Yield Improvement Policy

Background

1. As the world's second largest palm oil plantation company in the world, Golden Agri-Resources Limited (GAR) has a leadership role in finding solutions for sustainable palm oil production.

2. Improvement is an on-going process. We have initiated a proactive and holistic approach to sustainability. Together with The Forest Trust (TFT), an international NGO, we launched a Forest Conservation Policy (FCP) on 9 February 2011 to ensure a no-deforestation footprint and the conservation of high carbon stock forests in our operations, and a Social and Community Engagement Policy (SCEP) on 10 November 2011 to guide and shape our decisions in engaging with communities.

3. Our FCP is an example of GAR taking the lead to initiate and create a platform for multi-stakeholders to find solutions for sustainable palm oil production.

4. Our holistic approach to sustainability also covers yield improvement, and social and community engagement. Increasing productivity is part of our multi-pronged strategy to produce more palm oil from less land.

5. GAR's Yield Improvement Policy (YIP) applies to GAR's total cultivated area including all its smallholders. Currently, GAR has almost 61,000 smallholders in its plasma scheme, cultivating 90,300 ha or 20% of GAR's total cultivated area of 442,500 ha as at 31 Dec 2010. These smallholders produced 0.40 million tonnes of crude palm oil (CPO), 22% of GAR's total production of 1.85 million tonnes of CPO in 2010.

6. In 2010, GAR's plantations, including the smallholders, produced 4.70 tonnes CPO/ha compared to 3.82 tonnes/ha for the broader industry. GAR's yield per ha has been consistently higher than the industry (see Table 1).

Table 1: GAR CPO Yield Compared to the Indonesian Industry (tonnes/ha)

	2008	2009	2010[2]
GAR	5.18	5.35	4.70
Indonesian Industry[1]	3.90	3.91	3.82

[1] *Source: Weekly Oil World February 2011*

[2] *Palm oil production is highly dependent on weather conditions. 2010 was not a favourable year for palm oil production because of La Nina which resulted in high rainfall in Indonesia throughout the year. The wet weather disrupted the pollination process required for fruit production and also impeded the harvesting process.*

7. Our on-going collaboration with smallholders has been successful. In 2010, the CPO yield per hectare of our smallholders was 4.92 tonnes, higher than the industry smallholder average of 3.41 tonnes (see Table 2).

Table 2: GAR Smallholder CPO Yield Compared to the Indonesian Smallholder Average (tonnes/ha)

	2008	2009	2010
GAR Smallholders	5.20	5.45	4.92
Indonesian Smallholders[1]	2.33	3.32	3.41[2]

[1]*Source: Indonesian Palm Oil in Numbers 2011, Indonesian Palm Oil Commission*
[2]*Preliminary figure*

Yield Improvement Target

8. By 2015, we aim to achieve an average yield of **5.8 tonnes of CPO/ha** from oil palm trees in the prime age stage (7-18 years) cultivated on moderately suitable land, comprising 5.8 tonnes/ha and 5.6 tonnes/ha for our own plantations (nucleus) and smallholders (plasma) respectively. This is an increase of 12 percent from the current level of 5.2 tonnes/ha.

Table 3: GAR CPO Yield Target for Oil Palm Trees in Prime Age Stage

	2010 (Actual)	2015 (Target)
CPO yield (tonnes/ha)	**5.2**	**5.8**
- Company (Nucleus)	5.2	5.8
- Smallholders (Plasma)	5.0	5.6

A target is not set for oil palm trees in young (4-6 years) and old (19 to more than 25 years) stages as the yields tend to be unstable for these two stages of the oil palm tree's life cycle.

Leveraging on Best Practices

9. GAR's production is higher than the industry average mainly because we continuously build on our best practices in planting material, agronomical practices, plantation management and harness land suitability.

9.1 Planting Material

Using high-yielding seeds improves the yield per hectare. We only use high-yielding seeds such as Dami Mas in our new plantings. The high-yielding Dami Mas oil palm seeds are developed through stringent and robust breeding experiments conducted by SMART Research Institute (SMARTRI).

Another source of high yielding planting material comes from vegetative propagation or tissue culture plants. These planting materials have been selected from high yielding plants using molecular marker assisted selection[A] breeding technique.

[A] Molecular marker assisted selection is an advanced technique in conventional breeding to select genes with specific desired characteristics from selected plants in the same species. Molecular marker assisted selection does not involve the insertion of targeted genes from one species into another as practised in genetic engineering techniques.

9.2 **Agronomical Practices**

9.2.1 **Soil Fertility and Management**

We implement best agricultural management practices that maintain and enhance soil fertility through a comprehensive mineral nutrition management plan with the aim tooptimise the use of fertilisers.

For example, we implement a site-specific fertiliser application plan based on foliar and soil sampling to analyse the condition of each block of 30 ha of our estates and the exact optimum nutrients required. Also, we maximise the use of the large biomass produced by the palms by recycling both fresh (fronds and other palm tissues) and waste products from our factories as organic fertilisers in our fields. These practices help to reduce the potential risk of soil degradation arising from agricultural activities.

9.2.2 **Pesticide Use and Natural Pest Control**

We use only approved and registered agrochemicals permitted by the Ministry of Agriculture. These are applied by trained personnel in accordance with national laws and regulations.

We are committed to implementing tight control over the use of chemical pesticides. We have been researching and applying alternative methods of managing pests and diseases that affect oil palms.

Since the early development of our operations, we have advocated the use of an Integrated Pest Management approach on our plantations to minimise the use of pesticides and mitigate the possible impact of pest control on the environment. Pesticide use is minimised throughout all growth phases of the palms. The preferred method is to deploy biological controls. Pesticides are deployed only to control outbreaks of infestation when biological controls are not successful. In such cases, pesticide is used carefully in compliance with national laws.

For the long term, to reduce the use of chemical pesticides, we have been using breeding methods to ensure that our oil palms are hardier, more disease and pest resistant.

9.2.3 **Use of Chemical Fertilisers and Pesticides**

We recognise the concerns over the use of chemical fertilisers and pesticides. Over the long term, through collaborating with national and international institutions, we will continue to research and investigate to find ways to phase out the use of such chemicals. We will then implement these solutions together with other key players in the industry.

9.3 **Management**

As part of our commitment to continuous improvement, SMARTRI continues to push the frontiers of innovation to enhance productivity of palm oil production in our estates as well as in smallholdings. SMARTRI is actively collaborating with several reputable national and international research institutions and universities.

We continue to fully support the development of plasma smallholders and are committed to improving the productivity of plasma smallholders. We provide them with high yielding seeds to improve productivity. We also provide transfer of knowledge and capacity building through training on best agricultural practices such as optimal fertiliser usage and application techniques, Integrated Pest Management, health and safety, and other agronomical support.

Besides educating plasma smallholders on the optimal usage and application of fertilisers, we help to supply good quality fertilisers to them. Since fertilisers account for a major part of the operation cost, we also allow them to pay in affordable instalments.

9.4 **Land Suitability**

The suitability of land for oil palm cultivation depends on several factors such as its elevation and slope, soil texture and structure as well as rainfall. Usually, land that is located in mineral soil is suitable while land located in sandy soil or peat soils is less suitable or unsuitable.

Generally, land suitability can be classified into four classes, namely: highly suitable, moderately suitable, marginally suitable and not suitable.

Most of our oil palm trees are planted in moderately suitable land. Furthermore, as a policy, we do not cultivate on peat land regardless of depth. In developing new plantations, we prioritise the development on mineral soils with suitable climate and other standard agricultural practices.

Monitoring and Evaluation

10. We understand that best practices evolve and we are committed to continuous improvement. We adopt an open learning approach to develop and share these developments with our smallholders.

11. We commit to evaluating and reporting our performance regularly against our YIP in an open manner through our website, annual sustainability report and on-going engagements with key stakeholders.

Developed by GAR in consultation with TFT
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