AVRDC
The World Vegetable Center

SUBMISSION No. 4

Inquiry into Australia's international research collaboration
Submission from AVRDC – The World Vegetable Center

21 January 2010

1. Role of AVRDC in international research

AVRDC – The World Vegetable Center is the only not-for-profit international agricultural research center that has an exclusive mandate for vegetable research and development worldwide. It works to alleviate poverty and malnutrition in the developing world through the improved production and consumption of safe vegetables.

Founded in 1971 as the Asian Vegetable Research and Development Center, the Center's work has expanded globally over the past two decades. Headquartered in Taiwan, AVRDC - The World Vegetable Center has established regional centers in Thailand, India and Tanzania and offices or staff located in 11 other developing countries in Africa and Asia. With over 50 international scientists and 350 national scientists and support staff the Center's research and development work includes the collecting of vegetable germplasm, breeding varieties, improving production systems, marketing and post harvest handling and enhancing the nutritional value of vegetables.

The Center maintains the largest not-for-profit collection of vegetable germplasm in the world. Comprising over 56,000 accessions it contains major collections of globally important crops such as tomato, pepper, onion, cabbage and eggplant as well as over 10,000 accessions of indigenous vegetables. Since its founding, the Center has distributed more than 300,000 seed samples to researchers in 180 countries. Together with varieties bred by the Center's own staff these efforts have led to the release of hundreds of new vegetable varieties that are planted on millions of hectares in the developing world today.

The Center's activities include laboratory studies, field trials around the world, participatory research and development work with National Agricultural Research and Extension Systems (NARES), other international agricultural research centers, the private sector and farmers to develop appropriate and sustainable technologies. AVRDC – The World Vegetable Center also offers extensive training and capacity building programs with the public and private sectors to ensure awareness and adoption of improved vegetable technologies.

2. Past research collaboration with Australian institutions

In 2008 AVRDC was the largest recipient of ACIAR project funding to international agricultural research institutions. We currently have four ACIAR vegetable research projects in the Asia-Pacific region with Australian institutions, and one project funded by AusAID. These are:

- ACIAR HORT/2006/107 Strengthening the Cambodia and Australian vegetable industries through adoption of improved production and postharvest practices (2009.9 ~ 2012.8)
- ACIAR HORT/2004/048 Integrated disease management (IDM) for anthracnose, phytophthora blight, and whitefly transmitted germiniviruses in chilli pepper in Indonesia (2006.4 ~ 2010.10)
- ACIAR PC/2005/077 Integrated crop management package for sustainable smallholder gardens in Solomon Islands (2007.5 ~ 2011.4)

- ACIAR/ISCM NAD INDO Integrated soil and crop management for rehabilitation of vegetable production in the Tsunami-affected areas of NAD Province, Indonesia (2007.1 ~ 2010.1)
- AUSAID/GAP VN Improvement of Vietnamese vegetable production using GAP principles for seed and seedling production and superior hybrid varieties (2007.3 ~ 2010.2)

We also have personnel links with Australia through Professor Sally Smith from the School of Agriculture, Food and Wine, University of Adelaide who is Vice Chair of the AVRDC Board and Fellow of the Australian Academy of Sciences. Dr Dyno Keatinge, Director General of AVRDC has visited Australia three times in the last 18 months for extensive discussion with academic, research institutions and donors in five states and territories. Dr Warwick Easdown, Donor Support and IT Manager at AVRDC headquarters is an Australian national and spent 24 years working with the Queensland Department of Primary Industries and the University of Queensland.

3. Why we are making this submission

- Australia has a lot of expertise in tropical and sub-tropical agriculture which can have great benefits for the rest of the world, particularly as climate change makes a regime of “droughts and flooding rains” a more common feature of much of the world.
- We value our partnership with Australian institutions and would like to expand these, as we’ve had some productive research and development work in the Asia-Pacific to help alleviate poverty and malnutrition.
- We are concerned that institutional constraints in Australia appear to be to be causing a loss of expertise in vegetable production and disengagement from international vegetable research collaboration.

4. Addressing the terms of reference of the enquiry

4.1 The benefits to Australia from engaging in international research collaborations

Our focus is specifically on expanding international tropical and sub-tropical vegetable research collaboration. The main benefits for Australia are likely to be:

- **Meeting growing demands for more tropical vegetable production**: Climate changes will shift more of Australia’s vegetable production into tropical zones where water supplies are more assured, but Australia has limited capacity in tropical vegetable research and most of this is in ageing staff in Departments of Agriculture.
- **Access to germplasm already adapted to diseases not yet present in Australia.** The recent devastating outbreak of *Tomato yellow leaf curl virus* in Queensland is an example of a situation that could have been prevented if local researchers had maintained long-term contacts with international plant breeders who have been working on this disease for years and have resistant material available.
- **Connection to expertise familiar to immigrant vegetable farmers:** A significant percentage of vegetables in Australia are now being produced by Vietnamese immigrants, and grower organizations in Australia have already approached us for publications and contacts to help in work with such farmers. Collaboration would greatly strengthen and enhance efforts to improve vegetable production by national groups in their home countries and in Australia.
- **Strengthened experience in growing new tropical vegetables:** Market research in the US shows that there is an unmet demand from immigrant consumer groups for their traditional vegetables which local growers cannot meet. International collaboration can help provide the expertise to grow such vegetables for Australian consumers
- **Ensuring quality of imported vegetables:** Very rapid expansion of low cost vegetable production in countries such as China and Vietnam and new free trade arrangements will

make it more likely that there will be more pressure from large Australian retailers for importation of fresh as well as processed vegetables into Australia. Established research relationships in exporting countries will help to ensure a good understanding of the risks and opportunities in expanding such trade, and opportunities to ensure the effectiveness of Good Agricultural Practices.

4.2 The key drivers of international research collaboration at the government, institutional and researcher levels

- **Limited institutional capacity:** Australia's largest government institution with expertise in tropical and sub-tropical vegetable production is Queensland Primary Industries and Fisheries, part of the Department of Employment, Economic Development and Innovation. Some joint expertise in tropical vegetable production is being built between this department and the University of Central Queensland. There is no effective tropical vegetable research group at other universities and CSIRO does very little work on vegetables. A number of skilled individuals from universities in southern states and the NSW Department of Primary Industries have significant expertise relevant to tropical vegetable production, but they are more professionally isolated.
- **Need for research funding:** The attitude between individual researchers in universities and state governments towards international research collaborations are markedly different. State governments have the most expertise, resources and practical experience in vegetable research, but are almost wholly focused on parochial issues, and driven by industry to focus on short-term demands. They are funded by State government budgets and competition for national or industry grants. Universities have more diverse and less reliable sources of funding and due to their broader mandates are more likely to seek international collaboration than State Departments of Agriculture.
- **Lack of Australian students in horticulture:** University departments of agriculture are in decline due to a lack of local students, and increasingly depend on attracting international postgraduate students for their survival. This reflects the small, geographically scattered and diverse nature of Australian horticulture. There is a minor emphasis on vegetable-related horticulture in university education, in contrast to viticulture. International students may be more likely to study in Australia if their work will be of relevance once they have to return to their homelands. This is more likely if they can do field work in their homelands or if they are jointly supervised by an international scientist. Good collaborative relationships with international research centers or universities for joint supervision is a way of attracting high quality students to work in Australia.
- **Planning for replacement of ageing national expertise:** Declining horticulture enrolments by Australian nationals in Australian universities mean that the next generation of scientists to work in Australian departments of agriculture and universities are more likely to come from overseas. Strengthening research collaboration now can help to ensure that future graduates of overseas universities have the skills, background and expertise that is most likely to be of value to Australia in the future.

4.3 The impediments faced by Australian researchers when initiating and participating in international research collaborations and practical measures for addressing these

Industry pressure for short-term solutions to local problems: There is substantial political pressure to make state Departments of Agriculture show more short-term economic benefits for the whole Australian community as the political power of their traditional rural constituencies declines. Co-funding of research by industry also tends to increase pressure to solve immediate problems and not to think of long term strategic industry changes which often require looking overseas for alternative ways of addressing problems. Yet another international trip by a local scientist is not necessarily seen as a positive way to spend industry money. This also increases pressure on researchers in Departments of Agriculture that they cannot 'take time away' from work on immediate industry concerns on which they must report progress. In the distant past some Departments of Agriculture had substantial international training or collaborative programs but these appear to have been cut back in favor of greater focus on local issues.

Solutions: Invite international participation in national research planning exercises, encourage industry funding for more international research collaboration, encourage more industry study tours of international vegetable research and development efforts, provide more incentives to Department of Agriculture staff to take up study tours, sabbaticals or short-term collaborative projects with international partners.

Unfamiliarity with international research donors: Those who are most familiar with working overseas are in universities or international appointees to state Departments of Agriculture. The majority of those who could productively collaborate with international institutions have less experience in obtaining ACIAR grants or working with other international donors. Some opportunities such as those provided by the Endeavour scholarships or travel grants from the Australian Academy of Sciences may also need greater publicity.

Solutions: More active promotion of Australian sources of funding for international agricultural research collaboration, more appointments of internationally-experienced researchers to work in Australian universities and Departments of Agriculture.

Institutional conflicts between ACIAR and AusAID: We have seen this in the field show up as a lack of coordination between the two organizations, delays in getting some AusAID projects going and a lack of clarity about project directions. This reduces the incentives for Australian or international researchers to get involved in such projects.

Solutions: Better coordination between Australian institutions funding international research and development work that will encourage more active involvement of researchers in submitting project proposals to them.

4.4 Principles and strategies for supporting international research engagement.

National:

- More publicity concerning travel opportunities for Australian researchers to build collaborative research proposals with international partners.
- A more coordinated approach to supporting international research work by ACIAR and AusAID
- Greater support for the development of institutional capacity to support tropical vegetable research in Australia.
- Easier means of organizing coordinated funding between national research donors such as GRDC and international research donors, particularly ACIAR.

State:

- Time and funding set aside for researchers to encourage greater international research work with long-term payoffs.
- Development of specific international cooperation groups within state Departments of Agriculture to help build connections and projects involving skilled Australian researchers and international researchers.

Institutional:

- More scholarships for international students to do research on vegetable production in Australian universities if partnered with an international institution.
- Wider promotion of funding opportunities for Australian post-graduate students to work internationally on agricultural research projects.

Individual:

- Greater awareness of opportunities for international application of their research and development expertise, and where to start to get funding.