



Agricultural and tree biodiversity research in Malaysia

Bioversity International has worked closely with Malaysia for 20 years to better safeguard and use agricultural and tree biodiversity to support peoples' livelihoods and improve the productivity and resilience of agricultural and forest ecosystems.

The way forward

Countries around the world are increasing their investment in agricultural and tree biodiversity to improve diets, adapt to climate change, control pests and diseases and help reverse forest and land degradation. Bioversity International is a world leader in these research topics.

Bioversity International's current mandate for conservation through use offers prospects for strengthening Malaysia's thriving economy while safeguarding its rich natural resources.

Areas of strong mutual interest between Bioversity International and Malaysia include capitalizing on local fruit tree diversity, control of banana diseases to improve livelihoods, use of tree genetic diversity to enhance the success of forest and land restoration, and cryopreservation of key diversity for future use.

Bioversity International's research in use and safeguarding of agricultural and tree biodiversity brings synergistic value to Malaysia's excellent research centres and provides opportunities for Malaysian scientists to publish and obtain experience and advanced training in an international environment.

Snapshots of success in different areas of research

Tropical fruit

Since the mid-1980s, Bioversity International has been collaborating with the Malaysian Agricultural Research and Development Institute (MARDI) on the conservation and use of Malaysia's rich plethora of tropical fruit.

A regional programme that started in 1994 identified six priority species of major fruits (mango, citrus, rambutan), minor fruits (durian, jackfruit, litchi), as well as carambola, mangosteen and longan.

Data collected throughout the years is being put into action to strengthen peoples' livelihoods as MARDI continues to work with Bioversity International and

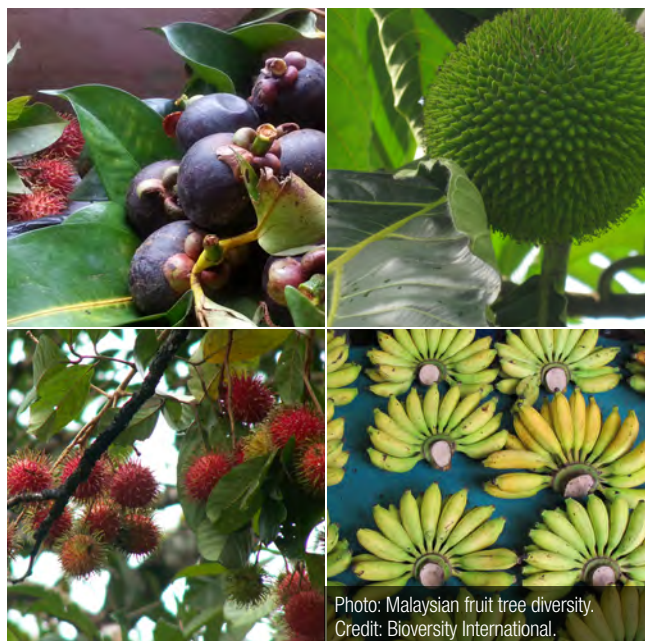


Photo: Malaysian fruit tree diversity.
Credit: Bioversity International.

Biodiversity International in Malaysia - a timeline

Through the Platform for Agrobiodiversity Research, Biodiversity International works with the Agricultural Research Centre and indigenous hill paddy farmers in Sarawak to facilitate their access to different rice varieties

Biodiversity International leads a United Nations Environment Programme / Global Environment Facility (UNEP/GEF) funded project on tropical fruit trees in four Asian countries, including Malaysia

International Plant Genetic Resources Institute (IPGRI) becomes Biodiversity International. Together with the Forest Research Institute Malaysia (FRIM), Biodiversity International starts studying genetic variation of tree species

MARDI joins the Banana Research Network for Asia-Pacific (BAPNET), an international network coordinated by Biodiversity International

The Malaysian Government, primarily through MARDI, collaborates with the International Coconut Genetic Resources Network (COGENT, established by Biodiversity International) to undertake research and development activities on coconut genetic resource conservation

Biodiversity International works with Malaysian partners and supports oil palm collecting and setting up a germplasm collection of other fruit crop species

Malaysia and Biodiversity International begin research on tropical fruit

Biodiversity International assists MARDI with Malaysia's national genebank programme and provides financial support to what will become the country's first rice genebank

2020

2015

Biodiversity International and Universiti Putra Malaysia initiate research collaboration to develop approaches and practices for restoring productivity and resilience of degraded forests

2014

Biodiversity International supports a Gender Research Fellow from the Department of Agriculture to study local knowledge about fruit tree species

2012

Together with the Malaysian Agricultural Research and Development Institute (MARDI), Biodiversity International publishes recommendations on implementing the Multilateral System of Access and Benefit Sharing in Malaysia

2010

2009

2008

Biodiversity International gives research grants to public Malaysian universities

2006

2003

Biodiversity International joins the Asia-Pacific Forest Genetic Resources Programme (APFORGEN)

2002

2001

A field genebank management guide published together with MARDI and Universiti Putra Malaysia in 2001 is still the go to document for field genebank managers worldwide

2000

1997

Biodiversity International office opens in Malaysia

1992

1990

1987

Professor Chin Hoong Fong serves on the Board of the International Board of Plant Genetic Resources (IBPGR, now Biodiversity International)

1980

local communities on conserving local fruit diversity on farm. Six conservation sites in Yan and Bukit Gantang in Peninsular Malaysia, Sibuti and Serian in Sarawak, and Kota Belud and Papar in Sabah have been established.

“MARDI and Bioversity International are just like ‘best friends’. Together, we have established international projects and capacity building on conservation and utilization of plant genetic resources.”

Dr Mohd Shukri Mat Ali Ibrahim, Deputy Director / Senior Research Officer, Management and Utilisation of Bioresources Program - Malaysian Agricultural Research and Development Institute (MARDI)

Malaysia's Ministry of Agriculture sought Bioversity International's advice to develop standardized lists of descriptors for different tropical fruit crops to meet the needs of distinctness, uniformity and stability. MARDI continues to use descriptors developed by Bioversity International at the country's national genebank (MyGenebank), which was established in 2013.

The United Nations Environment Programme (UNEP) and Global Environment Facility (GEF) sponsored regional 'Tropical Fruit Tree' project (2009-2015), led by Bioversity International, has shown the effectiveness of several approaches and tools to identify, document, multiply and create awareness on tropical fruit tree diversity using participatory community-based methods.

Malaysian seed icon Professor Chin Hoong Fong

Other than being a devoted and highly respected teacher in Malaysia, Professor Chin Hoong Fong is also an internationally renowned seed scientist who pioneered storage of recalcitrant seeds in the 1970s. His history with Bioversity International goes back almost 30 years to the 1980s when he served two terms as member of the Board of Trustees of the then International Board on Plant Genetic Resources (IBPGR). Professor Chin has been a Bioversity International Honorary Research Fellow ever since Bioversity International's office in Malaysia opened its doors in 1997.

Forest genetic resources

Malaysia is rich in agricultural biodiversity but also in tree species and their genetic resources. Genetic diversity prevents trees from inbreeding and makes them more resilient to abiotic and biotic stresses, including climate change.

In 2003, Bioversity International initiated a regional network programme called the Asia Pacific Forest Genetic Resources Programme (APFORGEN). APFORGEN consists of 14 member countries, including Malaysia, and it works to enhance the conservation and sustainable use of tree species and their genetic diversity in Asia and the Pacific. In 2014, APFORGEN developed a strategy to support implementation of the Food and Agriculture Organization of the UN's (FAO) Global Plan for Action for the Conservation, Sustainable Use and Development of Forest Genetic Resources in the Asia Pacific region with Malaysian scientists participating in several of the regional working groups for implementation of the strategy. This work was carried out in collaboration with the Asia Pacific Association of Forestry Research Organizations (APAFRI) and the Forest Research Institute of Malaysia (FRIM).

Since 2004, Bioversity International and FRIM have collaborated on the study of genetics and population dynamics of tree species of lowland mixed dipterocarp forests and have put together guidelines for their effective conservation. Several of the recommendations were included in the Malaysian Criteria and Indicators for Forest Management Certification (revised in 2012) according to which more than 4.6 million hectares of forests in Malaysia are currently managed.

Banana

Malaysia is the centre of diversity for wild and cultivated bananas but since the 1980s its banana crop has been threatened by pests and diseases, in particular Fusarium wilt.

Bioversity International and the Malaysian Agricultural Research and Development Institute (MARDI) have collaborated closely for many decades. One of their successes was the mapping of various types of Fusarium wilt outbreaks in Malaysia and the Asia-Pacific thus taking an important step in mitigating and preventing the spread of the disease in Malaysia.

“We are glad that Bioversity International has initiated the project on Identification of Timber Species and Origins, which aims to find a scientific system that is repeatable and precise, using DNA markers and stable isotopes to track the origin and species of timber, as part of a wider effort to establish international standards for the practical applications of timber tracking tools. It's a real honor for FRIM to be invited to collaborate in the project.”

Dato' Abd. Latif Mohmod, Director General - Forest Research Institute Malaysia (FRIM)

Malaysia's strong commitment to the Banana Research Network for Asia-Pacific (BAPNET) of which Bioversity International is the Secretariat helps to strengthen information-sharing systems on how best to manage banana pests and diseases. It played a key role in capacity building and information sharing by co-hosting with Bioversity International in the framework of BAPNET collaboration key events such as the second International Fusarium Symposium held in Genting, Malaysia in 1999 and the ProMusa International Banana Congress held in Penang, Malaysia in 2006. MARDI is part of the BAPNET Steering Committee and actively participates in planning meetings towards regional collaboration in addressing common banana research and development priorities.



Photo: Seeds galore.
Credit: Bioversity International/H. F. Chin.

Public awareness, plant genetic resources education and capacity building

Bioversity International provides a range of capacity strengthening opportunities linked to its research agenda and shares knowledge from its research through training materials and courses so that it can be used by local, national and international partners. Together with Malaysian research partners, Bioversity International plans to capitalize on building national and regional capacity in cryopreservation and on-farm conservation of key agricultural and tree diversity for future use.

“It was through our collaboration with Bioversity International in 2002 (then IPGRI) that we started the Traditional Knowledge Documentation Programme in Sarawak, and developed the TK Journal Methodology which has since been improved. One of the notable outcomes is that Sarawak has received recognition for the TK documentation work among the indigenous communities here.”

Margarita Naming, Senior Research Officer, Traditional Knowledge Documentation Programme, Sarawak Biodiversity Centre

Bioversity International worked with a local environmental NGO to carry out the Cyber Plant Conservation Network which undertakes tree planting activities in national schools across Malaysia to instill awareness on the value of indigenous fruit species.

Since 2000, Bioversity International has played a pivotal role in formulating the successful one-year intensive MSc Programme in the Management of Plant Genetic Resources and continues to contribute teaching staff in university courses.

Bioversity International was instrumental in pioneering traditional knowledge documentation work in Malaysia. Expert assistance was given to national agricultural research systems such as Sarawak Biodiversity Centre and Forest Research Institute Malaysia to develop their own work programmes around traditional knowledge documentation. Sarawak Biodiversity Centre has now become a centre of excellence for traditional knowledge work and the method refined by the Sarawak Biodiversity Centre is now used globally as an example of good practice. Forest Research Institute of Malaysia implemented a traditional knowledge documentation project under the Ninth Malaysia Plan (2006-2010).



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Bioversity International delivers scientific evidence, management practices and policy options to use and safeguard agricultural and tree biodiversity to attain sustainable global food and nutrition security. Bioversity International is the operating name of the International Plant Genetic Resources Institute (IPGRI), which since 2006 also includes the International Network for the Improvement of Banana and Plantain (INIBAP). The Bioversity International Malaysia office is hosted by the Malaysian Government through the Ministry of Agriculture and was officially inaugurated on 15 April 1997.

Bioversity International is a member of the CGIAR Consortium. CGIAR is a global research partnership for a food-secure future.

