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Committee Secretary
Joint Standing Committee on Foreign Affairs, Defence and Trade
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Dear Madam, Sir,

The Australian Government conducts a broad range of inquiries primarily to inform policy making decisions. In this instance, the Joint Standing Committee on Foreign Affairs, Defence and Trade is making an inquiry and will likely provide a report to the Minister for Foreign Affairs that will make recommendations on Australia's role in supporting development partnerships in agriculture and agribusiness within the aid program.

AVRDC – The World Vegetable Center (AVRDC) implements the project 'Improving Income and Nutrition in Eastern and Southern Africa by Enhancing Vegetable-based Farming and Food Systems in Peri-urban Corridors' (FSC/2012/111) funded by the Australian Centre for International Agricultural Research (ACIAR) of the Australian Government. The project falls in the ACIAR program area of 'Horticulture for AIFSC' and covers the following countries in Eastern and Southern Africa: Ethiopia, Malawi, Mozambique, Tanzania. The project duration is 3.5 years (24 June 2013-31 December 2016).

For almost 40 years AVRDC has been the world's leading international non-profit research and development institute committed to alleviating poverty and malnutrition in developing countries through increased production and consumption of nutritious and health-promoting vegetables. AVRDC, headquartered in Taiwan, was founded in 1971. In the early 1990s, operations were gradually expanded to sub-Saharan Africa. A regional center was established in Arusha, Tanzania in 1992.

AVRDC maintains the world's largest public sector vegetable genebank with highly diverse accessions of vegetable crops and a significant collection on hardy, nutrient-dense traditional vegetables, as well as on wild relatives of common vegetables. AVRDC's improved varieties, which are released by both the public and private sectors, are planted on millions of hectares around the world. Its vegetable production, postharvest and nutrition-related technologies have made major improvements in smallholder incomes and improved the consumption of vegetables, thus contributing to a reduction in malnutrition. AVRDC has expertise in addressing constraints throughout the vegetable value chain, from germplasm and seed to marketing and consumption incorporating studies on breeding, production, postharvest, processing and marketing.

We hope the attached report will be beneficial to the Joint Standing Committee on Foreign Affairs, Defence and Trade.

Yours sincerely,

Part 1: An insight to what ACIAR has achieved to support sustainable economic growth, improving livelihoods and strengthening food and nutrition security

The ACIAR project 'Improving Income and Nutrition in Eastern and Southern Africa by Enhancing Vegetable-based Farming and Food Systems in Peri-urban Corridors', or VINESA in short, pursues the goal to contribute to reduced malnutrition and poverty, through diet diversification, by promoting the production and consumption of vegetables as affordable sources of essential vitamins and micronutrients while enhancing youth employment and income by building their capacity for peri-urban, market-oriented, vegetable (indigenous and introduced) production. The project achieves this by bridging research and practice by focusing interventions on highly visible sites, creating 'best practice hubs' embedded within both current and potential (youth) vegetable farmers. Such best practice hubs will concurrently (i) test and fast-track options for increased production and postharvest handling and, (ii) build the capacity of youth to explore and enable opportunities for profitable self-employment. In four years, VINESA's best practice hubs will become centers for crop trials and experimentation that will also help to equip 500 young farmers from 120 communities with agribusiness skills and empower about 6,000 small vegetable producers with productivity-enhancing technologies within effective value chains.

The purpose of the project is to improve vegetable variety and seed supply systems, enhance crop management practices and develop value chain effectiveness, and thereby increase market returns for vegetable growers in peri-urban settings in the target countries. Specifically, the project aims to specific Objectives are to (i) identify, test and promote crop management and crop protection technologies and practices for increased and safer production of vegetables; (ii) to identify, evaluate and deploy improved varieties and high quality seed of selected vegetable crops; (iii) to strengthen postharvest systems the potential and feasibility for value adding and processing will be assessed, especially looking at technologies for improved postharvest storage and more effective value chain relationships; and (iv) to strengthen national vegetable research and development capacity and linkages.

By generating knowledge, transferring know-how, and strengthening research-to-delivery capacity and linkages, VINESA is enhancing the contribution of vegetable research to nutrition, income and livelihoods.

Part 2: Some examples of agricultural innovation that have been delivered through the partnerships in supporting agricultural development and inclusive economic growth

In the project, four best practice hubs have been successfully set up, one each in Ethiopia, Malawi, Mozambique and Tanzania; the best practice hubs are now centers for crop trials, experimentation and training. About 64 elite germplasm has been selected and distributed based on their market acceptance and nutritional value to enrich the local vegetable and seed supply and distribution system in each country. These plant materials are being evaluated, adapted and adopted by VINESA's research and development partners and farmers both at station and farm levels.

To date, VINESA has equipped a total of 185 trainees (105 men, 80 women) with the skills for producing more and safer vegetables in a profitable way. In a series of six-month training sessions, these young farmers have learned how to grow vegetables that they can sell by identifying existing market opportunities, identifying other value chain players to partner with, and pinpointing and tackling post-harvest losses. Following analyses of soil samples in the four best practice hubs, it was evident that most farmers' fields lacked sufficient macro-nutrients to support vigorous vegetable crops. Raising seedlings in plastic trays, and use of low-cost combinations of crop/animal residues and inorganic fertilizers is helping farmers to raise healthy seedlings in nutrient-deficient soils. Other training packages promoted at the BHPs include growing of crops using correct types and levels of pesticides to reduce contamination risks to vegetables, farmers and the environment; use of low-input technologies such as 'zero energy cooling chambers' to prolong storage after harvest; and recipes to promote vegetable consumption to diversify diets. Young

farmers that graduated from the best practice hubs are now using integrated pest management practices such as planting resistant crop varieties, proper crop nutrition, and timely planting and weeding to reduce the use of pesticides. These practices are minimizing contamination of soils and water. Low-cost drip irrigation systems being used at the best practice hubs are helping farmers to learn how they can increase water use efficiency and reduce soil erosion by delivering the right amounts of water and soluble fertilizers directly to crop's roots zone. VINESA best practice hubs are thus becoming centers of innovation for promoting the economics of use of water especially in moisture deficient months and countries.

Part 3: How have the partnerships promoted gender equity, women's economic empowerment and health

Among project stakeholders and partners, there is a better understanding of how gender relations impact behavior and practices of farmers at the best practice hubs. This awareness has guided project teams in the design and delivery of training activities in the best practice hubs at more appropriate days and times when more women are available to ensure that they too benefit from training as much as men.

Following a gender case study in the four project countries, it is evident that the role of women in vegetable production at home and in the best practice hub communities has gained more recognition. After realising the need to increase the number of women in the subsequent groups of farmer trainees, men and women have learned to share activities in production and marketing of vegetables, a practice which is gradually being adopted by households and the community. For example in Ethiopia, there was only one woman among the first group of trainees in January 2015. Now there are 10 women in the third group of trainees, highlighting the willingness, interest and ability of women to participate in smallholder vegetable farming. For all countries, greater participation of women in decision-making, access to land, and involvement in training will gradually usher in better sharing of returns from vegetable farming.

In some African cultures, it is believed that vegetables are a diet for the poor while in other cultures vegetables are meant for women and children. VINESA has been promoting 'eat more vegetables' campaigns to reduce effects of these beliefs. Twenty five trainee graduates from the Maasai community in Tanzania has sparked change of attitude among men in their communities start eating vegetables.

Based on in-depth training on group dynamics, entrepreneurship and gender, there is a greater recognition among the best practice hub graduates of the importance of trust and commitment among group members. A cohesive group is likely to attract support in training, funding and connection to markets. Equity Bank has trained VINESA farmers in Tanzania on importance of group dynamics and development of business plans. About 45 best practice hub graduates have savings in the bank and plan to take a loan to fund their farming activities soon. Project teams in all countries are conducting gender case study whose findings will identify social inequalities that may prevent the formation of more inclusive vegetable value chains.

Part 4: How have the partnerships benefited from involving the private sector and how could this be enhanced

Market linkages with private seed companies are especially pronounced in Tanzania, due to a large number of private vegetable seed companies. Fifteen young farmers are growing seeds using seed production protocols taught at the best practice hubs, thereby getting higher returns. These companies are Alpha Seeds, Kibo Seeds, East-West Seeds and East Africa Seeds in Tanzania. In the other three countries, the role of private companies in vegetable seed sector is not as robust as that in Tanzania and best practice hub trainees are exploring opportunities of producing and selling quality declared seeds (QDS) using protocols from AVRDCD on good seed production and preservation.

Commercial opportunities beyond the seed sector also exist and are capitalized upon in the project. In Tanzania, Darsh Industries (a vegetable processing company) has expressed willingness to buy tomatoes from VINESA training activity graduates if they could guarantee a continuous supply of quality tomatoes. About 15 graduates are seeking contracts from companies who will buy seeds after tomato processing. In Mozambique, a large number of farmers are importing vegetable seedlings from South Africa. VINESA graduates are working with a commercial seedling producer in Moamba to meet this demand of healthy seedlings thereby creating jobs and generating income. About 20 graduates in Mozambique have teamed up with a local farmer to revive a project to produce tomato seedlings for sale at considerable lower price (US\$ 0.07) to other farmers who have otherwise been importing seedlings from South Africa at a much higher price (US\$ 0.17) per seedling. Three years ago, this farmer stopped producing seedlings due to huge losses of seedlings from pests and diseases as the market for seedlings was not very developed then. The skills from the trained youth will come in handy in the revival of this venture to tap business from increasing number of farmers who prefer to buy seedlings instead of seeds.

Networking with other projects and programs is likely to foster utilization of VINESA's outputs and outcomes. For example, collaboration with ACIAR-funded project called 'Farm power and conservation agriculture for sustainable intensification (FACASI)', best practice hubs graduates took part in a training offered by FACASI on conservation agriculture, entrepreneurship, and operation and management of farm implement. A business model between credit providers, farmers and seed companies will see these farmers acquire a two-wheel tractor driven seed extractor that will favor production of large quantities of clean seeds at reduced costs.

Using their record keeping, group savings and group management skills, 25 VINESA training graduates from Tanzania have formed a Savings and Credit Organization (SACCO) which gives credit at an interest of 6.7% per month to help members in purchase of seeds, pesticides and fertilizers (commercial bank's rate is 2% per month). In December 2014, the group made a profit of TZS 2,000,000 (USD 2,000) over one year period. In Ethiopia, proceeds from the sales of vegetables from the best practice hubs served as a starter capital for group savings for the first and second batch of trainees.

As VINESA's second year unfolds, best practice hub graduates are discovering that vegetable production and marketing opportunities do exist. These include meeting the high demand for technologies and practices to reduce losses from pests, diseases and weeds; willingness of seed companies to contract best practice hub graduates to produce quality seeds; using simple technologies to prolong storage, and add value to vegetables; and taking advantage of high value local and export markets. These opportunities will convert VINESA best practice hub graduates into vegetable business professionals who will grow vegetables that consumers and other customers prefer, and as a result, graduates will obtain premium prices and, ultimately, have more 'cash in their pockets'.

Part 5: What are some of the innovative modalities and practices to improve Australia's contribution to agricultural development, better nutrition and inclusive economic growth in Kenya, Tanzania, Mozambique and South Africa

The project uniquely bridges research and practice by focusing interventions on highly visible sites, creating best practice hubs. The best practice hub concept includes a multiplier effect by leveraging the knowledge of recent project training graduates. After their six-months training, each graduate is tasked to train 10-12 farmers from communities around their best practice hub. About 2,000 farmers around the best practice hubs are expected to use improved practices and technologies such as plastic trays to raise healthy vegetable seedlings, low-cost composts to address crop nutrients deficiencies, and grow vegetables that are demanded by the local market outlets. It is planned that by 31 December 2016, about 320 graduates from the best practice hubs will have passed their acquired skills to 4,000 peer farmers around their communities.

Concretely, a farmer-to-farmer technology diffusion model will be used; graduates are provided with vegetable seed kits to set up demonstration plots in their farms for training of other farmers and farmer-to-farmer training is monitored with the help of local extension service providers. In Ethiopia, for example, best practice hub graduates are serving as 'knowledge multipliers' by showing farmers who were formerly dependent on teff (*Eragrostis tef*, a local cereal) how to produce and consume traditional vegetables. In Tanzania, best practice hub graduates have sparked a change of behaviour among men in a Maasai community where vegetables were previously eaten only by women and children.

Part 6: Suggestions for development partnerships in agriculture and agribusiness in promoting prosperity, reducing poverty and enhancing stability in Kenya, Tanzania, Mozambique and South Africa

Huge post-harvest losses of up to 50% have been reported by small-scale vegetable farmers around the best practice hubs. Farmers at the best practice hubs are reducing these losses by undertaking pre-cooling, sorting and grading and standardizing their produce to prolong shelf-life while adding value. Selected technologies such as solar driers, zero energy cooling chambers (ZECC) and grading sheds have been set up at community levels to help graduates in training other farmers and for their own use. The project is scaling out simple but effective technologies from AVRDC for farmers' use to reduce post-harvest losses. Farmers have started using these technologies to collectively bulk their produce before subsequently taking them to market few days thereafter.

Lack of provision of post-training support in the project budget is a major challenge but is being addressed through novel partnerships specific to each focus country. In this regard, VINESA is soliciting support in credit services, further training and linking farmers to viable markets from stakeholders, other projects and program interventions. For example BINDZU, a private grower, distributor and seller of fresh vegetables in Mozambique has started working with VINESA farmers from Moamba Best Practice Hub. BINDZU's business strategy is a direct application of Value Chain Thinking, and targets import substitution of high quality vegetables. To achieve this, the agribusiness company provides access for small vegetable producers to high value markets such as supermarkets and hotels in Maputo and Matola, for which they charge 10-15% of revenue generated. Collaboration with farmers includes providing training and inputs for farmers, as well as involving them in negotiating prices with retailers, which both increases transparency (creating more trust) and builds farmers' understanding of market requirements.

Use of information and communications technology (ICT) platforms to access market information is critical. AVRDC is developing an ICT platform called VegOneX to provide weekly information on vegetable prices and volumes at major markets which is being disseminated through a local radio, Farm Radio International. This information will help VINESA graduates in Tanzania to make a real-time decision on what vegetables to grow, how much and when.

Limited support exist for best practice hub graduates in form of affordable credit, land access, and business training. Lobbying stakeholders to provide trainees with business and financial support, motivating communities to give women trainees access to land, and re-sowing of trials are some of the strategies being used to address these challenges. However, real challenges exist as private credit providers expect applicants to have a long history of credit worthiness to qualify for farm credit. To achieve this, farmers are being encouraged to borrow from group savings where these exists, and also to bank some of their farm incomes at credit providers' banks.

There is limited experiences from farmers on growing and utilization of traditional vegetable crops such as amaranth, okra and bitter gourd in Ethiopia and Mozambique. Farmers are now using skills and knowledge from their training to control diseases and insect pests thereby benefiting from high nutritive and health values in these vegetables.