

International Wheat Yield Partnership

NIFA–IWYP Project Director Meeting

San Diego, CA, 15 January 2017

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Chair, IWYP Science and Impact Executive Board

Jeff Gwyn

Program Director

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**International
Wheat Yield
Partnership**

Research to Deliver Wheat for the Future

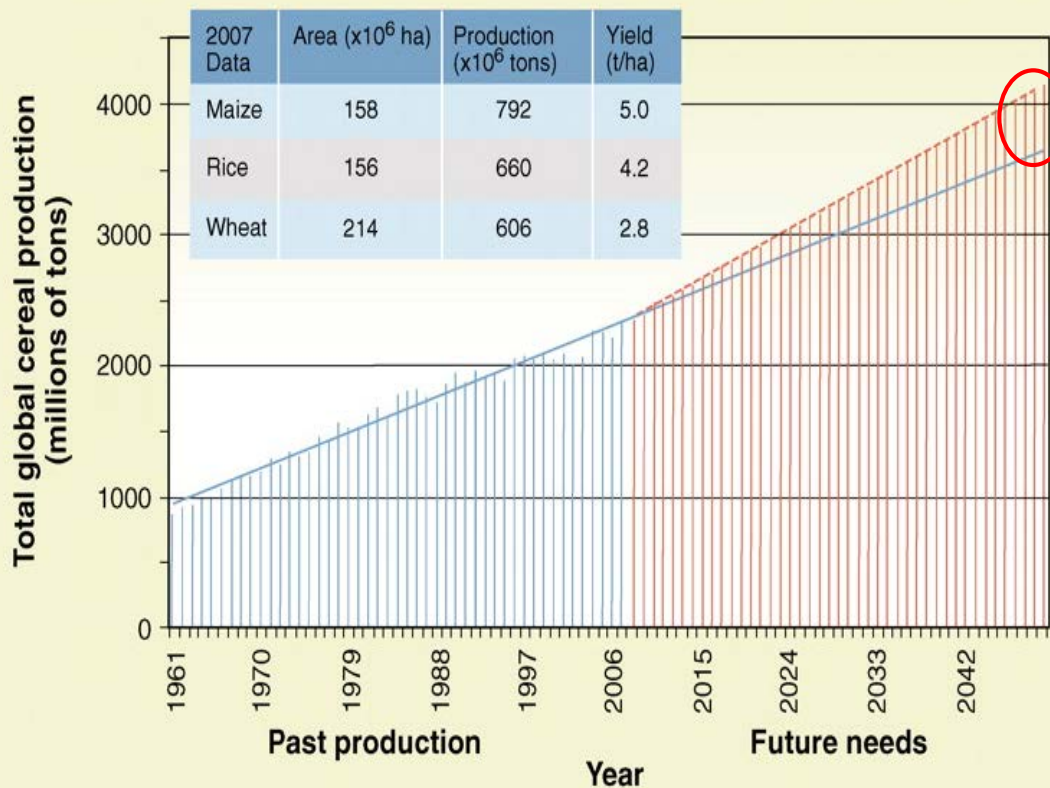
The IWYP Model

Richard Flavell

Chair, IWYP Science and Impact Executive Board

<http://iwyp.org>

Focus on a yield Increase to Feed 9+ Billion People by 2050



Will require a 60+ % increase in wheat production to meet food demands by 2050

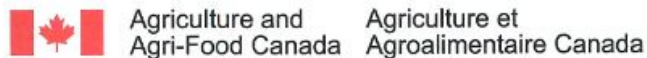
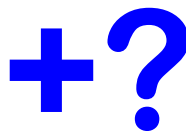


IWYP Goal

To increase wheat yield potential by up to 50% in 20 years:

- To be inspired and managed by an independent management team and structure
- Linked with the private sector
- Developed with state-of-the art technologies
- To be focused on delivery with a high degree of urgency

IWYP Research and Funding Partners



IWYP Private Partners



Science For A
Better Life



IWYP – A Partnership

Partnership between:

- Funding agencies in different countries
- Science teams in different countries
- Different research projects
- Private and public sector institutions

IWYP Founders Sought to:

- Do things differently
- Have own Governance
- Accept high risk / high reward science---seeking breakthroughs
- Take advantage of new technical opportunities
- **Align and partner with other funded projects — e.g. NIFA**
- Focus on outputs for farmers and consumers
- Take discoveries down the product development path (via links with CIMMYT and others)

The IWYP Science Program

Jeff Gwyn
Program Director

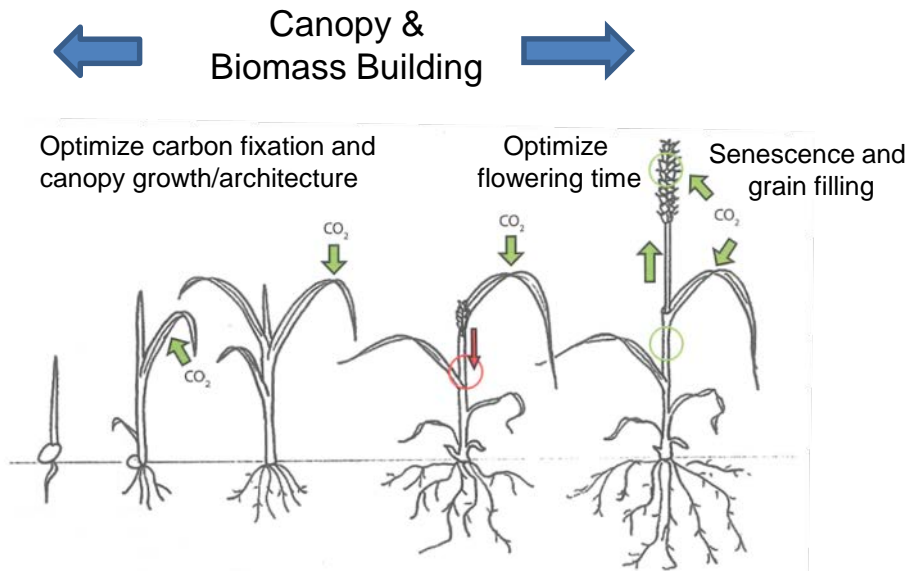
<http://iwyp.org>

IWYP is a Frontier Program for Making Breakthroughs in Yield Potential

- Explore new germplasm
- Discover high impact traits and their underpinning genetics
- New methods for creating variation
- New methods for screening traits
- Genome-wide polymorphic markers
- Rapid screening in fields
- Rapid validation in elite germplasm in fields

IWYP Goal and Strategy

GOAL - Increase the genetic yield potential of wheat by 50% in 20 years



The IWYP Science Program

Our strategy to:

- Facilitate the sharing and integration of research, project outputs
- Time material inputs, manage capacities
- Realize synergies and generate added value
- Deliver traits and germplasm

Partners in the IWYP Initiative

- **Funding and research organization partners** – provide the resources
- **Private industry partners** – provide strategic direction for deployment, commercial products
- **Science and Impact Executive Board** – provides overall strategy, operational direction and recommendations to Funders
- **Independent managers** – SIEB Chair, Program Director and Manager, Secretariat – operations, coordination
- **Scientists** – most essential and important team member stakeholders that need to be engaged and responsible, creative, focused on delivery with a sense of urgency, collaborative and sharing, successful

IWYP Science Projects

Dozens of researchers from 9 countries:

- 8 project selected from IWYP 1st Competitive Call
- 7 projects selected from USDA NIFA-IWYP Call
- 6 IWYP Aligned Projects (growing)
- Science portfolio is expanding:
 - IWYP 2nd Competitive Call (OPEN NOW!)
 - Future Calls (IWYP and Aligned)
 - Aligned Projects

IWYP will Capitalize on an R&D Portfolio

The science ...

Funded in
companies



Funded via
IWYP



IWYP
Aligned
Projects



Funded and
published
separately



Coupled with project selection gives IWYP a *Portfolio* of
research and future options for impact

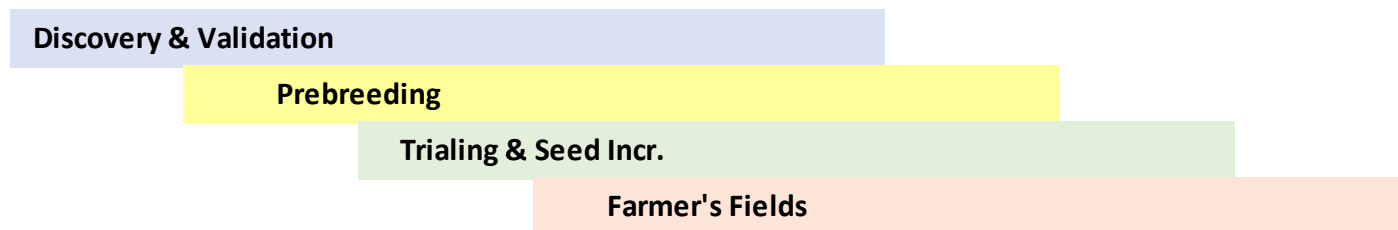
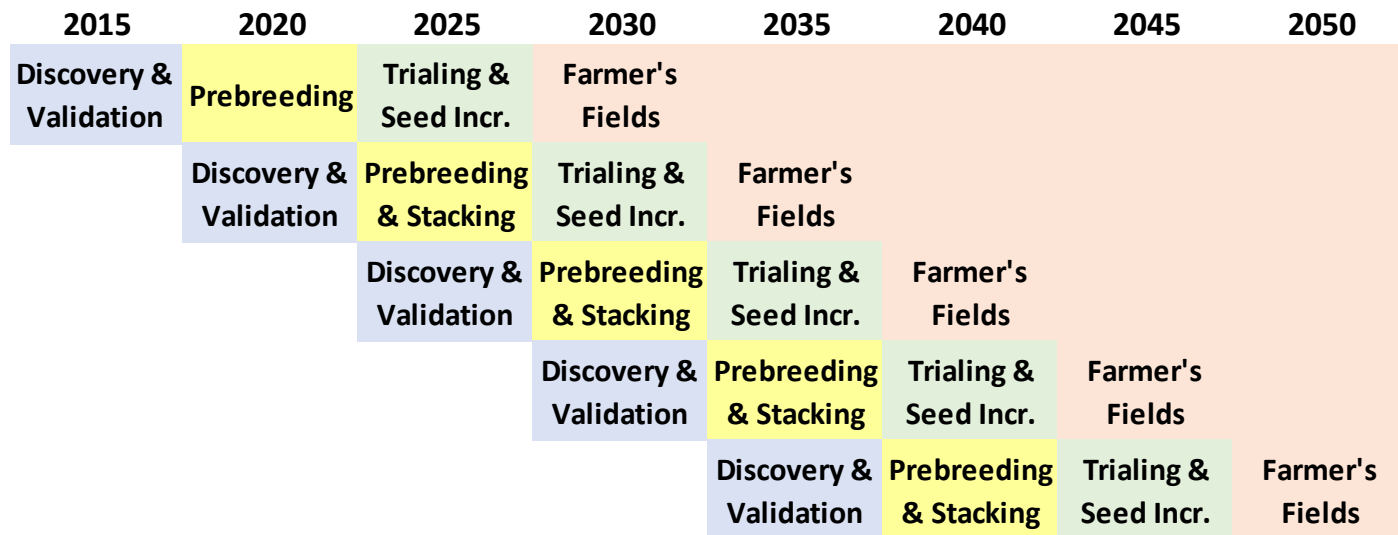
IWYP HUB – Validation and Development



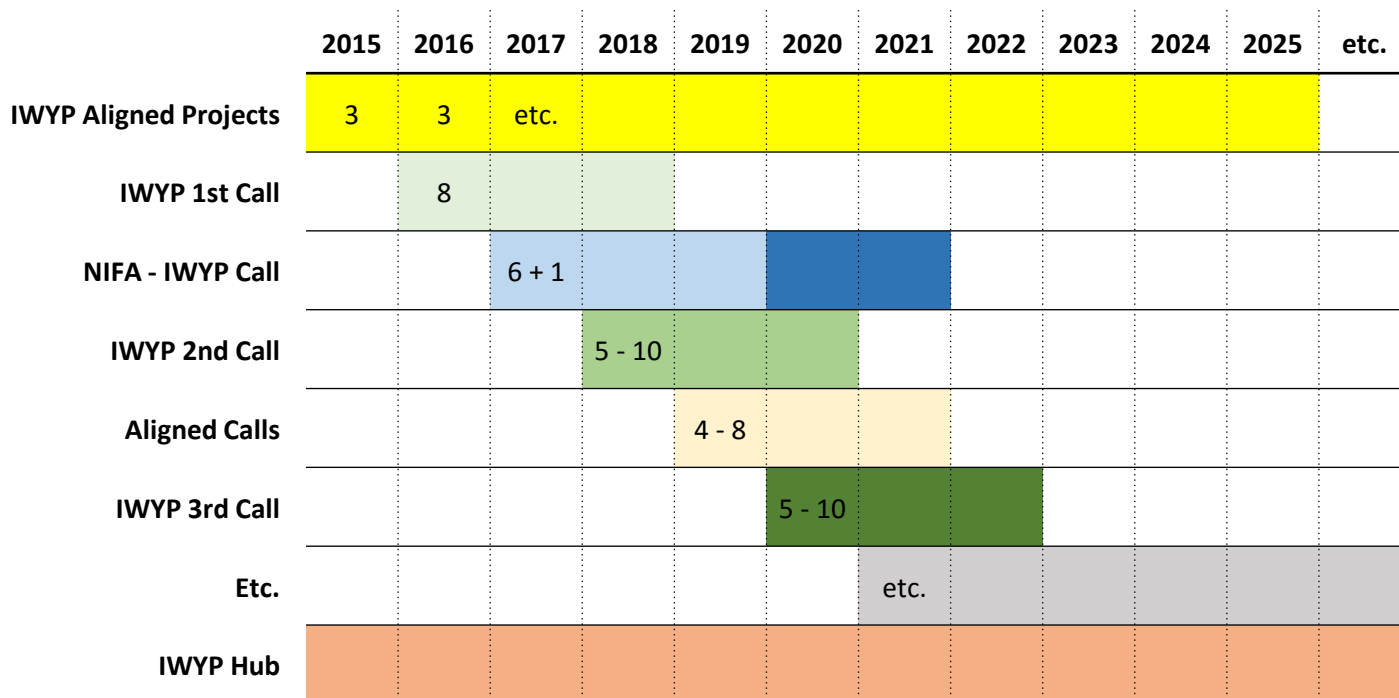
HUB Platform approach at CIMMYT:

- Brings all discoveries into a single source to compare and combine to seek synergies and generate added value
- ✓ Trait validation
- ✓ Precision phenotyping
- ✓ Field evaluation
- ✓ Prebreeding
- ✓ Trials and distribution via IWIN
- Enables the IWYP to drive the discoveries/traits toward the market

Rounds of Discovery, Stacking, Trialing and Seed Multiplication Before 2050



IWYP is a Long Term Continuous Program with Multiple Research Components



Overview of the IWYP Projects

Timing of Outputs to the IWYP Hub

Available products	Trait	2016				2017				2018				2019	
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Markers															
	Biomass									IWYP39FP					
	Photosynthesis								IWYP64FP				IWYP64FP		AP04
	Harvest Index	IWYP25FP			IWYP25FP							IWYP25FP			
	Spike development														
	Energy Use Efficiency									IWYP60FP			IWYP60FP		
	Architecture & photosynthesis						IWYP89FP						IWYP89FP		
Protocols															
	Biomass						IWYP39FP								
					IWYP64FP & IWYP48FP										AP04
	Photosynthesis														
	Harvest Index														
	Spike development														
	Energy Use Efficiency						IWYP60FP						IWYP60FP		
	Architecture & photosynthesis									IWYP89FP					
Tools/Software															
	Biomass														
					IWYP64FP & IWYP48FP										
	Photosynthesis														
	Harvest Index												IWYP25FP		
	Spike development		IWYP76FP												
	Energy Use Efficiency												IWYP60FP		
	Architecture & photosynthesis				AP05						IWYP89FP				
Lines with traits															
	Biomass	AP01	AP01	AP01	AP01	AP01	AP01	AP01	AP01	AP01	AP01	IWYP39FP & AP01	IWYP39FP & AP01	AP01	AP01
													IWYP64FP & IWYP48FP		AP04
	Photosynthesis														
	Harvest Index					AP02	IWYP25FP & AP02	AP02	AP02	AP02	IWYP25FP & AP02	AP02	AP02	AP02	AP02
	Spike development	IWYP76FP	IWYP76FP					IWYP76FP	IWYP76FP	IWYP76FP	IWYP76FP	IWYP76FP	IWYP76FP	IWYP76FP	IWYP76FP
	Energy Use Efficiency								IWYP60FP				IWYP60FP		
	Architecture & photosynthesis											IWYP89FP			
Transgenic lines with traits															
	Biomass													IWYP39FP	
	Photosynthesis								IWYP61FP				IWYP61FP		
	Harvest Index														
	Spike development														
	Energy Use Efficiency														
	Architecture & photosynthesis														

2nd IWYP Program Conference

- **20-24 March 2017 in Obregon, Mexico** (in conjunction with CIMMYT)
- This is a hands-on interactive meeting
- Important event for sharing your science, getting and giving feedback, linking with other projects, building research teams, and integrating into the IWYP Science Program overall
- Important for all IWYP and NIFA-IWYP Project Leaders and key Principal Investigators to attend and actively participate
- Participants include research scientists, IWYP Management and SIEB members, IWYP SAC members, IWYP Private Partners, key CIMMYT scientists
- Project Leaders will present project descriptions, progress updates
- Discussions - Q&A, feedback to IWYP, brainstorming, planning, etc.
- A day In the field for CIMMYT Visitors Day & IWYP Hub field tours

Thank You

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