



Wheat: 50 Years of CIMMYT's Contributions Impacting on Small Farmers' Livelihood and Income

Sanjaya Rajaram
Director Resource Seeds International, Toluca, Mex.
Former Director, CIMMYT Wheat Program and
ICARDA BIGM, Program

Impacts on Small Farmer's Livelihood



Data on Small Family Farms

- **Family Farm Size:**

- 72% <1 ha
- 12% 2-5 ha
- 3% 5-10 ha
- 1% 10- 20 ha
- 2% > 20 ha



- *Source: FAO 2014: Based on 460 millions Farms*



Increased Food Supplies

Because of his achievements to prevent hunger, famine and misery around the world, Norman Borlaug, together with his team of researchers, saved more lives than any other person who has ever lived.

Wheat improvement at CIMMYT, led to a prodigious increase in world wheat production – by more than 200 million tons – building upon the successes of the Green Revolution.

The legacies continue to be built upon, today.

Sources: World Food Prize Foundation: 2014



CGIAR Wheat Research Economic Benefits

- **Additional annual production**
24 to 65 million tons of grain per year
- **Value of additional wheat grain production**
USD 6 billion to USD 17 billion annually
- **Total benefits attributable to
CGIAR wheat improvement research**
USD 2.1 billion to USD 5.7 billion annually

Lantican et al., 2015. Impacts of International Wheat Improvement Research, 1994-2014



Impacts on Varietal Diversity



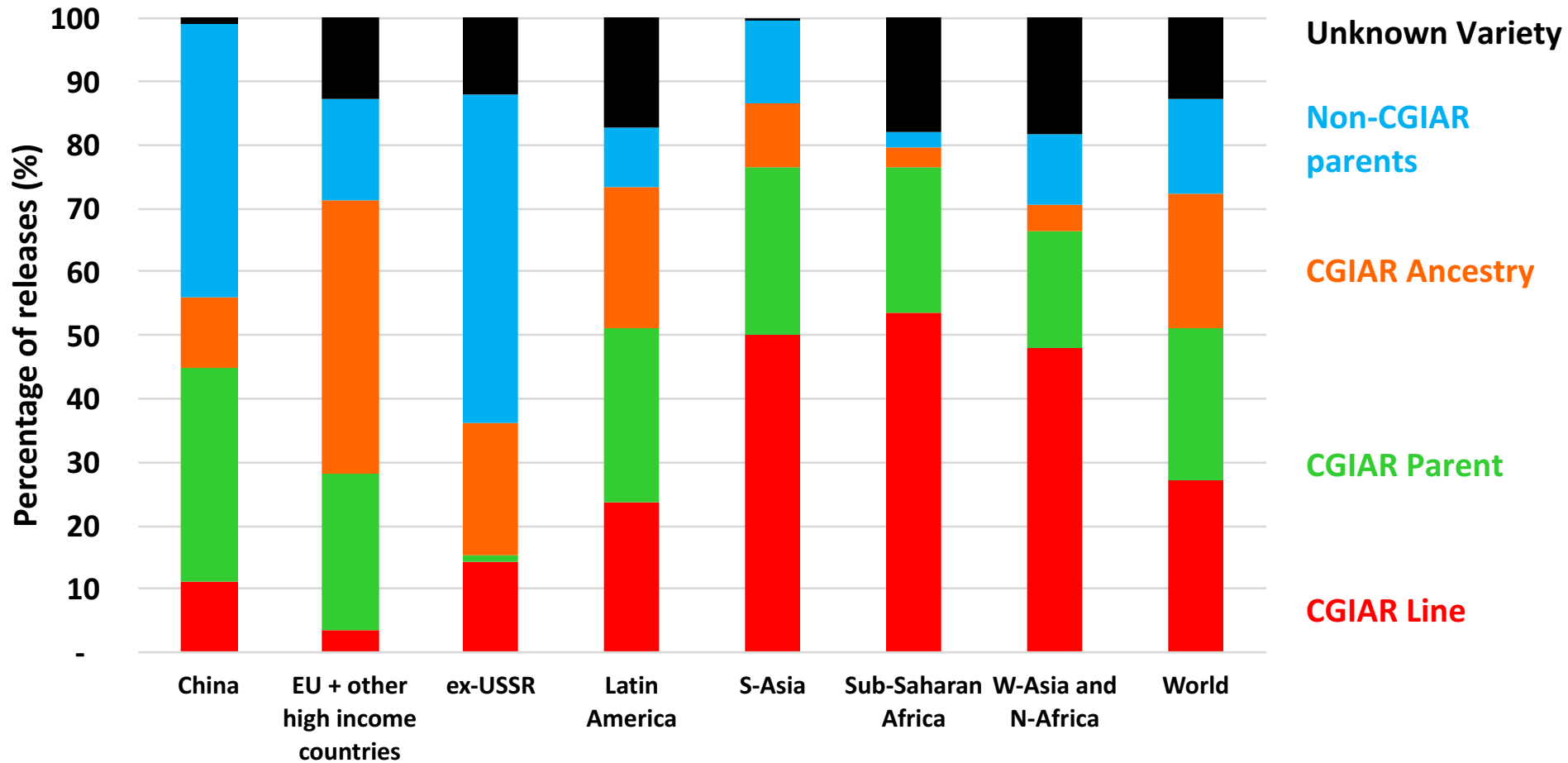
Increasing use of — and dramatic benefits from — CGIAR wheat varieties, 1994-2014

Region	Wheat varieties released with CGIAR ancestry	CGIAR-related varieties vs. total releases (%)
East Asia	121	54
South Asia	293	92
Central Asia	154	48
Sub-Saharan Africa	211	73
Latin America	455	72
West Asia North Africa	434	71
High income countries	1225	56
World	2893	63

Lantican et al., 2015. Impacts of International Wheat Improvement Research, 1994-2014



Spring bread wheat varieties, 1994-2014



Veery

= KVZ/BUHO//KAL/BB

= LUTESCENS 314H 147/BEZOSTAYA 1/4/SARIC F70/3/LERMA ROJO 64A/INIA F66//INIA
F66/BLUEBIRD/5/PENJAMA T62/GABO 55/4/CIANO F67//SONORA 64/KLEIN RENDIDOR/3/8156

=CRIEWENER 104/CENT.PETKUSER/9/CLTA/6/PSSU/AF621/5/RT/3/ROTE DIKKOP/ZEEUWSE WITTE//SHD/4/AKA/7/UKA/8/KR//FZ/LANCASTER/6/ROTE DIKKOP/ZEEUWSE
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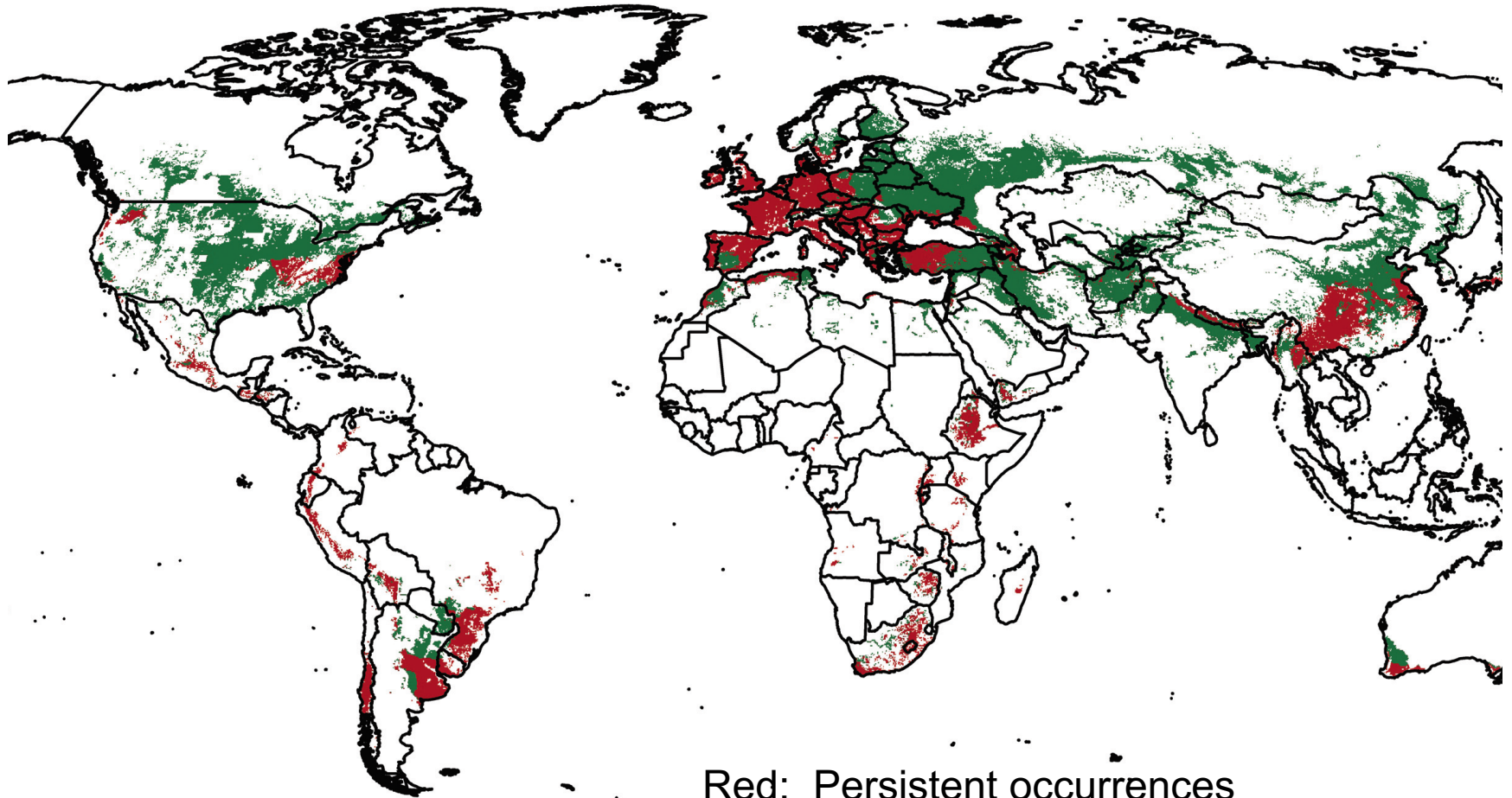
Ecological Impacts

- Avoiding Genetics Vulnerability
- Reducing applications of Fungicides and Insecticides



Global vulnerability for yellow rust

(Modelled by Pardy et al. 2015)



Red: Persistent occurrences

Green: Occasional occurrences



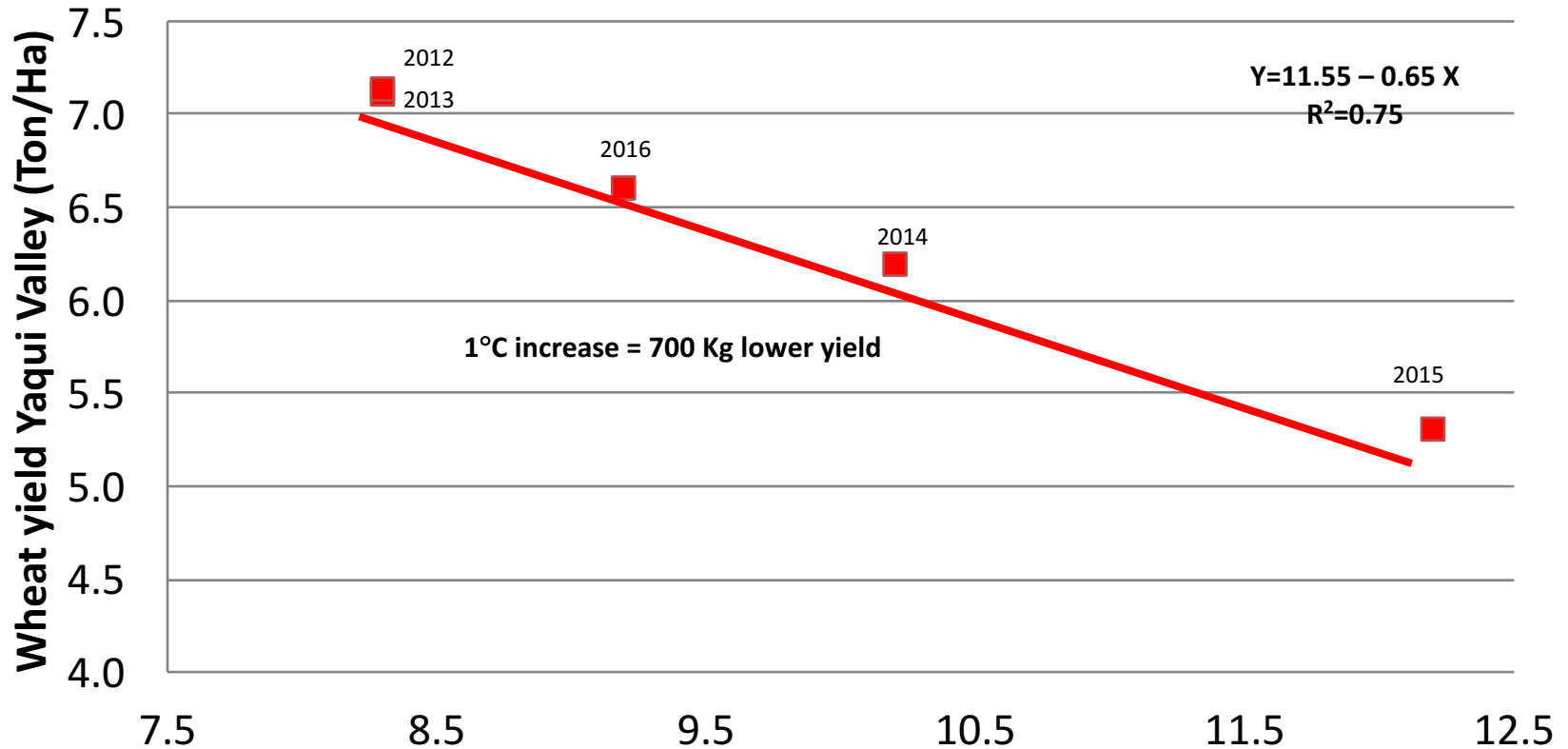
Challenges for CGIAR

Global Wheat Improvement

- Climate Change: heat, drought, erratic rains
- Yield stagnation
- Declining soil fertility, specially soil carbon
- Emerging threats: Wheat Blast, Fusarium, Rusts
- Trained scientists and assistants
- Funding



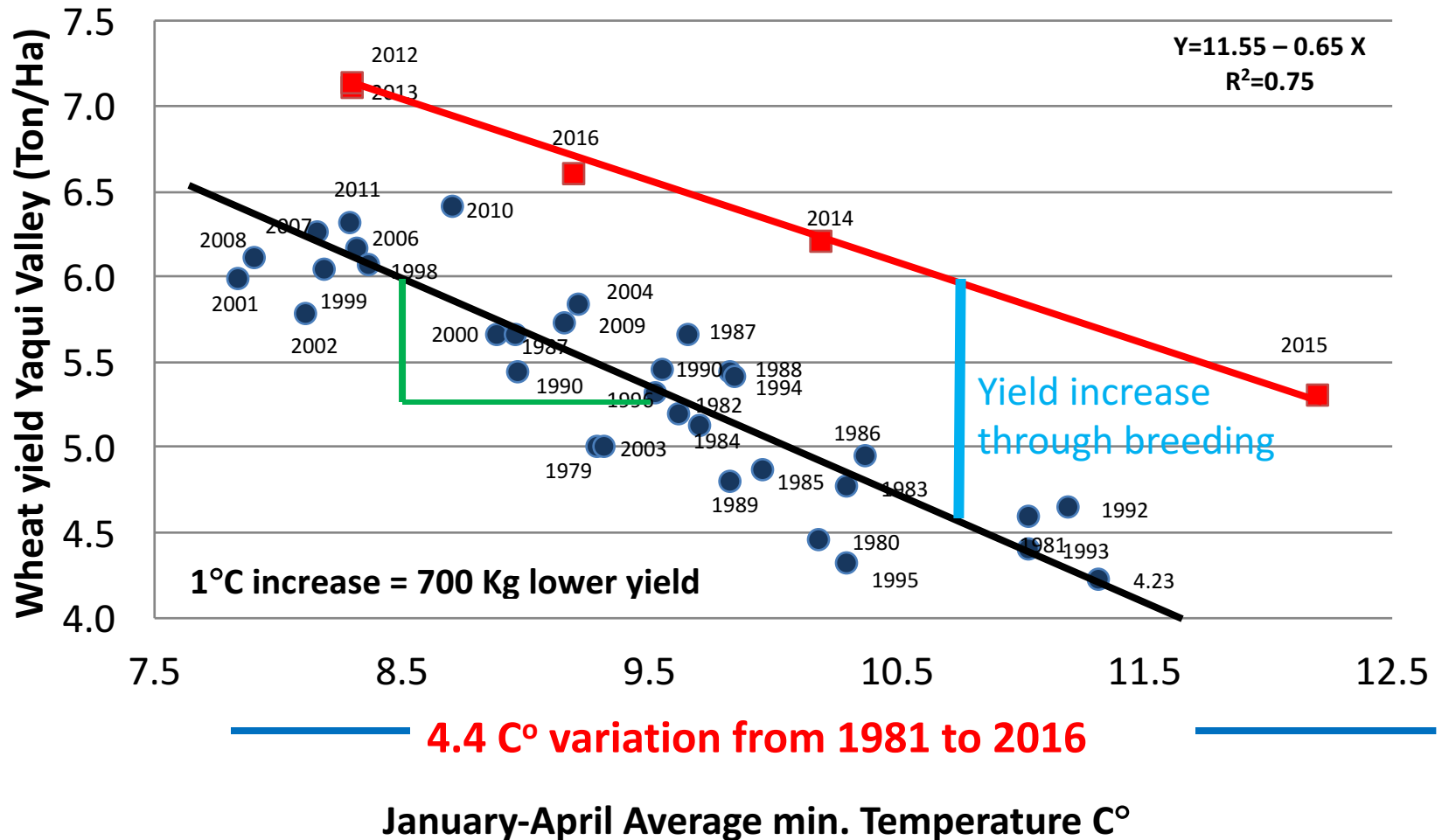
Response of wheat to warmer nocturnal temperatures



4.4 C° variation from 1981 to 2016

January-April Average min. Temperature C°

Adapting to Climate Change: Heat Tolerant Wheats prove their Value in Farmers' Fields in Mexico

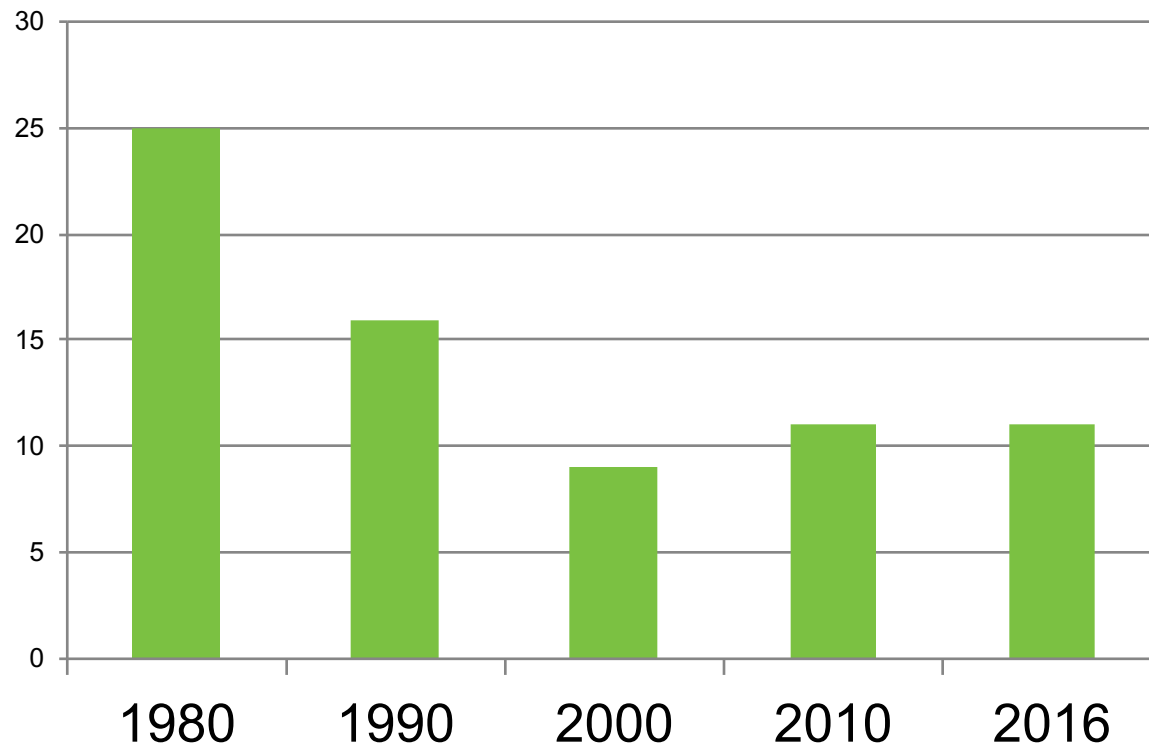


Global Wheat Improvement requires stable funding

- Political stability and economic development requires food stability
- Wheat dependent countries must invest more today to achieve future wheat food stability
 - Developing Countries investments of USD1-5m annually into CGIAR matched by Development Organizations investments



CGIAR Wheat Improvement Annual Investments (USD millions, adjusted to 1980\$)

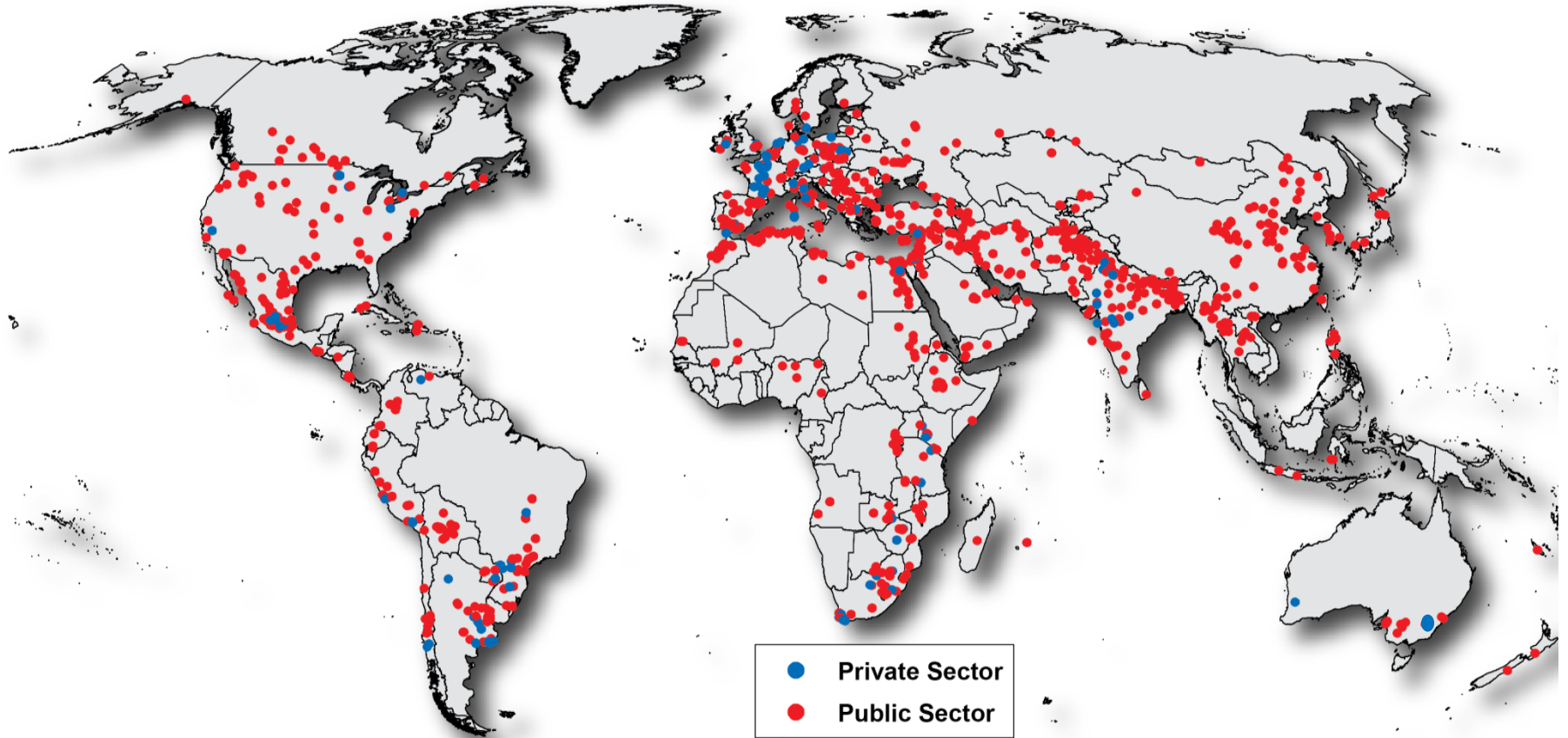


Global Wheat Improvement Requires Strong Partnerships

- Strong CGIAR Outreach Staff
- Innovative Farmers & NGO's
- National Governments and Foundations
- National Agricultural Research Systems (NARS)
- Public and Private Extension Services
- National Seed Systems and Seed Producers
- Private Sector, Advanced Research Institutes
- Collaborative Coordinating Networks



International Wheat Improvement Network



200 Global Collaborators



 **CIMMYT**^{MR}
International Maize and Wheat Improvement Center

**Thank you
for your
interest!**

