

SUSTAINABILITY JOURNAL



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Saving the Sumatran Tiger

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Dear Reader

We hope and trust this issue will demonstrate the extent of Musim Mas' interest and involvement in some big issues of sustainability.

We explain:

- Our experience to strengthen riparian management in oil palm plantation (Harvesting Musim Mas Experience for Industry-Wide Application)
- Our oil palm breeding strategies (Enhancing Mother Nature's Selection of the Best)
- Our involvement in the RSPO RT11 which was held in Medan in November 2013 (RT11: Promoting the Use of Certified Sustainable Palm Oil)
- Our use of flowers to control insect pests (Flower Power - Using Natural Properties of Flowers to Combat Pests)
- Our work to help ZSL develop its landscape approach to tiger conservation (Saving the Sumatran Tiger)

Come share our excitement!

Executive Chairman
Musim Mas Group

FOREWORD



Dr Holly Barclay has been engaged by the Roundtable on Sustainable Palm Oil (RSPO) to prepare a guidance manual on managing riparian areas. A research fellow at Monash University Malaysia, Dr Barclay specialises in aquatic and riparian research.

While there is ample literature on riparian management, not much comprehensive research has been carried out on the riparian areas of oil palm estates. Dr Barclay is assigned to learn from companies with experience in restoring riparian habitats in oil palm estates and Musim Mas was singled out for her studies. She visited Musim Mas Sorek Estates in Riau Province of Sumatra, Indonesia, in November 2013.

A riparian zone is an area separating land from water bodies. It serves important ecological functions by compacting the soil to reduce erosion and preventing chemicals from being washed into





Harvesting Musim Mas

Experience for Industry-Wide Application

the water body. It also serves as a corridor for movement of wildlife within the oil palm landscape.

Musim Mas has restored all riparian areas in its Sorek Estates using different methods. The first method is to remove oil palm trees and replace the vegetation with jungle saplings. This project started in late 2007 under the expert guidance of the Indonesian Forestry Department. Another method is to leave rows of oil palm trees unattended and stop all agricultural activities in the area, including pesticide and fertiliser applications. The undergrowth is allowed to regenerate and jungle saplings are planted between palm rows.

Both methods aim to reduce the impact of pollutants on the aquatic ecosystem. A buffer zone with thick vegetation can filter the overland flow of pollutants such as fertilisers or sediment. A thick canopy can offer shade for water temperature and aquatic plant control. The second method offers a quicker way to achieve thick vegetation and canopy. Comparison of these two different approaches over the last five years showed that the second method is more effective and practical. "Since 2009,

we have developed a Standard Operating Procedure (SOP) based on the second approach and rolled out this SOP to other operating units within the Group," said Dr Gan Lian Tiong, Musim Mas Group Head of Sustainability.

Over the years, data on water quality and presence of birds, butterflies, reptiles and small mammals in these rehabilitated areas has been recorded. This shows good water quality and micro-organisms metrics for the rivers. "In 2011 we started a collaboration with Princeton University on a PhD research project regarding the impact of riparian buffers on aquatic biodiversity in Central Kalimantan," said Dr Gan.

"A lot of hard work has clearly gone into replanting and managing these riparian areas. It is excellent to see that five years later, the trees are growing well and that the natural vegetation along these rivers has started to recover," said Dr Barclay after her inspection of the riparian buffer areas in the Sorek Estates. 





Enhancing Mother Nature's Selection of the Best

Oil palm breeding involves selecting the best characteristics in different palms to produce progenies with improved traits. Today, oil palm breeders have the option of either using simple tools such as selecting specific palms or more complex methods that use molecular markers to identify a particular aspect of a phenotype/genotype to single out the offspring that have improved yield components or desired growth characteristics. This marker method aims to accelerate the classical process of selective breeding.


Note that these techniques are not to be confused with Genetic Modification. Oil palm genetic improvement is still based on traditional selective breeding from two parental palms, unlike corn, cotton, soy and canola which use genetic modification for breeding.

Selective breeding is like the deliberate pairing of Hollywood celebrity Brad Pitt with Oriental beauty Gong Li to try to guarantee an attractive, good-looking progeny. In contrast,

genetic modification is like mixing Brad Pitt's genes with the genes of a cheetah to produce a good-looking human Olympic sprinter.

Oil palm genome was recently unraveled in July 2013. However the full gene sequence which would expedite the genetic improvement of oil palm using molecular markers has yet to be determined.

With the projected increase in the world demand for edible oils, advances in the technique of selective breeding will increase oil yield of the oil palm trees, reducing the need for an increase in planted area.

The plant breeding station of Musim Mas, also known as the Genetic Research Center (GRC), was first established three years ago, with elite breeding lines from renowned oil palm seed producers. The total area of 246 ha in GRC includes a seed garden and miscellaneous facilities such as laboratories, office, staff and worker housing. 



RT11 :

Promoting the Use of Certified Sustainable Palm Oil

The Musim Mas logo was prominent at the 11th Roundtable Meeting (RT 11) organised by the Roundtable on Sustainable Palm Oil (RSPO) from 11th till 14th November 2013 in Medan, North Sumatra, Indonesia. Musim Mas was a key sponsor of this event which was attended by 600 delegates from across the world.

The theme of RT11 was "RSPO Standard 2013: Understand. Apply. Embrace," with the aim to communicate and explain to all participants the new Principles and Criteria (P&C). The P&C are revised every five years to help address stakeholders' concerns and thus enhance continuous support for certified products.

RSPO was first set up in 2004 to respond to the demands of NGOs and consumers for environmentally and socially sustainable palm products. Growers have worked hard on the certification scheme and expected a price premium over conventional products. However, market demand for these certified products has been weak despite substantial efforts by stakeholders to promote the certification standard. Thus the larger goal of RT11 was to strengthen end users' commitment to sustainable palm oil.

There were key public announcements by large multinational companies to achieve full certified oil in their supply chain. For example, Italian confectioner, Ferrero SPA, indicated it was on track to use 100% segregated RSPO certified palm oil by the end of 2014, a year ahead of target.

"All food items prepared and consumed at RT11 used certified cooking oil produced by Musim Mas," said Dr Gan Lian Tiong, Musim Mas Group Head of Sustainability, proudly. "With an integrated business covering the entire palm oil supply chain and operations across the world, Musim Mas is fully capable of supporting customers' needs for RSPO and ISPO certified oil."





Flower Power

Using Natural Properties of Flowers to Combat Pests

Specks of yellow-orange flowers dot shrubs lining the roadside, forming a sea of yellow spots throughout the estates. These flowers are known as *Cassia cobanensis*. "It may seem like these pretty blooms were planted for aesthetic reasons, but they do much more than that," said Ooi Ling Hoak, Head of Research and Development (R&D) at Musim Mas' Estates Division.

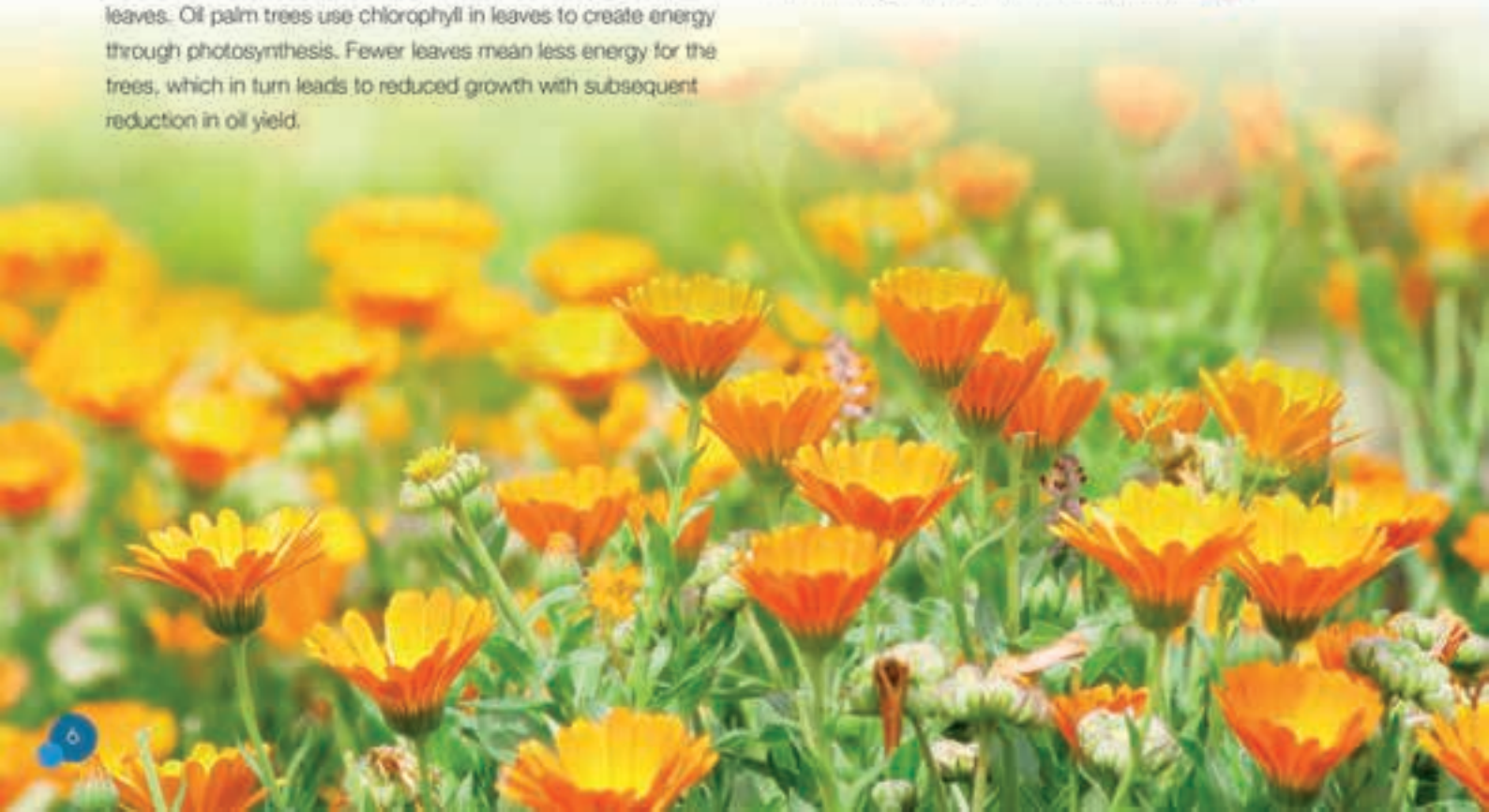
An agronomist by training, Ooi, and his team of research personnel support Group estates operations by providing specialist knowledge to resolve practical agronomic issues.

"These flowers give us a biological way to combat leaf-eating pests in oil palm plantations," explained Ooi. Insect species that feed on the leaves of oil palm trees can pose major problem. Some are voracious eaters causing serious damage to oil palm leaves. Oil palm trees use chlorophyll in leaves to create energy through photosynthesis. Fewer leaves mean less energy for the trees, which in turn leads to reduced growth with subsequent reduction in oil yield.

Cassia cobanensis provides nectar as food for parasitoids associated with the nettle caterpillar and bagworm, the common leaf-eating pests in oil palm plantations. A parasitoid spends a large part of its life obtaining nourishment from the host organism. It ultimately kills and prevents its host's reproduction.

Besides *Cassia cobanensis*, other flowering shrubs in the estates include *Euphorbia heterophylla*, *Turnera subulata* and *Antigonon leptopus*. These flowering shrubs host a range of predators of leaf eating pests and hence are also useful in pest control.

This biological method of pest control combining with minimal chemical applications, also known as Integrated Pest Management (IPM), forms a vital part of the environmentally conscious agricultural practices in Musim Mas. 🌱





Saving the Sumatran Tiger



In early 2010, Musim Mas collaborated with a London-based conservation organisation, the Zoological Society of London (ZSL), on a project in the Dangku Forest Reserve called 'the Dangku Tiger Conservation Partnership'.

The project aims to coordinate the efforts of landowners, communities, authorities and researchers in the forest reserve to save a critically endangered specie - the Sumatran Tiger - which is endemic to Sumatra.

The greater Dangku landscape covers 350,000 ha: 17% is set aside for conservation as protected forest, 15% for mineral extraction, 14% for oil palm cultivation and 15% for production forest, with the remaining 39% for community use.


The prime objective is to integrate this mosaic of habitats and landscape owners to form a buffer zone for the protected area to enable tigers and their prey to thrive in the enhanced habitat. The project also aims to learn more about the behaviour patterns of the elusive tigers so that the knowledge gained can be used to maximise conservation efforts elsewhere.

"We were at first skeptical of the project viability due to its vast scope, but were persuaded to participate by the

expertise and professionalism of ZSL," said Dr Gan Lian Tiong, Musim Mas Group Head of Sustainability. "Our contribution was to fund part of the project and also to provide expert advice to help ZSL understand the oil palm landscape".

Two years have since passed and ZSL has managed to achieve some major output indicators such as mapping out the baseline presence of the tigers (and their prey) and reaching out to key players in the landscape.

The project also included training for Musim Mas staff to deal with tigers in the event when one is spotted. "It is important for us to recognise that these big cats can, under certain circumstances, pose a danger to human life and this is of paramount concern to us," noted Dr Gan.

The second phase of the project will involve targeted conservation activities within the landscape. Many challenges need to be addressed: convince the authorities to support the project, enforce laws to protect the area, persuade local communities not to encroach into the area and define a joint management plan with commercial landowners to provide safe and viable corridors for the tigers. This phase will be completed by 2014. 



Sustainability Diary

First Quarter

- ▶ RSPO training for Oleochemicals, Soaps and Specialty Fats Marketing Divisions
- ▶ RSPO P&C Review Task Force meeting
- ▶ Workshop on Co – Benefit Approach on Palm Oil Land and Fishery Industry, Jakarta, Indonesia
- ▶ RSPO Compensation Task Force Meeting and Biodiversity HCV (High Conservation Value) Working Group (WG) meeting
- ▶ Workshop on RSPO Compensation Mechanism
- ▶ Training for Indonesia Sustainable Palm Oil (ISPO) auditors conducted by Musim Mas

Second Quarter

- ▶ Peer review of High Conservation Value (HCV) management plan and bird monitoring workshop by Xingli Giam and Dr Bert Harris from Princeton University, USA
- ▶ Estate visit by Professor Kenneth Richards from the National University of Singapore (NUS)
- ▶ The Tropical Forest Alliance 2020 workshop on HCV management and monitoring

Third Quarter

- ▶ Estate visit by WWF on Carbon & Commodities Programme
- ▶ Zoological Society of London (ZSL) RSPO workshop on HCV monitoring
- ▶ RSPO workshop on re-certification
- ▶ RSPO European Summit on Sustainable Palm Oil in Europe, *Taking Market Transformation to the Next Level*, Berlin, Germany
- ▶ International Singapore Compact Corporate Social Responsibility (CSR) Summit 2013, Singapore

Fourth Quarter

- ▶ UBS Palm Oil Forum 2013, *Innovating for Sustainable Growth*, Jakarta, Indonesia
- ▶ RSPO Roundtable Meeting 11 and General Assembly 10 in Medan, Indonesia
- ▶ Estate visit by representatives from ZSL, RSPO & the Biodiversity and Agricultural Commodities Program (BACP)
- ▶ Introduction to PalmGHG Workshop



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