School gardens in Bhutan help children learn about sustainable agriculture, nutrition and health

School children are learning how to grow vegetables and that eating more vegetables can enhance their health, as part of the Vegetables Go to School project funded by the Swiss Agency for Development and Cooperation (SDC). This project conducted in collaboration with AVRDC – The World Vegetable Center is presently active in Bhutan, Burkina Faso, Indonesia, Nepal and the Philippines, and is now in its third year of implementation.

Safe and environmentally friendly agricultural methods, such as composting and biopesticides are promoted and taught to the children as they plant, cultivate and harvest vegetables in a designated garden area on their school grounds. They also learn that having clean water, sanitation and hygiene (WASH) practices are important to their health, and consuming diverse and nutritious food including vegetables can make their bodies better nourished and help fight against many diseases. Children involved with the project are encouraged to take the knowledge gained in school to their parents and communities and establish home vegetable gardens with their parents, to improve their family's nutritional status. They are urged to tell their family members about the many benefits of eating more vegetables.

In Bhutan, the teachers who implement Vegetables Go to School involve the children in a wide range of activities from preparing the land to planting to weeding and watering to managing pests to harvesting. They learn how to make compost from locally available materials and this is especially important since soil fertility is a major constraint for farming in Bhutan. Terracing is a key intervention to reduce soil erosion which is implemented in the gardens. The children’s parents are also highly involved with the development of
Students participate in land preparation (left), watering (center) and weeding (right) in the school gardens in Bhutan.

School gardens and they help with various tasks, such as the labor required to keep the gardens productive. Numerous training activities followed by field visits have been conducted by Bhutan’s Project Manager and team members to build capacity among the teachers responsible for implementing the project.

When asked, the children participating in the project are able to answer questions relating to the importance of eating vegetables and integrating WASH activities to improve their personal health. They can also easily explain what they have learned from working in the school garden. A diversity of vegetables are grown in Bhutan’s school gardens, including chili pepper, eggplant, pumpkin, tomato, green gram, okra, onion, cucumber, spinach, cabbage, broccoli, radish, turnip, carrot, garlic, peas, beans and other green leafy vegetables.

Difficulties encountered vary somewhat according to the garden and the school, but deer and other wild animals eating the crops can be a problem at some sites. Fencing is an important pest management measure in these locales.

To handle such wild animal problems, the Project Manager and team members have supplied fencing materials like iron angle posts and GI barbed wire to fence the school gardens.

School principals, teachers, children and their parents are generally quite positive about the project and its potential impacts on their communities in terms of nutrition, WASH and agriculture. The present Government of Bhutan has mandated that the schools have boarding facilities to augment vegetable and livestock programs for better nutrition aspects after the World Food Programme is phased out in 2018. The concept of this project – linking school gardens with nutrition and health – will be replicated in all schools in the future. The Programme Coordinator for Bhutan’s School Agriculture Programme, Mr. B.B. Rai, who is also the Country Project Manager for the Vegetables Go to School project, said that the integration of nutrition and WASH aspects with school gardening, which is the main thrust of this project, has immensely helped the students of rural Bhutan.

Source:
Greg Luther, Global Technology Dissemination, AVRDC-The World Vegetable Center; B.B. Rai, Ministry of Agriculture & Forests, Desang Dorji, Ministry of Education, Royal Government of Bhutan; Ray-yu Yang, Nutrition, AVRDC; Bharathi Lakshmi, AVRDC Regional Center for South Asia, India

Photos:
VeGoTs Schools of Bhutan https://www.facebook.com/groups/334526730031207; Greg Luther
Use of AVRDC’s improved leafy vegetables to diversify smallholder cocoa farms: experiences from Cameroon

Cameroon is one of the world’s largest producers of cocoa; 209,905 tons of cocoa beans were produced in 2014. Cocoa is the main cash crop of the Centre region of Cameroon and one of the main export commodities of the country. However, unstable international cocoa prices coupled with weather variability have increased food insecurity and malnourishment among cocoa farmers.

Furthermore, even when cocoa prices reached high peaks in international markets, smallholder farmers received only 3.5 to 6.4 % of the final value of the chocolate bar. With highly volatile cocoa prices and small returns to cocoa producers, smallholder farmers need to embrace crop diversification of the cocoa farms to mitigate the uncertainty from cocoa prices.

Ms. Orlane Azonfack, a MSc student intern from AVRDC, helped farmers collect their first vegetable harvest in the cocoa farm.
Mr. Joseph Ondoua, a cocoa farmer who benefited from AVRDC technologies and training, works with his family on preparing the land for transplanting vegetables from his nursery to the cocoa field (top & below)

Cocoa farmers in the Centre region of Cameroon did not intercrop cocoa with vegetables in the past despite the large spacing between cocoa trees (3 m × 3 m). Vegetables, especially leafy vegetables, could diversify the revenues and nutritional diet of small-scale cocoa farmers. Intercropping vegetables with cocoa trees is a relatively less-known and -documented practice. Growing leafy vegetables is a good way to build food security because these vegetables provide high levels of micronutrients as well as an additional source of income that could complement the traditional income source, which is mainly from the cocoa cash crop.

AVRDC – The World Vegetable Center has initiated activities that intend to diversify cocoa farms with improved leafy vegetables under the CGIAR-funded Humidtropics project. In April 2015, the Nkolguet farmers’ community under Nyong-et-So'o district of the Centre region selected a number of cocoa producers to host farm demonstrations of intercropping leafy vegetables in cocoa farms. Three different ages (1, 3 & 5 years old) of cocoa plantations were selected. The older cocoa trees created more shade.

AVRDC provided seeds of two amaranth and four nightshade varieties, and trained selected cocoa farmers on nursery techniques and on-farm vegetable management. Poultry manure and urea were used to fertilize the leafy vegetables. Farmers also set up leafy vegetable nurseries and transplanted the vegetable seedlings to cocoa farms.

One month later, farmers started to harvest the first round of the amaranth and nightshade, and have harvested three times in three months. “It was our first time to intercrop something in the cocoa farms,” said Mrs. Sabine Ondoua, who was one of the farmers hosting the on-farm leafy vegetables demonstration. “Planting leafy vegetables in the space between cocoa trees could help us feed children during the hunger gap that is the period before harvesting…or when cocoa prices are low,” added Mr. Elouma Atangana Bernarbe, another cocoa farmer who hosted on-farm vegetable demonstration trials in his cocoa farms.

Source and photos:
Jean-Claude Bidogeza, AVRDC - The World Vegetable Center, West and Central Africa, Liaison Office in Cameroon
Interviewing women participating in a group nursery in Potangali village four months after business management training

Reflections on the establishment of group nurseries by women in Jessore, Bangladesh

Under the USAID-funded project, ‘Improving incomes, nutrition, and health in Bangladesh through potatoes, sweet potatoes, and vegetables,’ 15 women farmers from Jessore, a district located in southwestern Bangladesh, were trained by AVRDC in 2012-2013 on tomato grafting technology and healthy seedling preparation to address the emerging soil-borne diseases on tomato as well as creating nursery business opportunities for rural women. In the group nurseries women successfully applied grafting technology and raised grafted tomato seedlings to sell to tomato farmers who had problems with the soil-borne diseases; through this activity the women generated additional income. However, to sustain the nursery business the women cannot rely only on raising tomato seedlings during the off-season. Strengthening the business management skills for the women farmers and integrating a year-round production model that incorporates other vegetable seedlings into their nursery operation is pressing and imperative.

To facilitate integration of technology adoption, business management, links to micro-credit and tomato growers for nurseries, a joint initiative, ‘Vegetable Technology-Financial Development Approach and Modality’ between AVRDC, the Association of Social Advancement (ASA) and the Asia-Pacific Rural and Agricultural Credit Association (APRACA), was established in 2014. On 21-23 April 2015, a training workshop on business management skills, including market survey, calculation of expenditure, profit vs. loss and yearly cash flow, was conducted by ASA to further strengthen the capacity of the group nurseries. It is expected that women farmers would be able to apply those skills and sustain the nursery business after the training. However, besides the business management capacity and market demand, several critical issues that are also relevant to the sustainability of nurseries were discovered while operating the business this year.

In summer 2015, the nurseries encountered serious damage to the seedlings due to collar rot of scions and injury to rootstocks were caused by continuous heavy rain. The survival rate of the grafted seedlings dropped to 70% and one nursery even failed to produce any grafted seedlings this year. In addition, the nurseries are active only in the summer season with producing non-grafted and grafted tomato seedlings. To reduce business loss, they take orders from the farmers only at the beginning of the growing season. After continuous heavy rain or massive virus infection of tomato plants, farmers had more demand for tomato seedlings;
A training workshop on business management skills for group nursery members conducted in April 2015, Jessore

however, the nurseries were not able to respond to such urgent requests. Regular supply of seedlings is essential to attract farmers to buy from the nurseries. In addition to raising seedlings in summer, winter vegetable seedling production can also be included to ensure year-round operation.

Social constraints in running businesses are issues to be further examined. The women’s group nurseries cannot operate independently without help from male farmers. Vegetable seeds and inputs are accessible in the market only through male farmers. Conducting market surveys and attending field days are also challenging for women because of the gender norms that women seldom participate in public events. Furthermore, the nurseries need the male lead farmers in the village to help link with other tomato growers. The relationship between male and female farmers needs to be scrutinized. Moreover, manipulation of the nurseries by men to empower women should be avoided. The technical problems of technology adoption are more easily observed and overcome in the early stage. However, social issues such as whether farmers’ lives or gender equality are improved through the adoption of technologies cannot be easily evaluated without long-term observation.

Source:
Yi-chin Wu, Global Technology Dissemination, AVRDC-The World Vegetable Center

Photos:
Ko-hsin Yao, FlyingFish Photography, Taiwan; Marlowe U. Aquino, Asia-Pacific Rural and Agricultural Credit Association, Thailand