Food and Agriculture Organization of the United Nations

Enhancing climate resilience through cultivation of rambutan for forest enrichment, Philippines

Source	FAO, Strategic Objective 5 - Resilience, in FAO
Keywords	Risk management, climatic hazards, typhoons, rambutan (plant)
Country of first practice	Philippines
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Sustainable Development Goals	No poverty, climate action and life on land

Summary

The objective of forest enrichment through planting of rambutan is to increase resilience to drought, heavy rainfall, and pest and disease impacts; serve as a source of additional income, and optimize the use of idle lots / plots as well as nearby forest areas with low vegetation cover.

Description

This practice was tested as part of the project "Enhanced Climate Change Adaptation Capacity of Communities in Contiguous Fragile Ecosystems in the Cordilleras" (2009 to 2011) between august 2010 and December 2011.

Through active participation and involvement of local stakeholders and end-users in both training and field demonstration activities, the project identified forest enrichment as a location-specific and appropriate option for climate change. The GPO was tested in the municipality of Kiangan located in the province of Ifugao, Philippines during the wet and dry seasons of 2010 and 2011.

Rambutan is a medium sized tree producing a red or yellow fruit round to oval in shape with hairs or tubercles on its skin. The flesh or aril is translucent and sweet. Most rambutan trees propagated from seed is not true-to-type and usually sour. In the Philippines the rambutan has a small crop in June to July and a main crop in November to January. Selected clones produce thick, firm flesh which is sweet.

1. Implementation of the technology

Rambutan typically thrives within 17 degrees from the equator. Since rambutan trees are often found in the lower or middle storey of various primary and secondary forests, the field-testing of this CCA option followed similar vertical stratification.

The standard biophysical limits of rambutan include: an elevation of 0 to 600 meters above sea level; an average annual temperature of 22 to 35 degrees Celsius; and an average annual rainfall of 2 000 to 3 000 mm. Rambutan is also said to prefer clay loam soil with a pH range of 5 to 6.5.

It can also grow in various soil types as long as these are not water-logged (World Agrofestry Center-Southeast Asia).

1.1 Planting and Maintenance

- Remove the plastic bag and plant the seedling into prepared hole without breaking the ball of soil. Cover the hole with top soil and press gently.
- Provide shade to the newly planted rambutan seedlings for a period of

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two weeks to a few months depending on the weather condition to enable the plant to recover from transplanting shock and to shade it from strong sunlight.
Ring weed quarterly or as the need arises. Pest and diseases incidences must be observed and regularly checked before they become uncontrollable.

- Apply basally, 60 g (6 tbsp) of complete fertilizer (14-14-14) or based on soil analysis and cover with thin layer of soil. The rate of application increases as the tree grows bigger (Table 1).

1.2 Harvesting

Harvest rambutan fruits when the skin is pinkish red. Rambutan fruits do not ripen at the same time even within a bunch and this necessitates harvesting by priming. Harvesting schedule in a moderately sized orchard (200 to 300 trees) is three times a week during the peak of the season.

2. Results and findings

Cooperators of the agroforestry and forest enrichment were given seedlings of rambutan, which were raised and propagated in vacant woodlots, dried rice fields converted into fruit orchards, and along steep and highly erodible slopes of mountains.

3. Economic benefits, social and cultural acceptability and farmers feedback

Interview with the cooperators revealed that economic returns over-ride the significance of the agroforestry and forest enrichment technology to mitigate the impact of climate change to the livelihood and immediate environment of the households. The cooperators, however, are aware of the interrelatedness of the protecting the communal forest with their rice land and swiddens. The GPO provided them the initiative to enhance existing practices of growing fruit trees on idle lands with greater interest being made aware of the environmental services that they could have in the long run.

The cooperators are willing to invest on the seedlings and allocate time to protect their livelihood while at the same time attain some degree of assurance of stable income in the next 5 to 25 years. Estimated additional income which can augment household needs range from PHP 1 200 to PHP 15 000, depending on the number of fruits propagated and land area.

The propagation of new variety of fruit trees spurred interest in the community anticipating long-term economic gains in the long run. Communal forest ownership remains to be strong and encourages greater participation. In the Philippines context the propagation of new variety of fruit trees spurred interest in the community anticipating long-term economic gains in the long run. Communal forest ownership remains to be strong and encourages greater participation.

Table 1. Fertilizer application

FERTILIZER	2nd YEAR	3rd YEAR	4th YEAR
Complete	200 g / tree	300 g / tree	400 g / tree
(14-14-14)			

Source: FAO 2013

3.1 Replication and up-scaling

This practice is highly recommended for up scaling with training and technical assistance from the Department of Agriculture and the Municipal Agricultural Office. Agroforestry and forest enrichment must be integrated with small-scale infrastructure support such as water impoundments and storage and soil enrichment. Support across the value chain should also be provided to the farmers.

4. Further reading

- Desaeger J., Rao M.R. 1999. The root-knot nematode problem in sesbania fallows and scope for managing it in western Kenya. Agroforestry Systems 47:273–288.
- Evans O.D., Macklin B. 1990. Perennial sesbania production and use: a manual of practical information for extension agents and development workers. Maua, HI, USA: Nitrogen-Fixing Tree Association.
- Gallagher R.S., Fernandes ECM, McCallie EL. 1999. Weed management through short-term improved fallows in tropical agroecosystems. Agroforestry Systems 47:197–221.
- Hassan R., Ransom J.K., Ojem J. 1995. The spatial distribution and farmers' strategies to control striga in maize: survey results from Kenya. p. 250–254. In: Jewell D, Waddington S, Ransom J, Pixley K, eds., Proceedings of the Fourth Eastern and Southern Africa.
- Jama B., Buresh R.J., Place F.M. 1998. Sesbania tree fallows on phosphorus-deficient sites: maize yield and financial benefit. Agronomy Journal 90:717–726.
- Kwesiga F., Beniest J. 1998. Sesbania improved fallows for eastern Zambia: an extension guideline. Nairobi: International Centre for Research in Agroforestry.
- TECA technology: Improved fallows for western Kenya.

4. Agro-ecological zones

- Tropics, warm

5. Objectives fulfilled by the project

- Resource use efficiency