

A hard nut to crack

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As an island nation, Sri Lankans are rather attached to their *pol*. It is a given that coconuts play a large role in our lives, after all, coconut trees are a common enough sight in Sri Lanka and their value is priceless to the Sri Lankan way of life – think of any event that does not have a coconut or some part of the tree playing a role, however minor, in it and you will realize that it is next to impossible to come up with an answer to that one.

The effect of climate change on crops has oft been talked about. Sri Lankan being so close to the equator, face its own list of challenges which, not surprisingly, also has a negative impact on one of the country's oldest key exports – coconuts.

Changes around us

A significant change in the distribution of weather patterns, including increases in global temperature, changes in rainfall patterns, changing the character of seasons and increasing the likelihood of extreme events such as flash floods, droughts and cyclones is what climate change generally means to tropical countries such as Sri Lanka. As food production interacts closely with water and all other natural resources, the predicted changes in the climate will have enormous impacts on agriculture, which would lead to serious consequences in food security. Sri Lanka has already witnessed climate change effects. According to scientists, Sri Lanka being an island nation situated close to the equator is more vulnerable to changes in temperature, floods, landslides, extended droughts causing water shortages; hence crop losses and destruction of natural resources are now becoming more and more frequent.

At the International Conference on Climate Change Impacts and Adaptations on Environment and Food Security held in 2013, the urgent need to develop and implement a national plan to prepare the communities to meet the challenges of climate change was stressed.

The participants included climate

Co-co-coconuts

From the coconut fronds, to the nuts to the kernel to the shell, every bit of the coconut is used. The coconut (the fruit of the palm *Cocos nucifera*) in one neat package that provides a high-calorie food, potable water, fiber that can be spun into rope, and a hard shell that can be turned into charcoal, to name a few of its uses. From cooking to cursing (*pol gahanawa*), to weddings to pilgrimages, from handicrafts to quenching the thirst, the ubiquitous coconut is a humble partner of Sri Lankan life.

In early Sanskrit writing, the coconut is referred to as a *kalpa vriksha*, which translates as a 'tree that gives all that is necessary for living'.

Antonio Pigafetta, a nobleman from Venice wrote in 1519 that "coconuts are the fruit of the palm trees. And as we have bread, wine, oil, and vinegar, so they get all these things from the said trees. . . With two of these palm trees a whole family of ten can sustain itself. . . They last for a hundred years."

Early times

The fruit has a special mention in the *Mahavamsa* texts of Sri Lanka, dating back to the First Century BC. In the Pacific, coconuts were

likely first cultivated in island Southeast Asia, meaning the Philippines, Malaysia, Indonesia, and perhaps the continent as well. In the Indian Ocean the likely center of cultivation was the southern periphery of India, including Sri Lanka, the Maldives, and the Laccadives.

The rapid expansion of the coconut industry had begun in the late 1850s and accelerated in the 1860s. Much of the expansion had occurred before coffee; however the ruin of the coffee industry may have contributed to the extension of area under coconut.

Soon tea and spice traders from Ceylon were shipping whole coconuts to London, an operation that proved impractical and expensive. A French company, J.H. Vavasour and Company, set up operations in Ceylon with a unique solution -they shredded the coconut meat and dried it thoroughly (desiccated coconut), making it easier to pack without spoilage. By the early 1890s they were shipping 6,000 tons of desiccated coconut, a figure that multiplied by ten in 1900.

(History sources: ceylonkokonati.com, sciencedaily.com, *A history of Sri Lanka* – K.M. De Silva)

change experts from the United Kingdom (UK), World Agroforestry Centre, India, the international development agencies such as the Food and Agriculture Organization, United Nations Development Programme, World Bank, Asian Development Bank, and the International Water Management Institute and the officials of the Ministry of Environment and

Renewable Energy, national research institutes and the national universities.

The consensus was that while mitigating efforts should continue to reduce the emission of greenhouse gases, it is most important to build the adaptive capacity and reduce the vulnerability of natural resources and communities.

Saving the nuts

Professor H.P.M. Gunasena, Chairman, Coconut Research Institute (CRI), speaking to *Ceylon Today* stated the CRI has developed strategies to adapt to climate change effects and the biggest problem is the low yield resulting from extreme weather events such as prolonged droughts.

"Due to droughts, the button nuts fall and the per palm yield is reduced. We are recommending ways to overcome drought effects by soil and water conservation methods, growing trees with coconut palms to change the microclimate and also advocating water harvesting techniques. Also, we are developing new varieties that could tolerate the drought effects and plan to release them in 2015," he elaborated.

Unfortunately, the coconut growers are not funded by any source for meeting the effects of climate change. "If they are compensated to overcome these effects, before the events, it will be a better safeguard," stated Prof. Gunasena.

He further stated that the CRI receives funds for development on climate change research from the government. "The Ministry of Environment is the focal point for climate change in Sri Lanka. They, in turn, are in constant touch with global organizations working on climate change adaptation and mitigation programmes. We also work with them very closely," he added.

Protecting a gift of nature

In the face of uncertainty about climate change and its impacts, the International Conference on Climate Change Impacts and Adaptations on Environment and Food Security highlighted the following:

1. Plenty of research is being undertaken by several national research institutions, development agencies and universities on various topics related to climate change, but they are scattered and uncoordinated. These research projects should be listed under a national research agenda and conducted as multidisciplinary programmes linked to the implementing agency of the national climate adaptation strategy, the Ministry of Environment and Renewable Energy for critical analysis and effective dissemination of the findings to the end users.

2. The need for advanced prediction of extreme events accurately as it is essential for national planning for managing unexpected disasters without disrupting the national development initiatives of the country.

3. Comparative assessment of indigenous knowledge and farmer's experiences in predicting climate change should be comprehensively studied, documented and disseminated among farmers for adaptation to climate change.

4. Home gardens dominated with trees have shown resilience for climate change for over 50 years; hence the

inclusion of a tree component in both annual and plantation agricultural lands for mitigation and adaptation to climate change should be encouraged. This will be of considerable importance in the coconut sector as pollination is adversely affected by extreme heat events which could be overcome by inclusion of trees in coconut plantations.

5. As rainfall receipts in the south-west and north-east monsoons are predicted to differ water harvesting and storage was suggested as important to secure water security for agricultural and domestic purposes. Other adaptations for water related issues discussed were the use of short duration rice and other crop varieties, methods of water saving techniques in agricultural production and preserving the tank system in the dry zone.

6. Crop breeding was highlighted as prerequisite to overcome biotic stresses. Thus, breeding of rice and other field crops, horticultural crops, vegetables and fruits, plantation crops resistant to climate change impacts were suggested. In the plantation crops screening for reproductive survivability, breeding varieties for heat stress, screen clones for tolerance to quality parameters, persuading growers to adapt good agricultural practices and changing the microclimate through the integration of agroforestry systems.

