



An international research partnership for wheat improvement

MACS 2016

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Hélène Lucas

The Wheat Initiative

- ❖ **Created in 2011 following endorsement by G20 Agriculture Ministries to improve food security**
- ❖ **A framework to establish strategic priorities, identify synergies and facilitate collaborations for wheat improvement at the international level**



Why Wheat?

- ❖ The world's **most widely grown staple crop** (>220 mha)
- ❖ Provides **20% of all calories and protein** in developing and developed countries

but

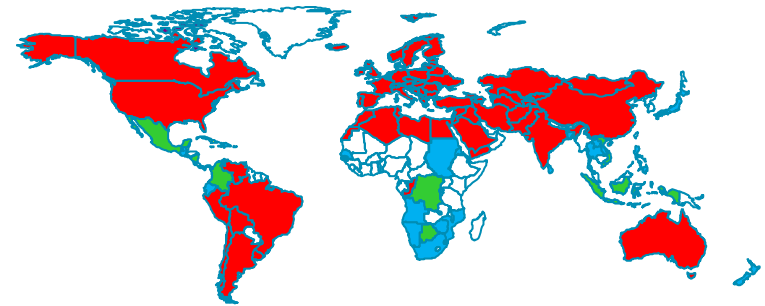
- ❖ **Wheat production did not always meet demand** in past years
- ❖ **Demand will increase by 60% in 2050/2010**, while yields are stagnating and resources are declining
- ❖ **Investment in wheat R&D is disproportionately low** given the importance of the crop

Importance of Wheat as Source for Protein from Plants

1. Rank

2. Rank

3. Rank



The world needs wheat

1 in 8 people in the world
(868 million)
are undernourished

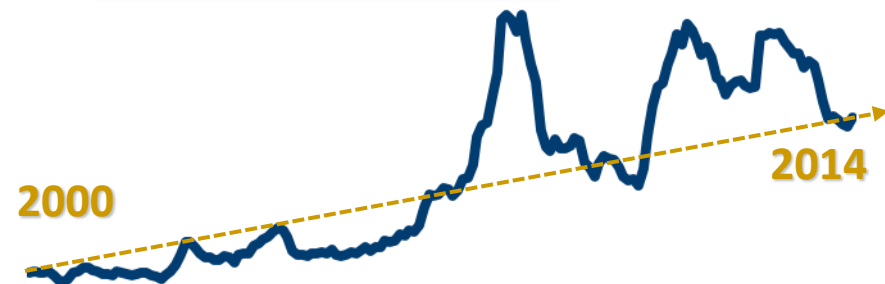


An extra
billion
tonnes of
cereals will
be needed
by 2030

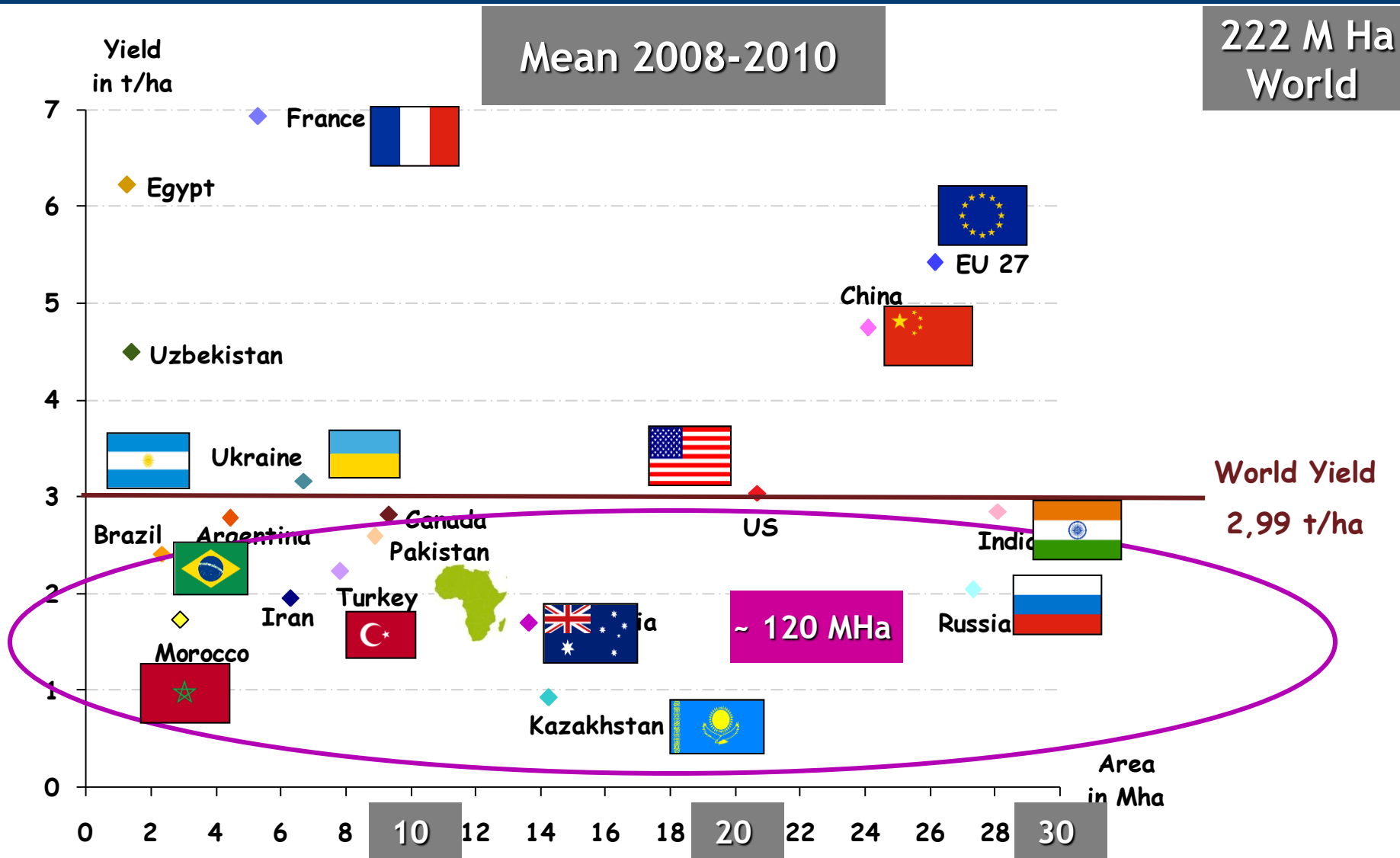
FAO, 2002. *World agriculture 2030:
Main findings*

Cereals prices have
risen by an average of
6% per year
since 2000

FAO Cereals Price Index



Wheat : Relation area/yield

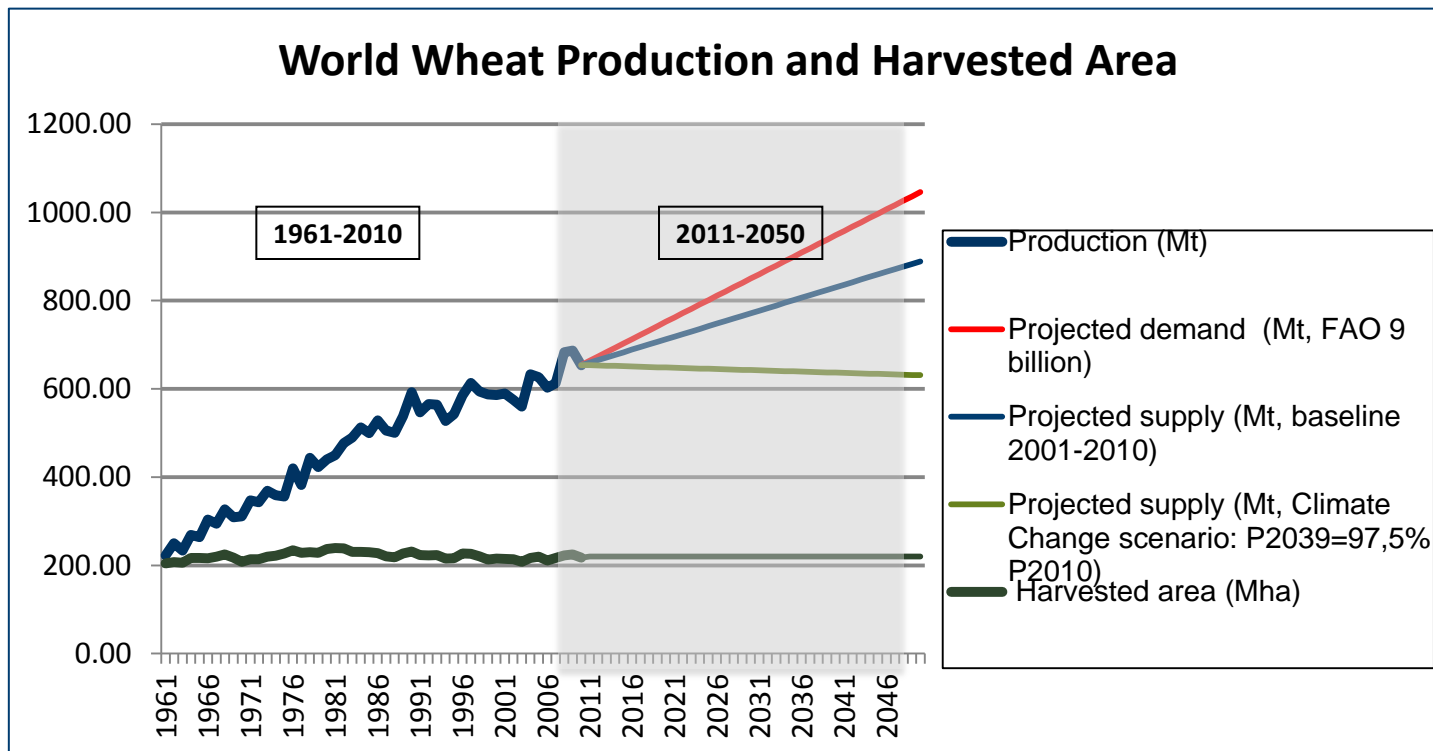


Source : USDA

Courtesy: Limagrain

How to achieve the needed production increase for wheat ?

Mean annual wheat yield increases must change from currently 1.1% (2001-2010) to 1.6% (2011-2050) to meet demand trends



← **Policy**

← **Agronomy**

← **Breeding**

Need for increased coordination

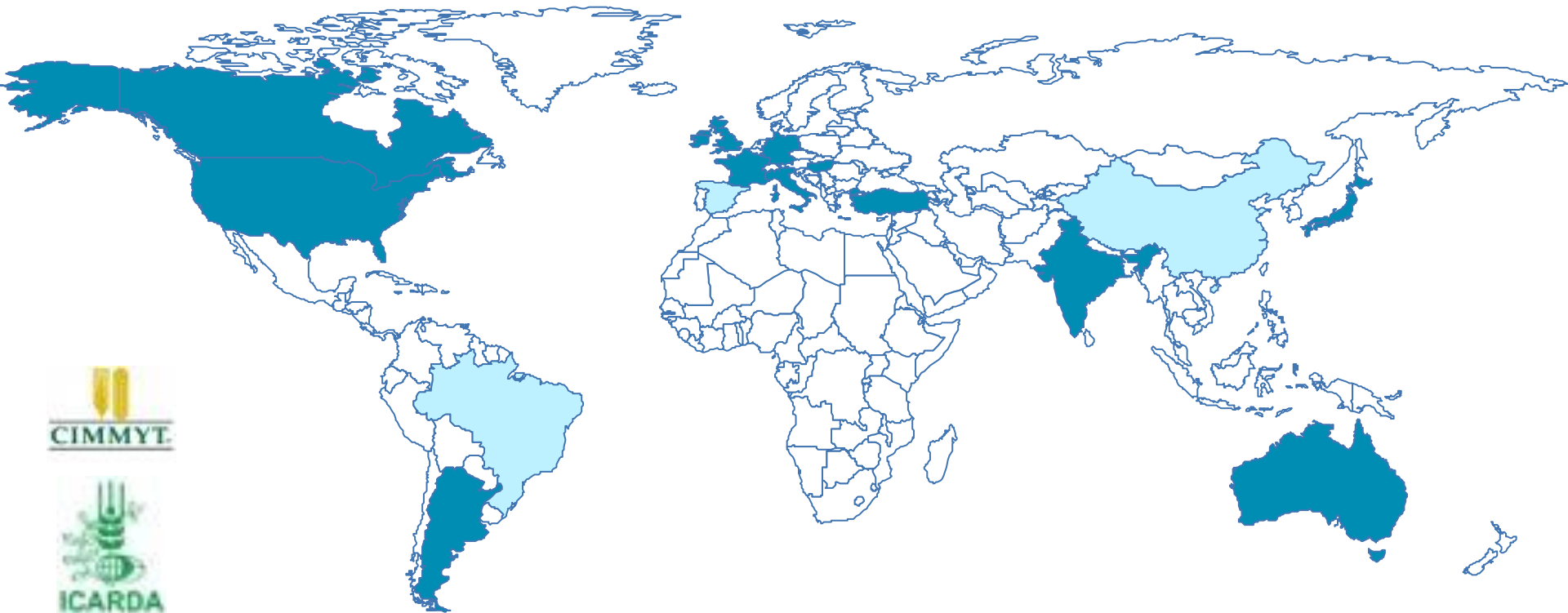
Wheat Initiative Vision and Mission

- ❖ **Vision:** a vibrant global wheat research **community** sharing resources, capabilities, data and ideas to improve wheat land productivity, quality and sustainable production
- ❖ **Mission:** develop a global Strategic Research Agenda and support its implementation through **coordinated actions, knowledge and resource sharing and efficient investment**



All countries and companies welcome!

16 countries, 9 private companies, 2 CGIAR Centres



ARVALIS
Institut du végétal



Limagrain MONSANTO



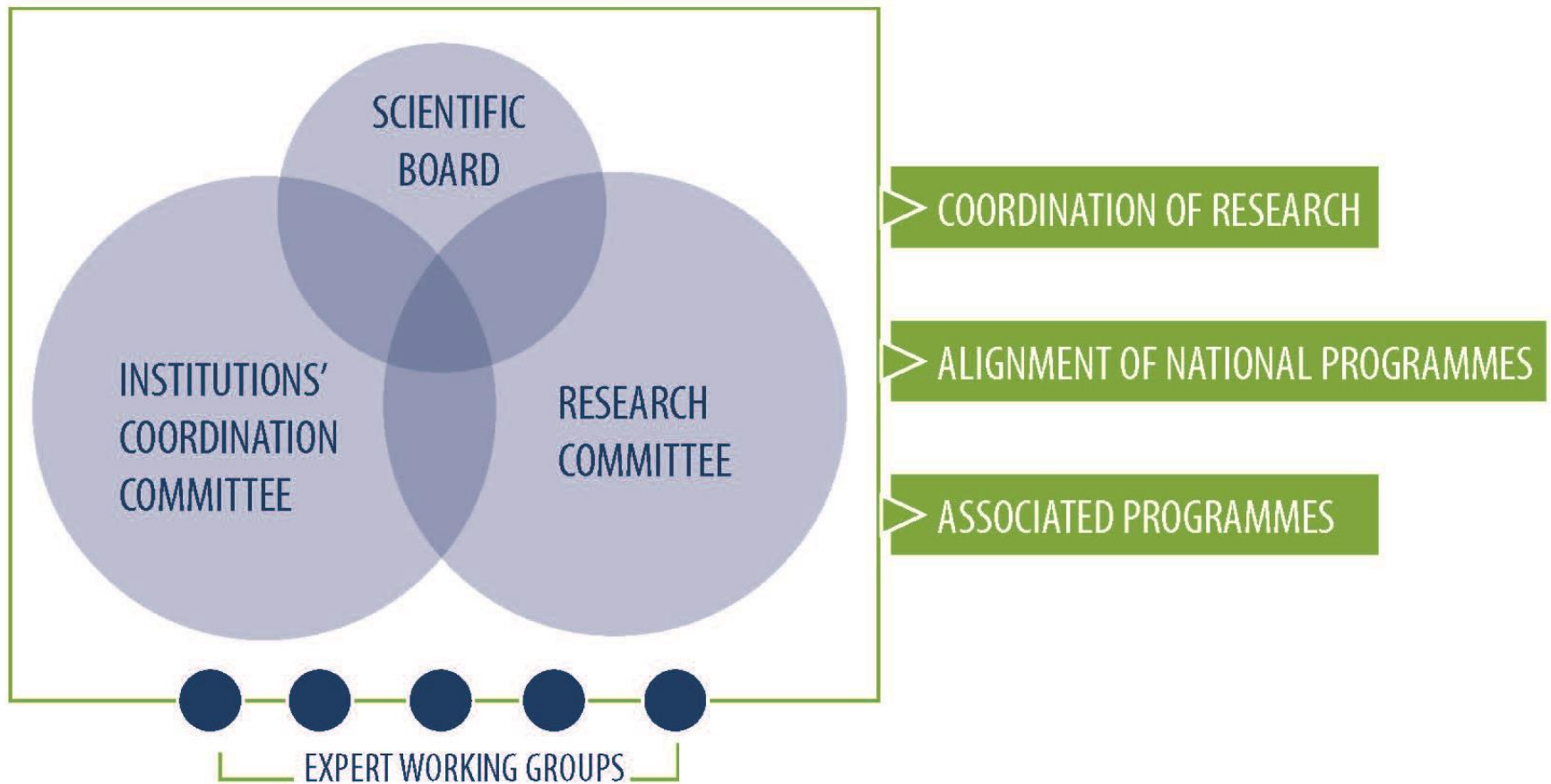
RACT



syngenta



Facilitating delivery by leveraging synergies and collaborations



Expert Working Groups

Established

- ❖ Wheat Information System
- ❖ Genetics and genomics of Durum wheat
- ❖ Wheat breeding methods and strategies
- ❖ Wheat phenotyping to support wheat improvement
- ❖ Wheat plant and crop modelling
- ❖ Nutrient use efficiency

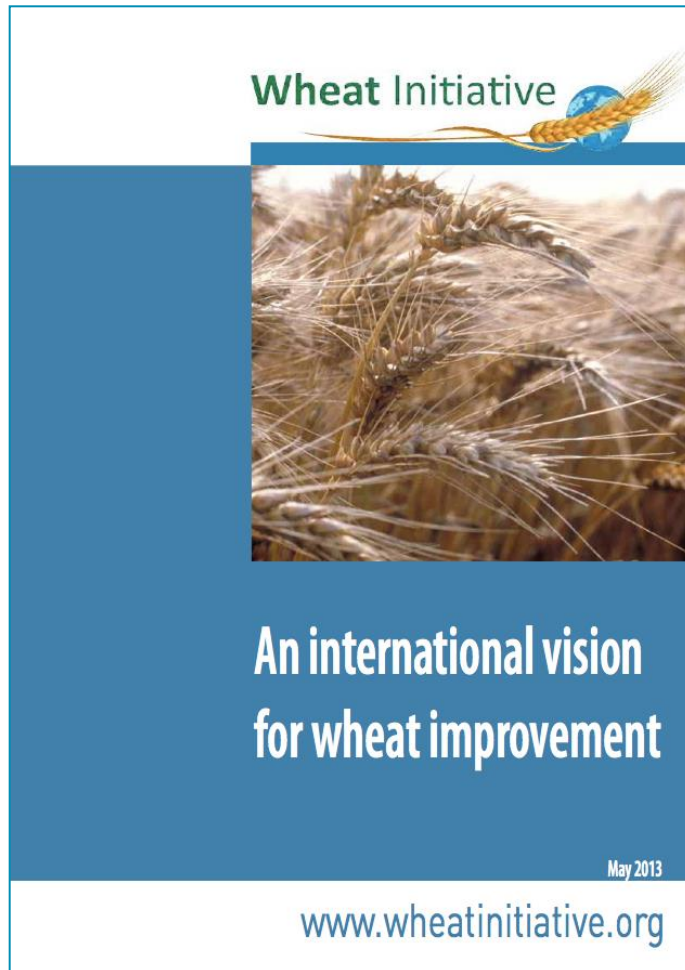
Developing

- ❖ Control of wheat pathogens and pests
- ❖ Adaptation of wheat to abiotic stress
- ❖ Global wheat germplasm conservation and use community
- ❖ Improving wheat quality for processing and health

Newly approved

- ❖ Agronomy

From an Vision Document to a Strategic Research Agenda



2013



2015

The Strategic Research Agenda

Wheat Initiative SRA themes

1 - INCREASE WHEAT YIELD POTENTIAL

2 - PROTECT YIELD

- Controlling wheat diseases and pests
- Improving wheat tolerance to abiotic stress

3 - PROTECT THE ENVIRONMENT AND INCREASE THE SUSTAINABILITY OF WHEAT PRODUCTION SYSTEMS

- Nutrient use efficiency
- Agronomy and crop management

4 - ENSURING THE SUPPLY OF HIGH QUALITY, SAFE WHEAT PRODUCTS

5 - ENABLING TECHNOLOGIES AND SHARED RESOURCES

6 - KNOWLEDGE EXCHANGE AND EDUCATION

- ❖ Challenges and aspirations
- ❖ Research Needs
- ❖ Priority actions

First benefits

- ❖ **Building momentum by stimulating debate and discussion**
 - **More focused support** of wheat research at national level
 - **Better understanding** of ongoing international wheat research
- ❖ **Coordination of wheat research, sharing efforts and resources**
 - Towards a **Wheat dedicated Information System** for scientific data (wheatis.org)
 - **International Wheat Yield Partnership**
 - Support to the **wheat genome reference sequence**
 - Building of a shared **reference Durum wheat collection**
 - First steps to build a **Wheat VIVO portal** (who is doing what, where, with whom...)

Next challenge: implementation of the SRA

- ❖ **Definition of initial global priorities**
 - Heat and drought tolerance
 - Nitrogen use efficiency
 - Post-reference sequence wheat genomics
- ❖ **Implementation plans for each priority (EWGs)**
- ❖ **Mechanisms to facilitate delivery**
 - Alignment of strategies
 - Public-private cooperation frameworks
 - **Joint funding mechanisms** (research programmes, meetings)- a Belmont Forum-like organisation for Ag Research?
- ❖ **Engagement and long term commitment essential**
 - What Members put in dictates what they get out
 - 'Easy' to launch – staying afloat and delivering is the real challenge



www.wheatinitiative.org

Contact:
wheat.initiative@versailles.inra.fr

The Belmont Forum

(www.belmontforum.org)

- Vision: *To deliver knowledge needed for action to avoid and adapt to detrimental environmental change including extreme hazardous events*
- Members: world's major and emerging funders of global environmental change research (e.g. NSFC, EC, ANR, DFG, MOES, NRF, NERC, NSF)
- Members participate in Collaborative Research Actions based on Calls for Proposals
- Each Belmont Forum member funds researchers from their own country
- Researchers from countries not participating in the Call may participate in a research project at their own expense