

Pulp and paper production from oil palm empty fruit bunches

PULP AND paper production from oil palm empty fruit bunches (EFBs) is among the latest developments in research at the Forest Research Institute of Malaysia (FRIM). EFB paper is not only technically feasible, but financially attractive, as it does away with exorbitant capital investments and large tracts of forests. EFB, an agricultural waste, is available all-year-round, are renewable, abundant and cheap (if not free). Also, by synergizing with palm oil mills, pulp and paper mills can use the excess electricity and steam generated by the palm oil mills from burning EFBs as renewable energy, thus eliminating energy costs. Ditto for excess treated water supply from the palm oil mills that can be recycled into the pulp and paper mills, with less water and minimal water wastage thereby achieved. Pollution is also minimized. EFB paper can be used for envelopes, exercise book covers, wrapping paper, fast food wrapping and shopping bags, and with the embedding of cotton and nylon threads or a little long-fibre pulp, also can be used for cement and fertilizer

bags, carton boxes and base paper for composite paper manufacture. Dwindling supplies of quality timber have meant a shift from solid wood to various types of wood composites for wood-based industries. Research focusing on the development of water, fungi and fire-resistant particleboards is ongoing, while studies on oil palm fibre cement composites containing fly ash and rice husk ash have shown that these are comparable to wood cement composites. Tissue culture of indigenous forest trees to produce better quality timber clones, phytomedicines from medicinal plants, investigating the pharmaceutical and health product potential of tropical soil microflora and fauna, and improving ground cable systems and skyline yarding for reduced impact logging, are also current concerns.

News source: **FRIM, Malaysia**

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Modelling pesticide and nutrient transport in Cameron Highlands, Malaysia agrosystems

CAMERON HIGHLANDS is located at altitudes between 1070 m to 1830 m above sea level with temperature 13°C to 23°C throughout the year. It has a long history of intensive horticulture especially vegetable and flower cultivation. A survey shows ten types of pesticides are used in the chrysanthemum farms and nine types used in vegetable farms to control pests and diseases. Several simulation models such as Hornsby Index (HI), Attenuation Factor (AF), Chemical Movement in Layered Soil (CMLS) and Leaching Estimation And Chemistry Model – nitrate version (LEACHMN) were used to investigate the movement of pesticides and nutrients in the cabbage and chrysanthemum plots. Hornsby Index shows most of the pesticides have low to medium leaching potential except methamidophos. The CMLS predicted that methamidophos has high leaching potential and can leach down to 1.7 m. The AF model applied for 16 pesticides used in the farms showed that topsoils from cabbage and chrysanthemum farms have high

infiltration potential with only methamidophos, dazomet, cyromazine, and triforine having the potential to leach through the soil. The exposed subsoil has the least capacity of filtering pesticides except for malathion, cyfluthrin, and profenofos. According to prediction by the models, CMLS and LEACHMN, most of the pesticides are not leached down below 1.7 m. The probability of groundwater contamination is low as the groundwater is usually deep. Dye tracer tests conducted showed that the depth of soil being ploughed plays a role in the infiltration. In the 15 cm ploughed soils, about 60% tracer infiltrated to 20 cm depth and 60 cm ploughed soils about 20% infiltrated to 50 cm depth. The modeling exercise using HI, AF and CMLS showed reasonable agreement between predicted and field observations.

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Chemical characteristics of fresh pineapple and coated pineapple products

PINEAPPLE variety 'Gandul' was processed using coating and freezing methods in the development of frozen coated pineapple products. The performance of four types of coatings (breadcrumb, oatbran, wheatgerm, and unprocessed wheatbran) as well as the effect of processing on the physico-chemical, nutritional and organoleptic properties of the products were studied. Physical characteristics of fresh Gandul pineapple are: length 17.44 ± 0.86 cm, width 12.54 ± 0.63 cm, circumference 40.54 ± 1.27 , cm and weight 1.60 ± 0.17 kg. Fat contents of frozen coated pineapple ranged between 0.31-1.65% which were significantly higher than the fresh or blanched Gandul. This indicated that the batter and coating materials contributed to the fat content in the frozen coated products. Compared to uncooked beef burger patty (15.8%) or commercial uncooked chicken nuggets (30.4%), the fat contents of these frozen coated products were much lower. Among the frozen coated products developed, breadcrumb-coated product

had the highest carbohydrate and energy values. Oatbran, wheatgerm, and wheatbran-coated products had higher values of vitamin B1, vitamin B2, vitamin C, calcium, potassium, iron and total dietary fiber compared to breadcrumb-coated product. The pineapple coated products are convenient healthy snacks being high in dietary fibre (>6%) and provide most of the vitamins and minerals. They are healthy alternatives to meat-based nuggets and an alternative way to introduce more fruits into the diet especially for children. The breadcrumb coated products can be baked or fried while the other three variants are suitable for baking. Baked coated pineapple has lower fat content than fried coated pineapple and as such is suitable as healthy snacks for the family. Packed in high density polyethylene, the products can be kept for at least one year at 20°C.

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MRQ 50, a new local rice variety for high eating quality

MMRQ 50 was selected from a cross between Q34 and Khaw Dawk Mali (KDML). KDML is a fragrant rice variety from Thailand. Q34 is a locally bred variety with Mahsuri as the base variety. It has the elongation properties of cooked rice similar to that of Basmati rice. Consumers like the variety but it has no aroma. MRQ 50 has all the properties of Q34 and is aromatic and is similar to Basmati. It can be used to replace Basmati rice in all the rice preparations that normally specify Basmati. MRQ 50 matures in about 123 days after seeding and suitable for double cropping and direct seeding culture. Culm height is around 65-70 cm and is tolerant to lodging. It is resistant to blast and bacterial blight. This variety can yield between 3.5-4 t/ha; however, under very good condition and management, it can give yield more than 4.5 t/ha. All past MARDI varieties are normal high yielding varieties suitable for general planting. MRQ 50 is the first MARDI aromatic variety. Grain length is 6.5 mm, about the same as that of Basmati rice. It is very slender; length breadth ratio is 3.8, similar to that of Basmati. Head rice recovery is about 70% of total recovery. Cooked rice is flaky, do not stick together and

elongate lengthwise. Elongation ratio is about 2, similar to that of Basmati. These properties make this rice suitable for preparation of Bryani rice and other similar preparation. Currently Basmati rice is imported from India and Pakistan. There is potential to replace this with locally produced MRQ 50. Since the variety requires to be marketed as a variety, it has to be handled separately. Thus, there must be dedicated mill to handle this variety and buy paddy from contract farmers, to ensure purity and quality. It is best to have a system from seed to shelves. An entrepreneur can supply seed to contract growers, give the appropriate technology, monitor quality of produce, buy and process the paddy. The entrepreneur can sell bulk or retail himself under a brand name. There must be enough promotion work to introduce the brand name and maintain consistent quality.

News Source: **MARDI, Malaysia**

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