

# Proposal for CGIAR Research Program 4: Agriculture for Improved Nutrition and Health (CRP4)

## 1. Clarity, relevance and conceptual framework

The size of the document is massive (132 pp.); in my view, it can be streamlined, while at the same time giving, right from the outset, a number of precisions that will facilitate its reading and comprehension.

- I suggest that the title of the CRP 4 be: “Agriculture for Improved *Human* Nutrition and Health”. We are not dealing with animal health, except when monitoring animal diseases can help prevent the spread of *anthropozoonoses* (cf. the old saying of the Romans, “*hygia precoris, salus populi*”). But we are dealing more with epidemiology and disease transmission than with animal health *per se*.
- The word *anthropozoonoses* is preferable to *zoonotic diseases*, because it stresses the transmission to humans, and thereafter from human to human.
- The phrase “agriculture-associated diseases” should be better defined, right at the beginning of the text. On page 9, the figure summarizes some of them in a box. With respect to water-related diseases, for instance, are we dealing with cholera, diarrhea, which are scourge in urban and periurban areas, due to the lack of safe drinking water or (and) poor sanitation? Or with the accumulation of nitrates in the water tables due to intensive livestock husbandry (e.g. swine feedlots)? Or with schistosomiasis (*bilharziasis*), after dam building? Similarly, food-related or borne diseases are not all associated with agriculture. Melamine-tainted milk was related to the food industry and not to agriculture *per se*, while aflatoxin or fumosinin-contaminated grains (poorly stored) belong to that category.

Also occupational hazards should be defined in both the Executive Summary and chapter 1.

- When intensive agriculture is mentioned as a cause (real or potential) of associated diseases, it would have been useful to mention both organic agriculture (and its limitations) and reasoned agriculture that uses less inputs and nevertheless reaches good yields.
- Obesity is mentioned in chapter 1 as a possible consequence of intensive agriculture or of a paradigmatic change in agriculture development and food availability. It does not

seem realistic, in my view, that the poor populations targeted by the programme would be so much affected by obesity (but much more likely urban and periurban populations; cf. recent studies on obesity incidence in developing countries).

The relevance of CRP4 is well established through its vision spelled out on page 2 of the executive summary and page 10 of the document (chapter 1). The target populations of the programme are defined later on. We ought to insist that both populations are poor or very poor, living in rural environments; that most of them are poor and small farmers who are the first to suffer from under and malnutrition.

Consequently, what is primarily needed is to increase, even slightly, their purchasing power. We would not be too optimistic about “greater access to more nutritious and diversified diets” (p.7). The reality is a rather monotonous diet that could be improved, but not considerably. The cost is also crucial.

It is true that the recent global food crisis has shown that the major problem was insufficient production of food at an affordable price, but quality (nutritious) was also a major issue. Hence, the “slogan”: produce more and better. Better in terms of agricultural practices (less water, less costly inputs, except of course in countries where they are very low, enhancement of soil fertility, no tillage, etc.), but also in terms of more nutritious agroproducts.

For many years, both FAO and WHO, and most of nutrition experts agreed that the first priority was to provide calories (“fill the stomach”). And this is the priority of many CGIAR programmes aimed at increasing crop yields. But it is also true that it is now possible to make the “bowl of rice” or “millet porridge” or cassava meal more nutritious. In this sense, CRP 4 is very relevant, but we should not be overoptimistic in the medium term.

Regarding the main components of the programme, I understand and support the three first ones, but I wonder whether components 4 and 5 should not be merged together and rearranged. Both indicate that they will focus on the integration between agriculture, health and nutrition; the building of synergies between the three areas; the design of best intersectoral practices; and the support for policy-makers and planners.

Acknowledging the magnitude and complexity of the tasks to be carried out under CRP 4, it would be reasonable to lessen the ambitions of the programme, as expressed at the bottom of page 1 of the Executive Summary. For instance, CRP 4 cannot pretend control pandemic anthroozoonoses, when we know the complexity of the emergence and spreading of these

diseases and the diversity of stakeholders involved (including those which are out of the reach of CGIAR).

Finally, the partnerships mentioned are numerous and wide-ranging. The coordination task will not be an easy one. Like in other CRPs, maybe an endeavour should be made in order to privilege *key* partnerships, e.g. those of the CGIAR family.

From a presentation viewpoint, the whole of chapter 1 (pp. 7 to 19) overlaps with the Executive Summary (partly) and much more with the following chapters devoted to the components of the programme. Some of it could be transferred to the Executive Summary (pp.7 and 8), while the rest (impact pathway, outputs, gender, capacity strengthening) appears in every following chapter (five to nine).

## 2. Component 1: Nutrition-Sensitive Value Chains

- The title of this component is not easy to understand. Translation to French or Spanish would be almost impossible!

I suggest: “Analysis of the food chain and its nutritional improvement”.

- The overall impression is that of comprehensiveness, which does not seem achievable over a reasonable period of time. Too many activities and overambitious impact. The other impression is that the CRP 4 would start from scratch. Many of the activities mentioned have been carried out here and there, and a useful task would be to synthesize them and draw some conclusions aimed at developing the appropriate policies.
- The target populations of the work are not clear: rural or urban, or both (in this case, it may be too much). Why not focusing on the rural poor (farmers and villagers), who can produce more nutritious foods and also benefit from them (if possible).

Regarding those populations exposed to agriculture intensification, are we dealing with those living in rural environments (which should be the case) or with periurban and urban populations, who are not, *stricto sensu*, directly exposed to agriculture intensification? Clarification is needed and activities focused accordingly.

The emphasis on women and children is very relevant and appropriate.

- The relationships between food, nutrition and health are complex. Perceptions of healthier foodstuffs differ among cultures. The taste factor is also very important. For

instance, fish powder or meal (as indicated on page 22---, case study# 2), added to bread could be rejected by populations (see the case of Morocco with sardine fish meal), because of the smell, taste and eating habits. Consequently, what is nutritionally justified, is not necessarily acceptable to populations. Henceforth, the role of education, training and imaginative approaches.

- I agree that partnerships will need a careful coordination work, in order to be really effective.
- To sum up, I suggest a more realistic approach, including a much more precise definition of the target populations, a reduced number of objectives/ activities, more realistic outcomes, and a preliminary benchmarking of previous research work and results.

### **3. Component 2: Biofortification**

This component is very convincing, well presented and soundly based on HarvestPlus and AgroSalud, two research-and-development programmes that have already given promising results. It is very sensible to retain these two subcomponents, but also to ensure effective and productive association and synergy between them.

The research questions or issues are well posed and seem to me very relevant, as iron and zinc deficiencies, as well as other micronutrient deficiencies (vitamin A), cause havoc among women and children worldwide.

It would be clearly stated that biofortification of staple food crops (cereals, beans, sweet potato, cassava) is a simple and cheap tool for making available to the poor more nutritious foodstuffs. If grains or sweet potatoes are enriched with provitamin A (i.e. a sufficient daily intake), it becomes unnecessary for the poor consumer to eat other vitamin A-containing agroproducts or to collect them from natural ecosystems, which is often impossible because of the cost and endeavour implied. The staple food fulfils both demands: calories and micronutrients.

It should also be more clearly stated that biofortification of staple food crop species can be achieved through conventional breeding (a lengthy process), marker-assisted selection (MAS) and genetic engineering. The latter method is in fact used and has been used successfully in the case of “golden” rice and maize with higher provitamin A content. I am disappointed that nothing is mentioned both in the text and the list of references about the work on “golden”

rice that has lasted 14 years and which is expected to be grown in the Philippines, India and possibly in China, in 2012 and beyond. Not only the work by Ingo Potrykus and Peter Beyer has provided the evidence that the transfer of genes involved in vitamin A synthesis was possible and effective, but it paved the way for similar work. Nothing is said either on the ongoing work by Paul Christou at the university of Lérida, Spain, on the biofortification of cereals. This, in my view, should be corrected, even through the genetically modified biofortified crops might raise acceptability issues. When we see the progress made in this respect by India (GM brinjal or eggplant), China (phytase-maize), the Philippines, there is no reason to be “shy” in mentioning this possibility in CRP 4.

Although I agree with the anticipated risks, mentioned on page 34, they should not be overstated. A major issue relates to the demonstration of nutrient bioavailability in *sufficient* amounts and of bioassimilation in the human body. On the other hand, experience has shown that once a country has produced its own crop variety (e.g. India, China, Brazil), it can be disseminated properly, and particularly to poor farmers and smallholders.

Finally, I am in favour of reducing the expected results or outcomes, at least in the medium term, in order to ensure a pragmatic approach, in both HarvestPlus and AgroSalud. Thus, the main focus should be on subsistence and family agriculture, which can be both a supplier and a consumer of biofortified staple food crops (e.g. the case of Brazil and the outstanding role of EMBRAPA). Also women and children should remain a primary focus of this programme component (women as both caretakers and housekeepers, but also as producers, e.g. in sub-Saharan Africa).

Advocacy strategies are a necessary ingredient of the component, as it has been clearly shown in Mozambique with yellow and orange flesh sweet-potato varieties (“sweetness that brings health”).

#### **4. Component 3: Control of Agriculture-Associated Diseases**

The main shortcoming of this component is its tendency towards comprehensiveness of research on the so called agriculture-associated diseases. This decreases the credibility of the component itself, but also of the whole programme. At the international and regional level, the CGIAR network is *not* the institution responsible for monitoring, diagnosing and controlling human diseases and public health. The prominent role of WHO should not be underestimated. This is therefore a major risk for the credibility of CRP4.

Consequently, and in addition to the above-mentioned remarks and comments on the denomination of human diseases that can be associated with or related to agriculture and livestock husbandry, I strongly suggest a priority ranking of the diseases to be studied and eventually better controlled.

One cannot imagine that we shall deal with malaria, obesity and all kinds of water-transmitted diseases, or food-borne diseases due to the food industry and not agriculture *per se*!

As a suggestion, we may select mycotoxins as a priority, with special emphasis on aflatoxin and fumosinins; a very few plant toxins or toxic chemicals; anthroozoonoses with high prevalence in developing countries; how about influenza viruses- AH1N1 and AH5N1- which implies the strict surveillance of swine and poultry, even though the last outbreak did not turn out into a real pandemic and was finally less lethal than seasonal flu); pesticide poisoning (focus on the cases of glaring impact on health in developing countries).

I do not disagree with the methodology to be adopted to monitor, diagnose and control the diseases, once a priority list of the latter is made. There are indeed many tools for these purposes, using for instance genetic tests as well as animal and human genomics. Vaccine development is another key priority area to prevent diseases in both animals and humans. This is in the purview of ILRI, WHO and OIE.

The improvement of storage of agricultural products can reduce heavy losses and mitigate risks for human health. Simple and effective methods should be proposed and improved (it is more often development and incremental innovation than research *per se*).

To sum up, I insist on a strong streamlining of this component which is too widespread, which can overlap with important international health programmes and which may harm the credibility of the whole programme.

## **5. Component 4: Integrated Agriculture, Nutrition and Health Programs**

At first glance, this component seems rather theoretical and has the ambitious goal to “*simultaneously* maximizing the benefits of agriculture and minimizing its risks”, until the reader reaches page 75 and table 2. This lists a series of on-going projects or programmes which aim at agriculture development and enhancement of nutrition and well-being of the populations involved. Why not therefore, from both a pragmatic and pedagogical viewpoint, start by selecting *a few* of these projects or programmes and work on them with all the

partners concerned, and later on draw the lessons that will be helpful for the planners and decision-makers. One would think that these projects have a methodology and a well defined approach that CRP 4 could validate or improve (see Annex 3).

Such an approach would save time and money. CRP 4 should not give the impression that in looking for synergy and integration between agriculture, nutrition and health, we start from scratch. We should rather start from what exists and improve it through effective and equitable partnerships. Credibility of CRP 4 would also be enhanced.

Other examples which deserve attention is Brazil's "bolsa familia" and "fome zero" programmes, when addressing small and poor farmers. They include technical assistance to grow nutritious crops, and even to sell part of them to generate income, small financial assistance to the *mothers* (a strong gender approach) who should vaccinate their children and send them to school. These programmes have been very successful and have certainly contributed to the reduction of poverty, malnutrition and disease. Brazil's authorities have even proposed to transfer this approach to other countries, e.g. in sub-Saharan Africa.

Why not taking also the example of Mozambique and the experiment made there by CIP with orange and yellow flesh sweet potato varieties? This has the advantage of already involving one of the CGIAR centers; it deals with very poor rural populations and involves women as main stakeholders. Maybe it needs a strong health component, besides the control of vitamin A deficiency.

Finally, the Andean altiplano communities of farmers and herders of camelids (llama and alpaca) should deserve a special attention. Again there is a strong gender approach, nutritious crops such as quinoa and indigenous potatoes are grown, poverty is a scourge. Improving livestock husbandry, using modern genetic tools, could make a breakthrough in income generation and improvement of the standard of living. AHN projects would find there an ideal experimental research-and- development substratum.

## **6. Component 5: Informing Policy and Decision Making Across Agriculture, Health and Nutrition**

I make a strong plea for a harmonious integration of this component to the previous one, as it seems to me that component 5 is the natural outcome of component 4. For instance, to convince leaders to engage in integrated planning and programming in A, H and N, the best approach is to show them at the field level that AHN programmes or projects work and give good results (as foreseen under component 4).

It is true that current international nutrition or health programmes are carried out in such a way that their targets are purely health or nutrition improvements. However, when they are implemented in rural farming communities, the agricultural component is taken into account.

Again here, I recommend a pragmatic approach, focused on specific examples, like those mentioned in Appendix 4, in order to draw useful lessons and convincing ones for decision-makers in favour of integrated planning and programming in agriculture, nutrition and health.

The example of brucellosis control in Mongolia could be an excellent example to start with, in order to develop more research aimed at elucidating issues towards integrated planning. Similar work has been carried out in Spain on brucellosis, concerning the control of the disease in cattle, with an outstanding reduction of human cases; it implied a good collaboration and joint planning among veterinarians, physicians and cattle raisers.

Talking of risks, I fear that component 5 would be perceived as “bureaucratic”, while if integrated to component 4 into a continuum gradient, from the field to the policy and planning process, it would be more convincing.

## **7. Partnerships**

The numerous and diverse partnerships needed for the implementation of CRP 4 are well described, and there has been great enthusiasm among many partners at the stage of the preparation of the CRP. This is a good omen. But the design and implementation of partnerships across the wide range of disciplines and actions of CRP 4 will not be an easy task. That is why the proposals made above to focus on a very selective list of case studies and tasks will help demonstrate the usefulness of key partnerships and ensure their success.

## **8. Programme management**

It is sensible to propose a *pragmatic* joint venture arrangement between IFPRI and ILRI to run the programme and to make their directors-general accountable to the Consortium Board. The joint venture between CIAT and IFPRI in the management of HarvestPlus is also a successful integration that need to be pursued.

It is imperative to keep the management team small and overhead low. In order to reduce costs and avoid too many meetings, would it be possible to have an advisory committee to the programme associated with a few representatives of stakeholders. After all, it is not unreasonable to blend independent advice with the voice of stakeholders, and thus to listen to both experts and stakeholders of CRP 4.

It is commendable to start implementation with an initial three-year detailed work plan and budget. In addition to fund raising , and to programme evolution , as indicated on page 98, I strongly recommend that the main inspiration of the programme should come from the research teams which will prepare a state of the art in order to determine the priority areas or case studies to begin with. This will give a clear cut pragmatic and credible approach to the whole programme.

## **9. Budget**

For the initial three-year period (2011-2013), the annual budget proposed (US\$ 59 million in activity in 2011 and rising to US\$ 69 million in 2013) is reasonable. In fact, one would have expected a higher budget because of the impression of ambitious objectives throughout the five components of CRP 4.

It is commendable to include a separate budget sheet to show the cost of activities funded under HarvestPlus. It is likely that funding of HarvestPlus activities will continue to be contracted bilaterally. In fact this is a very attractive part of the whole programme, as is AgroSalud, and the implementation of the Megaprogramme should not hamper it in one way or another, but rather be adapted to enhance HarvestPlus and AgroSalud performance.

## 10. Concluding remarks

CRP 4, as proposed on 10 September 2010, is a very wide-ranging programme, whose relevance is undeniable. It would be even more convincing if it were more concise, and avoiding repetitions. More precise words or phrases such as agriculture-associated diseases, anthroozoonoses (instead of zoonoses), about target populations, etc., should be welcome right at the beginning of the document (Executive Summary and chapter 1). The reader will be better oriented to make his /her own judgement.

The main criticism is that the programme may be too ambitious in its objectives and expected outcomes, especially for the first three-year period. I therefore recommend more focused components, particularly components 1, 3, 4 and 5 (4 and 5 could be integrated properly). Component 2, soundly based on HarvestPlus and AgroSalud, is the most promising. Component 3 should address a very selective list of diseases, actually related to agriculture and livestock husbandry, and not to the food industry and processing, or the supply of drinking water and sanitation. A pragmatic approach would be to start with existing projects or programmes integrating (or trying to integrate) agriculture, health and nutrition, and to make CRP 4 contribute effectively to their assessment, implementation, and draw all the relevant methodological and performance lessons.

Some gaps should be filled, at least for scientific reasons, such as the mention of “golden” rice and similar work on nutritional properties enhancement carried out worldwide, and indicated in the list of references. It should also be mentioned why this kind of approach will (or would) not be adopted in component 2.

I reckon the complexity of CRP 4 and its management and implementation will not be easy. That is why a pragmatic approach, less ambitious, and based on few key case studies, will have the chance to win credibility, while obtaining good results in terms of research, development and innovation.