

The International Wheat Yield Partnership

Strategic Plan 2017-2022 - Summary

THE INTERNATIONAL WHEAT YIELD PARTNERSHIP (IWYP)

IWYP is a unique partnership of public and private institutions that deploys a new and highly efficient model for funding and integrating research into a holistic science and development program. It seeks to assist in ensuring global food and nutritional security in the future when world population soars and outstrips our current ability to produce the amount of food required. The IWYP model is purposely different, our goals ambitious and our stakeholders focused on delivery with a sense of urgency. To achieve these globally vital goals, more partners and investment in downstream development are required to deliver improved products to farmers worldwide.

Strategy for Delivery

IWYP is establishing the knowledge, knowhow and tools to be able to breed higher yielding wheats faster and with a continuous high rate of yield gain, suitable for the major wheat growing areas of the world, as proven by the generation and delivery of improved wheats with higher yields, whilst maintaining quality, stress tolerances and other agronomic characteristics.

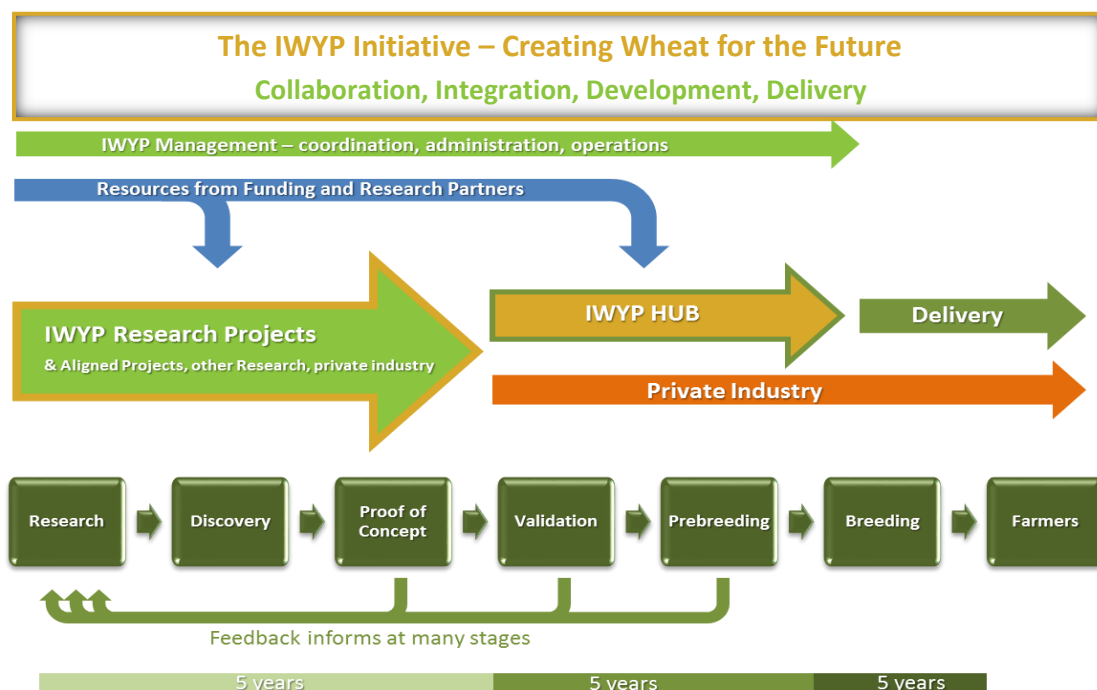
Summary of Strategic Goals for the Next 5 Years

- ✓ Deliver first higher yielding germplasm
- ✓ Bring in additional top quality science
- ✓ Achieve a succession of research breakthroughs in key traits
- ✓ Create added value by combining breakthroughs in elite germplasm
- ✓ Move improved germplasm into breeding programs around the world
- ✓ Coordinate projects around the world for greater efficiency
- ✓ Raise another US\$50 million to help bring successions of breakthroughs into world breeding programs

IWYP Goal
To increase the genetic yield potential of wheat by 50% by 2035

The IWYP Strategic Approach

The science to delivery plan is illustrated below:



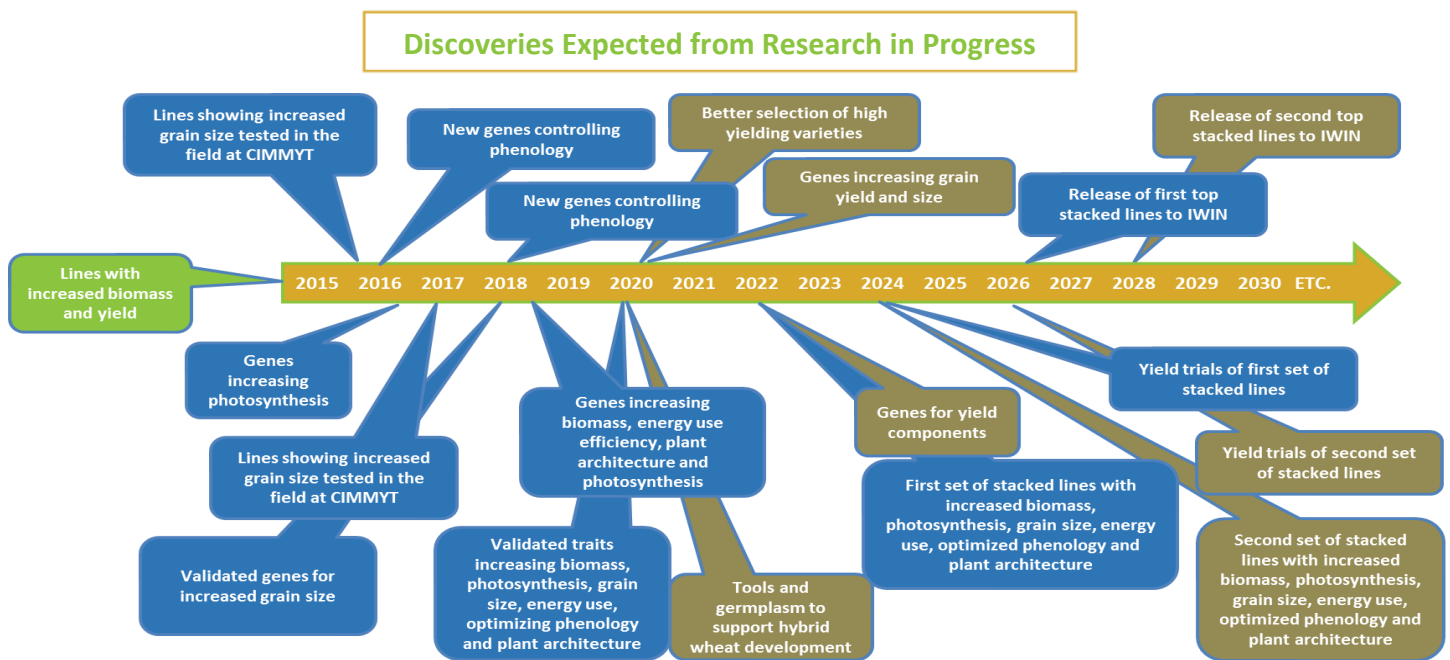
IWYP will create new research breakthroughs with expert teams, to validate the outputs in fields and to develop wheats with multiple sources of increased yields in order to create the production breakthroughs needed. IWYP's strategic tactics are to *i)* seek breakthroughs and not incremental improvements, *ii)* exploit the best relevant science base worldwide, *iii)* coordinate and integrate the science teams, *iv)* integrate the research discoveries and generate added value, *v)* translate the research discoveries and incorporate them into elite germplasm and evaluate, and *vi)* transfer the improved germplasm to leading breeding programs around the world, both public and private.

Translation and delivery of research outcomes (validation, prebreeding and global release of the new wheat lines with increased yield) will be done primarily by CIMMYT in Mexico (via the IWYP Hub) or other equivalent institutions. The private sector are partners as they also provide farmers of the world with improved wheat varieties, especially in more highly developed countries. The overall strategy is illustrated in the figure above.

Scientific Strategy

IWYP's research priorities are to discover the traits and their underpinning genetics in order to build higher performing wheat plants for as many parts of the world as possible. The resulting plants will have increased biomass, an ideal architecture and growth rate that overall captures more sunlight; converts, uses and distributes the captured energy more efficiently; utilizes more of this energy to produce more and larger grains; and overall results in a new type of wheat plant with transformative levels of yield and productivity.

Some of the expected outputs embedded in the Strategic Plan Timeline based on the already developing scientific research are shown in the figure below.



Major Actions for Success of the Program

- To retain the current flow and release of new high yield germplasm
- To bring in more world class science, both funded and aligned, to ensure success by “more shots-on-goal” and to build out / balance the IWYP science portfolio
- To coordinate the Science Program for efficiency, continue to integrate current research projects, generate added value and identify opportunities to generate additional added value
- To continue to develop the IWYP Hub – this includes pushing the first project discoveries through validation, combination and pre-breeding, and optimizing the processes at the IWYP Hub for pre-breeding for precision, efficiency and speed
- To deliver the first higher yielding germplasm developed with IWYP tools and traits

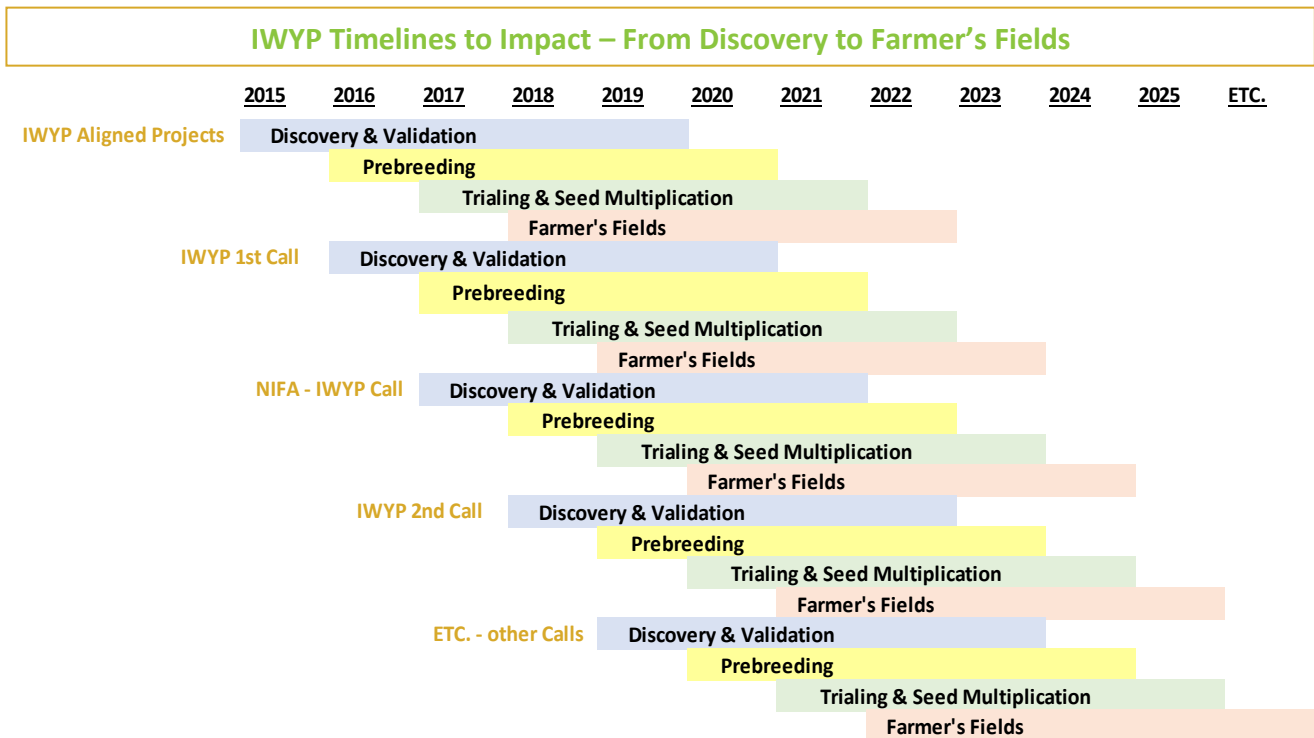
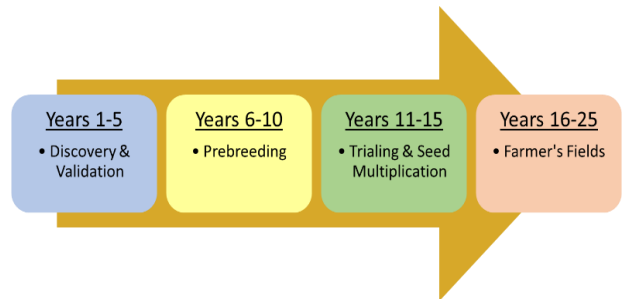
- To bring in new Partners and additional resources, including different types of partners to support specific facets of the IWYP Science Program, especially the more downstream development stages in the Hub
- To ensure that the research projects and the IWYP Hub have a strong component for training the next generation of wheat scientists and capacity building
- To remain focused and avoiding scope creep

Measuring Success

IWYP will measure its success in many ways. First, we will assess the magnitude of relative improvements during the research phases. Next, we will measure the progress of yield improvements relative to current levels via internal and international trials. As breeders and other researchers will continue to make gains in yield, we will also assess our cumulative gains in yield performance levels against the best commercially planted varieties over time. Another good measure will be to assess the level of uptake of IWYP germplasm in breeding programs worldwide. Baseline metrics and progress to date are under development.

Timelines to Impact

The research, development and delivery of discoveries from the lab to farmer’s fields is a lengthy process, typically taking some 10-15 years before impact begins to be realized. Further, as IWYP is seeking breakthroughs in yield potential via novel and high risk ideas, it is naïve to think that IWYP can achieve its goals and objectives via a single round of research projects. Therefore, multiple rounds of research must be initiated followed by multiple rounds of development, prebreeding, trialing, seed multiplication and delivery of new improved varieties. This is illustrated in the diagrams right and below.



RESOURCES – NEEDS, SOURCES, TIMING

Through its partners, IWYP has an overall goal to invest US\$100 million over the next 5-10 years to realize its aims. To date, over US\$45 million has been committed to the strategy and we seek to raise another ca. US\$50 million to ensure success and generate additional impacts. Numerous research projects around the world are already funded from the \$45million. The validation and development pipeline (currently ca. US\$1 million per year) is funded for 2017 but additional investments are needed for 2018 onwards, as are investments to cover the relatively small and cost-effective management overheads. This will likely require more partners as well as new different types of partners that prefer to fund downstream and delivery aspects rather than discovery research. Therefore, the IWYP Executive Board and Management will continue to seek new partners and funds to enable the strategy to be fulfilled. This is essential for wheat yields in farmers' fields to be boosted substantially to contribute to global food and nutritional security in the future.