



50 years of maize and wheat science for improved livelihoods

Dr. Martin Kropff
Director General, CIMMYT


The BIG IMPACT



CIMMYT GENERATES
BENEFITS of
\$3.5-4.0
BILLION annually



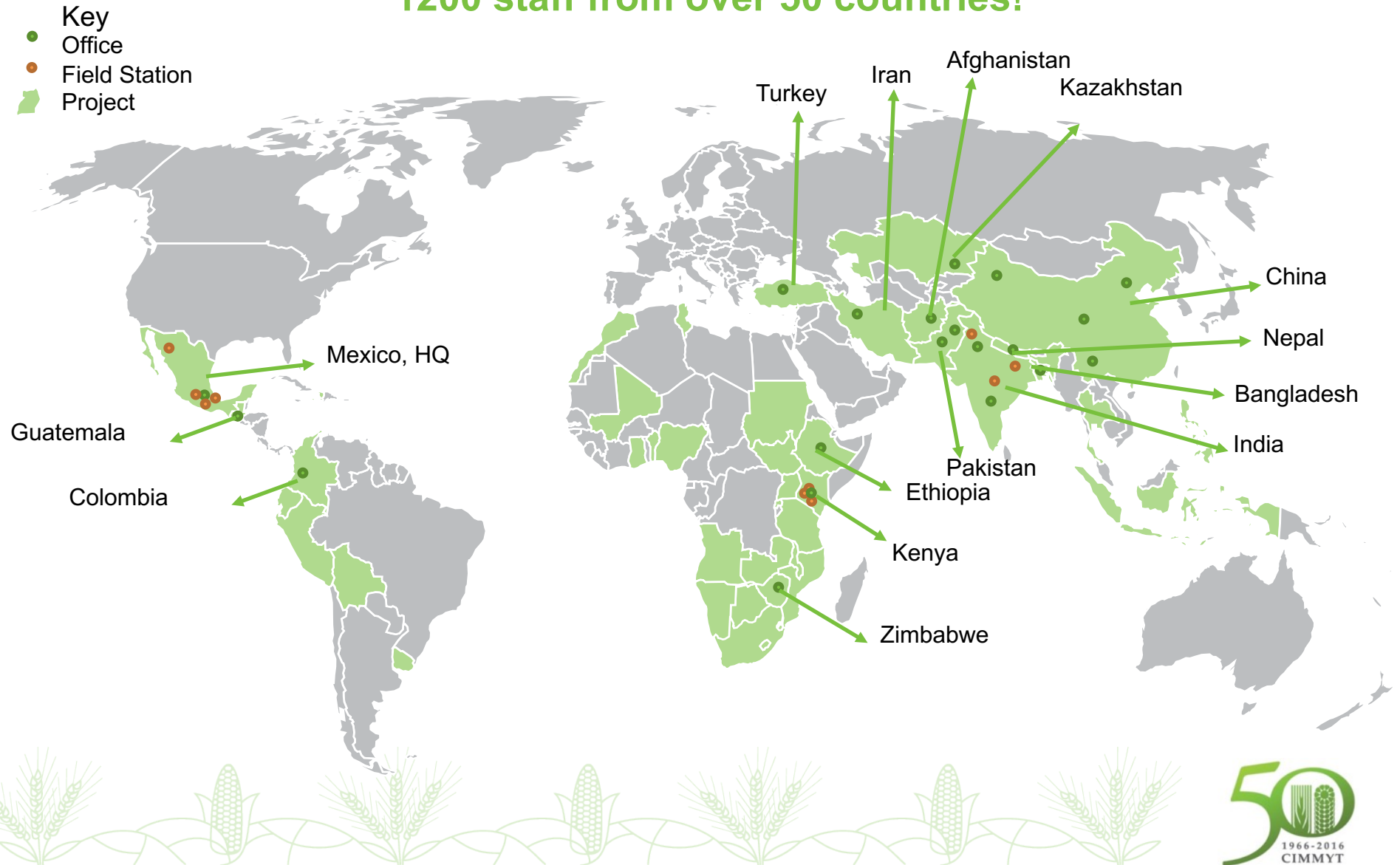
More than **10,000**
AGRICULTURAL EXPERTS
AND SCIENTISTS
have trained at CIMMYT

50% 
OF MAIZE AND WHEAT
grown in the developing world
IS BASED ON
CIMMYT VARIETIES



CIMMYT Around the World

1200 staff from over 50 countries!



1943 – 1965

Planting the seed



Vice President Henry A. Wallace and the Origins of CIMMYT



- In 1940, Henry Wallace witnessed the deterioration of Mexican agriculture on a journey through Mexico
- Wallace urged the Rockefeller Foundation and the Mexican government to establish the experiment station that became the Office of Special Studies.



‘Sin maize no hay país’ – without maize there is no country



Edwin Wellhausen studying maize collections at Chapingo, 1962

- 800 Mexican maize varieties collected
- By 1947, ten new varieties were available
- 1948 – Mexico achieves self sufficiency in maize

2016: 28,000 varieties of maize stored in genebank

The success of Borlaug's wheat program



1. Rust resistance
2. Dwarfing genes
3. Shuttle breeding

Wheat self-sufficiency by **1956**



A call from South Asia



- Drs. Borlaug and Anderson visit India and Pakistan to determine adaptability of Mexican wheat varieties
- Yields are higher than anything harvested before

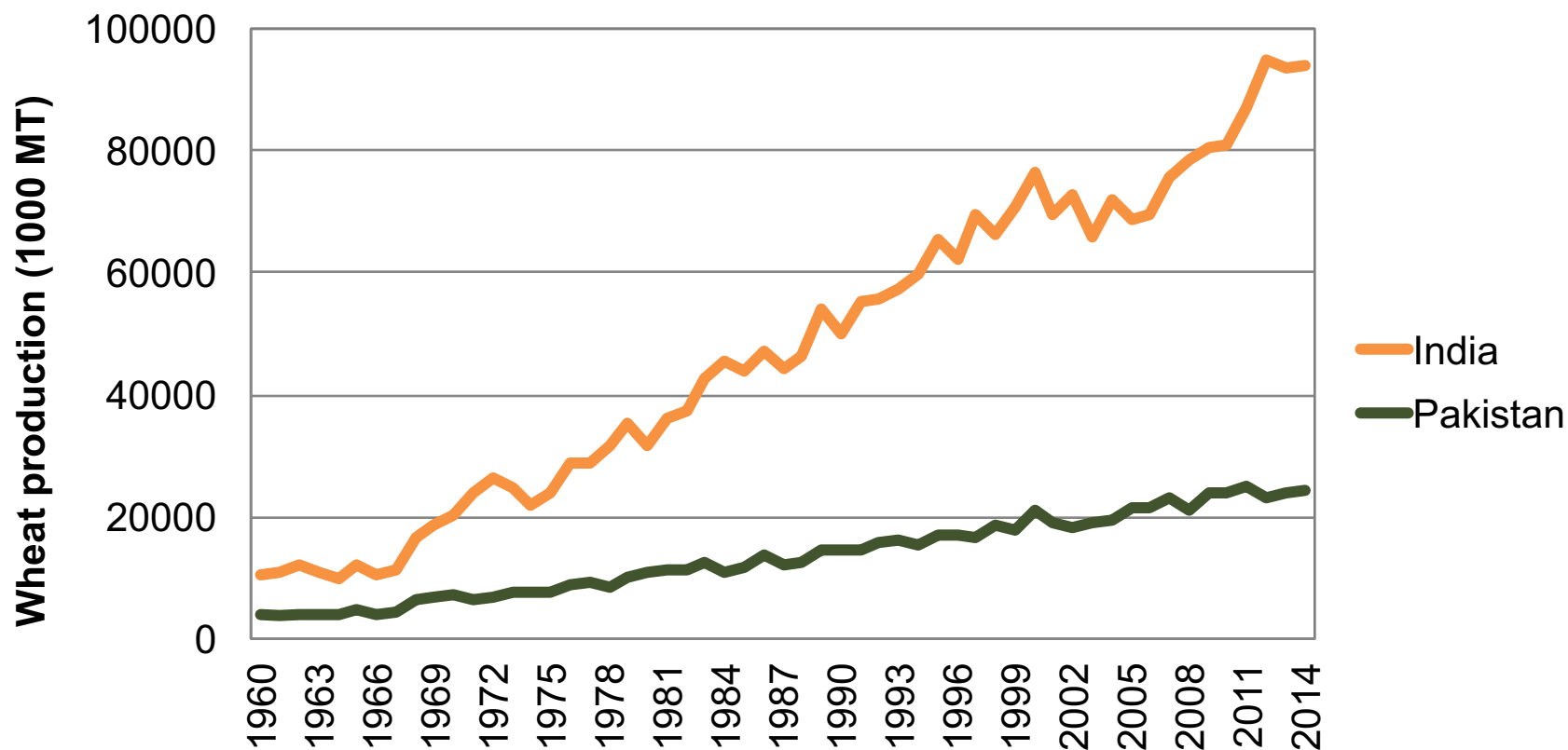


1966 – 1991

The green revolution and beyond



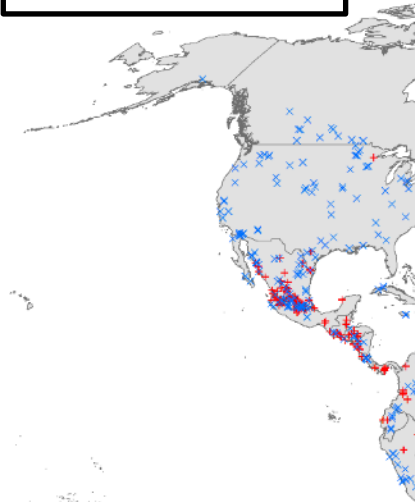
Results of the Green Revolution



Source: Index Mundi, 2014

Establishment of the international nurseries

2016



es seeds
m
xico
rkey
nababwe



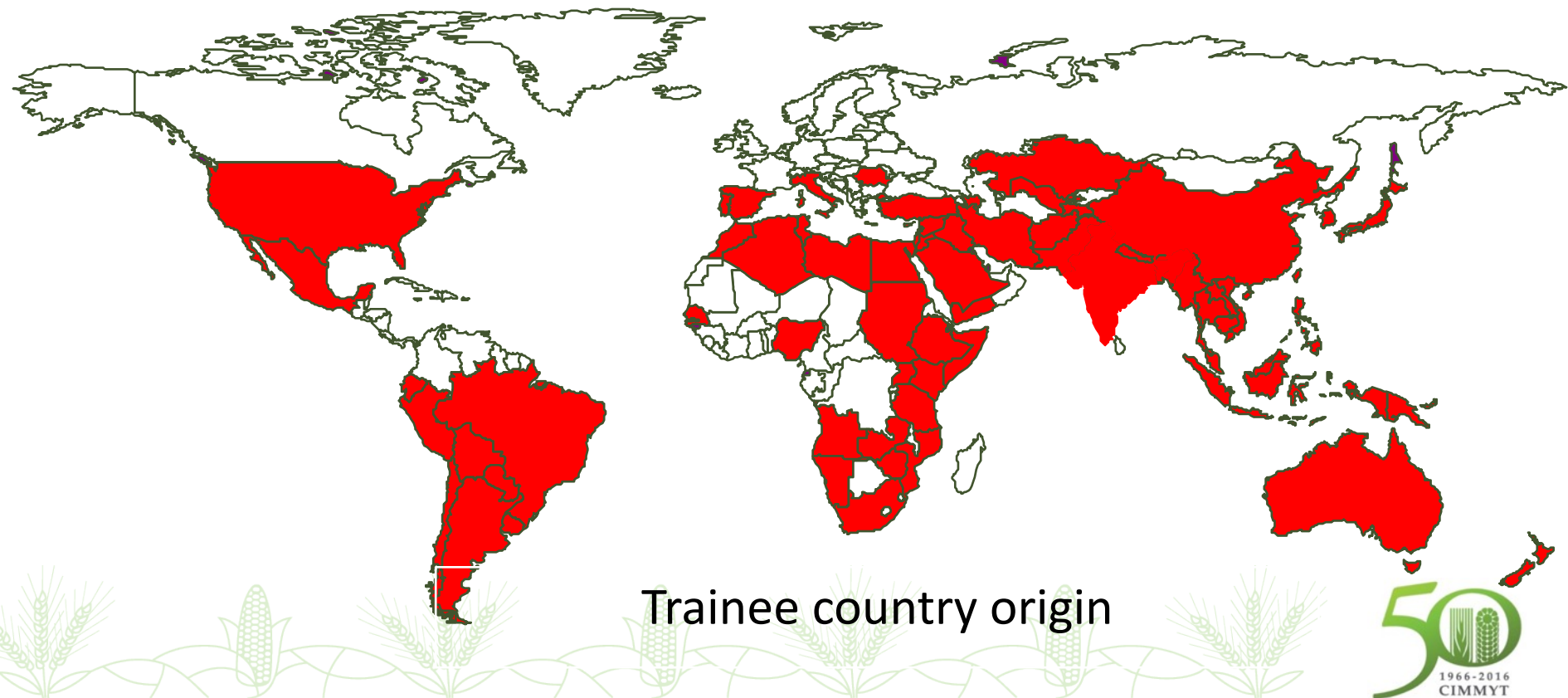
Establishment of the CGIAR

- CIMMYT was one of the first CGIAR centers



- Today, the CGIAR comprises 15 such centers, all dedicated to sustainable food security through scientific research





Research begins on Quality Protein Maize

- Production of maize with same taste but higher levels of lysine and tryptophan
- An important step in combating child and maternal malnutrition



In 2016: **624 tons** of certified QPM seed was produced by private seed companies in Ethiopia



1992 – 2006

Sustainable development and the green evolution



Tackling drought in Africa



- CIMMYT and IITA – first maize varieties capable of withstanding drought and low soil nitrogen
- 2002: Over 500 tons of commercial quality seed released. 30 OPVs and hybrids released to farmers.
- 25-50% yield advantage under drought

2007 to 2014: over 200 DT and nutrient use-efficient maize varieties released through over 100 private sector companies in 14 countries in Africa.



Wellhausen-Anderson Genetic Resources Center Opens



- World's largest collection: 175,000 maize and wheat accessions
- ISO-certified germplasm banks
- Facilities for recording, processing, conditioning, packing, and distributing seed
- 30 tons seed shipped to 80 countries each year
- 1,300 visitors annually



Resource conservation



- Reduced and conservation tillage practices in Latin America, Africa and Asia
- Adaptation of available farm tools



2016: Over 200,000 small-scale producers using certified maize varieties and conservation agriculture practices, with 23% greater incomes



Zero Tillage in South Asia

- 2005: Zero and reduced till wheat/rice on 2 million hectares
- Local development of ZT tools and service industry, and 15% decrease in production costs for farmers

2012 to 2015: From 17 to 1,900 ZT service providers in Bihar, allowing farmers to increase wheat yields by 19%



Conservation agriculture in southern Africa



- Conservation agriculture + improved varieties =
30-60% greater productivity and
40-100% greater income under drought

2010 to 2015: 173,000 farming households adopt conservation agriculture

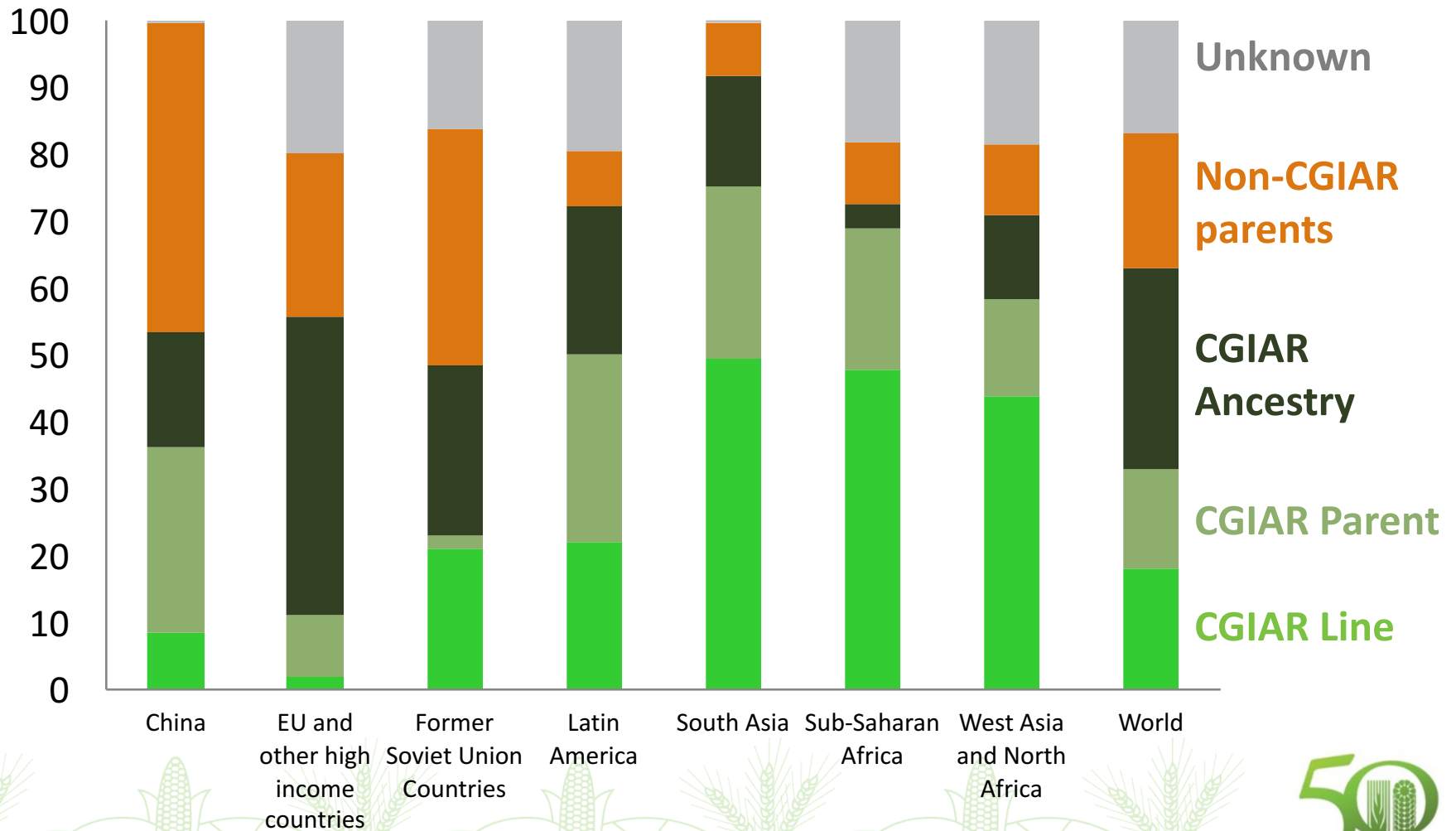
Conventional tillage versus CA

2007 – 2016

Bringing food security within reach

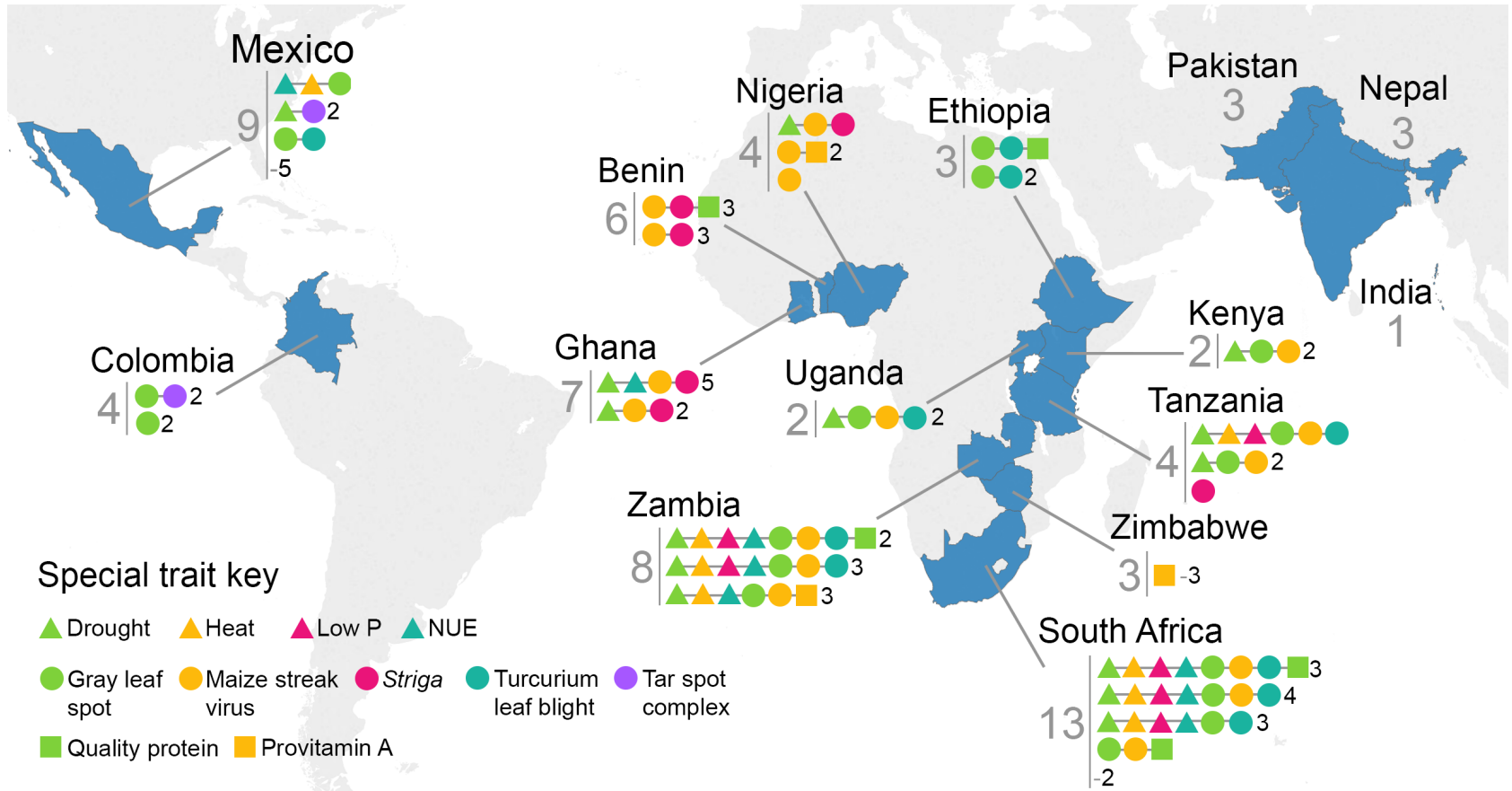


Origin of wheat variety releases 1994-2014



2015 maize releases

70 varieties commercialized by CIMMYT partners with traits preferred by smallholder farmers



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*Provitamin A varieties promoted under HarvestPlus

Gender



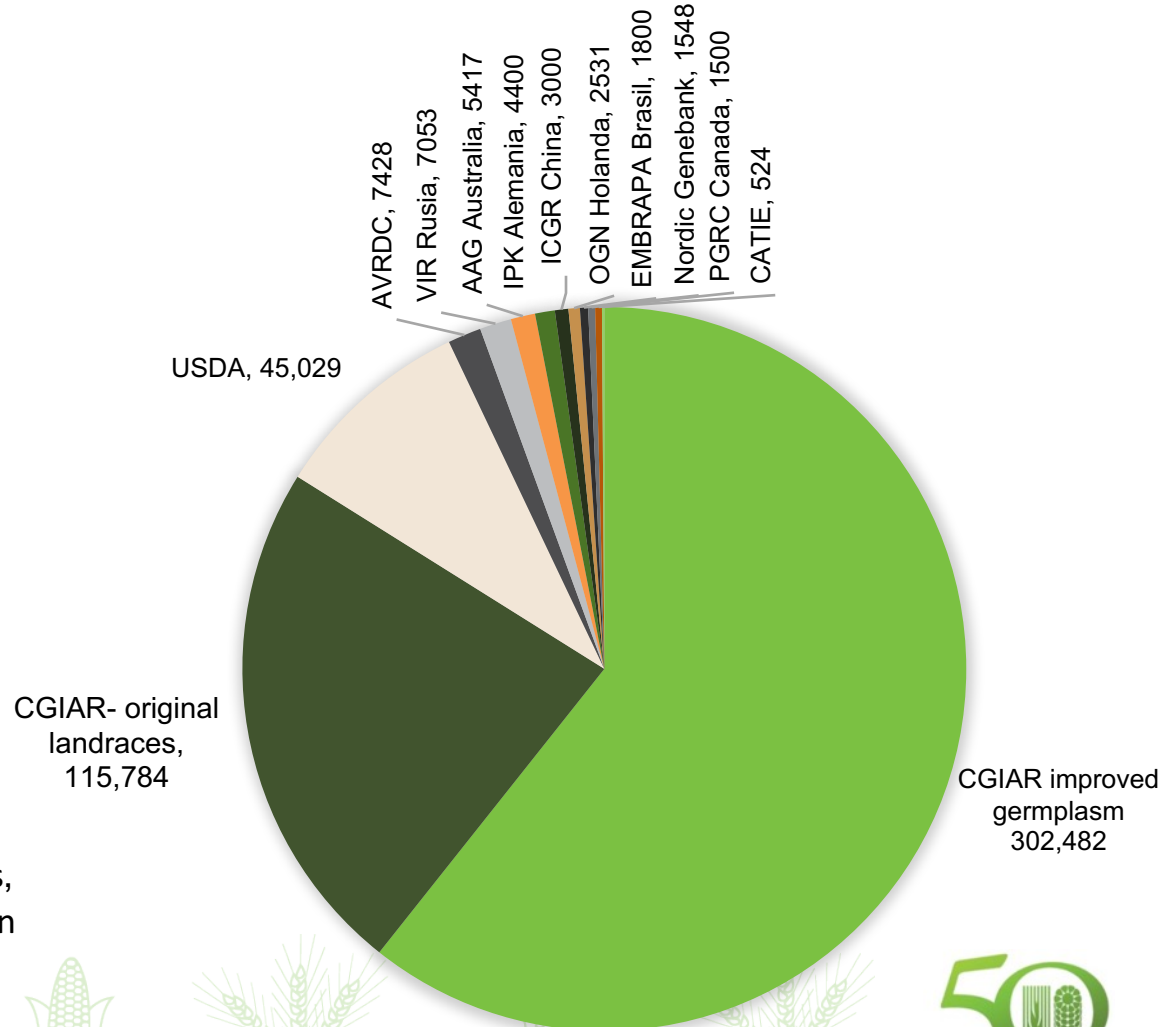
- Highlighting the (overlooked) roles of women in agriculture
- Creating strategies to design and target research for different social groups (including young people!)
- Building CIMMYT staff capacities
- Being responsive to on-farm demographic changes



Distribution and Development of Seed

**The CGIAR
provides 80% of
seed to the world**

Annual distribution of seed



Source: GCDT; online database collections, publications and communications between GCDT and responsible banks, 2008-2010

Disease Epidemics: Potential Threat to Production



Maize Lethal Necrosis

Kenya, Uganda, Tanzania, Rwanda, D.R. Congo, South Sudan, and Ethiopia



Tar Spot Complex

Mexico, Colombia, El Salvador, Guatemala, Nicaragua



Wheat blast

Argentina, Brazil, Bolivia, Paraguay, South Asia



Stem Rust

Most feared!
Global



Fusarium Head Blight

China, Caspian and Black Sea, Cona Sur, North America, Western Central and Eastern Europe



Septoria

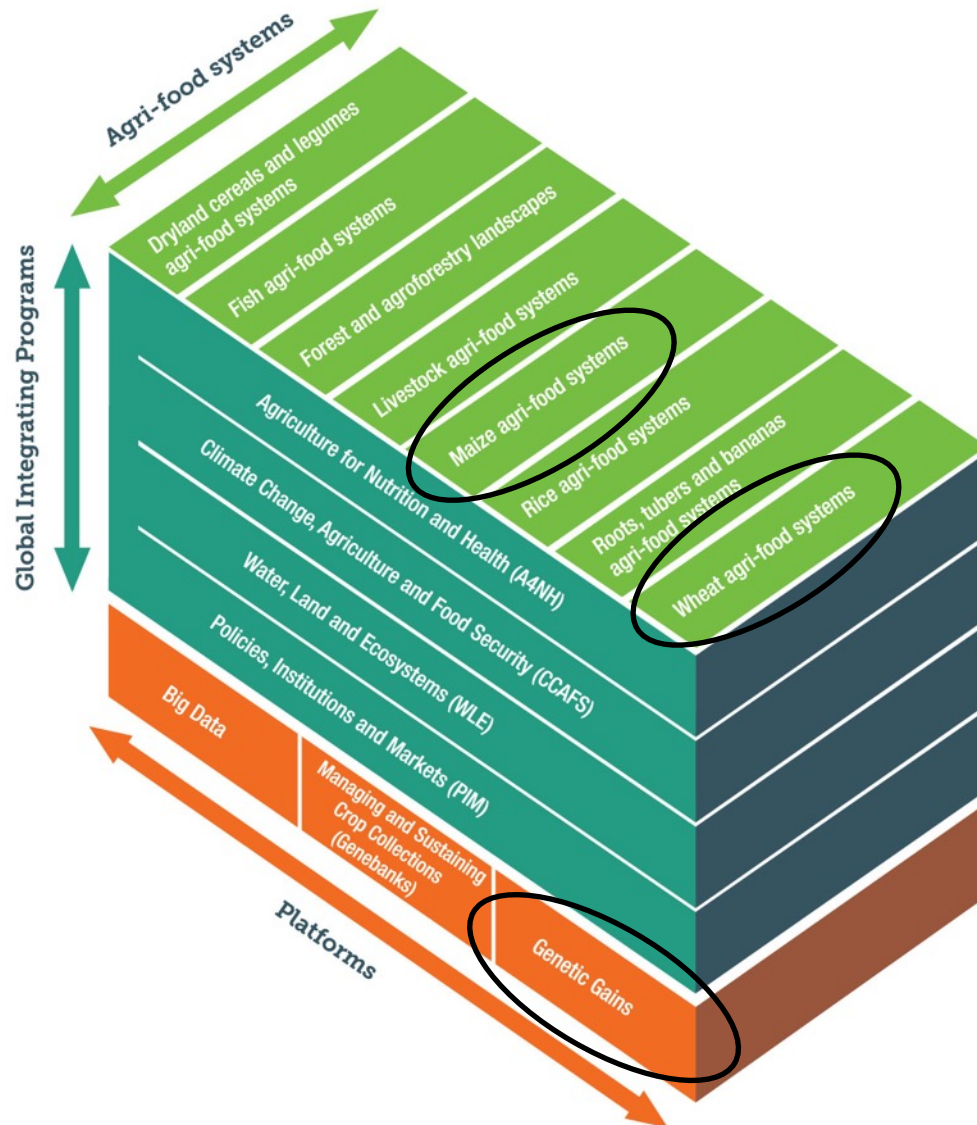
North Africa, Ethiopia, Latin America, Southern and Central Europe, Iran, Kazakhstan and Siberia



2016...



A new way forward for the CGIAR



New initiatives and collaborations



- Excellence in Breeding Platform
- Henan University
- BISA – USAID project
- Save a Seed campaign!
(\$48,000 pledged from seed companies!)





Thank you
for your
interest!

