Comment, Questions and Answers

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Paper prepared for presentation at the “World Food Security: Can Private Sector R&D Feed the Poor?” conference conducted by the Crawford Fund for International Agricultural Research, Parliament House, Canberra, Australia, October 27-28, 2009

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Comment, Questions and Answers

CHAIR: MICHAEL TAYLOR

Murray–Darling Basin Authority

Introduction

This session brings together the many questions that have been asked in the course of the day. There is no chance of getting through all these this afternoon, but the Crawford Fund will publish all the questions as part of the proceedings [p. 113]. Today we have listened to a wide range of speakers who have addressed that critical question that Crawford put before us: Can the private sector feed the poor?

I would like to review the way in which all the speakers have responded to that question. No one saw it as purely a private-sector issue of ‘feeding the poor’. A number of speakers very importantly drew out the point that we are only too familiar with — the extraordinary challenge we face with the world’s population expansion to some nine billion people over the next four decades.

Along with that, if we actually manage well, growth in incomes will put even more upward pressure on the demand for food. At the same time there are constraints on land, serious constraints on water and increasing constraints from the global climate challenge. So a really major question is, how do we actually feed a dramatically different world population?

New participants

In addition to speakers who have already contributed to the conference, we have three new participants in this session. The first is Dr Kate Fairley-Grenot, the chair of the Rural Research and Development Council, the government’s key advisory body in respect of rural research. She has also chaired a NSW grants selection committee and has been an associate director of Coopers Lybrand. An independent consultant, she has a background in plant physiology and science policy, and is a graduate of Sydney, Harvard and Sussex.

Next is Dr Gabrielle Persley, Chair of the Doyle Foundation, a Scottish-based charity that supports the role of science and technology in Africa. Dr Persley is a foundation supporter of the Biosciences East and Central Africa (BecA) Institute, which shares a research platform at IRLI in Nairobi. She also has had a long executive association with that body, and has previously been an advisor to the World Bank in biotechnology and a senior member of ACIAR in Australia.

The third new participant is Dr Prabhu Pingali, deputy director of Agricultural Development at the Bill and Melinda Gates Foundation. He was formerly director of the Agricultural Development Economics Division of the Food and Agriculture
Organization of the United Nations. He co-chairs the Millennium Ecosystem Assessment Panel’s working group on future scenarios. He is the editor of the e-Journal of Agriculture and Development Economics, eJADE. He has had 25 years of experience in assessing the extent and effect of technology change in developing country agriculture, especially in Asia, Africa and Latin America, and was the director of the economics program at CIMMYT.

New approaches, in addition to those of governments, are emerging as to how we can address the future world food demand. Traditionally the R&D has been supply driven and government based, with private-sector organizations very much on the edge. Foundations such as the Bill and Melinda Gates Foundation are starting to reshape partnerships between the private and public sectors.

**Question 1. Scaling up**

*Dr Pingali, we are starting to see changes in the approach to essential research and the advantages of foundations that are unconstrained by past mores and culture, but how do we scale up to the very large international effort that could actually help close the gap?*

*Dr Pingali:* I will give a more detailed account of the work of our foundation later. Let me start by explaining why the Bill and Melinda Gates Foundation became involved with agriculture, and then comment on scaling up. Much of the work of the foundation over the past ten years was health-related: addressing HIV/AIDS, malaria, tuberculosis, etc. As that work was in progress it became quite clear that if the fundamental problems of poverty and hunger are not resolved the gains from health work will be quite limited. There are enormous numbers of poor, hungry people, particularly in Sub-Saharan Africa but also in South Asia. We concluded that we should focus on agriculture in those regions. Why agriculture? Agriculture has had a clear track record of being the engine of economic growth, of being the fastest way to reduce poverty. As we considered what we should do, we asked why the productivity of agriculture systems in such large parts of the world is so low.

Basically it is a consequence of market failure in the supply of inputs—seeds, agriculture services—output markets, etc. Second, there is market failure in the lack of focus of R&D systems on crops that are important to poor producers and poor consumers, and on traits that poor people are really interested in such as tolerance to drought or submersion. Private-sector R&D has not addressed needs of smallholders—poor subsistence producers of staple crops—especially in Sub-Saharan Africa. The third set of market failures has been to not connect smallholders to the market system—local markets, supermarkets, international markets.

We decided to try to address each of these market failures through better science and technology, better policy and institutional investments, and by creating mechanisms by which transaction costs for smallholders could be reduced. We can do this at a scale that may be larger than that of other foundations, but even then what we can achieve will resolve only a very small part of the overall problem. So how do you go from this level of investment to a national or regional scale? We need to address that problem from the demand side, not from the supply side. From the demand side we need to remove the incentive constraints that smallholders face—to get the price policy right and remove discrimination against and taxation on the agriculture sector. Once the incentives are right, smallholders will invest in new technologies and new inputs and enhance their productivity. And that’s crucial.

Governments must be more involved in putting in place the infrastructure necessary to make agriculture work—roads, transport, communication, irrigation investments, etc. In Sub-Saharan Africa the level of such investment is extremely low.

We need to create systems through which rural businesses can flourish. Remove unnecessary regulations, remove bureaucratic red tape, remove taxes across borders to create a rural business environment that actually attracts the private sector—not just the big multinationals, but the mum and pop private sector that runs the rural mill, the rural store, etc. That’s absolutely crucial.

If you can get these areas right, I think scaling up takes place by itself.

**Question 2. Urea deep placement**

*Dr Roy, the urea deep placement program has been great for yields and for the environment—but what about labour? Doesn’t it put a lot more pressure on labour resources?*
Dr Roy: That is an important and very interesting question. The labour required for deep placement is greater than for broadcast application, but at the same time only one application is needed in the planting season. In addition, the need for and cost of weeding is significantly lower. On the other hand, as the yield goes up quite significantly, the labour requirement at harvest is greater. We are analysing the labour requirement for the entire system, and seeing that at seasonal peaks there is a shortage of labour, but this is pushing up the daily rate for women’s labour during both the application and at the first harvest.

**Question 3. Trust in public–private relationships**

I have a series of questions regarding trust that revolve around public investment in genetics and the private sector — how we deal with the issue of publication and exposure and on the other hand the need for profit in the private sector.

So, to Bill Niebur: You have described a partnership between the public and private sectors, but can you really illustrate some of those non-profit elements that you pointed out that are really of benefit to DuPont and Pioneer? How do you gain from these partnerships?

Dr Niebur: Our employees have come to us through public institutions. They gained their education and occupational opportunity in public institutions. Those people demand that we give back corporately to the public sector through partnerships, projects and contributions. As a corporation we need to be engaged with our employees, our talent pool. That is not for profit, but it allows us to retain the people that we’ve worked hard to attract and develop, and whose potential we ultimately fully realise. Secondly we, like other corporations, have strong external advisory panels that hold us to a very high standard to use the technologies, the discoveries, the inventions and the innovations that we translate those inventions into, for the public good, fulfilling corporate responsibility globally and legitimising our ability to operate effectively across borders.

We have been a seed company since the 1920s. We have the right to be that seed company only if we behave in a honourable and transparent and legitimate manner. In order to develop the technologies that are required today, we need the right to operate that is provided to us through partner-ships with the public sector and by our employees. Our employees cannot fully realise their potential if we isolate them from the extraordinary talent that is present today in the public sector.

To Ms Armstrong: It is all very well to have partnerships in place between the public and private sectors, but a critical part of the public in the R&D framework is the free publication of information. How does Monsanto deal with that? Does it restrict the times at which material comes forth?

Ms Armstrong: When Monsanto engages in public–private partnerships there is a variety of ways in which we approach that issue. In the case of the Water-Efficient Maize for Africa (WEMA) project, my understanding is that we are giving the drought tolerance gene and its intellectual property to WEMA, who will own that property and will be responsible for delivery to the different seed companies involved.

Dr Niebur: There is debate in the press (for example in Nature in October) between academics and the private sector on the free use of commercial products and the publication of data, but the press is not the best place for the public and private sectors to work out such differences of opinion. We are disappointed with the treatment and the quality of the article. A follow-up article in the periodical GM Crops in October will give a more balanced view of the different perspectives. Organisations like Sygenta, Pioneer and others do actively work with public researchers to make their commercial products available for evaluation. We encourage it. This approach makes us legitimate participants in this new era of regulated traits and stewardship. We must partner in such a way as to not inadvertently create problems where none exist today.

**Question 4. Market development and scale**

Dr Ngongi, you provided an excellent encouraging example from Rwanda of a systematic approach to developing essential markets. When we return to the challenge of feeding nine billion people, however, scaling-up is really a major challenge. Without minimising the successes to date, how does the Alliance for a Green Revolution in Africa (AGRA) plan to foster the scaling-up process?
Dr Ngongi: Clearly AGRA can push, can catalyse and can show what is possible, but it cannot manage scaling-up throughout Africa. If it had more resources it could do a little more. National governments in Africa have to accept their share of responsibility. Food security is clearly the primary problem in Africa. Most governments in Africa are spending probably 25–30% of their national budget on the military; arguably they could spend quite a bit more on agriculture. They have undertaken to spend 10% of national budgets on agriculture, but only six have gone past the 10% mark — so there is still a lot to be done.

I hope the international community that committed $20 billion in the L’Aquila summit this year will come up with significant resources to support the effort being made by organisations such as AGRA to scale up the successful work being done in Africa. We have shown that in a few years a lot can be done: but we are just scratching the surface.

**Question 5. Intellectual resources**

*Dr Ngongi,* one of the great successes of what you’ve been doing is to gather a group of people who thought very clearly about how the market system might be developed — the markets themselves, the various sorts of merchants involved, the incentives and the farmers’ vouchers. We do hope that those important international financial commitments to AGRA come to fruition, but perhaps the most valuable asset of AGRA is not financial but the intellectual capital of the network. How might you actually transfer the intellectual capital that put those systems together, rather than just money, to other centres of need?

*Dr Ngongi:* Fortunately AGRA is not implementing any programs directly: all the implementation is being done at country level by nationals at country level. We work with support from some organisations like the International Center for Soil Fertility and Agricultural Development (IFDC) and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). At a national level we work with national research systems — they are the ones doing the research work. We’re working with national seed companies.

We are building capacity by training people in African institutions. Of course a lot more can be trained — Africa has suffered an erosion of human resources over the last 20 years or so without replacement and training of the additional people who are needed to transform ideas into reality. Maybe we are now moving into a world in which knowledge alone is not enough. Management skills and essential services have to be built up. I would like to make one pitch: 70% of the producers of food in Africa are women, yet women form no more than 10% of the workforce in essential agricultural support services in Africa. If any donor or supporter was going to do something really tangible in Africa it would be to increase the percentage of women professionals in agriculture and food production.

**Question 6. Capacity building**

*Dr Ngongi has brought out this important issue of scaling up capacity building and this is an area in which Dr Persley has been involved for a long time.* Dr Persley, how can we do much better than we have done in the past?

*Dr Persley:* One has to think about capacity building in one of two ways: capacity building of who and for what. There is now a trend away from simply looking at capacity building as being only the training of individuals to also increasing the capacity of institutions. Over the past 10–20 years, of African scientists who went overseas to do PhDs, 60% never returned home. Not because they didn’t want to come home, but because there was nothing to come home to in the form of adequate research facilities where they could pursue a career as scientists, or indeed agriculturists. Thus capacity building in Africa is building institutions in those countries to address African real-life problems, not only in the technical areas like plant breeding but in areas like intellectual property and regulatory affairs.

Finally, I endorse the comments of my distinguished colleague from AGRA regarding the need and opportunity to increase the capacity and the numbers of women scientists and agriculturists — people who perhaps really understand the role of agriculture. As I reflect on what we’ve heard today, perhaps we haven’t thought and talked enough about the importance of capacity building in political leadership. And dare I say in this particular hall that building the capacity of political leadership in the developing world is absolutely critical, because the green revolution wouldn’t have happened without Norman Borlaug and a few other people. It certainly wouldn’t have happened in India without Indira Ghandi.
Question 7. The role of large multilateral organisations

Dr Ferroni, you left us with some very important take-home messages in four examples. You drew our attention both to seed and the way in which it had been managed in India, with great promise. (Similar very good initiatives were described by Dr Ngongi, including the supply of fertiliser through an auction process.) You talked about capacity-building in the way that Dr Persley has just advocated. You also challenged some of the framework around the insurance market, and you put a lot of emphasis on private–public partnerships. But in that account you did not talk much about the big multilaterals like the Food and Agriculture Organization (FAO). How do you see their roles in the partnerships that are starting to appear between the private and public sectors?

Dr Ferroni: I view the multilaterals as potentially extremely important. When we talk about multilaterals we might distinguish between entities like FAO — technical organisations of the UN system — and the international financial institutions such as the World Bank, the International Finance Corporation (IFC) and so on. IFC is potentially very important since we are talking about the creation of markets — input markets, output markets and the conditions to make them work. Also, two regional development banks, the African Development Bank and the Asian Development Bank, are significant in this context.

The Asian Development Bank has always had a sizable portfolio in agriculture. I am sure they are going over their books at this time to see what their Agriculture Program should look like now that agriculture and food security are very much on the political table — there is heightened awareness on the part of both donor and recipient country governments of these issues.

The African Development Bank is very actively looking at what agriculture could mean for them in future. They used to say, when asked about agriculture, that ‘we don’t directly work in agriculture, but we are engaged in infrastructure’. Infrastructure is extremely important; for example you can hardly over-invest in rural and secondary roads. I think, however, that they are now looking at agriculture in a new, much deeper way, at the African Development Bank, checking out new aspects such as agricultural R&D and how to better link farmers to markets.

FAO, on the other hand, is a more technical organisation. There are plenty of technical and policy issues that need to be addressed at the present time — for example, the whole incentive question and agricultural taxation which used to be important in Africa. There has been considerable improvement in this issue at the macro level, but there are unresolved micro-level issues that affect incentives and production possibilities that need to be addressed. In any case, I regard the role of the multilaterals, both technical and financial, as very important.

Dr Pingali: I wish to add to what Marco has just said. A multilateral institution that has transformed developing country agriculture is the CGIAR system. Without the investments that took place in IRRI and CIMMYT the green revolution would not have happened — and those investments were tiny investments. They lead to enormous change and scale-up and to an entire set of CGIAR research centres that have done enormously important work over the years. My concern, when thinking of the L’Aquila summit and the G20 meeting that took place in Pittsburgh and the new money that’s supposedly coming in, is that nobody talks about investing in cross-national research. Cross-national research will fall through the cracks in these new funding arrangements. We need to be making a bigger noise to ensure that that doesn’t happen, and at the same time we need to force the CGIAR system to modernise, to understand that the problems of today are very different from the problems of the 60s, and that the geographic focus is very different. And the CGIAR needs to come up with a new plan of action to ensure it is relevant in future.

Question 8. Declining investment and declining growth in productivity

That leads to a question to Dr Pardey who, as a good physician, diagnosed a fairly unhappy story about declining investment in agricultural research by governments in the western world going back into the mid 80s and staying there for a long time. Because of the long lags in payoffs from investment in R&D, we are only now starting to reap the consequences of that decline in the form of a falloff in productivity growth. Noting the responses of Dr Ferroni and Dr Pingali, Dr Pardey, would you reflect on the future opportunities that we should be looking for?
Dr Pardey: We have talked about market failures at a national level, but there are serious market failures at a global level. The spillovers that I referred to that are cross-national in nature are the very root of the problem. Whilst particular countries may be investing and developing instruments to invest appropriately in agricultural R&D, collectively at the global level there is large and increasing under-investment.

Regarding the CGIAR, Prabhu used his words carefully in drawing attention to cross-national research falling between the cracks, which is different from suggesting shoring up the CGIAR. Whilst like Prabhu I have spent many decades in the CGIAR, I’ve been careful to distinguish between the economic drive that is pushing towards greater international research and the CGIAR, which is related but different.

Some of those economic fundamentals relate to things that were hinted at in talks by Bill, Marco and others. It is not just pulling together expertise, talent and germplasm. Much of the market value of the big multinationals resides in their acquisition and management of information. That process is much more complex in a multinational dimension than in a national dimension. Therein lie lots of pitfalls, but also lots of promise in the payoffs from using that information to direct technology development and extension to those areas where substantial gains could be made.

There are platforms and models already in the private sector that could be adapted not only to public–private relationships but to public–public relationships, and between the CGIAR and national research institutions and so forth. There are grounds for much more efficient use of scarce dollars, not a doomsday scenario. There is no substitute for cranking up the levels of investment. Although we can become much more cost effective, unless the levels of investment are cranked up we are not going to achieve the results that are essential. That boils down to sustained political commitment. This is easy to prescribe, but much more difficult to make happen.

I was encouraged to hear the Foreign Minister, Mr Smith, the opening speaker today. Very few foreign ministers would talk about and seemingly understand the role of productivity and growth and economic development. That a pretty complex relationship to get your head around for a Minister of Foreign Affairs. The fact that those ideas were on the table this morning must give hope that this message is starting to filter up. The secret for real success will be not to make transience commitments in this area but, as Gabrielle was pointing about on the human capital and performance, to sustain financial commitment over the long term.

Question 9. Agriculture and nutrition

We do have a lot of private-sector involvement in germplasm for the horticultural industries — certainly in Australia, Europe and United States — although it doesn’t have a large role in the public-sector R&D framework. Is that the reason we get such little traction on some of the unique work that you are undertaking? I’ve heard the pleas for Australian resources, but what of institutional connections?

Dr Keatinge: I do believe that the public and private sectors can work more closely together. One of the brilliant things about the private sector is that it is dedicated to seed quality. Quality is probably the most important thing that the private sector can bring to seed production and make available to farmers. If you’re going to charge a reasonable amount of money for a packet of seeds, all of them must germinate. There is a big distinction and divide between hybrid and non-hybrid crops. The private sector is under pressure to make money, and really the only way to make money within the seed system is to grow hybrids. This then very quickly limits the number of crops you can and will work with.

We also have to gear up not just agricultural organisations but those nutrition and health organisations that have been working in the same areas of nutrition and malnutrition but in different ways. If we are going to join up the research of the public and private sectors we also should join up the research of the agricultural and health sectors. We haven’t yet learned how to speak the language of health very well, but we are in the process of trying to do that. Development, we all recognise now, is a very complex affair and to look for simple solutions is probably futile. With good will and with the energy from all of the sectors that are available to us, however, we can have a substantial effect on the major problems. One of these at a global level is malnutrition, not necessary directly hunger. I would like to see the private sector address more attention to that problem, a task in which the public and private sectors can work more effectively together.
**Question 10. Initiatives in Australia?**

*Dr Grenot,* there have been some important take-home messages for Australia today, especially regarding research and development in the rural sector. Can you comment on these?

**Dr Grenot:** I am chair of an advisory council to our Minister for Agriculture, Fisheries and Forestry; my colleagues Cathy McGowan and Jim Pratley have also attended today. I do not directly represent the rural R&D corporations.

The corporations model was established by John Kerin, who is here today, when he was minister for agriculture during the 80s. Thus we have an established mechanism in our system for building public–private partnerships. In addition we have ACIAR, examples of whose activities have been described today and which address various global issues.

A feature that distinguishes current partnerships involving research and food security in Australia from those of the post-depression and post-war eras is that this cooperation is now occurring in a global context made more complex by climate change. We anticipate that our nation state and its research systems (generally and especially rural R&D) will have to closely integrate with international research efforts.

I am therefore greatly heartened by what I have learnt today. I would hope the board of every corporation will consider how they can match their export-orientated commercial ambitions and the public-good requirements that come with matching government dollars with the tremendous development agenda described here.

I am encouraged also by Dupont and Monsanto’s comments regarding their work with international centres such as CIMMYT and the World Vegetable Centre. Although such large companies often have relatively small interests in Australia, it is in everybody’s interest to develop technology and help build capability. If we, too, interact internationally, our own research system will benefit.

We will need to discuss how to optimise these R&D interactions. We have a range of domestic industry structures, and the role of firms participating in our public–private partnerships varies across commodities. Large sections of the value chains are subject to policy development across a range of government portfolios. We need a whole-of-government response embracing not only R&D but climate change, education, health, defence, energy and so forth, with linkages to relevant scientific developments.

Our research community — for example the Academy of Science and the Academy of Technological Sciences and Engineering — is separately looking at internationalisation. We have world-class science in fields that are critical to global food issues.

So if there was one action arising from today, perhaps it should be to suggest to the minister that there is a real role for a forum where bodies such as ACIAR, the corporations and the academies came together to discuss how to optimise our joint and several activities for both national and international benefit.

**Conclusion**

As our speakers have responded to these questions from the audience, and during the presentations throughout the day, we have had the chance to experience comprehensive thinking about how we are going to address the great challenge of world food security. A clear message is that the public and private sectors must work together to meet that challenge.