

Mango

Priority statement

The mango sector has a **HIGH** potential for pro poor development. Indonesia has a large domestic market and a seasonal comparative advantage over northern hemisphere competitors in the export market. There are 4 main opportunities to improve mango farmers' income:

- (1) Extending the season to spread out production,
- (2) Evaluating new varieties,
- (3) Developing export supply chains, and
- (4) Exploring processing opportunities.

East Java is the second largest producer of mango in Indonesia, with both NTT and NTB also providing a significant contribution to mango production in Indonesia. Within these provinces there are over 1 million people that rely on mango as a source of income.

Table 1. Mango production statistics for selected provinces in Indonesia

Basic Statistics	East Java	West Nusa Tenggara (NTB)	East Nusa Tenggara (NTT)	Indonesia
Area of Production (ha)	57,572 ¹	8,239 ¹	12,935 ¹	186,000
Volume of Production (tonnes)	694,314	99,360	155,999	2,243,440
Yield (t/ha)	-	-	-	12.06
Value of Production ¹	-	-	-	IDR 11.85 trillion ² (\$USD 1.2 billion ²) IDR 2.7 trillion ³ (\$USD 291 million ³)
People Employed ⁴	771,460	110,400	173,332	2,492,711

Source: Badan Pusat Statistik

¹ Estimates based on national yield data of 12.06 t/ha. These estimates also include wild harvested fruit. There may be a blurring of data with NTFP, as some of the fruit will be harvested from forest and forest margin communities.

² FAOStat 2009 - \$561/tonne

³ Farm gate estimate of \$130/tonne – Baker 2008 “The potential for mangoes in Eastern Indonesia”, Final Report, ACIAR, Canberra, Australia.

⁴ Estimates based on national yield of 300 kg per tree/annum and ownership of 3 trees per farmers. Source: Mango as a priority in regional agribusiness policy system- Analisis Kebijakan Pertanian vol. 7 no 2. June 2009: 189-211
<http://pse.litbang.deptan.go.id/ind/pdffiles/ART7-2e.pdf>

Poverty and sustainability

Is there potential to reach large numbers of poor households in production and post-production?

Yes, absolutely. There are over 1 million farmers involved in mango production across the three provinces.

- Potential exists for job creation with increased on farm and community based processing for products such as dried mango.
- Improved productivity and prices have potential to significantly reduce poverty as most mango farmers live below the poverty line. There is a value adding opportunity in buying the cheap, unused (C-grade) fruit in the high season
 - These can be processed and sold as mango cheeks or aseptic pulp, stabilizing it for both international and local markets.
 - This will attract post-harvest job creation for poor households and add value through the supply chain.

What is the potential to increase income for producers?

There is a high potential to increase income for producers and chain participants through extending the season to have a longer harvest period, evaluating new varieties, development of export markets and exploring processing opportunities. Utilising these interventions could raise farm incomes (per 0.5 ha) from IDR 5 -6 million to over IDR 20 million, which is much higher than the poverty line of IDR 7-8 million.

- Significant losses, from 15% to 100% of the crop, during the growing season can be reduced using a combination of fruit bagging, IPM and chemicals to control pests and diseases. These strategies are low cost and easy to use.
- Recent evidence demonstrates that the use of paclobutrazol in a normal year can increase farmer's profits by up to 300% due to early access to markets. The chemical is cheap, simple to use and very effective. In particularly wet seasons trees treated with the chemical produced fruit while control trees failed to produce fruit at all. The price benefit to growers is over IDR 3,000/kg, returning good profitability to an important crop in the restricted crop options for growers in drier areas of Eastern Indonesia
- Greater emphasis on developing farmer co-operatives and shorter marketing chains by then linking with larger buyers offers great potential for higher returns to farmers, particularly in the rapidly growing modern retail market. other issues that could be addressed are:
 - (1) on farm mango storage facilities
 - (2) credit issues for the farmers. (Farmers are normally reliant on the local investors who lend money in advance to procure mangoes at pre-agreed prices during the harvesting season).
 - (3) support to the farmers in preparing the trees and their maintenance
- The sector grew by 14.2% annually during the period 2005 – 2008.

Does the chain/commodity fit with the focus of Government programs and priorities?

Yes, it fits with government priorities. Mango is a priority product in the Ministry of Agriculture's long-term development plan and has strong market potential for domestic as well as export markets.

- The national target for 2013 is to increase production from 2.2 million tonnes to 2.47 million tonnes of mango per annum. Specifically the musrebangtan 2013 document of the Director General, Horticulture stated that the government will promote mangga Gedong gincu, mangga garifta merah and harumanis as their focus of variety to be developed in the mango sector, which is the key variety of mango in East Java, NTT and NTB.
- Mango is also a focus of East Java government, with special emphasis on the Situbondo area.
- Establishment of the Centre for Tropical Fruit Studies (CENTROFS) in Bogor highlights the willingness of the Indonesian government to invest.
- The Horticulture bill recently introduced to parliament mandates sourcing of domestic produce, as well as regulation measures for production, distribution and marketing.

How project-crowded is the sector? (To what extent are sector needs addressed by the current donors?)

- Not a large presence of funding bodies and projects in the sector.
- ACIAR is engaged in mango research within the eastern part of Indonesia and is primarily focussed on production research, fruit fly management and fruit quality.
- JICA provides institutional post-harvest research (VHT) and support to encourage better fruit quality in an effort to satisfy strict import requirements of Japan.

What is the agro - ecological feasibility?

High.

- East Java produces a significant proportion of Indonesia's mangoes because it has a suitable climate with wet and dry seasons. NTT and NTB have a longer dry season than the western parts of Indonesia, which can be problematic for production of annual crops but can be advantages for mango production because mangoes require dry weather during floral initiation and set for optimal fruit set.
- In addition to that, the land conditions in NTT and NTB are best suited to deep-rooted perennial tree crops, in order to survive the wet and dry season and prevent soil degradation.

Sustainability (economic and environmental)

Both the economic and environmental sustainability is high.

- Farmer groups have successfully managed four mango export shipments to Hong Kong, Singapore and Kuala Lumpur confirming the viability of an Indonesian mango export market.
- There was also good market response to the Harumanis variety.

- Mango production is often not the focal crop produced by smallholders. Often mangoes are produced opportunistically alongside cash crops such as rice, vegetables and other crops to provide a year round income. Opportunities to increase the return of existing orchards through techniques outlined above and the strong domestic and international demand for mangoes is economically promising.
- Environmentally, mango is a suitable crop for Eastern Indonesia. Mangoes are deep rooted perennials. In NTB and NTT in particular the landscapes endure long dry seasons and short but intense wet seasons. Annual cropping presents greater potential for erosion. Perennial, deep rooted trees offer a more sustainable cropping system in sloping lands with less predictable wet/dry seasons.

External risk

The sources of risk in mango production and attempts to increase income are climatic conditions and seasonal gluts, which result in significant yield and price fluctuations.

- Low prices in the peak season are the most severe constraint for producers to adopt better management practices and pose a significant social risk for farmers in the poorer districts of eastern Indonesia.
- Technologies to expand the season are cheap, simple to use and effective so risks surrounding adoption should be low.
- Adverse weather conditions are a risk to the industry. In 2011 production halved presumably due to high rainfall at flowering and fruiting.
- Development of an export market is dependent on variety selection and timing of harvest.

Structure of the chain

What is the potential for improving market access?

There is high potential to access higher end domestic and export markets.

- Indonesia produces mangoes in different times of the year to major northern hemisphere producers but as yet has not managed to meet market demands.
- Research in Lombok shows that attempting to grow mangoes for export may be financially and technically possible in effort to lift farmer incomes, especially for farmers in the drier areas (e.g. North Lombok).
- Extending the harvest season and improving post-harvest technologies would also allow access to high end domestic markets through supermarkets and other modern retail outlets.

Is there potential for post-harvest productivity / value-added?

The potential is high.

- There is large potential for export markets and high end domestic markets if post-harvest infrastructure such as cooling, grading and quality control (vapour heat treatment) can be addressed.

- Value adding through product transformation into juice, pulp, dried mango would add great value to the sector and provide more employment opportunities.

What is the scalability and transferability potential?

The scalability potential is high as is the transferability potential considering the widespread growing of mangoes across Indonesia

- Every province in Indonesia grows mangoes with East Java being the biggest producer. Efforts to increase production and enhance marketing will be tied initially to the domestic market and the rapid increase of modern retail outlets.

Is there sufficient infrastructure availability?

Existing infrastructure in East Java and especially NTT and NTB, needs great improvements to gain access to markets other than traditional wet markets.

- Currently the infrastructure is geared towards satisfying the domestic demand for mangoes, the largest market being Central Java and Jakarta.
- Transport infrastructure is in place to move vast quantities of fruit in Java.
- The string of islands that make up the provinces of NTB and NTT are currently dependent on boat transfer which precludes rapid transport of perishable goods.
- For export markets infrastructure would be required for post-harvest processing and international transportation. A key problem for exporting produce from NTB is a lack of suitable commercial exporters in Lombok.