



Climate resilient, high value,  
intensive vegetable production

The Asian Development Bank (ADB) supported Cambodia BCCI project takes a multi-purpose, sustainable, biodiversity landscapes approach. The BCC Project covers 22 communes (12 in Mondul Kiri and 10 in Koh Kong) located across 10 districts with a total population of approximately 68,048 (2008 census) in both provinces and households numbering just over 14,000. The Project in both Koh Kong and Mondul Kiri provinces is predominantly in mountainous areas covered with protected forests, national parks, and wildlife sanctuaries. An estimated 2,600 households will benefit from the Project with diversified livelihood assets and/or income generating opportunities.

This primer is targeted to the following audience: Project Implementation Units; Provincial Department of Environment; Provincial Department of Agriculture Forestry and Fisheries (PDAFF), Forestry Administration Cantonment; District Officers, CEDAC, IIRR Staff and Asian Development Bank (ADB).

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Cambodia imports at least half its vegetable requirement from other countries. There is a growing concern about chemical residues. Consumers are now aware of the value of safe food, about dietary diversity and about the role of vegetables and fruit for better nutrition and health.





Farmers have also started to appreciate the value of diversifying away from cereals crops. They are now realizing the market potential of vegetables. Horticulture is emerging as an important livelihood option for smallholders, especially for women.





The challenge that small farmers face is the seasonality of vegetable growing: most of the vegetables are grown in the wet season. In the dry season, there are shortages of supply, and, the country has to depend on cross border imports of vegetables and fruits.



With the climate changing (non predictability, shifting seasons, rising temperatures, and variability of rain, etc.) even this wet season vegetable farming can become challenging and sometimes risky.





Climate smart good agricultural practices are needed to make farms more resilient to rising temperatures, variability in rain and long periods of drought.





Good climate resilient practice include: i) use of deeply prepared plots (using a tiller); ii) addition of compost and organic matter (to hold moisture in the soil); iii) reliance on animal manure (with very limited and targeted use of chemical fertilisers); iv) introduction of simple drip irrigation systems; v) use of mulching in the dry season, and vi) the use of well adapted, open pollinated varieties of seeds (both modern and traditional).



The basis for resilience is a healthy soil. Raised beds reduce the risk of flooding. Deep dug plots, lots of manure, diverse cropping systems, healthy soil life, and good moisture storage in soil benefits micro organisms and earthworms.





If the soils have low soil fertility, then small quantities of fertilizer can be added using micro dosing methods (targetted and spot application of chemical fertilisers, inserted two inches deep, in between plants). Liquid fertilizer and green manure can also be added. Chemicals are not advised when there is drought or high temperatures.





Intensive use of space (both horizontal and vertical space) is suggested. This way the maximum output is obtained per unit area. Diversified gardens also help reduce insect problems. Temperatures around the plants are lowered by mixed crops of different heights.



Cambodian soils are sandy and shallow (in the uplands and in rainfed lowlands). Fertility is poor, soils are acidic, and organic matter and micro-nutrients are limited. Compost, animal manure, and green leaf manure is essential for generating and sustaining agriculture.





Micronutrients are crucial for plant growth. This is what compost delivers effectively. Compost also helps reduce acidity and helps to store rainwater in soils. Long-term sustainability is only achieved through healthy soils.





Rainwater harvesting ponds characterize Cambodian landscapes.

Drip systems ensure a 10-12 month growing season.



Water is a major limiting factor in the dry season. Rainwater harvesting ponds can be used to provide supplementary (sometimes, life saving) irrigation to crops.





For easy maintenance, simple drip systems are advised. The more complicated systems break down after a few years. Simple “emitter systems” are the best. Ordinary PVC pipes with holes on the side will also serve the purpose. These are used mainly in the dry season to extend the cultivation for longer periods.





With climate change (too much or too little rain) its best to raise the seedlings in trays in small nurseries before outplanting. If crops and varieties are not adapted to the local conditions, then more pests can be expected. Pesticides will have to be used making food unsafe.



Only proven and well tested varieties should be used. Focus on a few reliable seed companies. Choose varieties that come from similar agro climatic conditions. Locally adapted varieties can be discovered by comparing different varieties.





In the dry season mulching of beds with straw and residues of previous crop is advised. Residues placed on the soil (in the dry season) helps reduce soil temperatures, preserves below – ground biodiversity (worms and beneficial bacteria and fungi) and helps conserve moisture.





Climate smart agricultural practices (those discussed earlier) help to increase production (yield), diversify production, reduce the risks of crop failure, and ensure that food is safe and nutritious.





Small commercial vegetable producers are unable to generate the volume needed for buyers. Community gardens and group based activities can make a difference: a critical mass of growers, in one location, can help to aggregate supplies, making it attractive for buyers to establish and maintain long time relationships with producers.



Using value-chain studies, production, input supply, and market related constraints and opportunities can be studied. These are done for each location and for each crop. This can help to improve service delivery, establish market linkages and provide assured income.



Farmer groups, processors and marketing groups need to work in an open, transparent and fair environment where mutual trust exists.





There are good prospects for creating a market niche for safely produced vegetables.

Food security, livelihood, nutrition goals can be achieved through semi commercial and commercial, intensive, diversified climate smart vegetable farming.



Vegetable gardens provide special opportunities for the economic empowerment of women. Inequities can be addressed when livelihood opportunities are targeted to women.





Child and family micro nutrient deficiencies can be addressed by growing and eating vegetables. Even if a garden is commercially oriented, women will always consider using some of their produce in their homes. Daily consumption of vegetables at home is usually a side benefit of market gardens.



Healthy families,  
economically  
empowered women and  
vibrant local  
communities arise from  
environmentally sound  
and sustainable  
interventions.









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