

## TECHNICAL ASSISTANCE COMPLETION REPORT

Division: MKAE

<b>TA No. and Name</b> TA 6011-REG: Strengthening the Collaborative Vegetable Research Network in Cambodia, Lao People's Democratic Republic (PDR), and Viet Nam (Phase II)			<b>Amount Approved:</b> \$650,000	
			<b>Revised Amount:</b> N/A	
<b>Executing Agency:</b> Asian Vegetable Research and Development Center (AVRDC)	<b>Source of Funding:</b> Japan Special Fund	<b>TA Amount Undisbursed</b> \$32.40	<b>TA Amount Utilized</b> \$649,967.60	
<b>Date</b>			<b>Completion Date</b>	
<b>Approval</b>	<b>Signing</b>	<b>Fielding of Consultants</b>	<b>Original</b>	<b>Actual</b>
17 Dec 2001	5 Mar 2002	4 April 2002	31 Dec 2004	30 Nov 2005
			<b>Account Closing Date</b>	
			<b>Original</b>	<b>Actual</b>
			31 Dec 2004	28 April 2006
<b>Description</b> The economies of Cambodia, Lao PDR, and Viet Nam (collectively called the CLV countries) are predominantly agrarian with most of their rural population fully or partially engaged in the agriculture sector. Vegetables are widely grown in this region, and provide an important source of cash income for small farmers. Vegetables also provide people with essential micronutrients such as vitamins and minerals in addition to supplying carbohydrates, proteins, fats, and dietary fiber. However, the average vegetable consumption and productivity in these countries still remain low despite their large potentials. The principal factors for low vegetable productivity include severe infestation by insects, pests, and diseases, and poor adaptability of the available varieties to the hot and humid conditions of the region. There are also substantial fluctuations in vegetable supply and prices due to poor and inconsistent product quality in the CLV countries. To address these issues, the CLV countries and the Asian Development Bank (ADB) collaborated in establishing a regional cooperation network in vegetable research under the first TA project. <sup>1</sup> The above-captioned TA (the TA) was identified as the second phase and formulated by AVRDC to further pursue collaborative vegetable research and disseminate the research findings among the national agricultural research systems (NARS) of the CLV countries. The TA was consistent with ADB's policy on agriculture and natural resources research <sup>2</sup> and aimed at contributing to ADB's overarching objective of poverty reduction.				
<b>Objectives and Scope</b> The overall goal of the TA was to increase vegetable production and productivity in the CLV countries. The purpose of the TA was to further develop and disseminate improved vegetable varieties and production technologies. Specifically, the TA aimed to (i) disseminate environmentally sustainable technologies for integrated pest management (IPM) and improved vegetable seeds, (ii) build capacity among researchers, extension agents and farmers through hands-on training and workshops, and (iii) promote public-private partnership in agricultural research and development. The TA project scope included (i) germplasm evaluation, field verification and technology development; (ii) IPM for controlling damages due to diamondback moths (DBM) on cruciferous vegetables; (iii) improvement of seed production and multiplication technologies through enhanced public-private partnership; and (iv) capacity building, information exchange, technology transfer, and impact assessment.				
<b>Evaluation of Inputs</b> The TA was designed based on the achievements and lessons learned during the first phase (TA 5680), and considered relevant to the needs of the NARS for improved vegetable production. It was also in line with the agriculture sector strategies of the CLV countries to diversify agriculture and promote higher-value commercial products. The terms of reference for the TA were clear and adequate to achieve the TA objectives although the component for IPM could have covered a wider scope than DBM on cruciferous vegetables. The TA provided the services of the AVRDC's Asian Regional Center (ARC), which is located within the compound of Kasetsart University in Bangkok, Thailand, including a full-time project coordinator, a training specialist and supporting staff. In addition, the services of an impact monitoring and evaluation specialist (6 person-months) and a seed regulation specialist (10 days) were engaged by AVRDC on an individual basis. The use of ARC was effective in ensuring close communications with the NARS of the CLV countries and provision of timely advisory support for them. However, there were managerial problems due to inadequate consultation between the head office of AVRDC located in Taipei, China, and ARC. This often led to delays in the finalization of annual work plans and budget, and TA reports. The project coordinator was replaced in November 2003 due to his retirement from AVRDC. Overall, the TA consultant inputs were satisfactory. ADB carried out annual TA review missions in conjunction with the workshops organized for the annual review and planning for the TA activities to discuss the achievements, and agree on the work plan and				

<sup>1</sup> ADB. Technical Assistance for Establishment of Vegetable Research Network for Cambodia, Lao PDR, and Viet Nam, for \$600,000, approved on 8 April 1996, Manila (TA 5680-REG).

<sup>2</sup> ADB. 1995. *The Bank's Policy on Agriculture and Natural Resources Research*. Manila (R253-95).

budget. As the TA activities were highly complementary with the project funded by the Swiss Development Cooperation (SDC) for human resource development in vegetable research and extension, the annual workshops for the TA were jointly organized with SDC and covered both the TA and the SDC project. This arrangement substantially facilitated field-level coordination between ADB and SDC. During TA formulation, the CLV countries designated their respective national implementing agencies: the Department of Agronomy and Agricultural Land Improvement in Cambodia; the Department of Agriculture in Lao PDR; and the Research Institute of Fruits and Vegetables in Viet Nam. Despite delays in the transfer of project funds from AVRDC to NARS of the CLV countries, these national agencies provided adequate facilities and counterpart staff to carry out field research on vegetable production and disseminate research findings in various vegetable producing areas according to the agreed annual work plans. NARS' performance was satisfactory under the TA. There was a long delay in initiating the formulation of a participatory benefit monitoring and evaluation mechanism due to the late agreement on the implementation arrangements for benefit monitoring and evaluation and the late recruitment of an external consultant by ARC. As a result, benefit monitoring and evaluation were only partially completed due to the lack of complete baseline information.

#### **Evaluation of Outputs**

AVRDC assisted NARS of the CLV countries in carrying out the TA activities generally according to the work program and agreed schedule. The TA mostly exceeded the quantitative targets set for the four TA components: (i) more than five superior vegetable lines with improved farm practices were disseminated to farm communities of the vegetable growing areas under the component for field verification and technology dissemination; (ii) promising parasites (natural enemies) of DBM were released on more than two major crucifer growing areas under the IPM component; (iii) seed production trials of more than 15 improved varieties were conducted under the seed production and multiplication component except for Cambodia and Viet Nam; and (iv) NARS conducted a total of 39 in-country training programs and workshops with support from AVRDC for about 690 trainees, including about 490 lead farmers, and implemented a total of 21 farmers' field days under the component for in-country training and field days. In addition to these in-country activities, the TA supported (i) regional training programs on DBM control and seed testing and production techniques at ARC for 40 scientists; (ii) production of training guides and translation into national languages; (iii) training seminars on seed regulations; (iv) network establishment with private seed traders and associations; and (v) research infrastructure development (seed storing and drying facilities, and training equipment). AVRDC produced a TA inception report, semi-annual progress reports, a draft final report, a final report and a farmer evaluation report. The final report includes the country reports from the NARS of the CLV countries, which provide useful information on the details of their in-country activities under the TA. Overall, the TA outputs exceeded the targets set for the TA activities and contributed to the dissemination of appropriate findings on vegetable research in accordance with the original terms of reference. The TA's contribution to the network establishment for NARS with private seed companies and trade associations is important in the CLV countries where the entry of the private sector has just begun.

#### **Overall Assessment and Rating**

The TA was implemented through close collaboration with NARS of the CLV countries. It is considered that the evaluation and seed production technologies on the selected vegetable varieties have been fully institutionalized under the TA, and that adequate research personnel have been trained for the IPM techniques on DBM problems. These are expected to contribute to sustainable impact of the TA on the NARS activities. The training programs and workshops substantially achieved the TA objective of enhanced dissemination of vegetable research findings and achievements. Overall, the TA is considered successful.

#### **Major Lessons Learned**

The TA should have initiated the establishment of a participatory monitoring and evaluation system from TA inception to conduct effective impact evaluation activities with participating farmer groups. AVRDC needs to further improve internal procedures and communications with ARC for improved management of regional activities involving ARC.

#### **Recommendations and Follow-Up Actions**

The regional TA for improving rural livelihoods through development of vegetable-based post-harvest technologies in the CLV countries<sup>3</sup> was approved in December 2004. This follow-up TA is timely and appropriate as the third phase of collaborative research with its particular focus on the post-harvest technology for vegetable products. The research achievements during the first and second phases need to be fully utilized through appropriate selection of vegetable varieties under the follow-up TA.

Prepared by     Masahiro Otsuka     Designation     Principal Project Economist    

<sup>3</sup> The estimated TA amount is \$700,000, constituting one of the 5 components of ADB TA 6208-REG for the Ninth Agriculture and Natural Resources Research at International Agricultural Research Centers, for \$3 million, approved on 16 December 2004.