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The International Wheat Yield Partnership Announces Funding Awards for Its First Competitive Call

The Science and Impact Executive Board of the International Wheat Yield Partnership (IWYP) has selected the first set of research projects to recommend to its Funders for grant awards resulting from IWYP's First Competitive Call. Funders have committed to provide resources for eight selected projects. The projects cover a broad range of research topics that are fit-for-purpose to the IWYP goal of raising the genetic yield potential of wheat by up to 50% over the coming 20 years.

IWYP launched its First Competitive Call for research proposals in January of 2015. The Call invited international applications that seek to address how genetic yield potential in wheat can be enhanced by: increasing carbon capture before flowering; optimising plant architecture; modifying flowering time; increasing biomass; optimizing harvest index. Further details can be found at <http://iwyp.org>.

Dr. Jeff Gwyn, IWYP Program Director notes: "IWYP received many very good and potentially high impact Proposals to consider. Final decisions for funding awards were based upon a rigorous international expert peer review for scientific excellence that also identified research projects that were best aligned with the research needs of IWYP. It is important to note that the goals and criteria that the IWYP associates with this initiative are purposely very demanding".

Projects that were chosen involved institutions and research teams from the United Kingdom, Australia, United States of America, Mexico, India, Argentina and Spain. Science topics of the funded research include finding and employing traits and genes to increase photosynthesis; genes to boost spike development; reducing respiration and thereby enhancing photosynthetic efficiency; optimizing canopy architecture to increase carbon capture and conserve nitrogen; using selected genes to increase biomass and yield; and optimizing phenology leading to increased harvest index.

The total value of the funded research is around US\$20 million. Funding agencies include the Biotechnology and Biological Sciences Research Council of the UK (BBSRC), Grains Research and Development Corporation of Australia (GRDC), United States Agency for International Development (USAID), United States Department of Agriculture - Agricultural Research Service (USDA-ARS), Department of Biotechnology of India (DBT), and Consultative Group for International Agricultural Research (CGIAR) through the International Maize and Wheat Improvement Center in Mexico (CIMMYT).

Selected projects are:

- **Realizing Increased Photosynthetic Efficiency to Increase Wheat Yields**
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 CIMMYT 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)

As IWYP Program Director, Dr. Gwyn will coordinate and guide the multinational IWYP Research Program, as developed from competitive bids and alignment with other programs with similar objectives, towards commercially relevant breakthroughs that result in current maximum yields being exceeded. He says: “The IWYP mission is that wherever these breakthroughs are found, we will seek to integrate and build them into elite commercially relevant germplasm, in liaison with CIMMYT or other public and private sector breeding programs, as rapidly as possible”.

Dr. Richard Flavell FRS, who chairs the Science Impact and Executive Board of IWYP, says: “This is particularly exciting in that IWYP is a new funding and coordination partnership for stimulating wheat yield genetic research and development. IWYP will push the translation of scientific discoveries into elite wheat varieties ready for marketing to both non-industrialised and industrialised countries. It brings together research funders, international aid agencies, foundations, private industry and major wheat research organizations to help realize the IWYP goals”.

Mr. Steve Visscher, CBE, Deputy Chief Executive – International of the BBSRC, a major funder of IWYP and plant and agricultural research in the UK, says: “This is a very exciting step that we have been working towards for several years. The critical issue of food security relative to a rapidly expanding population, coupled with the effects of climate change, is a global one that requires immediate international action since the scientific discovery, development and delivery process takes many years. We believe that IWYP is but one important new strategy to address this issue. IWYP also provides a new model for a public-private partnership and how coordinated international research programs can be done effectively and efficiently”.

Ends

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About IWYP

Globally, wheat is the most important staple crop, providing 20% of daily calories and protein. Due to population growth and changing diets, wheat demand is expected to increase by 60% by 2050. To meet this demand, annual wheat yield increases must grow from the current level of below 1% to at least 1.7%. These urgent global needs have provided the motivation for the formation of IWYP by major agricultural research funding organisations in many countries with the goal of raising the genetic yield potential of wheat by up to 50% over the coming 20 years.

The Partnership was instigated by the UK’s Biotechnology and Biological Sciences Research Council (BBSRC), the International Maize and Wheat Improvement Center (CIMMYT), Mexico’s Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA), the Syngenta Foundation for Sustainable Agriculture and the U.S. Agency for International Development (USAID) in 2012. IWYP represents a long-term, global endeavour that utilizes a collaborative approach to bring together funding from public and private research organisations from a large number of countries.

The Partnership will support both core infrastructure and facilitate transnational open calls for research, all targeted at raising the yield potential of wheat.

Over the first five years, the growing list of partners aims to invest up to US\$100 million.

All partners are committed to transparency, collaboration, open communication of results, data sharing as well as improved coordination to maximize global impact and eliminate duplication of effort.

IWYP is an independent research activity which also responds to a major priority of the G20 sponsored Wheat Initiative. It will help the Wheat Initiative to fulfil its mission to “coordinate wheat research and contribute to global food security”.

References

<http://www.wheatinitiative.org/news-media/wheat-initiative/wheat-initiative-strategic-research-agenda>

<http://ccafs.cgiar.org/bigfacts/#theme=food-security>

<http://www.bbsrc.ac.uk/publications/topic/future-bread.aspx>