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Proponents' Respone to ISPC Comments

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Document presented for Agenda Item 8:
CRP 3.5 - Grain Legumes

Submitted by:
ICRISAT

Proponent's Responses to ISPC Commentary on the proposal CRP 3.5 Grain Legumes
05 November 2011

On behalf of all the partners involved in CRP 3.5 Grain Legumes, we would like to express our sincere thanks to the reviewers and the Independent Science and Partnership Council (ISPC) for their comments and suggestions on the CRP 3.5 document that was submitted to the CGIAR Consortium, and recommended to the Fund Council for approval.

Grain Legumes are important components of the cropping systems in many developing countries across the five target regions of CRP 3.5, and are essential for sustainability of the farming systems, as they not only fix valuable atmospheric nitrogen and add the needed organic matter to soil, but they also recycle other major nutrients, particularly phosphorous. Grain legumes are important in human nutrition and health, and contribute substantially to livestock nutrition. In many farming households, Grain Legumes are one of the major sources of income, especially to women, that supports family necessities such as healthcare, children's education and family emergencies. It is therefore gratifying that the ISPC concurs with the proponents of the CRP 3.5 on the importance of Grain Legumes to the livelihoods of the smallholder farmers in the developing countries.

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The ISPC recommends that CRP 3.5 be approved subject to substantial revisions and resubmission, taking into account the commentary that follows, with emphasis on: **Recommendation 1:** A much stronger description of the potential of research on GLs to decrease poverty and hunger as a basis for prioritizing crop-region-constraint combinations—perhaps different from that done in the past. It should: - Objectively demonstrate the relative importance of these crops in the CGIAR portfolio, drawing on information related to GL-specific producers and consumers in the different target regions. - Undertake a comprehensive assessment of past research efforts and current barriers to adoption of technology, as a basis for identifying key constraints and opportunities that could be influenced by CRP3.5 research products. - Establish targets for outcomes in a crop by region matrix to account for actual situations and current status from a regional and crop species	Chapter 3 on Justification (p. 12) in the CRP 3.5 document provides statements of how grain legumes address the System Level Outcomes (SLOs) related to (i) Reducing rural poverty, (ii) Securing food supplies, (iii) Nutritious, safe food and (iv) Sustainable intensification. The document (p. 16-22) looks at "priority setting among grain legume regions, crops and farming systems," providing statistics on population (rural and urban), number of poor and number of stunted children in the five target regions, as a basis for selecting these regions, and the number of expected beneficiaries from legume cultivation. The CRP 3.5 priority setting is based on the potential impacts of the crop in the region and availability of alternative R&D suppliers. For example, though soybean has large area in SSEA, it was not included in CRP 3.5 due to availability of alternate R&D suppliers. We also undertook an ex-ante study to assess the value of benefits to the target regions (p. 22-23 in the CRP 3.5 document). We have developed a crop by region matrix to account for actual situations from a regional and crop perspective.

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perspective, and strengthen capacity to prioritize allocation of resources for GL research within this CRP and within the CGIAR.	
Recommendation 2: A work plan with more focus and fewer product lines: that this CRP concluded with such a large number of product lines (61 crop/traits for genetic improvement) indicates the difficulty of moving from individual programs to a global program within a CRP.	The proponents of the CRP 3.5 Grain Legumes chose eight out of 23 legumes grown in different farming systems in the five target regions. It is proposed to work on one to four major legumes in each region (except in ESA, where the CRP proposes to work on seven legumes due to the diverse farming systems in the region and the vast geographical area). Although the 61 product lines look high in number, we believe they are a reasonable number when considered per region/crop.
Recommendation 3: Given limited success to date in the adoption of 'improved GL technologies', demonstrate feasible impact pathways, citing relevant references and documentation.	There are many success stories of adoption of legumes across crops/regions. The CRP 3.5 document listed only a few as examples (see also our response on p. 6-7). One of the successful examples is from the Tropical Legumes-II project where inadequate availability of seed was identified as a major constraint in adoption of improved cultivars by farmers in sub-Saharan Africa and India. The project partners put high emphasis on improving seed systems. Nearly 93,000 metric tons seed of groundnut, common bean, cowpea, chickpea, pigeonpea, soybean was produced across target countries during 2007-2010. This amount is enough to plant an estimated 2 million ha, equivalent to about 1 million smallholder households. The common bean seed system team has reached over 1 million farmers with small pack seed distribution during the last three years in Ethiopia (ca. 465,000) and Kenya (ca. 637,000) (http://www.icrisat.org/tropicallegumesII/pdfs/BTL4-2011.pdf).
Recommendation 4: This CRP should be closely allied to and integrated into the system CRPs, and particularly CRP1.1.	Grain Legumes are cultivated in and form an integral part of both drylands, sub-humid areas (soybean and common bean), and also in other moisture regimes. Considering this, CRP 3.5 Grain Legumes has indicated close partnership with both CRP 1.1 (Dryland Systems) and CRP 1.2 (Sub-humid Systems) (see Chapter 9 on Interactions of CRP 3.5 Grain Legumes with other CRPs, pages 124-129 in CRP 3.5 document).
Recommendation 5: Highlight the new and most promising areas of research: the list of innovation initiatives and cross-learning opportunities on p122-123 are ambitious and commendable and deserve a more prominent place in the proposal, with an explanation of the value that would be generated by succeeding in each of these	Agreed. The CRP 3.5 document has indicated/listed a few innovations and cross-learning opportunities. The recent advances in science and technologies in grain legumes have opened new opportunities for using innovative approaches for grain legumes improvement. Remarkable progress has been made on development of genomic resources and transformation technologies of grain legumes during the recent years. The whole genome sequence is available for pigeonpea and will be available for other grain legumes soon. Another significant achievement is the development of

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initiatives.	CMS-based hybrids in pigeonpea. We have proposed to use integrated breeding approaches for improvement of grain legumes, including exploitation of hybrid vigour in pigeonpea. Other innovations include exploitation of double-haploids and wild relatives. Development of more climate change-ready grain legume varieties will also receive high emphasis.
Recommendation 6: In management and governance, a more streamlined structure is needed that provides for independence in decision making, monitoring and evaluation. (i) The Advisory Panel needs to be more appropriately structured and resourced with formal oversight by the Lead Center Board; (ii) redundancies in the Steering Committee and the Program Management Team need to be addressed; (iii) the role and authority of the CRP Director needs to be strengthened; and (iv) the CRP management functions central to the success of the program, including communications, resource mobilization, and program evaluation, need to be clarified, adequately resourced and managed.	The proponents of CRP 3.5 Grain Legumes proposed a simple management and governance structure that was considered to be efficient and effective in implementing the CRP. The ISPC has also made a few suggestions that will be considered in developing an acceptable and efficient management structure (see also responses on p. 14-17).
1. Strategic coherence and clarity of Program objectives	
1.1 Comment: Program objectives are clear and the research plan is comprehensive, with reference to the SRF. Although the proposal rightly points out that GL cultivation and consumption are consistent with the SLOs, the justification presented is a general outline of how increasing the production of GLs could in theory contribute to meeting the four SLOs. A more detailed explanation is needed about how links between research outputs from this proposal lead to increases in production, resulting in positive changes in indicators related to the SLOs.	Chapter 3 (p. 12 in CRP3.5 document) provides a write-up on how grain legumes contribute to the four SLOs. The rationales linking these elements to the SLOs were provided in discussions at the Output level and the Strategic Objective level in Chapter 5, and across Strategic Objectives for the CRP as a whole in Chapters 2, 3, 4 and in the Vision Statement.
1.2 Comment: To support the supposition that outcomes from research on GL will address the SLOs, the proposal argues (p12) that 'Farmers both consume and sell GL	Two formal publications by respected researchers were cited (Shiferaw 2007; Lowenberg-DeBoer and Ibro 2008). Detailed baseline surveys further support these points but were not cited because they are not yet published due to the relatively recent initiation of the project that is generating

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crop products, granting them flexibility to optimize their livelihood strategy according to household food needs and market conditions'. And, 'A wide range of processed products from these (GL) raw materials add further value and generate important income-earning opportunities for poor people, especially women'. While these are powerful arguments in favor of research within the context of the SRF, citations given in support of these arguments are not from peer-reviewed literature.	this data (Tropical Legumes II).
1.3 Comment: The prioritization framework for CRP 3.5 is based on three selection factors: regions of large historical grain legume production area; low income, food deficit countries; and numbers of poor. While this framework is helpful, considering the current state of knowledge, it is too coarse for effective prioritization of a USD140 million investment in GL research over three years. Moreover, CRP 3.5 has done a commendable job in presenting the estimated yield losses due to many different abiotic and biotic constraints on the eight GL crops (Appendix 6). Average values for yield gaps and plausible closure of yield gaps are reported in Table 5.3.1. However, this information is not used as a basis for prioritizing research based on highest expected value in terms of impact on SLOs. Budgets appear to be based on current research investments at the respective Centers.	The data and information provided in Appendix 6 [Relative importance and yield losses (%) due to biotic constraints in grain legumes in different regions] and Table 5.3.1 [yield gap and plausible closure of yield gap (PCYG) for grain legumes across priority target regions] have been used in prioritizing the traits for breeding for resistance/tolerance to various pests and diseases and abiotic stresses. Currently, more than 70% of the proposed research-for-development (R4D) activities are to meet the objectives of the on-going bilateral projects. Hence, the budget allocations reflect the current work of the centers, and will continue to be like this for the next 1-2 years. Efforts will be made to allocate new and non-bilateral funding based on CRP priorities as the CRP becomes operational.
1.4a Comment: Projections of the increase in GL production needed to meet future demand seem overstated based on trends in pulse production and consumption in key producing countries. For example, food supply data for India (FAOSTAT data), the world's largest producer and consumer of GLs, shows that per capita availability of All Pulses	On p. 14-15 of the CRP3.5 document we cited five publications that indicated the existence of a significant grain legume supply-demand gap. The case is particularly well documented for India due to its strong census/survey institutions (though the same issue is highlighted for Africa citing Clansey and others on p. 15). ISPC's description of trends from 1961 may be less relevant to CRP planning than those of the recent past and projected future. The CRP3.5 proposal also emphasizes (p. 14) the importance of disaggregating global grain legume trends from trends for

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declined by almost half since the early 1960's (22.8 kg/capita/year in 1961 vs. 12.9 kg/capita/year in 2007). There appears to be a very slight rise in availability over the past 10 years but it is hard to conceive based on that recent change that demand will grow by over 3% per year over the next 15 years.	the poorest sector of the population of the developing world (the CGIAR's priority target). At a global level, legume consumption has been partially replaced by meat and dairy consumption made possible by increasing incomes. But the poor cannot afford these more costly protein sources, as indicated by data from income-stratified studies in India described in detail on p. 14. The proposal highlights Akibode and Mareida's (a study commissioned by ISPC/SPIA) conclusion that grain legumes will continue to be crucially important as "poor person's meat" in the foreseeable future. ▪ In India, per capita consumption of grain legumes has declined drastically between 1960 and 2007. However, if a more recent period is taken, such as 1990 to 2007, the per capita consumption has increased from 11.4 kg/capita in 1990-92 to 12.9 kg/capita in 2005-07 (FAOSTAT). During this period, the total consumption of pulses increased by 2.2 million t in India. ▪ To meet the increased demand for pulses in India, imports have risen from 0.4 t in 2001 to 1.7 million t in 2006 and 2.7 million t in 2008, indicating that domestic supply is unable to meet the growing demand. ▪ Globally, the volume of pulse trade increased three-fold from 3 million t in 1982 to 10 million t in 2006 to meet the increased demand for pulses. Presently 15% of pulse production is traded. ▪ The demand and supply projection for grain legumes[1] from 2011 to 2020 was simulated using the IMPACT[2] model. The baseline model projection shows a wide gap between demand and supply for Grain Legumes (GLs) in LIDFC countries. The model result also shows that the demand for GLs will grow by 2.1% per year over the next 10 years. For few LIDFC countries (Afghanistan, Eretria, Ethiopia, Kenya, Iraq, Malawi, Rwanda, Tanzania, Uganda) the demand will grow more that 3% per year. With the current technologies in the LIDFC countries the supply grows only by 1.5% per year. The Indian Council of Agricultural Research (ICAR) projected an annual growth of 3.1% for pulses for the 2011-2017 period (Ayyappan, 2011). If there is no supply shift by technology intervention in these countries, GLs deficit will be a threat to food security and will increase malnutrition.

[1] The grain legumes included in the IMPACT model are chickpea, pigeonpea, groundnut and soybean.

[2] International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT) is global agricultural trade model widely used for global food projections in the changing socio-economic and environmental conditions. The model was spatially disaggregated into 281 'Food Producing Units' – which represent spatial intersection of 115 economic units/countries and 126 river-basins. The IMPACT model factored in country and region specific income growth, population growth, crop and livestock productivity growth, own and cross price elasticity, income elasticity, trade policies in terms of marketing margins and protection levels for specific commodities, growth trends of irrigated and rainfed land, rainfall of base year 2000, etc. The business-as-usual projection does not take into account climate change (drought, flood, and higher temperature), biotic stress on crop yields, etc.

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1.4b Comment: The proposal also overstates the importance of GLs relative to other sources of protein. For example, FAO data indicate that in "Low Income Food Deficit Countries" (also examined by this proposal) that animal and fish products, as a group, are the major sources of protein (68.1g/capita/day) followed by cereals (33.2 g/capita/day) and then pulses (4.1 g/capita/day).	The CRP 3.5 document cites a recent, major study commissioned by ISPC itself (Akibode and Maredia 2011) that states that – grain legumes provide 7.5% of protein in the diets the developing world, roughly double the percentage implied by ISPC above, and three times higher than in developed countries. It further states that many of the poorest areas (the CGIAR's priority focus) exceed this average, including the largest pocket of poverty and grain legume producer/consumer, India, with a 12-13% contribution to dietary protein, several of the poorest Central America/Caribbean countries at 15-16%, and several East African countries with a startling 20-60% of dietary protein supplied by grain legumes. In relation to ISPC comparison among commodity groupings, it is important to point out that since this document is a proposal for a CRP, and separate CRPs have been proposed for separate major cereal crops/groups (rice, wheat, maize, dryland cereals), the relevant frame for comparison of dietary contributions would be versus those individual crops/groups rather than lumping all cereals together as ISPC has done. ISPC's linear ranking also overlooks the important synergy between the amino acid profiles of cereal and grain legume proteins when consumed together – a synergy that becomes more significant for the poorest whose diets contain insufficient animal protein. For all these reasons Akibode and Maredia (2011) conclude that "that grain legumes will remain crucially important as a "poor person's meat" as highlighted in the proposal. ▪ There appears to be an error in the data that is quoted. FAO data states that **total protein supply** for the LIFDC countries in 2007 is 68.1 g/ capita/day and not just animal protein. Second, in our calculations, data from China has not been included (not an LIFDC). The total protein consumption for LIFDC countries, excluding China, from the FAOSTAT data is 59.6 g/capita/day. Further, the contribution of animal protein is much lower at 15.9 g/capita/day, 29.9 g/capita/day from cereals, and 5 g/capita/day from pulses. Further, country-wise analysis shows that in two countries, pulses contribute the highest share of protein, and in 21 countries pulses contribute to more than 10% of protein intake. ▪ In 11 countries the contribution of animal protein and pulse protein are nearly equal in total protein intake. ▪ Additionally, grain legumes indirectly contribute to protein intake through animal protein as well. Oilseed cakes and pulses (grains and husk) are important feed resources. Between 1990 and 2007, the availability of soybean cake increased from 3.6 million t to 9.6 million t in the LIFDC (excluding China), while groundnut cake increased from 3 million t to 3.8 million t in the same

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	period.
1.5 Comment: While we commend the proponents for performing a rudimentary yield gap analysis as a tool for identifying where the greatest opportunities may be found for increasing productivity, the methods used to make these estimates are still coarse. Efforts to improve these estimates, and the databases and methods to simulate them, are encouraged. Such yield gap analyses should focus on water-limited yield potential as the benchmark.	We appreciate the comments of ISPC on yield gap analysis. What we have attempted is based on available information/data. Grain legumes are not limited to dryland environments. Two of the legumes (common bean and soybean) are not primarily grown in the drylands. We consider that both water and soil fertility are limiting grain legume production, so we cannot use the water limited yield potential as benchmark.
1.6 Comment: If a 20% yield increase over a 20% area farmed by the rural poor by 2020 is to be realistically addressed then the reasons for historic slow adoption need to be identified, understood and remedied. Elements of doing this are presented in Section 5, but the current implementation plan suggests little change from a previous *modus operandi*, which has resulted in slower than desirable adoption. Missing from the proposal is a comprehensive analysis of past successes and failures of GL improvement research over the last 30 years. The proposal makes reference to this sort of work: *"Farmers may encounter many constraints in adoption of improved technologies, especially pest and nutrient management practices, which are knowledge-intensive. These will be documented to draw lessons for future research"* (p67). This is a commendable goal but one would have expected this documentation in the proposal itself. There is much less documented success from GL improvement research compared to say, cereals, potatoes and cassava improvement research, and evidence of genuine lessons learned from previous GL research is deficient in the proposal (despite the sections titled as such).	We agree that adoption of improved technologies (eg, high yielding varieties, improved crop husbandry and agronomic management practices) have been slower compared to major cereals such as rice, wheat and maize, and tuber crops such as potato. Due to prolonged neglect for several decades, yield levels of pulse crops are stagnant (increased only by 12.2% from 1966 to 2009 as against 162.6% increase in yield of wheat). Farmers' adoption of improved technologies is always high in well-endowed areas (where a large proportion of rice, wheat and maize are grown), vis-a-vis less-endowed areas (the dryland areas). While a longer literature review could always be envisioned, the proposal did address this issue in considerable depth. The CRP 3.5 proposal began (Chapter 2, p. 6 and following) by describing specific successes as well as areas where progress has been difficult. For example, the first paragraph on p. 6 provides ten examples of large impacts from improved varieties supported by fifteen substantive literature citations, mostly from peer-reviewed journal articles. It notes that drought resistance must be approached as an adaptive trait and points out several difficulties and challenges in drought research (p. 7). It further notes that resistance to insects in the field has been difficult to achieve while indicating promising avenues for addressing this difficulty such as the fuller exploitation of genetic resources using new biotechnological approaches. The proposal especially highlights seed system constraints that have hindered adoption in an in-depth discussion in the box article on p. 10-11, further devoting an entire Strategic Objective to overcoming this past constraint (p. 75-86). The proposal also described the consequences of lesser policy support for grain legumes compared to other commodities since the Green Revolution (p. 15), motivating farmers to shift grain legumes to less favorable lands and supported by fewer incentives and institutions, slowing productivity gains. The proposal pointed out that this has been a reason for

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What are the main reasons behind the large gap in farmer field yields and experimentation station yields? Why don't farmers use existing improved varieties and apply recommended pest management strategies and more fertilizer and more labor to their GL crops even under marginal conditions? Are they ever likely to considering the risks and opportunity costs? How will the CRP ensure that the program is developing technologies that will be useful to and taken up by farmers? The proposal should include a separate section under each SO describing past work – success and failure – and how the current work will explore other ways and means of addressing the major constraints. Providing this rationale would help inform the Impact Pathways, which presently lack sufficient analysis and detail, generally assuming a smooth transition from research outputs to research outcomes.	research emphasis on stress resistance in the CGIAR, a notably difficult breeding target resulting largely in stabilizing yields (e.g. drought escape) rather than greatly increasing them as can be done for favorable environments. The proposal continued (p. 15) to describe the growing supply shortfall that has alarmed some governments, causing them to re-kindle efforts to stimulate increased grain legume production to counter imports. All of these detailed discussions reflect historical lessons learned and the approaches that CRP 3.5 will take to overcome past bottlenecks. The Green Revolution in South Asia was predominantly in the well-endowed areas, but the second green revolution has to come from less-endowed areas. This is the challenge that CRP 3.5 partners would like to address, using farmer-participatory research. Recent experience of the partners in Tropical Legumes II project (CIAT, ICRISAT and IITA) indicates that farmers are willing to invest in good quality seed of improved varieties, and use of inputs (phosphate fertilizers and micronutrients).
1.7 Comment: These difficulties and deficiencies in addressing strategic coherence and prioritization can be greatly reduced if CRP 3.5 and its partners are diligent in efforts to identify data needs and invest in data acquisition and work together for substantial improvements in the prioritization of GL research within the CGIAR as a top-priority activity.	We concur with the ISPC that what is available is B.A.D (Best Available Data). We will invest time and resources and work with NARS partners for data acquisition as a top priority. Phase 2 of the Tropical Legumes I and II projects also has a top-priority activity on data curation and management. Several of CRP 3.5 partners are involved in these projects. This is a big plus for CRP 3.5, as a lot of efforts are being made in the above projects on standardizing formats and developing modalities for data curation and management.
2. Delivery focus and plausibility of impact	
2.1 Comment: The proposal is weakened by a lack of focus and should undertake research on far fewer product lines. Although initial priority-setting resulted in some crops and regions being explicitly excluded, the fact that the process concluded with such a large number of product lines (61 crop/traits for genetic improvement) indicates the difficulty of moving from 5 individual programs to a global program in this	Though CRP 3.5 has eight grain legumes and many product lines, we will not work on all GLs in all regions and all product lines in all GLs. We have prioritized crops for each region (p. 3 in CRP 3.5 document). Thus, we have chosen 1-4 crops per region (except in ESA region that has highly diverse farming system over a broad geographical area). The product lines have also been prioritized for each crop. We will continue to refine these to remain focused on key priority traits. Insect-pests are major constraints to GLs and levels of host-plant resistance available are low to moderate, needing integrated pest management, including judiciiuos use of pesticides. Hence, we consider that there is a need for

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CRP. CRP3.5 must make the transition to fewer targets with greater probabilities of success. Some research with a low probability of success has been included - for example, continued work on bio-pesticides. It is noteworthy that a considerable body of research exists on bio-pesticides for GLs with modest impact.	enhanced efforts on identifying suitable bio-pesticides that are eco-friendly.
2.2 Comment: The section on SO2 "A*ccelerating* the development of more productive and nutritious cultivars" is quite strong. The traditional constraining biotic and abiotic stress factors are listed in Table 5.2.1, along with some grain quality factors. In setting crop improvement priorities, factors beyond the crop production phase need to be considered—along the entire range from input supply, through post-harvest, marketing, consumer requirements, etc. It is stated (p32) that "SO5 (value chain analysis) will help SO2 to refine breeding objectives to develop cultivars with market preferred traits". It is essential to analyze the broader social and economic environment as part of the priority setting tool for breeding objectives and activities indicated in SO2. The question needs to be asked – even if the major biophysical constraints could be alleviated, and grain quality parameters assured by genetic improvement, would there still be factors along the value chain that would prevent production increases leading to poverty alleviation? There is also a need for the proponents to make explicit that in the implementation phase the CRP develops a crop-specific breeding program taking into consideration the previous comments and past research experience of Centers and partners involved in GL genetics and plant breeding.	The CRP 3.5 proponents will indeed take into consideration the components of whole value chain from input supply to marketing. We will broaden the range of partnerships to have competencies in the areas where we currently lack expertise. Crop specific breeding programs will be clarified when we develop the detailed work plans with partners, once the implementation of the CRP begins in 2012, after its approval.
2.3 Comment: Strategies to optimize	As BNF is an important contribution of grain legumes to the

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Biological Nitrogen Fixation (BNF) have been attempted for resource-poor farmers over the last 50 years, but with little positive outcome. But considering its potential, BNF R&D it is still worth pursuing if further efforts were based on an analysis of reasons for non-adoption and different approaches chartered. Previous failures in expanding the use of more effective *Rhizobium* inoculum mainly relate to marketing failures. However, there is room for CGIAR inputs in unraveling the physiological basis of environmental effects on N fixation as advocated by Giller (2009).	agro-ecosystems, we have proposed to enhance our efforts in identifying effective *Rhizobium* strains for inoculum production, and cultivars with high BNF efficiency. We will also work on facilitating adoption of *Rhizobium* inoculum by the farmers, involving NGOs and private sector partners. The N2Africa project funded by BMGF is focusing on enhancing BNF in grain legumes in smallholder farmers' fields in Africa. We will partner with N2Africa and exploit synergies. The improved germplasm developed by CRP 3.5 will be shared with N2Africa for assessing BNF ability across Africa. The lessons learned from N2Africa will be used for CRP 3.5 work on BNF in other regions.
2.4 Comment: "Methods to increase legume productivity and profitability through increased resource use efficiency developed, tested and promoted". This is a vague, non-targeted description of potentially useful things to do and needs to relate better to genetic improvement aspects mentioned under SO2. Similarly, the statement "Efforts will also be made to optimize water and nutrient inputs to maintain soil health and sustainability of production system" is a vague generic statement not indicating what actually will be done.	We agree that these are generic statements. However, we will provide specificity when we develop detailed crop-wise work plans with partners, when CRP activities are initiated in 2012.
2.5 Comment: It would seem appropriate to mention under this output some of the possible innovations for including legumes in evolving conservation agriculture approaches, where improved crop rotations may be required to help control weeds and diseases.	We had included this component in the first version of CRP 3.5 Grain Legumes. The Consortium Board suggested that these would be better addressed by CRP 1.1 and CRP 1.2. The CB gave the following comments: "Since grain legumes are usually intercropped and provide a number of ecosystem services, the proponents should make the case for addressing the genetic enhancement of grain legumes in this CRP, rather than as part of the relevant CRP 1 proposals, for instance. CRP 1.1 and 1.2 are a priori in a better position to assess total system productivity in complex agro-ecosystems, which is mostly what farmers are interested in, rather than the productivity of only one of their crops." Thus, CRP 3.5 will focus on development of improved varieties and crop management practices that promote grain legumes in intercropping systems and crop rotations. We will work closely with CRP 1.1 and CRP 1.2, for testing/

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	evaluation of improved legume varieties in appropriate intercropping systems and crop rotations.
2.6 Comment: Improving seed systems (SO4) is an issue that goes beyond the purview of the partner institutions, and is not limited to GLs. The failures and obstacles facing seed systems in the target regions are well documented and complex. Although the proposal does recognize that poor seed systems are a constraint to GLs adoption and diffusion, it is unlikely that this project will succeed in improving seed systems on a large scale within the next decade, when numerous organizations (with arguably more relevant expertise) have been working on this issue for at least thirty years. The proposal speaks of supporting an emergent private sector in the seed industry, but it is not clear what expertise CRP 3.5 institutions have in this area. This is a key strategic factor that would need to be included in a revision of the proposal.	Grain legume R4D partners strongly recognize that inadequate availability of quality seed is a major bottleneck in adoption of improved GL cultivars. The 30 years of work on seed systems are not largely relevant to Grain Legumes, and this is precisely a research gap that CRP 3.5 should fill. Our honest assessment is that if CRP 3.5 does not invest in seed systems, then we cannot expect smallholder farmers to adopt improved grain legume technologies (also see response on p. 6). Thus, we will be working with both public and private seed sectors and also be promoting informal seed systems (seed produced by individual farmers and farmer's groups) for enhancing availability of quality grain legumes seeds at the local level. The CRP partners (CIAT, ICRISAT and IITA) have worked with private sector seed companies for seed production and marketing in some of the donor-funded projects (mainly BMGF-funded Tropical Legumes II in South Asia and Sub-Saharan Africa, and Government of India funded Seed Systems projects in India). We find that some of the small and medium seed companies are interested and are participating in legume seed systems activities. The support will be mainly by providing breeder and foundation seed, and training to the start–up companies in seed production, processing and storage. In CWANA region, ICARDA is working to create a pluralistic seed industry operating across 'open-borders' with easy movement of varieties and seeds. Both formal (public and private) and informal seed sectors are being supported to bridge the gap between agricultural research outputs in the form of new varieties, and their use by a large number of farmers, thus creating an appropriate pathway for research impacts on the poor and vulnerable people in the dry areas.
2.7 Comment: Improvements in value chains are proposed in SO5. It is clear that value chain opportunities have much to do with profitability—and hence with adoption—of new GL technologies. Unlike crop genetic improvements, however, changes in value chains are complicated to achieve and involve changes in marketing systems, processing, and distribution. It is not clear that the partner institutions behind CRP 3.5 are the best actors to bring about changes in GL 6 value chains. (Supermarket chains and other retailers might be better positioned here?) But, there is value here in terms of contributing to	This concern is understandable and was discussed at length by the proponents. The priority-setting utility of value chain analysis is highlighted clearly in the CRP 3.5 document (p. 8), "A value chain perspective helps align crop improvement with farmer priorities and motivations" and "CRP 3.5 will utilize value chain analysis as an aid in assessing its priorities and likely impacts benefiting smallholder farm families, diagnosing constraints in impact pathways, and identifying new opportunities, particularly for women"; p. 89, first impact foreseen is "Improving R4D planning and priority-setting"; and p 92, Key R4D question "How can value chain findings contribute to CRP 3.5 priority setting processes?" However the proponents perceived additional important potential from value chain analysis – that it could open the door to new and important opportunities for impact towards the CGIAR SLOs. Accordingly, we did not envisage to narrowly bind CRP 3.5 into traditional lines of R4D if value chain analysis were to reveal additional opportunities,

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priority setting for SO2 and 3—if we know where the value chain opportunities are to be found, then it might shape the targets for genetic improvement or crop management techniques. This seems more realistic than the prospect of CRP 3.5 institutions helping create new markets for processed GLs or the equivalent.	particularly to improve the well-being of women (as described and cited on p. 8) and if such priorities fell outside the remit of other CRPs yet within the remit and comparative advantages of CRP 3.5. The proponents recognize that entry points for value-chain impact must first be clearly justified, highly focused, and must engage relevant and likely novel partnerships.
2.8 Comment: One other promising area of research here relates to post-harvest losses – as GLs are highly susceptible to post harvest insect pests or fungal attack (mycotoxin-affected grain). Training of farmers in proper handling and storage has been mentioned (p96) but the CRP does not give much detail. This is extremely important as many of these technologies have been known for a long time, but little progress has been made on adoption. The proposal recognizes a strong need for capacity building and there is an ambitious program of capacity building planned around each of the SOs. One weakness, however, is that there is no strategic analysis of capacity building around the key drivers for the global targets, which reinforces the need for greater focus.	The capacity building needs vary considerably from country to country. The detailed plans for capacity building will be developed in consultation with partners in each country during the implementation of the CRP.
2.9 Comment: The use of a 20% yield increase on 20% of the total planted legume area by 2020 as a basis for production, income and incremental protein benefits fails to make use of any discrimination across crops and their constraints and their regions. There is no detailed analysis of the contribution of the various SOs in each of the crops or regions to this target, and no justification of the allocation of resources based on any such analysis. This is a significant deficiency in the plausibility of the targeted impacts, and undermines the credibility of the targets. For example, how much of the target will be met by improved seed systems, or by improved agronomic practices	A breakdown of the 20-20-20 Vision by Strategic Objective would be difficult, because there is much synergy and complementarity between them. For example, breeding gains (SO2) depend on more efficient/effective use of genetic resources (SO1) and improved crop management (SO3), fewer seed bottlenecks (SO4), improved priority-setting (SO5) and more effective partnerships (SO6). An attempt to disentangle these interdependencies would be fraught with unrealistic assumptions. In fact the proponents considered this interdependency as a rationale for the necessity of an integrated CRP including all six SOs. A serious effort was made to disaggregate the yield increase dimension of the 20-20-20 Vision through yield gap analysis, as described on p. 22 of CRP 3.5 document and elaborated in more detail in Chapter 5 (p. 65-66) and Appendix 6 (p. 189-191). Appendix 6 breaks out the yield gap by crop, region and trait. This table was judged to be too detailed to include in the main body of the proposal, so Table 5.3.1 summarizes yield gaps by crop across traits and regions. The caution

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and systems? Greater differentiation should be used to calculate expected yield gains for each crop and region (based on tables of yield loss, expected yield recovery, yield gap etc.) and valued accordingly.	concerning the importance of interdependencies and synergies among traits is also relevant to yield gap analysis.
2.10 Comment: There is little evidence provided that there have been studies of impact pathways for the major GL crops to support the schematic pathway framework in Figure 4.1, or the pathways defined for each SO. Each component of an impact pathway needs to explicitly consider how the outputs generated will address the major constraints faced by primary users, and describe a strategy to ensure effective uptake by them. The modest uptake of improved varieties and production technologies that has occurred for GLs in targeted regions of SSA and SA over the past 30 years suggests that research to better understand impact pathways and key players in the pathway would be helpful.	We agree that impact pathways are complex, non-linear, and involve several feedback loops. We have provided a simplistic and generalized pathway (fig 4.1) to indicate the possible outputs, outcomes, partnerships and expected impacts on the beneficiaries. While the uptake of improved varieties and production technologies of GLs have been modest globally, there are several national and regional impacts of higher magnitude. Some of these have been assessed, and other impact assessment surveys are on-going. During the past four years, ICRISAT, CIAT and IITA have worked together to facilitate NARS partners in their efforts on enhancing adoption of improved cultivars in sub-Saharan Africa and South Asia under the Tropical Legumes II project. This has helped us in identification of constraints in the impact pathways and development of strategies for enhancing uptake of technologies. See also response to Recommendation 3.
2.11 Comment: A strong claim is made in the proposal (on p2) that...CRP 3.5 Grain Legumes core partners have nonetheless achieved remarkable impacts in all regions. They have helped countries to increase grain legume yields, brought destructive diseases under control, made headway against the complex problems of drought, and connected grain legumes to export markets for higher incomes.' For some legume crops, in some regions, this may well be true, but it is important that credible evidence is provided to substantiate these claims. Although the proposal highlights 12 cases of success (p24-25), many of these are yet to be realized, e.g., drought tolerant bean varieties in Rwanda and Nicaragua, *ex-ante* assessment of improved cowpea in Nigeria, or they are impacts documented on a	We have made concerted efforts to provide evidences where GL core partners have been successful in achieving impacts. Only a few examples are given as success stories and additional evidences can be provided. The rate of progress in increase of average yields of GLs has been slow as compared to staple cereals (rice, wheat and maize) that are grown in well-endowed areas. The GLs are generally grown as inter-crops, or mixed crops, and often on very poor and marginal soils under unreliable and rainfed conditions, leading to low realized yields. The adoption of cultivars and technologies has remained low for GL, and would be adequately addressed in this CRP. For pigeonpea hybrids, we would like to clarify that research for development of CMS-technology in pigeonpea took 35 years. However, the first CMS-based pigeonpea hybrid was released only in 2008 and adoption of pigeonpea hybrids is increasing in India. It is pertinent to mention that other hybrid systems took 5-7 years before they became commercially viable.

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relatively small scale, as found by the recent scoping study commissioned by the ISPC. Hybrid pigeon pea, for example, has been researched for 35 years but substantial commercial uptake is yet to occur. Also, high levels of adoption of winter-sown technology for chickpea in Syria are indicated by Mazid et al. (2009) but this refers to sampling areas where winter chickpea is grown, which is a relatively small portion of the total chickpea growing area in that country.	
3. Quality of science	
3.1 Comment: The science underpinning the proposed research is generally sound and builds upon the experience of the participating Centers and partners. The proposal provides examples of their broad experience in innovation and the delivery of new products. This CRP would benefit, however, from identifying and focusing on a few scientific areas of global excellence (the proposal mentions these in a number of places, e.g. the chapter on innovation). The CRP could emerge as a center of excellence in these areas and develop its global scientific presence. The Descriptions and Methodology sections are reasonably well-written, and although lacking in detail, the science is sound. Some issues stand out, such as the protection of yield from disease and pests in GL production systems—an ongoing battle that requires a full arsenal (host-mediated genes, bio-control agents, vigilant IPM practices etc.). However, on this point (addressed under SO3) the proposal lacks sufficient detail on the routes to achieve solutions and appears to be relying on a continuation of what the Centers are currently doing. While the proponents are to be commended for attempting to	We are pleased to note that the ISPC recognizes the sound science and experience of the participating Centers and partners of CRP 3.5 on Grain Legumes. Indeed our endeavor would be to ensure that the CRP benefits from science and areas of global excellence. These would help Grain Legumes to eventually win the war against yield reducing biotic and abiotic stresses, even when they pose greater challenges due to impending climate change effects. The relative importance (prioritization) of various stresses in different regions and crops would be undertaken to reduce the yield gaps, and CRP partners will use robust science to underpin the physiological, ecological, and simulation approaches to produce the IPGs in science.

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perform a yield gap assessment to help prioritize research, the supporting analysis given for SO3 (p65) is opaque and does not appear to have adequate underpinning physiological, ecological, or simulation to support it. Considering the importance of yield gap assessment to research prioritization and geographical emphasis, CRP 3.5 should strive to improve the capacity to perform sound quantitative yield gap assessment for GLs in target regions. Such methods and research capacity would be an important IPG.	
3.2 Comment: Although data is provided on the numbers of accessions currently in CGIAR germplasm collections (Table 5.1.1), it is recommended that this be extended to include worldwide accession numbers for GLs, to give a more complete picture of the existing genetic diversity (for example, the USA soybean germplasm collection has more than 20,000 accessions).	Germplasm resources of the eight legumes available in the genebank of participating centers (>133, 000 accessions) would be used to infuse new diversity using trait specific, genetically diverse accessions identified using FIGS, mini core, and reference sets of grain legumes to circumvent yield reducing stresses. However, critical genetic diversity not available in the genebanks of the participating Centers and partners would be assembled/collected from other genebanks to ensure its availability for use by CRP partners to produce IPGs.
4. Quality of research and development partners and partnerships	
4.1 Comment: Intended partners and partnerships are carefully considered and appropriate. CRP 3.5 - unlike other CRPs where the partnership strategy is more generalized - commendably proposes to focus on and invest in a core group of activities, including capacity building and knowledge sharing, that aim to increase the value of partnerships in achieving impacts. More specifics about building and maintaining partnerships would be helpful but, by treating partnerships as one of the SOs, it ensures that at program management levels there will be at least one member of the team responsible for the effectiveness of the partnership strategy.	We are glad that ISPC notes with satisfaction the choice of partners and partnership strategy of CRP 3.5 which aims at purposeful partnerships for impact. The work in all the five regions (SSEA, WCA, ESA, LAC, and CWANA) would be through strong collaboration with the Regional Networks and the NARS. This would enable us to seek appropriate partners from the region while formulating work plans for implementation of CRP. Similarly we recognize that private sector and NGOs would have an important role to play for activities such as production and delivery of improved seed and Rhizobium inoculum.
4.2 Comment: Specific examples of opportunities for partnering with	As indicated in Chapter 9, CRP 3.5 will work with other CRPs including CRP 1.1 (Dryland systems) and CRP 1.2 (Sub-humid

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other CGIAR Centers are provided (p23-24) and these offer a useful way of monitoring progress towards achieving effective collaboration within CRPs. CRP 3.5 benefits from being among the last group of proposals drafted, so that the proponents can be expected to better visualize potential interactions with other CRPs, as listed in Chapter 9. As such, one would have expected to see closer integration with the system CRPs, particularly CRP1.1. It is not evident that there was sufficient collaborative preparation across the two dryland institutes involved. In the original formulation of the SRF, GLs were not a subject matter for individual CRPs but would have been part of the systems programs. It is still appropriate to ask how these —minor crops will be handled and their relationship to the system's programs in the overall CGIAR portfolio.	systems) where grain legumes form a major part of the cropping systems. Greater details of the interactions with partners and CRPs would be visible once work plans are developed in consultation/collaboration with them. All the four Centers involved in CRP 3.5 (ICRISAT, ICARDA, IITA and CIAT) have worked together as a Team in preparing the proposal. Interactions with system CRPs (CRP 1.1 and 1.2) have occurred at a broader level. However, detailed interactions will possibly happen once all the CRPs are approved, and each of these system CRPs will have joint work plan meetings with crop CRPs, possibly in early to mid-2012. The grain legumes are dubbed 'minor' erroneously, while they play very significant role in reducing poverty, hunger and malnutrition of the most disadvantaged population of the world. We prefer using of word 'nutritious' (instead of minor) for these grain legumes
4.3 Comment: For non-CGIAR partners, the list appears to be lacking for SSA. Only Ethiopia is listed, yet a large majority of the work will target SSA and will be conducted there. The ISPC recommends that additional partners in SSA be sought. More private sector partners are also essential for achieving impact (e.g. in seed production and delivery). The private sector will be especially important in production and delivery of Rhizobium inoculants, but there is no mention of linkages or partnerships with the private sector towards this goal.	CRP 3.5 proponents chose one NARS partner as representative from each of the target continents. Thus, Ethiopia was chosen to represent Sub-Saharan Africa. However, CRP3.5 will work with relevant NARS in SSA wherever Grain Legumes are major crops and are important in the farming systems in these countries. Appendix 8 (Pages 195-200) in the CRP 3.5 document lists all the partners: NARS, IARCs, ARIs, Private Sector, NGOs, Regional/ sub-regional organizations and Farmers' cooperatives/ organizations.
5. Appropriateness and efficiency of Program management	
5.1 Comment: The lead Center, ICRISAT provides an unspecified range of financial and management services to the CRP and its DG acts as chair of the SC for an initial period. No executive office or program	In order to keep the CRP management unit small, the lead Center was expected to provide support to the CRP Director's office. However, considering the suggestions from ISPC and the need to fully cost all support services, we will revise the budget accordingly. We agree that the time allocation (0.25 FTE) for the six Strategic Objective

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management staff other than the CRP Director is described in the proposal. The six positions dedicated to coordination of the strategic objectives are budgeted to spend 25% of their time on the responsibilities that attach to the RMT. This limited time means that they can hardly be considered managers of the strategic objectives much less a management staff for the overall program, the challenges of which should not be overlooked.	Coordinators needs to be increased to at least 0.5 FTE to ensure effective management of Strategic Objectives.
5.2 Comment: Both the SC and the RMT are problematic. Each is essentially wholly representative of the primary partners. All primary partners are represented on the SC. Each is guaranteed a spot on the RMT. The roles of both the SC and the RMT in priority setting and resource allocation fail to provide any formal space for independent, disinterested decision making; instead they have significant potential to preserve the status quo. The impulse behind the structure may be to build transparency among partners and enable consensus but the effect is to create a drag on the potential for genuine leadership and innovation. Between the SC and the RMT there is little incentive to move past the aggregation of existing projects, partnerships and funding that characterize the startup of the CRP to create a program with its own priorities that has the capacity to attract the influence and resources needed to advance its goals.	Our effort was to keep the Steering Committee (SC) lean to be effective. We will consider the suggestions of ISPC to expand the SC. The RMT is the implementing body for CRP (details on Page 131 of CRP 3.5 document). Hence it has membership of the CRP Director and Strategic Objective Coordinators, as these are the people who are responsible for implementation of planned R4D activities, and delivery of outputs and outcomes for impacts.
5.3 Comment: Although the R4D Advisory Panel offers a mechanism for engaging scientific and development advisors from outside the partnership circle, it is primarily an input to the RMT with the potential for additional interaction with the SC. It has no formal or informal relationship with the ICRISAT governing board. Finally, its name subtly but effectively signals its	The overall purpose of R4D Advisory Panel is to get independent advice on the CRP R4D activities (details on page 132 in CRP 3.5 document). The proponents kept this as a 'panel' to avoid having many committees. The overall responsibility for the CRP is with the SC that reports to the Governing Board of the lead center. We do not see any merit in multiple committees reporting/responsible to the GB of the lead Center.

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standing in the structure—it is a panel, not a committee, and its members are described as being part of a —pool. The budget allocation for this panel is further proof of the intended limits of its role.	
5.4 Comment: The CRP Director has not been given the scope of work or sufficient authority to manage a program with a projected annual operating budget in the range of USD40 to 50 million. The fact that the position will be internationally recruited and compensated accordingly does not offset the limited conception of the position. The Director is expected to serve as the public representative of the CRP, helping to raise its profile and the value of its work, to lead partner/donor relations, and to be active in resource mobilization. For all that, the position does not appear to have any authority—to appoint a management team or to evaluate the 9 performance of team members, to provide genuine leadership for the achievement of the program's strategic goals, or to shape ongoing planning.	The roles and responsibilities of CRP Director (pages 131-132 in the CRP3.5 document) have been delineated to give the needed authority and accountability for CRP. However, we will review the roles & responsibilities of CRP Director, based on ISPC comments.
5.5 Suggestion: Program management appears to have no staff dedicated to it but relies on ICRISAT for unspecified management support. Although the proposal demonstrates a nuanced understanding of the value of both communications and knowledge sharing, and the differences between them, no ideas are presented as to how a more externally focused communications strategy designed to raise awareness about dryland GLs and build interest at a global level will be coordinated or managed. All of the resources for communications and knowledge sharing are embedded within a strategic objective. The assertion that —the program's communication action plan [will be implemented] at all	We agree with the suggestions of ISPC and will establish a Secretariat for CRP Director including: Administrative Officer, Secretarial staff, and a Communication Specialist. However, the Financial Services, HR and Resource Mobilization will be sub-contracted to the lead Center.

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levels and be carried out by many of those involved in the R4D work (page 133) suggests that eventually nobody may be in charge. A comparable challenge can be anticipated in resource mobilization. Assigning both of these important tasks to the CRP Director and then expecting the program to acquire capacity on an *ad hoc* basis is unrealistic. It is possible to subcontract for backroom functions like financial services and HR; it is much more difficult to subcontract for an ambitious communications program or professional resource mobilization, particularly if the Centers continue to maintain corporate identities and seek resources for programs that fall outside of the CRP.	
6. Clear accountability and financial soundness, and efficiency of governance	
6.1 Comment: The total budget for the project over three years is projected to be USD137 million, which includes a funding gap of USD33.5 million. Although each of the CGIAR Centers is assigned a portion of the funding gap, the presentation of the budget by SO and by region (tables 14.2 and 14.3) does not indicate where funding gaps are anticipated to occur in the program. It is therefore not possible to see where a potential shortfall will have the greatest impact, nor is a contingency budget presented that illustrates how resources will be allocated in the event that the additional funds are not raised.	CRP 3.5 has proposed a few R4D activities that are new and/or re-initiation of research that was discontinued in some of the centers due to funding constraints. These include: developing varieties with better nutritive traits (protein, mineral content, etc.); breeding varieties for adaptation to climate change; breeding for enhanced nutrient use efficiency and high N2 fixation potential; options to optimize BNF and related rhizobium inoculum production support; and enhancing legume value chain benefits to farmers. Resource allocation for new activities will depend on additional funds raised for the CRP.
6.2 Comment: The CRP Management Budget allocates a significant percentage (40%) of its USD2.4 million budget to meetings that enable the full representation and participation of partners at three points in the program‘s governance and management (SC, RMT, Global and Regional Coordination Meetings). The Advisory Panel is	The comments made by ISPC on the Advisory Panel are relevant. The CRP proponents will consider the valuable suggestions made by ISPC, and will allocate sufficient funds for at least two regular meetings per annum for the Advisory Panel. The role of Advisory Panel in Monitoring and Evaluation will be based on Fund Council and Consortium Board directives on M&E process for the CRPs.

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provided with approximately USD20-25,000 a year to support the participation of its pool of six to 10 advisors. The imbalance is indicative of an inherent problem with the structure. The Advisory Panel has the potential to bring together expertise and perspectives of value to the program and provide a more independent level of planning and oversight than currently exists in the proposal. The Panel's role is to —provide independent guidance on strategic planning, new R4D opportunities, and research progress across the CRP agenda. It is proposed to have six to 10 members appointed by the SC based on recommendations by the RMT. The proposal does not envision the Panel meeting as a group on any consistent basis, rather the Panel is intended to provide the program with a pool of experts who can be tapped a few at a time to participate in meetings of the research team, or occasionally the SC. Aside from a three-year term for appointments to the Panel, there is no other structure proposed—no regular meeting as a Panel; no leadership structure; no link, formal or informal, to ICRISAT's governing body. Although there is a reference to its role in evaluation of the CRP's performance, there is no realistic way it could effectively fulfill this function given its lack of structure and support. As noted, the budget for supporting the work of the Panel is minimal.	
6.3 Comment: CRP3.5's management structure has two bodies that are insufficiently independent, and one without the mandate and structure to be effective or fully useful. As a result, the program needs to establish a mechanism that can support its accountability, increase the transparency and independence of	As indicated earlier, the SC of the CRP will have full responsibility and accountability, reporting to the Governing Board of the Lead Center. CRP 3.5 proponents will fully consider the suggestions offered by ISPC on strengthening and enhancing the role of the R4D Advisory Panel.

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decision making, and reduce any potential risk that of affirming the status quo at the expense of the program's potential impact. At present, the Centers and other partners are given adequate opportunities to observe the program and strengthen it through the involvement of their research staff on the management team as well as participation in twice yearly global and regional coordination meetings. The SC as described would seem to be superfluous and counterproductive.	
6.4 Recommendations: (i) Strengthen the structure and terms of reference for the Advisory Panel to give it a more substantial role in monitoring and evaluation, and in recommending program priorities and resource allocations. Provide a mechanism that allows a DG or equivalent from one of the primary partners to be a member of the Panel, in addition to the DG of the lead Center who can serve *ex officio*.	As indicated earlier, we will consider the suggestions of the ISPC to strengthen and enhance the role of the Advisory Panel, but prefer that the panel reports to the SC.
(ii) Establish a chair for the Panel, elected from among the members of the Panel, who has reporting links to ICRISAT's DG and board chair on the progress of the CRP.	Agreed, and will follow ISPC recommendations as indicated above.
(iii) Eliminate the SC and redistribute its proposed functions to the Advisory Panel, the RMT, or the CRP Director as appropriate.	We do not agree with the recommendation. As indicated earlier, the Steering Committee (SC) of the CRP will have full responsibility and accountability for the CRP, and reports to the Governing Board of the Lead Center.
(iv) Strengthen the role and authority of the Director sufficiently for the incumbent to lead and manage the program in an effective way. The evaluation of the Director's performance (and future recruitment) should include the chair of the Advisory Panel. The reporting relationships between the Director and the members of the RMT should also be strengthened to increase the	Agree. We will consider the suggestions of ISPC and revise the terms and conditions for CRP Director accordingly.

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ability of the Director to manage for performance.	
(v) Identify more clearly the management activities that will be undertaken by the program office or management unit to assure that functions central to the success of the program, including communications, resource mobilization, and program evaluation, are adequately resourced and managed.	Agree. We will establish a Secretariat for the CRP Director including Administrative Officer, Secretarial staff, and communication specialist. We will sub-contract other services such as Finance, HR and Resource Mobilization to the Lead Center.