CIMMYT Global Wheat Program

Accelerating impact

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CIMMYT

CIMMYT's mission

Maize and wheat science for improved livelihoods.

CGIAR's vision

Transforming food systems for affordable, sufficient and healthy diets produced withing planetary boundaries

CIMMYT

CIMMYT around the world

1,300 staff from over 50 countries

13 offices

Afghanistan
Bangladesh
China
Colombia
Ethiopia
India
Kazakhstan
Kenya
Mexico
Nepal
Pakistan
Turkey
Zimbabwe

With >300 partners!

Projects in over 40 countries

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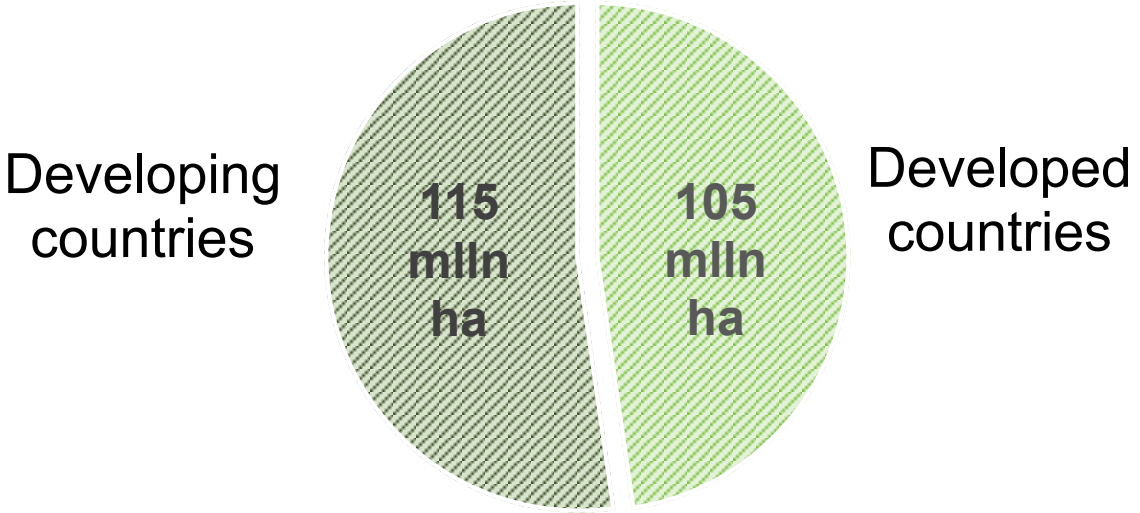
Wheat production in the South and North: two different worlds?

Global wheat area



Average farm size: 1-3 ha vs. 40-5000 ha

Data compiled by H.-J.Braun CIMMYT

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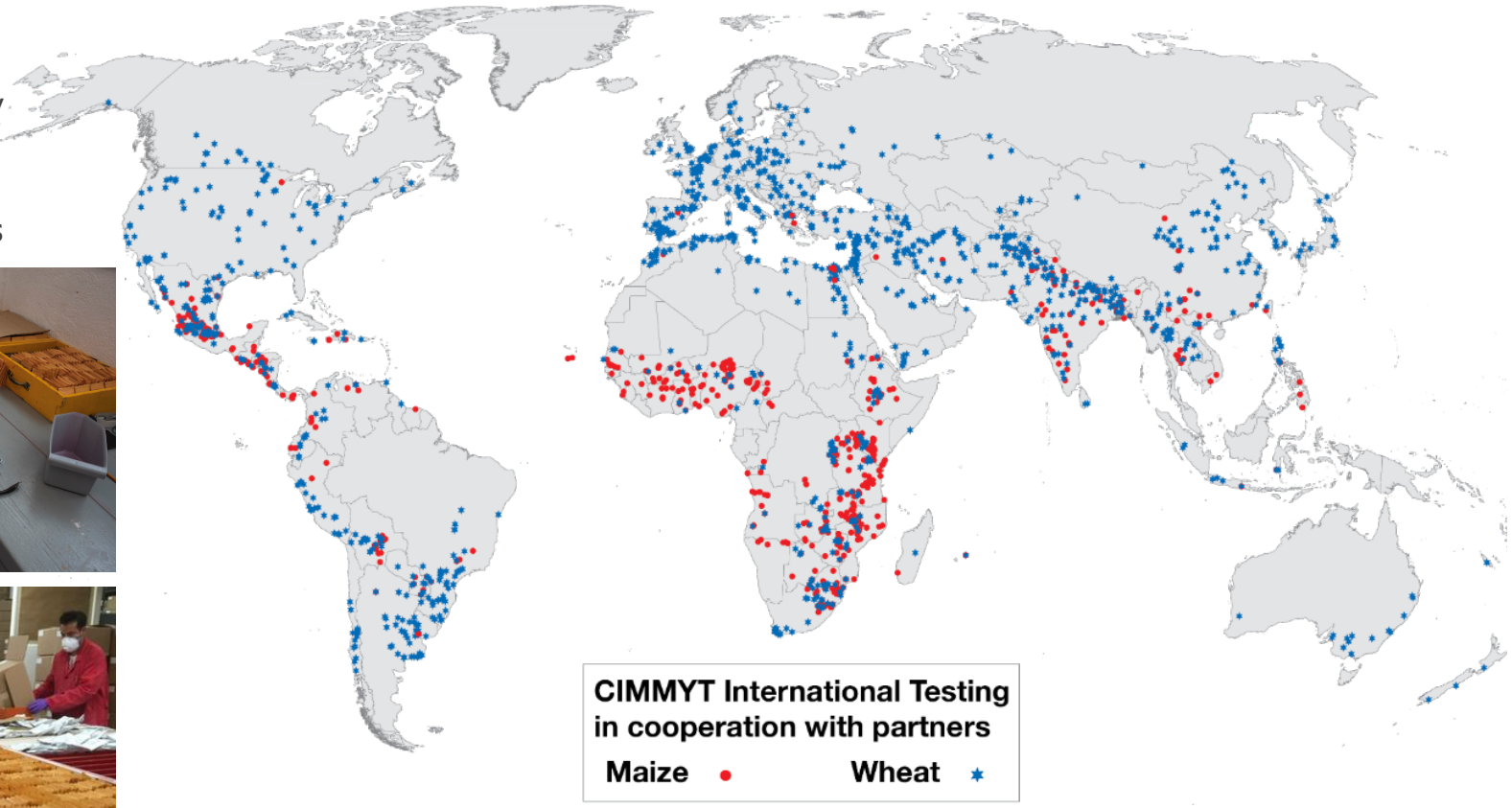
CIMMYT's global seed distribution network

1,500 maize and wheat shipments every year, each containing over **500,000** individual seed packets



The **CGIAR provides 80% of public germplasm** to the world.

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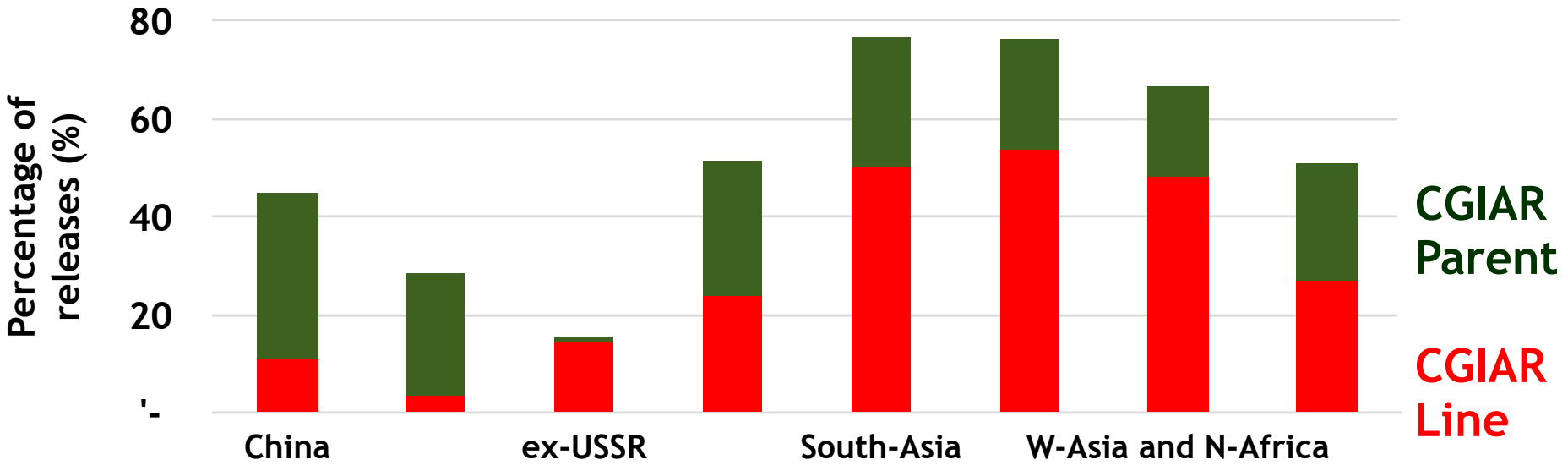
CGIAR wheat breeding delivers impact

Percent of spring bread wheat releases derived from CIMMYT and ICARDA by region and origin (1994-2014)



Note: Percent release roughly represents area sown to CIMMYT derived wheat varieties

Lantican M.A., H.J. Braun, T.S. Payne, R.P. Singh, K. Sonder, M. Baum, M. van Ginkel and O. Erenstein. 2016. Impacts of International Wheat Improvement Research, 1994-2014. Mexico, D.F.: CIMMYT.

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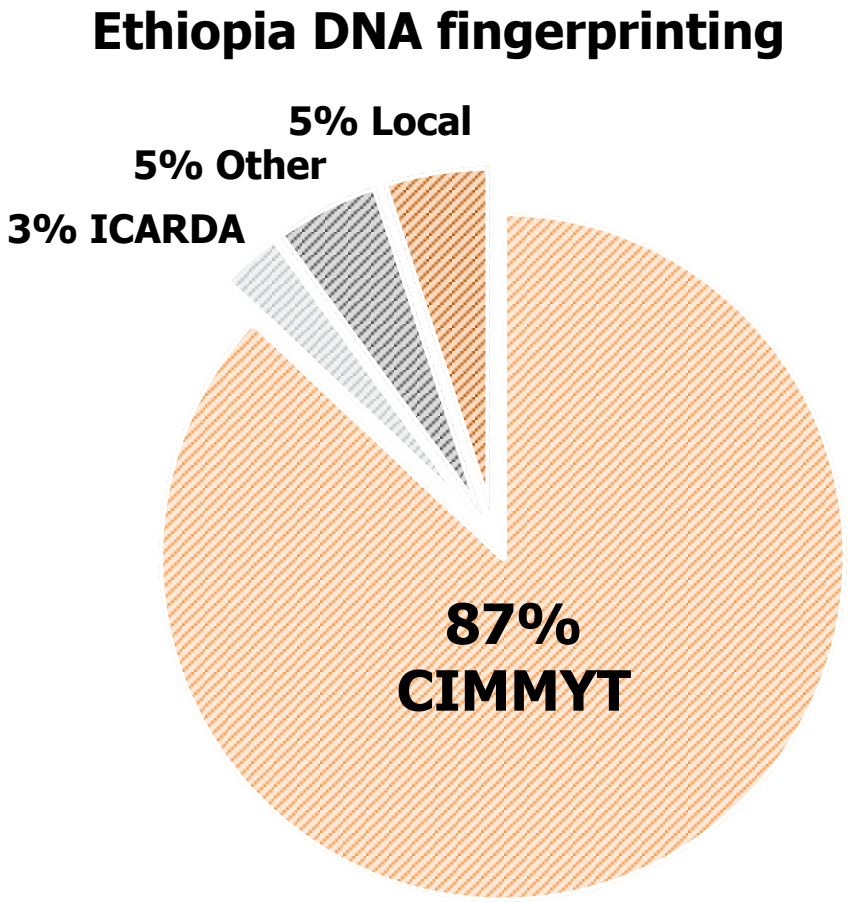
e.g. Widespread adoption - Ethiopia



Ethiopia produces ~5 million t/year

In 2016/17:

- Recently released varieties (post 2005) occupied 61% of the wheat area sampled.
- 43% of the area sampled planted to varieties released since 2010.

- A substantial decline in average area weighted varietal age for bread wheat - from 15 years in 2014/15 to 11 years 2018/19.

Results based on 4000 samples from farmers field sampled in 2016-17 season. Full results in Hodson et al. (2020) Scientific Reports 10: 18532

Funded by Bill & Melinda Gates Foundation

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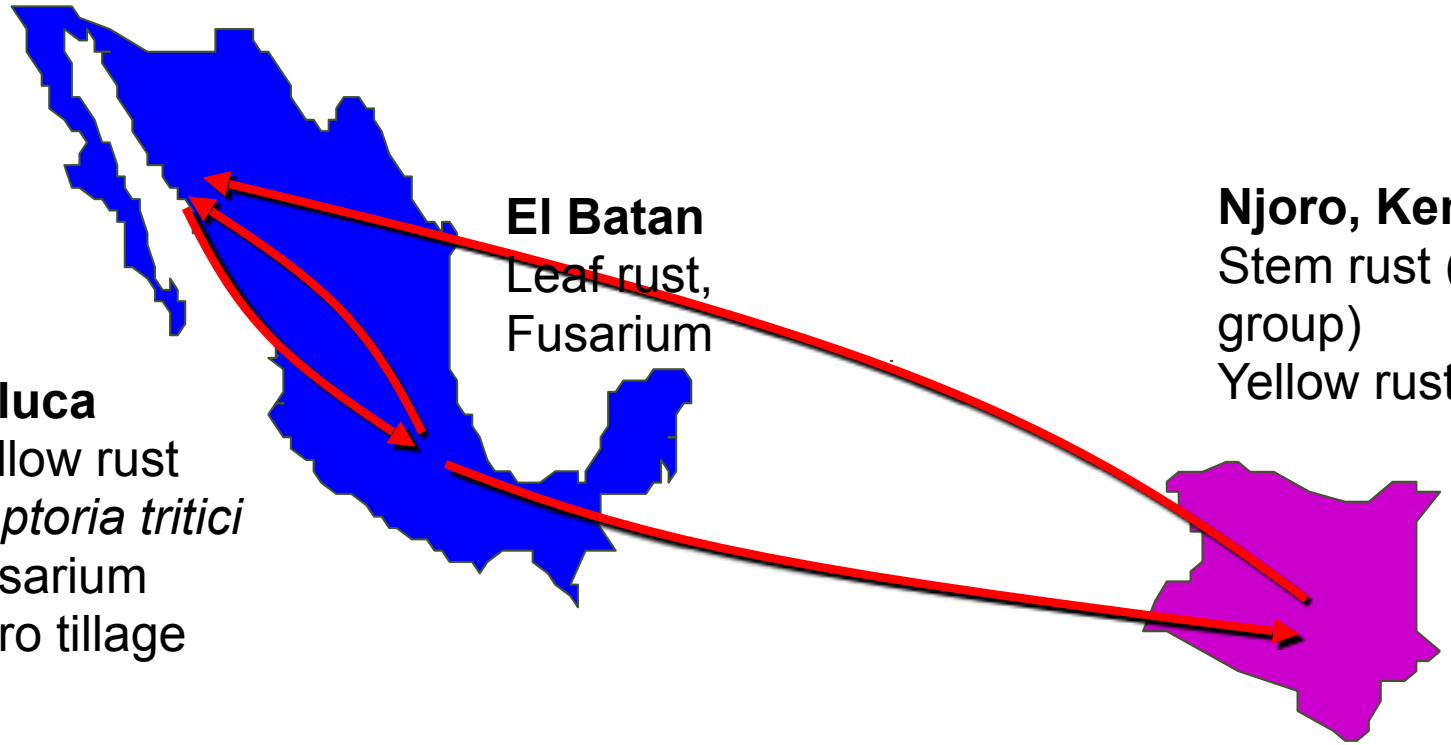
Shuttle breeding

Cd Obregon
High yield (irrigated)
Water-use efficiency
Heat tolerance
Leaf rust
Stem rust (not Ug99)



El Batan
Leaf rust,
Fusarium

Njoro, Kenya
Stem rust (Ug99 group)
Yellow rust

Toluca
Yellow rust
Septoria tritici
Fusarium
Zero tillage

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Continual breeding investment required

Simulated environments in Obregon, Mexico





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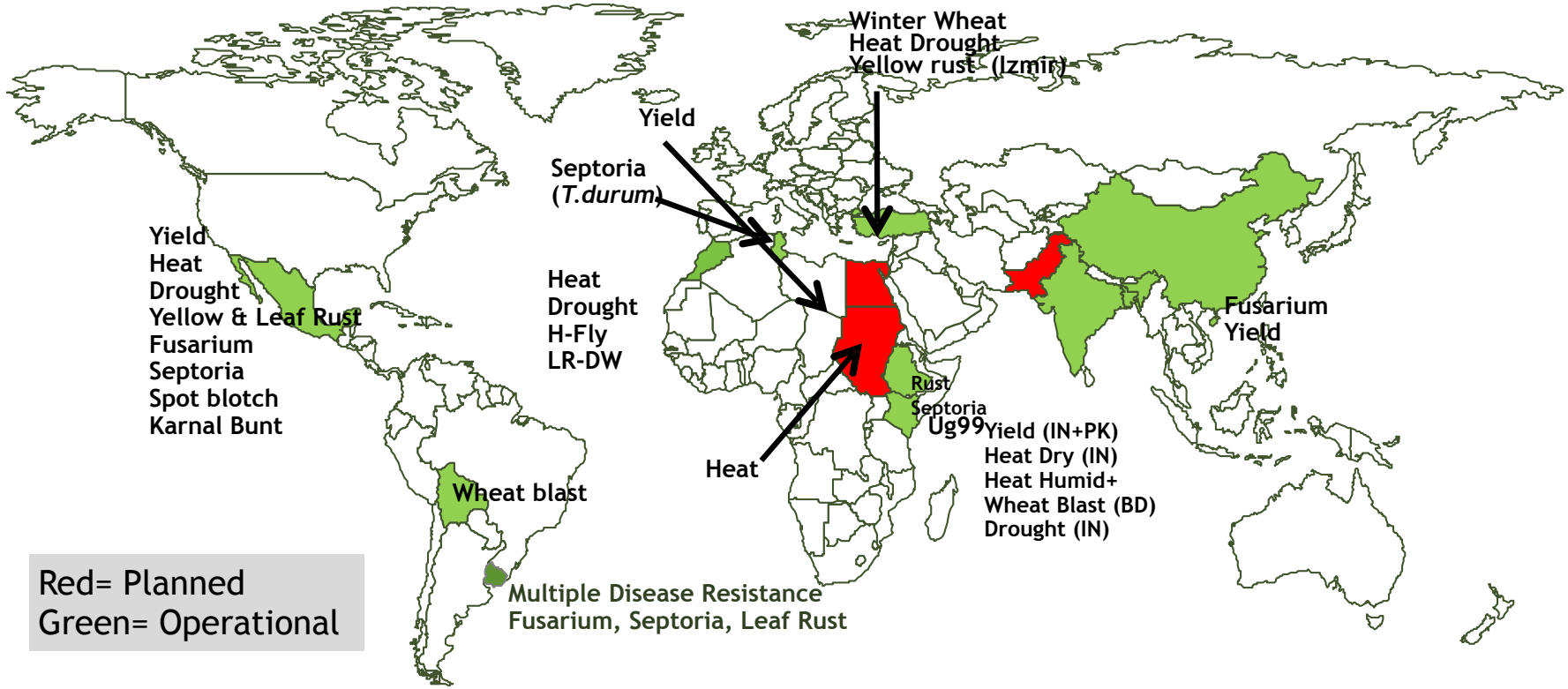
Global phenotyping capabilities



Phenotyping Platforms

- Hubs for generating high quality phenotypic data, under defined good practices, and promoting training and sharing of the generated knowledge.
- Some sites represent future climate analogues, others are hotspots for specific diseases.

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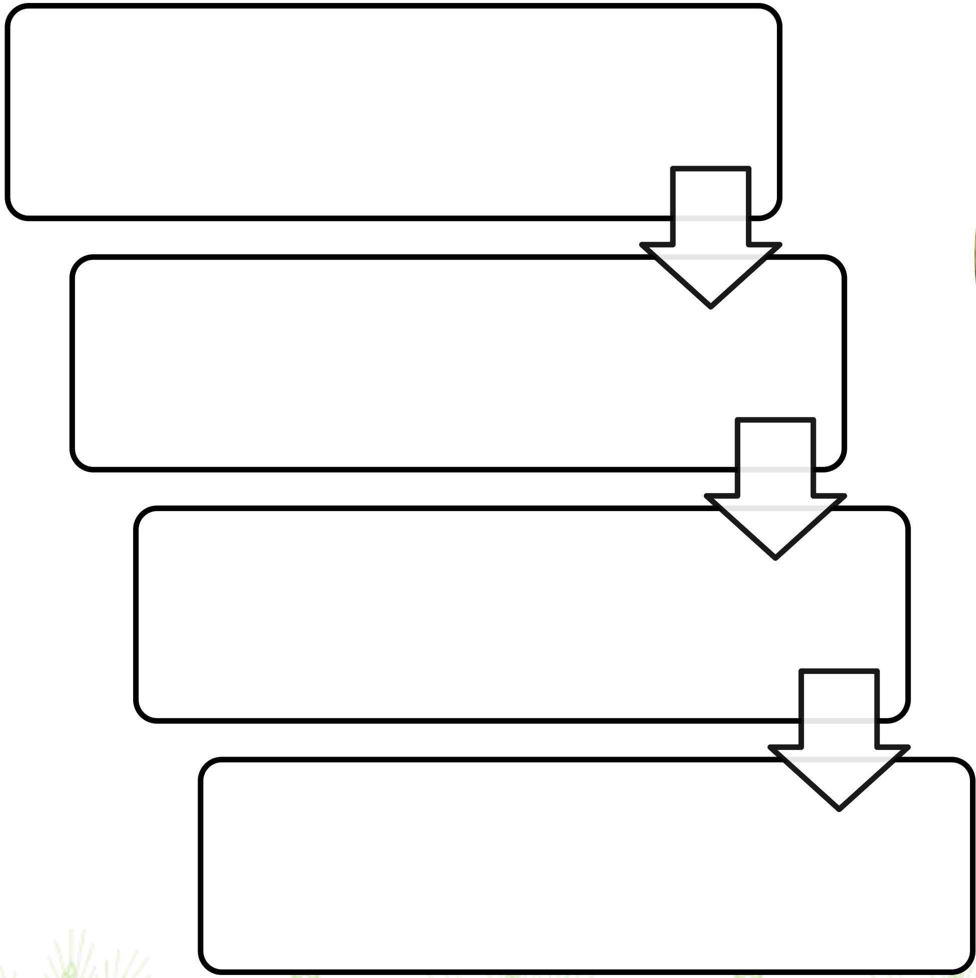
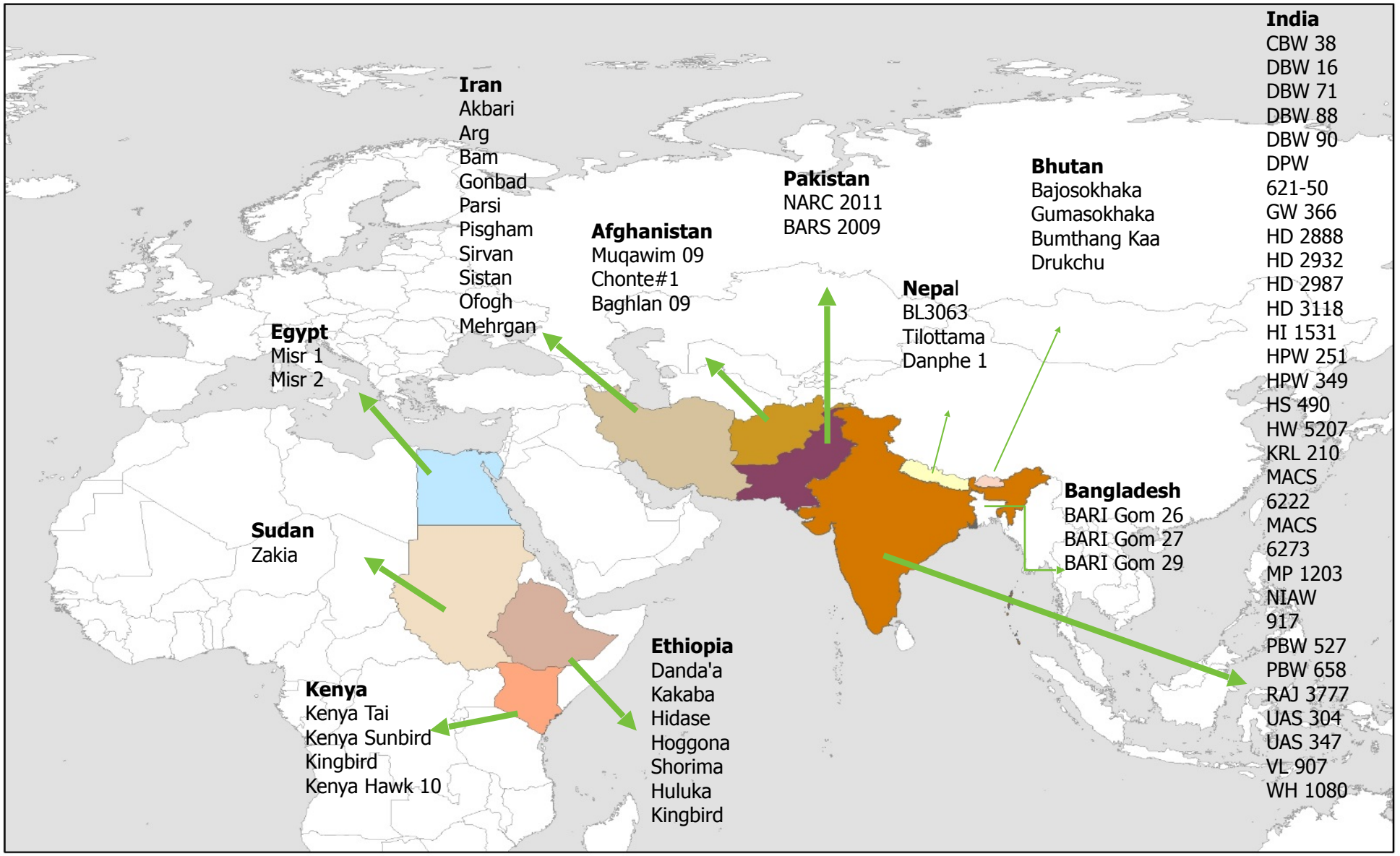
Centralised breeding enables rapid-response to new disease threats

E.g. Response to Ug99 and wheat blast



Achieving rapid seed response

E.g. Response to Ug99



Challenge to accelerate genetic gains in farmers' fields

Accelerating Genetic Gains
in Maize and Wheat

Accelerating Genetic Gains in Maize and Wheat for Improved Livelihoods

BILL & MELINDA GATES foundation

UKaid
from the British people

USAID
FROM THE AMERICAN PEOPLE

FFAR
Foundation for Food and Agriculture Research

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Investment in accelerated breeding facilities

Field screenhouse covering 2 hectares for 4 generations/year

Speed breeding growth rooms for trait-integration pipeline

Photos: Fernando Delgado

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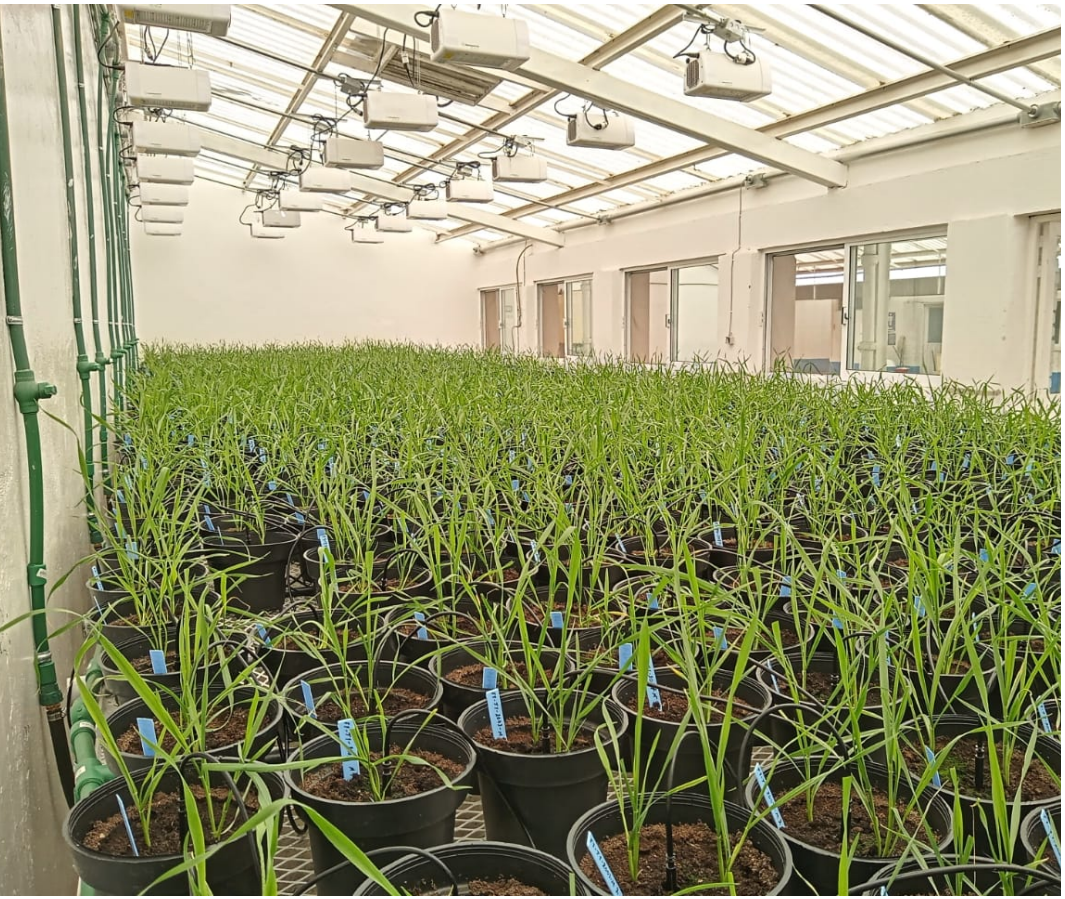
Optimisation underway



Pictures from Suchismita Mondal

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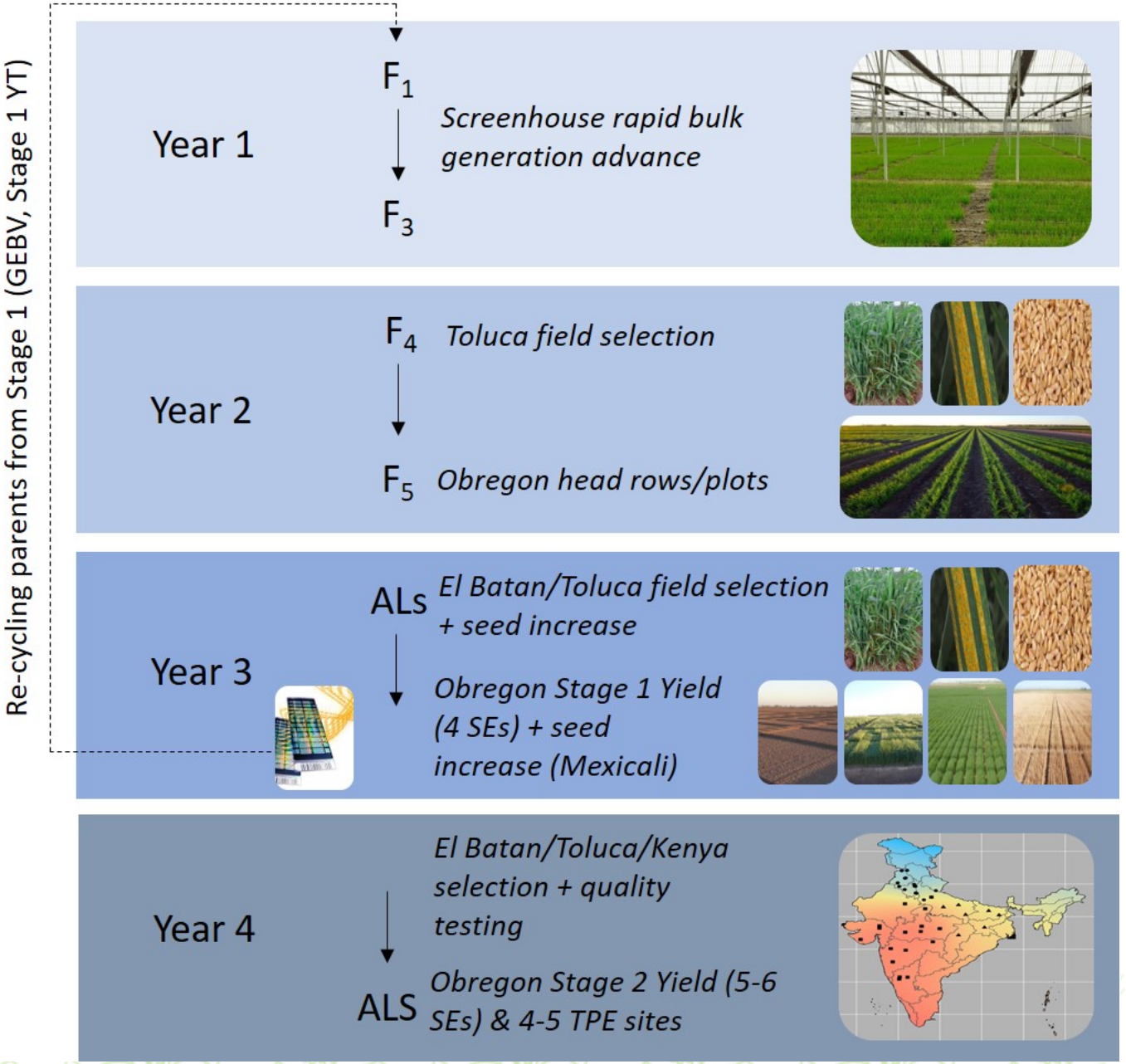
Increasing genetic gains



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Faster & more efficient delivery of climate resilient, nutritious, efficient, productive varieties supporting livelihoods.

Find out more about AGG:

https://www.cimmyt.org/projects/agg/

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