

# Homestead Agriculture in Drought & Salinity Affected Areas



Addressing climate resilience, livelihoods & nutrition challenges

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The Asian Development Bank (ADB) supported Cambodia BCC project takes a multi-purpose, sustainable, biodiversity landscapes approach. The Project covers 22 communes (12 in Mondulkiri 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 Mondulkiri 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 targetted to the following audience: Ministry of Environment (MoE), Forest Administration and BCC staff; Provincial Department of Environment; Provincial Department of Agriculture, Forestry and Fisheries (PDAFF); District Officers, CEDAC and IIRR Staff.**

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In Mondulkiri and Koh Kong many households have three food production systems: **Chamkars** or uplands, homesteads and rainfed lowlands for rice. Homestead areas in Cambodia range from small to large (half to one hectare) and under-utilized. Homesteads offer new “space” for introducing high value crops which contribute to the economic empowerment of women in households. Components include fruit trees, spices, and vegetables and small livestock.



In both drought and salinity prone areas of Mondulkiri and Koh Kong provinces, homesteads offer new opportunities for households to prepare for future climate change, by diversifying their livelihoods with crops, trees and small livestock. Homesteads are the perfect location for such diverse, multi-story and resilient, agro-forestry systems which can beat some of the affects of climate change. With rich, diverse and resilient homestead agriculture, households can have shorter periods of recovery from unusually damaging climate-induced events.



When rainwater harvesting ponds are in place, the opportunity for further high value crop production can be pursued in homesteads and around ponds. Ponds can also be used for fish production to augment the income opportunities to provide nutritionally relevant and economically important fish production. Ponds with easily accessible water sources can also improve the productivity of livestock.



Trees and livestock are an important asset-building program for homesteads, especially given the risks to annual crops of extreme weather events. A diverse combination of fruit trees and under-story crops (eg. turmeric, ginger, galangal) can help farmers cope with weather-induced losses to rice crops. Moreover, temperatures in the homesteads can be reduced by 2-3 degrees using multi-story agro-forestry systems.



Agro-ecological considerations, elevation household preferences and market opportunities help determine what crops combinations are appropriate.

In Mondulkiri, the following trees might be considered: **Avocado**, Citrus, **Mango**, Jackfruit, Robusta coffee, **Soursop** and **Durian** (Durian below 600 meters altitude only).

For Koh Kong, **Cashew**, **Mango**, **Jackfruit**, **Rambutan**, Mangosteen, Custard Apple and Durian may be considered. In both areas root and tuber crops, yams, banana, black pepper, ginger and gourds serve as understory crops.

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*Note: Priority crops are indicated above in underlined and italic bold fonts.*



For successful tree establishment and their protection from strong winds fruit trees are planted in 30 cm x 30 cm x 30 cm sized pits to encourage deep rooting. These pits store rainwater helping in good establishment of trees. Pits should be filled up with mixture of organic matter, manure and good soil. For small canopy plants, a spacing of 4 meters will do. For bigger trees, a standard 6 to 7 meters spacing is suggested.





All crop residues and organic waste in a homestead are utilized in compost preparation or used as mulch. Mulching helps provide food for soil microbial life and earth worms. Residue management is an important aspect of maintaining soil moisture and reducing soil temperatures especially, during long dry seasons. Combined with the diverse cropping, homesteads are resilient to higher temperatures and extreme weather events.



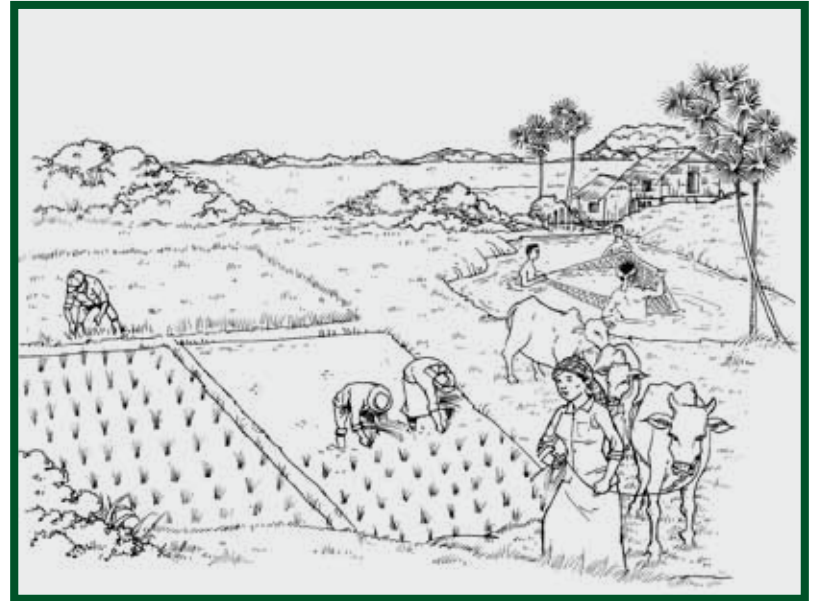
The introduction of legumes into homestead farming must be given attention because of their role in restoring soil fertility. Peanuts, Cowpea and Mung Bean are all promising crops due to their market demand (\$ 0.7 to 1 per kilo average in Mondulkiri and Koh Kong). These should be considered as high value crops because of their commercial importance. Root and tuber crops such as Cassava and Sweet Potato are valuable during extreme events. These crops can be stored for several months (compared to fast perishability of vegetable crops).



Livestock are high-value assets. A recent trend is for farmers in rice-growing areas sell livestock to raise funds to purchase tillers. Livestock play a significant role as source of meat and as economic assets and must be conserved. Homestead are still the best location for raising livestock. Small livestock are a high value commodity for small holders (cows, pigs and ducks/ chicken) that also deliver on the household nutrition goals.



High value cropping opportunities in homesteads of Cambodia are significant because of the amount of land area available to most households, and their current under-utilized state. Intensification and diversification are important strategies for maximizing the economic productivity of small holdings, while also improving their resilience to climate change. Outcomes from homestead development, include better ways to cope with losses on rice lands from drought, salinity and extreme weather events. Where water harvesting is done, more intensive vegetable production can be undertaken. Homesteads are of special relevance for the economic empowerment of women household members.



Dealing with climate change is not just an environmental issue, but its about dealing with social, economic and environmental issues together. For the many communities living around the Protected Areas and community forests in Mondulkiri and Koh Kong, alternative livelihoods need to be developed. These are important climate adaptation measures. Well developed homestead programs help reduce the reliance on forests. The ecosystem services provided by the forests help support healthy and sustainable communities.





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