

# IWYP NEWSLETTER

February 2016

Dear Colleagues,

Welcome to the IWYP February 2016 Newsletter!

You may be aware that in March 2014 in Obregon, Mexico at CIMMYT the International Wheat Yield Partnership (IWYP) was formally launched at the Borlaug 100 Summit on Wheat for Food Security. In brief, IWYP has set itself the challenge to facilitate research that will make a step change in wheat yields up to 50% above current levels. We will enable the delivery of higher yielding wheat varieties to farmers by increasing the plant's photosynthetic capacity to make sugars and ability to move more of this available carbon captured by this process into the grain. More information about the program can be found at [www.iwyp.org](http://www.iwyp.org).

2015 was an exciting initial year for us. We are now fully-operational and have gone from initial ideas to awarding our first portfolio of scientific research projects, working with colleagues at CIMMYT to set up a world class phenotyping and prebreeding pipeline platform, encouraging industrial and public sector scientific research programs to become members and generally spreading the message about who we are and what impact we want to make in farmers' fields and global food security.

Below you will find some of our most recent achievements. We hope you find it interesting and would welcome any comments or questions you might have.

## Successful first IWYP Competitive Call for Research Proposals

A major milestone was achieved in October 2015 when we awarded our first set of scientific research projects. It was heartening to see such a level of interest generated by our first Call with nearly 100 Pre-Proposals being submitted to IWYP that included researchers from 41 countries. Following expert scientific peer review, we recommended 8 projects for funding as they fit our research themes and, if successful, could have a large impact on our Program objectives. The Funding partners unanimously agreed and responded with research grants to the selected projects. The successful awardees are teams based in the United Kingdom, Australia, United States, Mexico, India, Argentina and Spain. The projects are listed below and more information on each can be found at <http://iwyp.org/media/>.

- ❖ **Realizing Increased Photosynthetic Efficiency to Increase Wheat Yield**
  - Project Lead - Christine Raines, University of Essex (UK)
  - Principal partners - Lancaster University (UK); University of Illinois (US); Rothamsted Research (UK)
- ❖ **Molecular Dissection of Spike Yield Components in Wheat**
  - Project Lead - Cristobal Uauy, John Innes Center (UK)
  - Principal partners - University of California, Davis (US); CIMMYT (MEX)
- ❖ **Improving Wheat Yield by Optimizing Energy Use Efficiency**
  - Project Lead - Barry Pogson, Australian National University (AUS)
  - Principal partners - University of Western Australia (AUS); CIMMYT (MEX); University of Adelaide (AUS)
- ❖ **Increasing Carbon Capture by Optimizing Canopy Resource Distribution**
  - Project Lead - Richard Trethowan, University of Sydney (AUS)
  - Principal partners - University of California, Davis (US); Agharker Research Institute (IND)
- ❖ **Using Next Generation Genetic Approaches to Exploit Phenotypic Variation in Photosynthetic Efficiency to Increase Wheat Yield**
  - Project Lead - Anthony Hall, University of Liverpool (UK)
  - Principal partners – Lancaster University (UK); CIMMYT (MEX); Australian National University (AUS)
- ❖ **AVP1, PSTO1 and NAS - Three High Value Genes for Higher Wheat Yield**
  - Project Lead - Stuart Roy, University of Adelaide (AUS)
  - Principal partners - University of Melbourne (AUS); Arizona State University (US); CIMMYT (MEX); University of California, Riverside (US)
- ❖ **A Genetic Diversity Toolkit to Maximize Harvest Index by Controlling the Duration of Developmental Phases**
  - Project Lead - Simon Griffiths, John Innes Center (UK)
  - Principal partners - University of Bristol (UK); University of Buenos Aires (ARG); CSIRO AUS); CIMMYT (MEX); ICREA (ESP)
- ❖ **Wider and Faster: High-Throughput Phenotypic Exploration of Novel Genetic Variation for Breeding High Biomass and Yield in Wheat**
  - Project Lead - Erik Murchie, University of Nottingham (UK)
  - Principal partners - University of Bristol (UK); Lancaster University (UK); University of Essex (UK)

## IWYP meeting at the Plant and Animal Genome (PAG) Conference XXIV January 9-13 2016

The recent PAG Conference in San Diego provided an opportunity to bring together scientists from the 8 funded IWYP projects with IWYP management for the first time. Following a brief recap of the Program objectives by the IWYP Director, Dr. Jeff Gwyn, participants presented their projects to other project team members. This was the first time the group had been able to exchange research strategies and goals with colleagues and it proved extremely useful in fostering a sense of teamwork by initiating a discussion on how the IWYP projects can work together with one shared vision and goal. This is something we are keen to cultivate and formalize over the coming months as we shape our Scientific Research Program. The meeting also stimulated discussion around new research areas that might merit future support from funding agencies.

### First IWYP Program Conference

As a more comprehensive follow-on to the meeting at the PAG Conference, the first IWYP Program Conference will be held the week of the 7<sup>th</sup> March in Obregon, Mexico. This will be the first opportunity to bring together all the project scientists of IWYP funded projects, IWYP Management, associated CIMMYT scientists, a few invited guests and IWYP Private Members. It will be an opportunity to inform other team members of research objectives and plan how we work together as an effective team under the umbrella of a Scientific Research Program rather than separate projects. This is an essential component of the IWYP mission and we hope the conference will be informal and interactive with lively and open constructive discussions and suggestions on how to shape the IWYP Program in the future. As well as reporting on activities and presentations there is time set aside to get into the field to see wheat plants. A full day has been given to this activity and we will be encouraging all participants to walk among the research plots and observe the experiments being conducted at the IWYP Research and Breeding Hub there at CIMMYT. We will be reporting on the conference in our next newsletter.

### NIFA / IWYP Competitive Call

At the end of December 2015, an aligned Call for research proposals was announced by USDA NIFA and IWYP. A total of ca. US\$15 million is anticipated to support research projects that align with IWYP research goals. We anticipate a similar level of interest from the scientific community to that we experienced with for our first IWYP Competitive Call. Closing date for this call is May 3<sup>rd</sup>, 2016 with Letters of Intent to arrive at USDA NIFA no later than March 1<sup>st</sup>, 2016. More information on the USDA NIFA Call can be found on our website:

[http://iwyp.org/wp-content/uploads/sites/13/2015/12/IWYP\\_NIFA\\_Call\\_Press\\_Release.pdf](http://iwyp.org/wp-content/uploads/sites/13/2015/12/IWYP_NIFA_Call_Press_Release.pdf)

and the NIFA website:

<http://nifa.usda.gov/funding-opportunity/nifa-international-wheat-yield-partnership-program-nifa-iwyp>.

## IWYP Private Membership

Whilst IWYP is a publicly funded initiative, it is important to bring representatives from the private sector into the Program. They have particular expertise, especially in relation to product delivery, that will bring added value to our Program and facilitate delivery of higher yielding wheat varieties to farmers' fields. IWYP is therefore offering companies who are leaders in wheat research and breeding to become members. We will be able to call on their expertise while developing our research portfolio and strategies, and at the same time members will receive particular benefits including access to scientific discoveries and germplasm earlier than non-members. We are pleased to say that as of today six of the leading wheat breeding companies in the world have signed up for membership (Syngenta, KWS, Pioneer, Limagrain, Bayer CropScience and Mahyco) and more have contacted us with expressions of interest. Expect to see more announcements soon! If you are interested in becoming an IWYP Private Member, membership information including application form will soon be available from our website or you can contact the IWYP Program Manager at [lwypprogmanager@iwyp.org](mailto:lwypprogmanager@iwyp.org).

## Connecting with other international wheat research efforts

There are many examples of excellent scientific research currently being conducted around the world that are not directly funded by IWYP but have similar objectives to IWYP, namely significantly raising the grain yield level of wheat varieties. Therefore, it makes sense to connect with these initiatives and research programs to formally bring them in to the IWYP Program. Doing so will expand the range of our research capacity, rapidly take advantage of ongoing research and generally leverage the power of a global team working together on a similar research theme. This could shorten the time in getting improved varieties into farmer's hands by capitalizing on some early wins. We are calling these external projects "Aligned Projects". More information on Aligned Projects will soon be available on our website including details and benefits of becoming an Aligned Project member.

## IWYP Research & Breeding Hub

Germplasm and traits developed by different IWYP research projects need to be validated and tested to ensure that the desired trait(s) that we are targeting are giving consistent improvements in relevant environments. We also need to rapidly move research results into the breeding pipeline and then into the hands of farmers. We have created, with CIMMYT, the IWYP Research and Breeding Hub at the CIMMYT wheat station in Obregon, Mexico. Here we will be able to provide screening and characterization of material for traits correlated to yield improvement and also cross the most promising materials together for further testing and develop elite germplasm to transfer to breeding programs worldwide. All IWYP projects will have access to this development pipeline. In addition, interesting germplasm produced from groups in Aligned Projects will also be able to send germplasm to screen at the IWYP Hub. It is notable that the IWYP Hub is now up and running and material is already being tested in the field. A distinguishing feature of the IWYP Hub is that its primary use is to validate discoveries coming from the scientific research projects rather than be part of the discovery pipeline. It is the backbone of prebreeding activities that will feed directly into worldwide breeding programs for commercial deployment.



## IWYP Science and Impact Executive Board (SIEB)

The IWYP Science and Impact Executive Board (SIEB) is the top level of management for IWYP. It was put in place to provide strategic direction to the IWYP Program, review and recommend projects to our funding organizations for support and assist IWYP Management with the general administration of the Program. The SIEB is currently chaired by Dr. Richard Flavell with Mr. Steve Visscher of the Biotechnology and Biological Sciences Research Council (BBSRC) as vice chair.

The SIEB meet on a regular basis with IWYP Management. The most recent meeting was in London, United Kingdom in September 2015. A key item on the agenda at this meeting was a discussion of the results coming from an expert peer review of the projects selected for submitting Full Proposals. These results were used in conjunction with other criteria to recommend a select set of proposals for grant awards. These are the 8 projects proposals that we have reported on earlier. Among other items discussed in the meeting were future IWYP Calls and development of a strategy for IWYP to evolve into a Science Program with a portfolio of scientific research projects.

The next SIEB meeting is planned later in 2016 and we will report on the main outputs from this.

## IWYP Scientific Advisory Committee (SAC)

To ensure that IWYP will generate maximum impact and that decisions are made in a clear and transparent manner, IWYP took the decision to create an ad hoc committee that will be a resource for consultation on current global wheat / cereal research. The SAC will be an important resource to keep IWYP management well informed on current with world-wide wheat / crop research, assist in the evaluation of funded project progress, advise on needs and scope for future Calls, and have an important role in scouting outside research projects to bring into IWYP as Aligned Projects. A number of wheat experts have been nominated to join the SAC and we expect to be able to circulate membership of this group in our next newsletter and from our webpage.

## IWYP Communication

The main vehicle for communicating to the outside world on what is happening with IWYP is through our webpage ([www.iwyp.org](http://www.iwyp.org)). We want this to be the face of IWYP and a cornerstone to our brand. With the website we want to create a one-stop shop where users can come for information about our science Program, progress updates, reports, membership, news items and more. We are making significant changes to the look and feel of the site. It will be more intuitive for a first time user to find what they are looking for and will be more information rich and interactive. We aim to have the new website up in the next month or two.

## IWYP Science Program

We have begun the process to coordinate and integrate the various elements described in this newsletter (IWYP funded Projects, Aligned Projects, private sector members, the IWYP Hub) into a unified IWYP Science Program. Our goal is to integrate the various individual projects into coordinated research team with a portfolio of projects where each might address a particular research theme but when assembled in such a way obvious connections can be made between them that will ensure the overall research target is achieved. Evolving into a Science Program rather than a set of projects loosely constructed around a

common goal will help identify synergies between projects and any early wins that might move us more rapidly to a finished product.

Over the coming weeks we will be aligning all the projects to provide an overall view of all activities and deliverables. As all IWYP stakeholders begin to work together in a unified sense their interaction and suggestions will facilitate the construction of our overall Science Program. This is one of the principle objectives for the 1<sup>st</sup> IWYP Program Conference in Obregon, Mexico in March.