

## ISPC Assessment of the Maize Agri-Food System (MAIZE) CRP-II revised proposal (2017-2022)

### ISPC CRP RATING<sup>1</sup>: A-

#### 1. Summary

- The MAIZE CRP encompasses almost every relevant aspect of the maize agri-food system and the activities range from the development and delivery of germplasm to sustainable intensification and poverty reduction in maize-based agri-food systems in target areas. In addition, the proposed research effectively integrates relevant knowledge sharing and capacity building activities. The proposed activities are well-motivated on the basis of maize's importance as a staple in many parts of the developing world, and also on the basis of its importance as animal feed.
- MAIZE aims to increase the annual rate of yield increase by 1.2%, assist 7.5 million maize consumers and producers to exit poverty, help 5 million people out of hunger, help 15 million people consume biofortified maize, increase water- and/or nutrient-use efficiency through improved crop management practices in maize-based farming systems by 1%, and reduce GHG emissions from maize-based farming systems by 0.01 Gt CO<sub>2</sub>eq/yr<sup>2</sup>.
- The proposal credibly illustrates that there are scientific opportunities and viable technological approaches that can address some of the key challenges that confront maize farming in the developing world. The leadership track record is variable, with varying strengths across professional areas. The marketing and business analysis in the proposal is significantly weaker than the bioscience content.
- The articulation of MAIZE's comparative advantage and hence of its niche and regional foci is quite strong. MAIZE's partnership strategy benefits from strong CGIAR networking throughout the value chain and includes a broad range of actors in the public and private sectors as well as civil society.
- The structure of the CRP is well organized and conceptualized. It is based on five interconnected and complementary FPs. The CRP-level and FP-level ToC/impact pathways clearly link to the SRF and are logical, and investment in maize research should expand the performance and benefits derived from the maize agri-food system.
- Further development of the agri-food systems concept for MAIZE is still needed. For example, one weakness of the proposal is the lack of attention to the potentially important impacts of maize use as fuel on the design of the research strategy for this agri-food system.

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<sup>1</sup> A+: Outstanding - of the highest quality, at the forefront of research in the field (fully evolved, exceeds expectations; recommended unconditionally).

A: Excellent – high quality research and a strongly compelling proposal that is at an advanced stage of evolution as a CRP, with strong leadership which can be relied on to continue making improvements.

A-: Very good – a sound and compelling proposal displaying high quality research and drawing on established areas of strength, which could benefit from a more forward-looking vision.

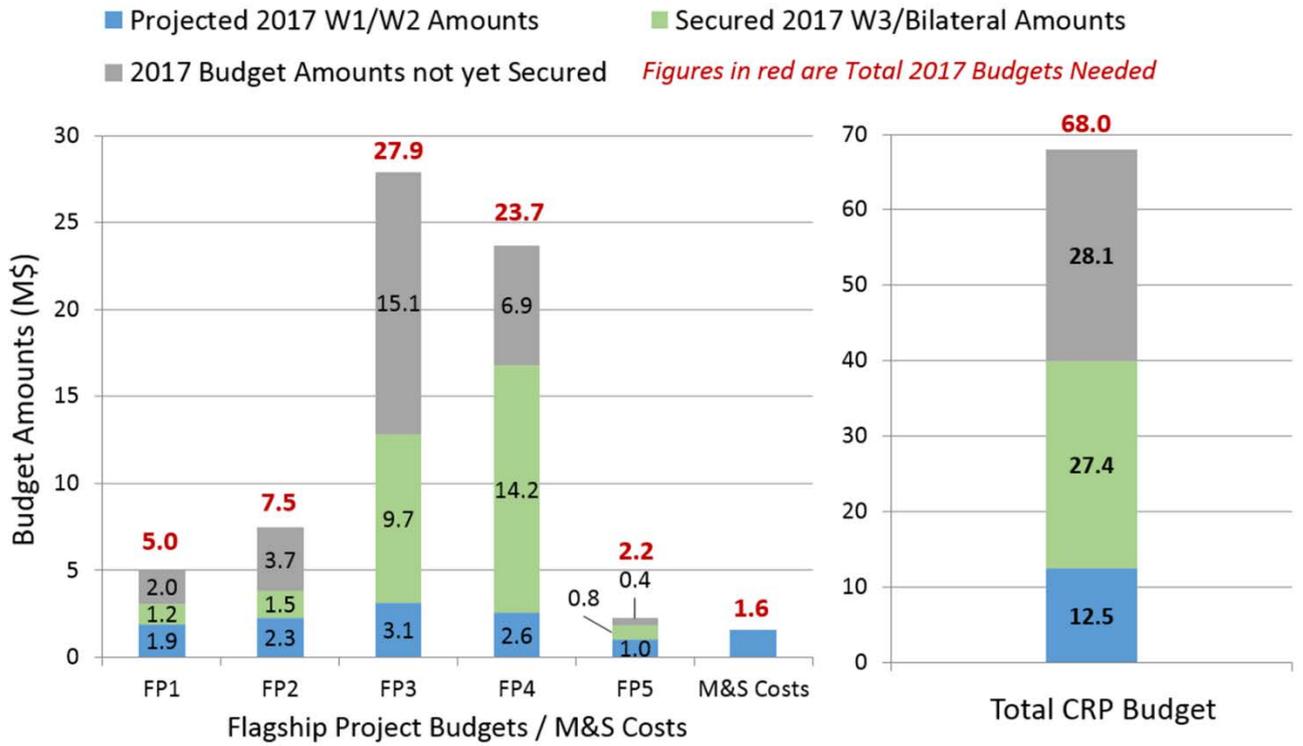
B+: Good – a sound research proposal but one which is largely framed by 'business as usual' and is deficient in some key aspects of a CRP that can contribute to System-wide SLOs.

B: Fair – Elements of a sound proposal but has one or more serious flaws rendering it uncompetitive; not recommended without significant change.

C: Unsatisfactory – Does not make an effective case for the significance or quality of the proposed research.

<sup>2</sup> The CRP targets have not been independently verified.

**MAIZE 2017 FP and CRP Budgets:  
W1/W2 Amounts, W3/Bilateral Amounts & Shortfalls (US\$M)**



Data Source: CGIAR System Management Office

## 2. Characterization of Flagships

FP	Main strengths	Weaknesses/Risks	Rating
<p><b><i>FP1: Enhancing MAIZE's R4D strategy for impact</i></b>            FP1 enhances MAIZE's R4D across all the FPs, informing strategies for impact through foresight and targeting, learning from adoption and impacts, strategic and transformative gender research, and identifying value chain opportunities.</p>	<ul style="list-style-type: none"> <li>• Explicit consideration of value chain opportunities rather than simply feeding in demand projections.</li> <li>• Clear comparative advantage; partners add value and enhance the probability of success.</li> <li>• Above average leadership track record, with high citation impact in social sciences.</li> </ul>	<ul style="list-style-type: none"> <li>• Little demonstrated capacity on prioritization (although there is new capacity on foresight and targeting that should be monitored).</li> <li>• Less than convincing quality of impact work, including CRP-level impact assessment.</li> </ul>	Moderate
<p><b><i>FP2: Novel diversity and tools for increasing genetic gains</i></b>            FP2 harnesses advances in science and new technologies to develop and validate maize-specific tools and to provide novel raw materials that are mainstreamed in FP3 to enhance breeding efficiency and germplasm enhancement.</p>	<ul style="list-style-type: none"> <li>• Potential to tap diversity for breeding new maize cultivars more efficiently.</li> <li>• Cutting-edge research resulting from science advances.</li> <li>• Solid past performance in this area, including high quality publication outputs.</li> </ul>	<ul style="list-style-type: none"> <li>• Prioritization based on likelihood of success needs strengthening.</li> </ul>	Strong
<p><b><i>FP3: Stress tolerant and nutritious maize</i></b>            FP3 uses outputs from FP2 to develop farmer and consumer demanded high yielding, stress tolerant, healthy, nutritious and market-responsive maize varieties that are targeted at region-specific needs of the poor.</p>	<ul style="list-style-type: none"> <li>• Target traits for breeding are related to a broad array of environmental stresses e.g. climate change/new pest outbreaks.</li> <li>• Science thoroughly detailed with high level of specificity.</li> <li>• Strong comparative advantage; broad range of partnerships, including appropriate public and private sector (particularly SMEs) actors to ensure the delivery of outputs at the country level.</li> </ul>	<ul style="list-style-type: none"> <li>• Need for clarity on the availability of a public database with yield data of the many multi-location trials conducted for transgenic maize under the WEMA project (monitoring needed to ensure that open access is made operational).</li> </ul>	Strong

FP	Main strengths	Weaknesses/Risks	Rating
<p><b><i>FP4: Sustainable intensification of maize-based systems for improved smallholder livelihoods</i></b></p> <p>FP4 focuses on the sustainable intensification of maize-based farming systems. Besides utilizing outputs from FP1 and FP3, FP4 analyzes system diversity, dynamics and livelihoods strategies to further target and enhance the sustainability of MAIZE interventions.</p>	<ul style="list-style-type: none"> <li>• Team has good scientific credentials.</li> <li>• Sound research plan that is policy relevant; climate change well addressed.</li> <li>• High comparative advantage on innovating for complex targets.</li> </ul>	<ul style="list-style-type: none"> <li>• New design may not overcome shortcomings identified in Humid Tropics.</li> <li>• Inadequate recognition of existing trade-offs (not very many technologies that generate “wins” in all dimensions).</li> </ul>	Moderate
<p><b><i>FP5: Adding value for maize producers, processors and consumers</i></b></p> <p>FP5 assesses value-addition opportunities for maize producers, processors and consumers and has numerous implications for the societal grand challenges.</p>	<ul style="list-style-type: none"> <li>• Recognition of the increasing importance of maize-as-input vs. maize as food.</li> <li>• Acknowledgement in proposal addendum that feedback from this FP on traits for value addition to FPs 2 and 3 is crucial.</li> </ul>	<p>The ISPC recognizes that this is a new and important area of research. It recommends that this FP be viewed as a pilot project and calls the attention of the proponents to the following issues:</p> <ul style="list-style-type: none"> <li>• Clear criteria needed about which research activities should be expanded or curtailed, including risk analysis of potential failures.</li> <li>• Strategic design of the FP should be made more coherent.</li> <li>• Expertise necessary for research to support development of commercial activities is weak.</li> </ul>	Weak

### 3. Assessment of CRP response to the ISPC major comments

Initial ISPC comment (16 June 2016)	CRP response/changes proposed (31 July)	ISPC assessment (14 September)
<p>1. <b>Elaborate on the lessons learned from the Phase-I Humid Tropics (HT) CRP. The CRP should also provide further details on the research components and activities that are being absorbed into MAIZE from the Phase-I Humid Tropics CRP (predominantly in FP4)</b></p> <p>Additional details on the lessons learned from the Phase-1 Humid-Tropics CRP should be included in the addendum.</p> <p>.....more clarity is needed on the lessons learnt from the Humid Tropics CRP as well as the components of that CRP that will be integrated into MAIZE. These should be provided in the addendum.</p>	<p>The MAIZE addendum lists 6 lessons learnt from both HT and MAIZE v1 on integrated systems research (ISR), illustrating the challenges for fully implementing it. The proponents also note how MAIZE v2 embeds some of these lessons, particularly in its FP 4 on sustainable intensification.</p>	<p><b>Satisfactorily addressed.</b></p> <p>The addendum displays exemplary candor on the shortcomings of the HT systems approach. With due credit for acknowledging these shortcomings, it also must be observed that these “lessons learned” from HT are not in fact new but rather these pitfalls and costly lessons of experience by-and-large are well established in the rural development literature going back some years. Thus, it cannot be taken for granted that the new design will embrace and overcome these shortcoming in practice. These questions deserve particular attention in CRP MAIZE Phase II activities going forward.</p> <p>Moreover, the claim that “<i>stakeholder demands are not necessarily aligned with what CGIAR centers can supply, especially given limited capacity to work on policy and market innovation at the institutional level (e.g. land tenure, service provision)</i>” does not seem an acceptable “lesson learned”. The ISPC hopes that going forward, these gaps are filled by stronger partnership with PIM.</p>
<p>2. <b>Address whether major changes will be seen in competing uses of maize, e.g. for biofuels as well the corresponding implications for the design of the MAIZE program</b></p> <p>Further effort is warranted in examining various scenarios of maize use for biofuels and its implications for the design of the</p>	<p>The addendum states “<i>MAIZE specifically targets resource-poor smallholders in regions where the biofuel industry is not expected to develop in the near term. Similarly, value creation of maize for biofuel is not likely to improve the livelihoods of most target beneficiaries in the near future.</i>”</p>	<p><b>Partially addressed.</b></p> <p>The multi-market nature of maize requires structured multi-market analysis in order to credibly understand possible cross-market effects, e.g. among maize for food, feed, fuel or feedstock among other uses. The rationale in the addendum for ignoring linkages to biofuel markets, which after all are at least</p>

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<p>MAIZE program and this should be included in the addendum.</p>	<p>The proponents further note that “<i>CoA 1.4 is set to analyse major drivers and modifiers of the maize supply-demand nexus within an agri-food systems context</i>”.</p>	<p>partially integrated globally, is not convincingly written. The addendum provides no evidence that these multi-market effects – indispensable to an agri-food systems approach – have been taken seriously by the proponents. Expertise in these areas exists within the CGIAR (e.g. IFPRI), so perhaps collaboration with PIM would be an effective way to develop this analysis in a timely fashion.</p>
<p>3. <b>A stronger case for the CRP’s comparative advantage for the planned work is needed. There is still not sufficient justification of comparative advantage of the CRP relative to the private sector.</b></p> <p>There is indeed little discussion of the comparative advantage of the CRP relative to the private sector.</p>	<p>The proponents refer to both Table 1.6 and Annex 3.12 in the original proposal for showing the CRP’s comparative advantage vis-à-vis the private sector. It is further elaborated in the addendum that “<i>MAIZE does not seek to compete with the private sector, but to complement and enable the development of a sustainable, thriving seed sector that can perpetually re-invest in maize improvement in target regions.</i>” Likewise, as noted in the addendum, “<i>The private sector uses science primarily for generating profit; MAIZE uses science for generating impact in partnership with the private sector. The two are complementary and not necessarily antagonistic.</i>”</p>	<p><b>Satisfactorily addressed.</b></p> <p>MAIZE targets various environments in Africa, Asia and Latin America (about 40-50% of them) that large-scale (multinational) private sector does not show interest in, due to specific cultivar traits and small market size and where farmers do not have adequate access to improved maize seed. Herein MAIZE provides its SME partners with bred-germplasm and capacity development.</p> <p>The articulation of MAIZE’s comparative advantage and hence its niche and regional foci is quite strong. The CRP’s comparative advantage regarding multinational private sector could be further elaborated through reliable maize data and thorough analysis on this statement included by the proponents in the addendum (and quoting from Excellence in Breeding proposal): “<i>private sector breeding investment in low and lower-middle income countries is no more than 5% of the breeding investments done in upper-middle and high</i></p>

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		<i>income countries, yet it is where almost half of the area of CGIAR mandate crops is.”</i>
<p>4. <b>Elaboration of the plans for collaboration with other CRPs – particularly AFS CRPs is needed</b></p> <p>In this proposal, MAIZE provides even less information on plans for collaboration and has not responded to the ISPC request to specify linkages with other CRPs in its program and FP impact pathways. This should be provided in the addendum.</p>	<p>The addendum indicates that MAIZE v2 will collaborate with all the AFS CRPs, except for FISH. For further details the proponents refer to subsections 1.7 and 2.7 plus Annex 3.2 and Annex 3.7.</p> <p>The proponents have revised the FP-level impact pathways highlighting the linkages with other CRPs and platforms.</p>	<p><b>Satisfactorily addressed.</b></p> <p>The ISPC notes that collaboration between MAIZE and other AFS CRPs will be expanded in MAIZE v2. Priority is given to work on pre-breeding tools, models and methods; sustainable intensification; and value addition. These plans are articulated clearly and concisely in the addendum, but still appear to be aspirational. As probably is true for all of the Phase II CRPs, the actual development of these partnerships and collaborative efforts deserves ongoing MELIA attention.</p>
<p>5. <b>Provide an indication of how the work on value addition (FP5) will be used to prioritize breeding objectives. FP5 needs to show more alignment and integration with FPs 2 3, and 4.</b></p> <p>In that sense, it would be important for this FP to show more alignment and integration with FP2 and FP3, as well as with FP4, together with more evidence that FPs 2 and 3 understand the need to target the traits identified here.</p>	<p>The proponents indicate in the addendum that FP5 “<i>is a strategic interface linking identified market opportunities with technology development and its beneficiaries – and all the associated fine-tuning and feedback loops.</i>” It is further stated that “<i>work on maize value-addition (FP5) will benefit from pre-breeding and breeding work undertaken under FP2 and FP3, respectively. FP5 will also provide feedback to prioritize traits relevant for value-addition</i>” and some examples are given.</p>	<p><b>Satisfactorily addressed.</b></p> <p>However, the meaning of the claim that FP5 “<i>is a strategic interface.....and its beneficiaries....</i>” remains unclear.</p>