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Programme Book

# ASEAN Regional Conference on Food Security

**8-10 October 2013**
**Bayview Hotel, Penang**
**Malaysia**

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2013
PENANG MALAYSIA

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and

All sub-committee members for the time and effort and all those relevant parties and individuals who have contributed to the success of this event in one way or another

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| | |
|---|---|
| 1215-1400 | Networking Lunch and Poster Session |
| | ASEAN COUNTRY REPORTS<br>*Chairperson: Tuan Haji Muhammad Salimi Bin Sajari, Secretary of Strategic Planning & International Division, Ministry of Agriculture and Agro-Based Industry* |
| 1400-1415 | Lao PDR<br>*Mr. Khamtanh Thadavong*<br>*Deputy Director, Department of Agriculture*<br>*Ministry of Agriculture and Forestry of the Lao PDR* |
| 1415-1430 | Philippines<br>*Mr. Orlan Agbin Calayag*<br>*Administrator National, Food Authority* |
| 1430-1445 | Vietnam<br>*Ms. Nguyen Thi Thanh Huong*<br>*Director, E-news Division*<br>*Department of Informatics and Statistics*<br>*Ministry of Agriculture and Rural Development* |
| 1445-1500 | Malaysia<br>*Ab Jabbar Abdullah*<br>*Deputy Undersecretary, International Section*<br>*Ministry of Agriculture and Agro-Based Industry* |
| 1500-1515 | Brunei's Food Security (Technical Presentation)<br>*Dayangku Norasyikin Pengiran Tejuddin*<br>*Universiti Pertahanan Nasional Malaysia* |
| 1515-1535 | Role of Southeast Asian Council for Food Security & Fair Trade (SEACON)<br>*Dr. Anni Mitin, Executive Director*<br>*SEACON* |
| 1535-1600 | Wrap up session for country reports<br>Experiences in International Partnership for Food Security: Collaboration for the ASEAN Region<br>*Tuan Hj. Anas Bin Ahmad Nasarudin, Group CEO*<br>*Marditech Corporation Sdn. Bhd.* |
| 1600-1630 | Q and A session |





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| 1630-1700 | Coffee Break |
| 2000 | **CONFERENCE DINNER** |
| | Wednesday 9 October 2013 |
| | TECHNICAL SESSION 1<br>Food Security and Sustainable Resources Usage<br>*Chairperson: Dato' Mustafa Kamal Bin Baharuddin*<br>*Director General, Department of Agriculture* |
| 0830-0845 | Paper 1: Alternative Food Crops<br>*Dato' Dr. Sharif Bin Haron*<br>*Director General*<br>*Malaysian Agricultural Research and Development* |
| 0845-0900 | Paper 2: Role and Direction of the Department of Agriculture in Strategic Planning for National (Malaysia) Food Security<br>*Dato' Wan Darman Bin Wan Abdullah*<br>*Director of Agricultural & Agro-Based Industries Extension Division, Department of Agriculture, Malaysia* |
| 0900-0915 | Paper 3: Application of Green Technology in Enhancing Sustainable Food Production in the ASEAN Region<br>*Datuk Dr. Abd. Shukor Bin Abd. Rahman*<br>*Chairman, Arif Efektif Sdn. Bhd.* |
| 0915-0930 | Paper 4: Competing of Resources for Food Crop Production and its Challenges<br>*Miss Faridah Bt Hj. Ahmad*<br>*Director of Soil Resource Management and Conservation Division, Department of Agriculture (DOA), Malaysia* |
| 0930-0945 | Paper 5: Soil Conservation and Land Management for Sustainable Food Production<br>*Dr. Christopher Teh Boon Sung*<br>*Dept. Land Management, Faculty of Agriculture, Universiti Putra Malaysia* |

has sufficient water supply for agricultural activities, proper water conservation and management is essential due to uneven distribution over the regions and occurrence of water shortage during dry seasons. Land constraint was realized back in the early 80's. Policies, practices and technologies are needed to boost production and strengthen food security. The National Agriculture Policy (NAP) which emphasized in increasing productivity through efficient use of resources was introduced to address the problems. Concerted efforts were made to increase land productivity through efficient use of under utilize land, idle land and even marginal land such as peat soil, acid sulphate soil, BRIS (Beach Ridges Interspersed with Swales), ex-mining land and sloping land.

Nevertheless, with the fast tempo of development in the last two decades due to industrialization, urbanization and crop diversification, land constraint still remain a pressing issue. Changing pattern in land use has caused great demand of water for agriculture and domestic used. Based on land use survey by DOA for 1984 and 2010, agriculture land has increased by 6.8% (about 80% occupies by oil palm and rubber) while urban land has doubled.

Encouragement from the government through Agro-Food Policy and increasing demand for fresh fruits and vegetables have resulted in the increased of fruits area by 40 folds and vegetables (including herbs) by 20 folds. Meanwhile, coconut and cocoa areas have decreased by 64.8% and 73.1%, respectively due to low price of the commodities and pest outbreak of cocoa pod borer. Paddy area has declined by 24.8% over the period mostly for urbanization.

In addressing the present issues, the government and relevant authorities have strategized various programs such as introducing replanting scheme with high yielding variety of coconut, while in rice areas, advance technologies including high yielding and resistant varieties plus upgraded irrigation and other infrastructures became a reality. To ensure continuous supply of fruits and vegetable, government has established Permanent Food Production Parks and Modern Agriculture Farms where rain shelter and fertigation system was extensively practiced to increase productivity through efficient use of land, water and fertilizer.

With proper planning, technical guidelines and legislations, only suitable land is identified and developed for agricultural purposes, while appropriate on-site management and conservation measures are implemented for sustainable development.

## PAPER 5

## Soil Conservation and Land Management for Sustainable Food Production

*Dr. Christopher Teh Boon Sung*
*Dept. Land Management, Faculty of Agriculture, Uni. Putra Malaysia, Serdang, Selangor*
*cbsteh@yahoo.com*

Soil quality is the ability of the soil to support long term agriculture production. Consequently, soil quality must be protected or enhanced for greater agriculture production. Soil is often protected against erosion and loss of soil nutrients (such as by leaching or runoff) by using mulches to cover the soil surface.

In Malaysia, four soil conservation practices are often recommended for oil palm (Elaeis guineensis Jacq.) plantations.These practices are oil palm empty fruit bunches (EFB), Ecomat (a compressed EFB mat; ECO), and pruned oil palm fronds (OPF).These three oil palm residues are used as organic mulching materials. The fourth method is silt pits (SIL) which are soil trenches to collect nutrients from runoff water and later redistribute them back into the soil.

Many studies (such as by Moradi et al., 2012) have shown the beneficial effects of EFB mulching. EFB was shown to be significantly better than the other three soil conservation practices in improving nearly all of the measured soil and plantparameters. Empty fruit bunches are most effective partly because of the combined effects of higher amounts of dry matteradded and the higher nutrient concentrations in the EFB than in other mulching materials. Silt pitting was found not to be as effective as EFB because SIL could only trap and return nutrients back into the soil, whereas EFB could do both: trap nutrients and release additional nutrients into the soil as it decomposes.

Typically in the short term, larger improvements in soil chemical than soil physical properties can be observed due to these soil conservation methods. In one study, soil physical properties such as bulk density, total porosity, and water retention at saturation and permanent wilting point were not significantly affected by the conservation practices of EFB, ECO, SIL, and OPF. However, EFB significantly increased soil aggregate stability by 32%, soil aggregation by 5%, soil water content at FC by 13%, soil available water content by 31%, and relative proportion of soil mesopores by 14% compared with the OPF (control) treatment. The effects of ECO, SIL, and OPF on the evaluated soil properties were not significantly different from one other. However, their effects were significantly lower than EFB. Soil water content was significantly the highest, especially during the low rainfall periods, in EFB-treated soils compared with OPF and ECO. Average daily water content in the whole soil profile (0-0.75 m depth) was 20, 12, and 8% higher in EFB treatment compared with the OPF, ECO, and SIL, respectively. SIL was not as effective as EFB in increasing the soil water content in the top soil layer where oil palm feeding roots would be mostly located. EFB was the best soil and water conservation practices on non-terraced oil palm plantations.

The huge beneficial effects of EFB is partly due to its higher amount of nutrients released than that released by other mulching materials. Decomposition studies showed that the pruned oil palm frond's leaflets had the highest initial concentration for most nutrients, and the frond's rachis and Eco-mat the lowest. The order of residue quality and rate of residue mass loss were: leaflets > fronds > EFB > Eco-mat > rachis. EFB however had a higher mass loss rate than the fronds. Residue mass loss and nutrient release rates were faster at the beginning than at the end of the decomposition period. Leaflets released the highest total amount of nutrients (except for K), and rachis the lowest. The fronds released either significantly higher (for N and Ca) or not significantly different (for P and Mg) total amount of nutrients than EFB. Converting EFB into Eco-mat had resulted in nutrient losses (e.g., N, K, and Mg) and a residue quality reduction in Eco-mat.

Silt pits can be effective to conserve soil water and nutrients. However, the dimensions of silt pits are important. It is commonly thought that the larger the silt pits, the more effective they are to conserve soil and water. However, studies have shown that making the silt pits too large would incur higher water loss by evaporation (through the pit opening) and percolation (through the pit floor). Moreover, it the pits are below the rooting zone, this would cause water to flow out of the pit and away from the root zone. Measurements and computer simulations have shown that the wall-to-floor (W:F) ratio of a pit is important. The larger the W:F ratio, the more effective the pit would conserve soil water and nutrients and enable them to return to the rooting zone.

The water conservation ability of silt pits is in ascending order with the total W:F ratio which defines that the narrowest silt pit with smallest floor area and largest wall areas is able to serve more water into the top soil layers via infiltrates more water laterally through silt pit walls. Slower lateral infiltration and slowing effect of lateral infiltration on vertical infiltration make the narrow silt pit keeps the stored water for longer time.

Other conservation methods are currently being investigated such as the use of oil palm trunk as a mulching material. In 2011, Malaysia produced 81.5 million tonnes of dry biomass, 13 million tonnes (16% of the total) of which came from the biomass of oil palm trunk. The average economic lifespan of oil palm trees is 25 to 30 years, after which the trees are cut down for replanting. The trunks are discarded either by burning or leaving them to decay in the field. Nonetheless, freshly felled trunks contain high moisture content so the trunks do not burn easily, and leaving the trunks in the field becomes a physical hindrance to replanting and other field operations. Moreover, these trunks can take up to five years to completely decompose in the open field.

One recent solution is to shred the trunks and leave the shredded materials in the field as a soil mulch. Shredding the trunk means the trunk become much less of a physical hindrance and eliminates the air-polluting problem of burning.

But little is actually known about shredded oil palm trunk (OPT): its decomposition rate in the field, its nutrient release rate into the soil, and ultimately, its effects on soil properties and oil palm growth and yield. Unlike empty fruit bunches (EFB) and pruned oil palm fronds (OPF), much less is known about the effectiveness of using OPT as a mulching material. There have been very little studies on the potential use of OPT as a nutrient resource and how effective OPT can increase soil and oil palm fertility. One of the few studies is by Kee (2004) who reported that OPT is a rich source of N and K nutrients. However, Kee (2004) did not study the effect of OPT on soil properties or on oil palm fertility. In addition, there has been no studies so far that compared the effectiveness of using OPT a soil mulching material against the conventional mulching materials of EFB and OPF.

The effectiveness of OPT as a mulching materials also needs to be studied because there is a growing interest in Malaysia to find more varied uses of oil palm trunk such as to make plywood, furniture, and bioethanol (Abdul Khalil et al., 2010; Yamada et al., 2010). If the oil palm trunks are not to be used as a mulching material and instead removed from the oil palm field, we need to determine how much nutrients (and other benefits to the soil and oil palm) are potentially lost from the field.

**PAPER 6**

**Sustainable Agriculture Initiatives-Nestle and Creating Shared Value**

*Mr Yong Lee Keng*
*Agricultural Services Manager, Nestle Malaysia*

Nestle is a food company, and naturally agriculture raw materials supply is of prime importance i Nestle's operations throughout the world. In this respect, ensuring supply at right time, quality an cost has been, and will continue to be, a primary agenda of all Nestle agriculture activities. Howeve since 2001, Nestle has extended its agricultural activities to include sustainability practices, as exempl fied by the Sustainable Agriculture Initiative-Nestle(SAI-N). Basically, this means strong emphasis i now also placed upon social and environment factors in the way Nestle conducts agricultur activities. Last but not least, it is imperative to true sustainability that as many of these new initiative should deliver benefits to all in the supply chain, and in the Nestle world, we call this Creating Sha Value(CSV).

In short, the SAI-N and CSV platforms should be able to deliver triple wins for People-Planet-Profit, ar I will elaborate upon the background and rationale of both SAI-N and CSV, with current ongoing lo and global examples, and its deliverables.





## Technical Session 2
## Environmental Sustainability, Policy and Trade

**PAPER 7**

**Nuclear Technologies in Sustainable Food Production**

*Dr. Khairuddin Bin Abdul Rahim*
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In a world facing the double dilemma of exponential population growth and changing climates, agricultural production will have to increase by about 70% by 2050 to meet demand based upon current practice and consumption. The application of nuclear technologies provides a unique tool in achieving sustainable food production and has a proven record in increasing agricultural productivity since 1970s. In crop improvement, radiation mutation breeding accelerated the production of crop varieties with desired characteristics compared to conventional breeding for better adaptation to climate change. To date, more than 3000 improved crop varieties such as rice, wheat, banana, potato, yam and soya bean plants that are more resistant to disease or drought or able to grow in marginal or saline soils and under harsh conditions have been developed and registered. In conserving natural resources for sustainable intensification of agricultural production, radioisotope and stable isotope tracer techniques play important role in developing efficient and integrated soil-nutrient-water management practices to enhance soil quality, fertilizer and water use efficiency to achieve sustainable crop productivity. Radiation sterilisation has also been adopted in biofertilizer production. In animal production and health, isotopes are used to develop diets and feeding strategies for improving livestock growth and reproductive efficiency while radioimmunoassay method help diagnose and monitor effectiveness of animal disease control and eradication programmes. Nuclear technology also contributes towards biological control of insect pests through sterile insect technique (SIT) in which radiation induce sterility in male insect pests so that no progeny is produced when they mate with wild females. Success stories of SIT application include eradication of melon flies in Okinawa Island, Japan and tsetse flies in parts of Africa. To reduce post-harvest losses during storage and increase food safety, food irradiation provides a safe and environmentally friendly method by effectively controlling contaminating food-borne microorganisms and insect pests. Recently, stable isotope techniques are also used in the development of analytical traceability systems to determine product origin/authenticity and ensure food safety. Nuclear technology when applied in conjunction with other related techniques can make a powerful and critical contribution towards sustainable food production. These techniques enable farmers, food processors and government agencies to provide people with more, better and safer food while conserving soil and water resources. The inroads and successes of nuclear technology, often in fusion with other technologies including biotechnology, which involve various institutions in the agriculture and agrofood sectors in Malaysia are highlighted.