

SCIENCE COUNCIL OF THE CGIAR

Commentary on the Fifth External Program and Management Review (EPMR) of the Africa Rice Center (WARDA)

21 September 2007

The Report of the 5th EPMR of WARDA was discussed at the Eighth Meeting of the Science Council, at Bioversity International's HQ in Maccaresse, Italy. On behalf of the Review Panel, Eric Tollens, Chair, presented the main findings and recommendations of the Report. Gaston Grenier, WARDA Board Chair, and Papa Seck, WARDA Director General, responded on behalf of the Center. The SC considers the report to be well written, and reflecting a frank and analytical review of the relevance and quality of WARDA's research, as well the Center's management and governance. The report addresses the ToR for the study, and is thorough in its analysis, often using cited references that lead to the many well-considered recommendations and suggestions. The SC especially commends the Panel for its excellent analysis of WARDA's work on genetic improvement, and for the report's section on quality assurance. The SC further notes that, given that WARDA is a relatively small Center with a one-crop mandate, the Panel was able to do an in-depth analysis of program content, and that the Center stands to benefit a great deal from this. The SC is also pleased to know that the Center management considers that the review was carried out in a participatory and transparent manner. The SC notes, however, that the report was rather long (137 pages plus 68 pages of Annexes).

The SC appreciates the report's analysis of the 'Ivorian crisis', and joins the Panel in its praise of the way in which the Center has been able to weather the crisis, in spite of the series of forced relocations between 2002 and 2004 of the Center's headquarters, first from Côte d'Ivoire to Mali (and Abidjan), and finally to the IITA-Cotonou station in Benin in 2005. The SC is pleased to note the Panel's conclusion that WARDA "has continued to do reasonably good research, maintained functioning corporate services, and is now poised to launch a period of phased growth", consolidation and stability, guided by an effective Board of Trustees, and ably led by its senior managers. The SC is in agreement with the Panel's report, its 18 recommendations, and several suggestions, and believes that they will help WARDA move forward in the right direction. Key issues addressed by the EPMR are discussed below.

Strategy and Research Planning

The Panel is optimistic about WARDA's future and visualizes a stronger and larger rice research Center in collaboration with IRRI and CIAT, WARDA's many NARS and international partners. The Panel also underlines the growing strategic importance of WARDA, noting that rice is the fastest growing food staple in sub-Saharan Africa, and that, in spite of the substantial increase in rice production and rising world prices, reportedly 32% of all rice exports now go to SSA. The SC concurs with the Panel, and joins it in suggesting that WARDA take advantage of the great opportunity for technological change provided by the increasing trend in rice prices. In order to meet that challenge, the Panel recommends that WARDA should place more emphasis on strategic research, not just because NERICAs are not a "silver bullet" that can solve all of Africa's rice production problems, but also because the genetic variability of African rices remains largely untapped, the genetic basis of NERICAS is too narrow, and NERICAs remain a "black box" with respect to the genetics and physiology that underlie their superior performance. The SC agrees with the Panel's recommendation of moving Center research into more strategic areas that will continue to support the NARES in the SSA, and believes that this is consistent with the SP concept.

The rising importance of rice in SSA is the rationale given by WARDA for its planned expansion into East and Central Africa, which initially contemplates increasing member states from 17 to 21. The

Panel cautions that such expansion should be carried out in a phased manner, and includes a recommendation about this, which the SC appreciates. The Panel also notes that WARDA is understaffed in many of the areas required to undertake a balanced strategic research agenda. The SC therefore cautions that WARDA should place more importance on the expansion of its strategic research agenda than on the expansion of its regional activities, in order to maintain focus in a phased period of growth. The panel rightly points out that partnerships should not/cannot substitute for the Center's own research capacity for strategic research.

The panel has provided many examples of where the growth in research needs to occur. It also highlights the benefits. A good example is seen in the cloning of the gene for yellow mottle virus, the application of which can begin to improve the efficiency of developing durable host plant resistance for that African pest by the NARES. The Panel has identified many other strategic areas of research that could have the same benefits: understanding the *GXE* of the region to define TPEs (target population environments) and then to set priorities around the constraints of each; modeling adaptive traits to further refine the targeting of priorities; fully exploiting the wealth of genetic and functional information that can now be released from the genetic resources of Africa; and defining a strategy for integrated weed, water and soil management. In supporting these recommendations, the SC suggests that the report could have been more forceful in defining the pathway for their implementation, and the SC offers the following three suggestions to that end:

First, the Panel made only passing reference to the alignment of Center activities to the SPs, indicating those to which the Center activities are aligned. However, the SPs are not just about the subject matter, they are more about focusing (i.e. prioritizing) Center resources on key strategic issues for which there is a higher likelihood of success. In many cases, this means Centers moving away from the more adaptive research to take on research of a more strategic nature. While the Panel's recommendations make this point, the Panel did not stress the fact that such strategic research needs to be linked back to and reinforced at the "system" level, and that WARDA needs to move away from a Center-centric view.

Second, the Panel recommends the addition of 4 staff and the filling of 2 vacant social sciences positions, in order to take up the new research agenda, and the Center has agreed to these increases. However, implementation will most likely imply decreases in other areas, and the Panel has not helped identify these areas. Furthermore, the change in the direction of the Center's research toward more strategic research and more NRM work, with the need for more and different staff, comes at a time that the Center is also growing geographically, which is also supported by the Panel. While in agreement with the Panel's recommendations, the SC is concerned about the feasibility of their implementation, and foresees that priorities will need to be set in order to manage all of this change with limited resources. Thus in the SC's view, WARDA needs to develop a 2-year business plan to ensure that these fundamental shifts take place in the best way possible. The SC recommends that the Board of the Center undertake to develop such a business plan, the implementation of which will be reviewed by the SC in 2 years.

Third, the Panel endorses the need for two Centers (IITA and WARDA) in the region, but it also notes progress made in governance and corporate services alignment between the Centers. The SC wonders, however, whether such alignment is enough, and whether there may be opportunities to exploit a greater alignment, particularly in the programmatic area. If WARDA (and the system) are to move upstream, why not conceive a joint program on bioinformatics that includes biometrics, or on weed management, or on water modeling and management, to name as examples a few of the areas that the Panel identified which are in need of new expertise? The SC thus suggests that there is an opportunity for more joint implementation at the program level, in order to drive the resources needed for a change in the direction toward a more strategic agenda, in line with the CGIAR SP focus.

Research Program and Partnerships

The Panel notes that WARDA has conducted very relevant work, focusing both on genetic and non-genetic solutions to rice production systems in Africa. The Center has continued to use the products of the scientific breakthrough on the use of the African rice (*O. glaberrima*) as an important new genetic source for the development of inter-specific rice cultivars for Africa. WARDA's scientists have combined this breakthrough with conventional breeding, with contributions from participatory plant breeding, to develop varieties adapted to local conditions. The networks developed by WARDA constitute an important platform for ensuring that the Center's scientific products are used by the local NARS. WARDA has also facilitated the development of seed systems through the African Rice Initiative (ARI), to alleviate the seed availability constraint in the pathway for more impact. The report states that, while WARDA has an excellent record of accomplishment of breeding work, research planning needs greater interdisciplinarity. The rice-growing environment in SSA is very heterogeneous and, until now, most of WARDA's technological solutions have been too generic and have relied too much on genetic improvement. There is therefore a need for better targeting of research activities, using a stratification of the biophysical and socio-economic environment. The focus should be on only a few constraints of regional importance, as it is more effective to produce varieties for targeted environments than releasing a wide range of varieties with unknown *GxE* performance. The SC concurs with the Panel on this, and adds that a fully integrated program on *GxE* interactions is needed, spanning upstream research to implementation. In addition, if the *GxE* studies are to be useful, a correlation of genotype data with phenotypic and productivity traits is required, the quality of which will depend on close attention to the capacity building of NARES staff. The *GxE* studies also have potential for increasing the output of high impact publications. How consistent this strategy is with the participatory plant breeding approaches employed by WARDA in the case of the NERICAs is moot however, and deserves critical examination by WARDA in the process of responding to these recommendations.

With regard to the integration of molecular marker technology into the breeding program, the SC notes the Panel's suggestions to upgrade throughput capability at Cotonou and to expand marker capacity at other breeding sites. Without wanting to enter the debate about centralization and outsourcing of marker technologies, the SC is aware that the CGIAR Genomics Taskforce, on which WARDA is ably represented, is, in the near future, intending to develop a 'Strategy for the delivery of genomics technologies by the CGIAR Centers over the next ten years'. The SC hopes that WARDA will await the advice and benefits available from such a strategy before investing too heavily in this area.

The Panel mentions the need for integration of participatory plant breeding into mainstream breeding. This aspect of the review relates to observations from other EPMRs, has systemwide relevance, and is currently under consideration by the SC. The SC has recently recommended the phasing out of the PRGA SWEF which is dominated by participatory plant breeding, essentially because the SWEF has done its job. Plant breeding at WARDA is a good example, showing the integration of PPB into conventional breeding, including, increasingly, the use of molecular approaches. The commentary in the report on the opportunity to further strengthen the statistical analysis of the information generated from the participatory work, and on ways to bring the local products of the PPB into a more formal seed system, is relevant for all rainfed (and perhaps irrigated) breeding programs. Indeed the report highlights the overall breeding approach for variable environments using modern approaches of molecular tools, modeling of traits and genes, determining the TPEs, using diverse parental materials, and incorporating PPB along with the evolving information on innovation in seed systems. This is an area where the CGIAR might consider developing a concept paper to guide progress in rainfed environments.

The SC notes with surprise the Panel's doubts about the long-heralded claim that the NERICAs would have an ability to overcome weed problems by being much more competitive with them. Indeed this was a major rationale for the *glaborima x sativa* crosses. The SC believes that this issue deserves more research attention by WARDA as an input into its future research strategies and priorities, and that this should be informed by more multidisciplinary studies of adoption/constraints, which the Panel has recommended.

The Panel mentions the Center's gaps in social science research. The SC is in agreement with the Panel's recommendations to fill these gaps. However, the gaps in social science research supporting Center activities have also been pointed out in other EPMRs. The fact that they are also mentioned in this report is further confirmation of the need for the SC to undertake a stripe review in this area.

The System-wide Initiative on HIV/AIDS in Agriculture (SWIHA) is an important integrated, collective effort of several institutions seeking to spread information on this pandemic, and to improve nutrition in infected populations. (As the nutritional status of HIV/AIDS patients has an influence on the frequency and severity of opportunistic infections and disease progression, there are compelling reasons to contribute to good nutrition of patients.) However, the Panel concludes, and the SC concurs, that the activities being carried out by WARDA in SWIHA are not in areas where the Center has a comparative advantage, and recommends that the Center transfer its convening role to an institution whose core activity is in the area of HIV/AIDS and nutrition, which might be better equipped to serve the goals of the SWIHA initiative. Globally such institutions include UNAIDS, WHO, WFP and AED whose NARES or NGO partnerships seem to vary from one country and region to another.

The Panel suggests that the relatively low science productivity, measured by number of publications per scientist per annum, is not of great concern, considering the difficulties that the Center dealt with during the review period, perhaps because the Panel considers that, under such circumstances, this indicator does not reflect scientists' potential to perform. The above arguments notwithstanding, the SC questions whether doing "reasonably good research", in the Panel's words, is good enough for a "Center of Excellence", and will continue to monitor progress in this important indicator of science quality. The SC appreciates the report's highlighting of the need for more Quality Assurance (QA) in all aspects of the science, not just in laboratory procedures. The extent to which Centers have in place an overall QA program could be further explored as a means to improve the quality of science.

In summary

WARDA is to be congratulated for maintaining momentum during a difficult period in its history. The Science Council endorses the findings of the EPMR Panel's Report and agrees with its recommendations. The SC welcomes the recent alignment with IRRI and CIAT on rice, and encourages WARDA to adopt a strategic view towards its own research on rice for African environments, taking advantage of the specific opportunities identified in the Panel's report. There should be constant efforts to assess and enhance all aspects of science, and not to overstretch critical mass by too rapid an expansion to east and southern Africa. The SC hopes that WARDA will utilize opportunities (such as shared posts) for linking with IITA and regional partners where it is sensible to do so.