technology
- Partnerships

ABInBev

SmartBarley

Data Collection:

Agronomist collect farm management data from Growers

Data Insights:

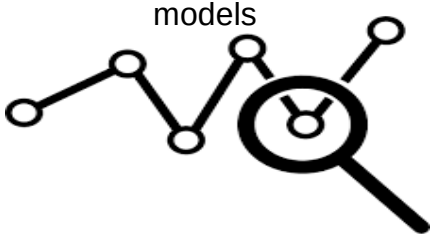
Benchmarking software provides Agronomists & Growers with insights to improve crop production

Local Solutions:

Agronomists identify gaps, provide advice & introduce Grower initiatives to help improve production

Data Analytics:

Researchers and Data Scientists use this data to develop predictive yield & production models



ABInBev

Project Examples in Emerging Markets

Mexico

Uruguay

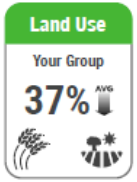
Uganda

Understanding farmer needs & barriers

Partnerships & Sustainability Benchmarks

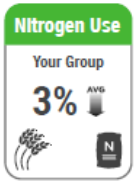
MORNING FARM REPORT

Land Use Efficiency



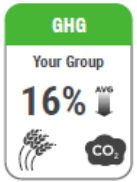
Crop yield is a measure of the productivity of the plants per unit of land. The higher the yield, the more efficiently the land was used. Since land that is fit to grow crops is limited, we have to make the most of it.

Nitrogen Use Efficiency



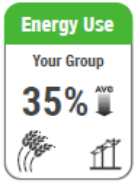
This metric measures how efficiently plants use the nitrogen that's applied to the field. Using nitrogen efficiently lowers energy use and reduces greenhouse gas emissions.

GHG Emissions



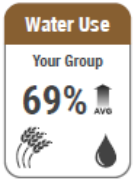
Measuring Greenhouse Gas (GHG) Emissions starts with measuring energy use efficiency. Then, those numbers are converted into kilograms of CO_2 equivalents. In addition to the CO_2 emissions from energy consumption, Nitrous oxide from fertilizer emissions are also considered by converting the emissions to the CO_2 equivalents.

Energy Use Efficiency



This measures the energy it takes to produce a volume unit of the crop— for example, bushels or metric tons of barley. It takes both direct and indirect energy into account from pre-planting to delivery to a processing facility. Using less energy while maintaining yields can save on production costs for growers and improve ROI.

Water Use Efficiency



Plants need water to grow efficiently. In some areas where there is an arid climate, growers need to give those plants extra water to get better yields. This metric measures the efficiency and impact of that additional water. Areas where growers can fine tune their water use can make a big impact.

Adapting digital approach to smallholder context

Transparency

Establish farmer identity and collect data

Capacity

Provide tools & information to improve productivity

Financial Services

Enable access to financial services