

Thomas A. Lumpkin
Director General

Texcoco, Mexico, August 30, 2011

Carlos Perez del Castillo
Chair of the Consortium Board
Consortium of the CGIAR

Dear Carlos:

Please find enclosed CRP-3.1 WHEAT (Version 30 August 2011) with budget adjustments as requested by the World Bank (ie excluding BISA), and an additional Annex A to further respond to queries about comparative advantage of the CGIAR. We include a complete account of our responses to feedback by the ISPC, FUND Council members and the World Bank.

Sincerely,



Thomas A. Lumpkin
Director General

cc. Dr. Mahmoud Solh, Director General ICARDA
Mr. Lloyd LePage, Consortium Chief Executive Officer, CGIAR Consortium
Dr. Anne-Marie Izac, Chief Science Officer, CGIAR Consortium

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Detailed Responses to the ISPC and FUND Council Commentary, and World Bank Feedback

From ISPC:

1. Clear prioritization among regions, mega-environments, and alternative research interventions focusing on where there are greatest opportunities to address CGIAR System-level outcomes, comparative advantage, and probability of impact.

WHEAT: In the introductory section, we improved the description of where WHEAT engages and capitalizes on wheat research in advanced economies. While the focus on the four ME's (ME1, ME2, ME4, and ME5) and its justification (which relates to number of poor, comparative advantage, and likelihood of success) was already included in the earlier version, the target beneficiary section has been further revised and a regional/country-specific prioritization included in Table 2. The criteria used to set priorities are: prevalence of poverty (number of people with income below US\$2 per day), importance of wheat (calories / capita from wheat), number of people depending on wheat as important calorie and protein source, and the availability of alternative suppliers for wheat technologies.

Table 2 presents the WHEAT prioritization based on megaenvironment (ME); related wheat area; affected population earning less than USD 2 per day; and associated representative locations.

- High priority megaenvironments and regions: ME1 (affecting 556m people earning less than USD2 per day in West and South Asia, Egypt and Mexico); ME2 (affecting 107m people in East and North Africa); ME4 (affecting 75m people primarily in CWANA and India); ME5 (affecting 238m people primarily in South Asia); and ME12 (affecting 14m people in CWANA and China).
- Medium priority megaenvironments and regions: ME6 (affecting 10m people in China, Kazakhstan and Siberia); ME7 (affecting 89m people in CWANA and China); ME9 (affecting 7m people in CWANA); and ME10 (affecting 66m people in CWANA and China).
- Low or no priority megaenvironments and regions: ME3 (affecting 16m people in Brazil); ME8 (affecting 2m people in Chile and Turkey); and ME11 (which primarily affects Europe and North America).

Table 1 and Table 2 provide detailed information regarding the importance of each of these criteria for each geographic region and mega-environment. Annex A has been added as an account of a much wider list of research areas, among which those included in WHEAT were selected. Biotic stresses are further prioritized in Table 5.1 based on the area where they occur and the potential economic losses they cause. Regional priorities of abiotic stresses for wheat production are presented in Table 6.1. Priorities were based on refereed journals, expert opinions, country reports from national wheat programs, and data presented at conferences on specific diseases. WHEAT's SI 1 will continue to work with CRP 2, CRP 7, and other WHEAT SIs to continually inform and update research priorities and strategies to maximize impacts.

The text of WHEAT v7 has been modified, reflecting requested changes in:

- Section 2 was rephrased to portray our pro-poor strategy more succinctly.
- Table 2 was updated to better reflection WHEAT priorities.
- In SI 4, a paragraph was added (and text was replaced) outlining clearer priorities by mega-environment and targeted country or region.

2. Careful analysis of: (i) linkages between production and consumption and the benefits to poor farmers and consumers; (ii) causes of the overall decline, and in some countries plateauing rates of

wheat yield gains; and (iii) scenarios resulting from climate change that affect wheat production and consumption.

WHEAT: The Target Beneficiary section has been expanded to include an explication of the proportion of production and poor located in low, lower-middle, upper-middle, and high -income countries. Additional references have been included in the box describing climate change impacts on wheat and the description of key drivers of change has been strengthened in the introduction and target beneficiary section. Drivers of change remain qualitative, in particular the influencing factors of the recent food price crisis which demonstrated that realities have overtaken outdated perceptions on where the comparative advantage of wheat production may be (wheat yields are plateauing in high income countries and increasing in developing countries) and also highlighted the role of risk versus average production. Sections have been added that clarify:

- Quantifying the interrelationships between local price realities, the impact of climate change, water and fertilizer costs and availability, the push for more rainfed production, the role of biofuel friendly alternative crops, political stability and policies (applicable not only to wheat but other crops affected by biofuel, import, and export policy), and the difference between economic attainable and theoretical yield levels remains a significant and ongoing research endeavor and will be addressed in SI1 and in collaboration with CRP2.
- The focus cannot be on comparative advantage alone, but must include both risk management of global supply and also the need for social stability requested by major wheat consuming countries in the developing world.
- Considering, in aggregate, the target areas (four ME's), the more detailed geographic and income related information, the improved description of where WHEAT engages viz research in first world countries, and the choice of 10 strategic interventions that were influenced by the feed-back of hundreds of partners, the document provides our best assessment of research focus while respecting activities in other CRPs (in particular CRP2).

The text of WHEAT v7 was changed in:

- Section 3 reflecting drivers of change that will affect WHEAT.
- Socio-graphic data presented in Tables 1, 2, and 3.
- Table 2 to reflect climate change scenarios.
- More succinct targeting and prioritization throughout the document.

3. Development of realistic outcomes at the strategic initiative (SI) level and impact projections at the program-level with transparent metrics and sources of data to justify these targets and appropriate assumptions.

WHEAT: We have included footnotes to Table 3 and clarified previous ambiguity by tabulating all outputs against dated milestones to assure they clearly lead to outcomes. Outcomes have been defined and verified through feedback from NARS. While individual estimates are affected by large variation – as with any other research endeavor – when taken in summary they do provide an estimate for the aspirations of WHEAT's stakeholders that are quite similar to published past impacts. Improved estimates for each SI will be derived from iterative research feedback, research in SI 1 (technology targeting for greatest impact), through work with CRP 2 (policies institutions and markets), and CRP 7 (Climate Change).

WHEAT v7 has been altered to reflect changes in:

- Table 3, with added footnotes

- Text added and edited in section 4.1
- Outcome and Output tables added to all Strategic Initiatives

4. Improved elaboration of what is new in the proposal relative to current research efforts within the CGIAR and elsewhere as well as analysis of the level of risk regarding the proposed research.

WHEAT: The description of individual SIs has been improved. Risks of not achieving project goals and outcomes are discussed. Furthermore, the risks associated with WHEAT's research approach, organization, and funding are presented. Chapters 2 and 3 have been divided into 2.WHEAT Strategy Overview and 3. The Strategic Initiatives – Genesis, Innovation and Expected Impacts, providing a detailed account of innovations per Strategic Initiative. Chapter 4. Institutional Innovations provides an overview of institutional innovations.

Throughout the document we strive to highlight these new approaches and research used in WHEAT. A sample of these innovations includes:

- In the past, partnership interactions primarily occurred while cooperating across a large number of individually-funded donor projects. Using a more systematic approach of SIs, WHEAT will streamline and better focus partnership interactions by implementing a sequence of actions typical of participatory, multi-partner programs (Figure 9). Examples include annual collaborative research planning and review meetings (specific to one or several SIs) and prioritization across the entire WHEAT agenda, participatory priority setting using impact pathways, and a stronger peer-review of past and proposed contributions.
- The overall objective of SI 1 is both to provide a social science context for WHEAT and also to complement and enhance the relevance and effectiveness of the work in the other SIs. The SI will implement new approaches to strategic socioeconomic research. Together with CRP2, SI 1 intends to affect policy change at both the international and domestic level.
- SI 2 takes a systems approach that more strongly links field level with farm level and value chain research. It also links with the mobile phone industry for research and development of community systems to supply information to farmers.
- SI 4 and SI 7 will employ take wheat breeding to the cutting edge of genome-wide selection, high-throughput marker-assisted selection, and advanced statistical analysis of multi-location evaluation data with a particular focus on complex traits such as grain yield under optimum drought and heat conditions.
- What is “new” is not always enticing. Crops are grown in dynamic biological systems. Resistance to diseases and pests, based on native genetic variability, risks the breakdown of enduring sources of resistance, as was evident in 1999 with the discovery of a new, virulent form of wheat stem rust. This “new” race resulted in millions of hectares of wheat becoming highly susceptible to wheat stem rust after more than 30 years of durable resistances being deployed worldwide. It is certain that SI 5 will encounter new diseases and pests. Strategies will need to be devised for each, on a case-by-case basis, and suited for sustainable agriculture by small-holder farmers.
- Through more diverse seed systems SI 8 will deliver improved seeds to farmers encouraging broader public and private participation as well as alternative and innovative seed production and marketing by farmer groups and communities.
- SI 9 uses the most cutting-edge molecular genetics technologies to characterize the CIMMYT and ICARDA held wheat collections. These technologies generate data in such quantities that no existing data management system is capable of organizing the information into user accessible formats. A large portion of the funding attributed to SI 9 will go to the development, often using existing open-source components, of systems capable of managing the volume of data.

- The strategic focus on gender is a new paradigm for many of those involved in WHEAT, particularly those from more conservative, paternalistic societies. Agriculture is now recognized as a key pathway out of poverty for many women. WHEAT will go beyond gender analysis and seek impact pathways that particularly strengthen the role of women.

From FC Members:

5. Elaborate of how counterfactual and attribution issues will be addressed in the ex post impact assessments at scale.

WHEAT: A discussion of how we will address counterfactual and attribution issues in ex post impact assessment has been added to the text of WHEAT v7 in Box 4 and Annex B. The key quantity that impact evaluation studies attempt to estimate is the *average effect* of adoption on outcomes for adoptees. This is known as the average treatment effect on the treated (ATT). Because of the selection effect (the presence of systematic differences between comparison groups in ways that affect both treatment status and the outcomes from treatment), the main challenge is to establish the proper counterfactual group against which to compare adopters (de Janvry et al. 2011).

6. Include a comparison of past budget shares to each SI with the proposed “optimized” allocations in the CRP 3.1 budgets.

WHEAT: Section 9 was updated to explain that budgeted years 2009 and 2010 (Tables 8A, 8B, and 8C) provide an indicative baseline of past spending, distributed retrospectively amongst the newly proposed Strategic Initiatives. From 2011 onward, projected budgets are optimized for the implementation of WHEAT.

7. Clarify how the requested funding for SI 9 Seeds of Discovery relates to the separate funding request to the FC for the operation of the center gene banks outside of the CRPs.

WHEAT: Textual changes were included in section 9 and in SI 9 to explain that, as requested by the Consortium, costs determined as “essential” for the conservation of wheat genetic resources have been removed from the WHEAT budget scenarios. SI 9 intends to add value to the collections held by CIMMYT and ICARDA by leveraging top-end genomic and phenotypic technologies. The goal is to both uncover the genetic heritage of wheat and also build a platform which enables wheat researchers and breeders to bring novel diversity into breeding programs via well-characterized accessions and parental germplasm. These activities fall outside the purview of the Consortium and Global Crop Diversity Trust essential funding of the collections.

8. Clarify how SI 2 on sustainable wheat systems will relate to other systems-oriented CRPs such as 1 and 5.

WHEAT: This has been addressed in the newly included “SI 2 Outputs and Corresponding Milestones, by year” table included within the SI 2 text; and in a revised Table 5; and in Section 7.

9. Prioritize different SIs where CRP 3.1 has a clear comparative advantage, and where there is high probability of achieving the stated outcomes and longer term impacts.

WHEAT: WHEAT is a strategic plan whereby all SI components fit together as an interlinked chain, moving from strengthened institutions (SI 1 and SI 10), to basic research and pre-breeding (SI 7 and SI 9), to technology development (SI 3, SI 4, SI 5 and SI 6), and to dissemination and expedited impacts (SI 2)

and SI 8) for farmers and consumers. There is an enormous amount of information to consider, prioritize, and put into context. Between the target areas (four ME's), the more detailed geographic and income related information, the improved description of where WHEAT engages viz research in first world countries, and the 10 strategic interventions (influenced by the feed-back of hundreds of partners), we have presented our best assessment of WHEAT's clear comparative advantage and highlighted where there is high probability of achieving the stated outcomes and longer term impacts. The relative emphasis on various SI's is reflected by the respective "optimized" resource allocation in the Budget section (Table 8A-C, indicative of 2011 funding, onwards) and will continuously be improved in course of executing the CRP through partner feedback and activities within SI1.

10. Develop realistic and monitorable outcome indicators with a timeframe at the SI level and longer term impact projections at the overall CRP level.

WHEAT: This has been addressed in the version 7 newly included "SI Outputs and Corresponding Milestones, by year" tables included within the SIs descriptive text.

11. Improve management structure to ensure overall efficiency and effectiveness of the CRP implementation and coordination among SIs and with multiple partners.

WHEAT: CRP-specific management approaches have been compared with those of other CRPs and further detailed in the Oversight and Management section, making them similar to those that have already been endorsed. WHEAT was developed through consultation with more than 200 stakeholders and endorsement letters show widespread support. They are included in Annex C.

It is our understanding that the Consortium Board has recognized the oversight by multiple bodies as an issue for all CRPs and has contracted an independent study to recommend models for more effective, representative CRP management. We will await the outcome of this study before recommending changes to the WHEAT management structure.

12. Indicate activities and/or SIs that may be scaled down or dropped if resources are reduced.

WHEAT: Activities conducted under actual funding scenarios will be described in the WHEAT Operational Plan and annually updated based on available funding, as described by the document on "Consortium level monitoring principles". Under the supervision of the Oversight Committee, the Management Committee will strive to fund the most important SI's (based on continuous and forthcoming partner feedback), for the most important target regions (as described by Table 1 and 2), and based on the comparative advantage of the IAR (viz national research).

13. Clarify the potential linkage between CRP3.1 and the International Research Initiative on Wheat Improvement (IRIWI).

WHEAT: The new version now includes the following important section: "*The G20 Ministers of Agriculture recently declared their support for the CGIAR, GFAR, and GCARD and highlighted the need to promote technology transfers, knowledge sharing, and capacity building through North-South, South-South and triangular cooperation. The declaration¹ announced the launch of an International Research Initiative for Wheat Improvement (IRIWI) to better coordinate national wheat research in G20 countries*

¹ <http://www.g20.utoronto.ca/2011/2011-agriculture-plan-en.pdf>

with CGIAR ie WHEAT–led efforts directed at the needs of the developing world. It is important to note that IRIWI is a coordination and not a funding body. The declaration similarly endorsed GRiSP.

Discussions over the past years with national wheat scientists in advanced economies, including now these leading up to the formation of IRIWI have led to the conclusion and specific requests from the global wheat research and development community that leadership from WHEAT should come from exploiting the wild relatives of wheat through new synthetic wheats, in cytogenetic manipulations for alien gene transfer from wild and cultivated relatives, in finding new sources of pest and disease resistance (particularly rust resistance), in new physiological tools for selecting heat and drought tolerant lines as well as applying systems-based approaches and precision agriculture technology to improve the productivity, sustainability, and resource-use efficiency of the developing world’s wheat production systems. [I.e. these discussions defined the WHEAT agenda as presented to the Consortium and the FUND Council]. Through its involvement with IRIWI, WHEAT will strengthen its ability to benefit from developments in advanced economies in crop genomics, genetics, pathology, physiology, and agronomy; it will direct emerging technologies from that work into varieties and production systems adapted for lower-income wheat growing countries.”

From World Bank: Remove capital investments in BISA from the budget tables

This has been done.