Non-destructive technique (NDT) for sapodilla
Assessing ripeness and predicting the storage life and internal quality

SAPODILLA (Achras zapota), known in Malaysia as “ciku”, is gaining in popularity. It has considerable potential as a crop for tropical and subtropical countries. However, the ripening stage of the fruits cannot be determined visually. Furthermore, the maturity stage of the fruits may vary even within a single cluster.

Hence, it is difficult to group the fruits according to the ripening stage or to determine the ripeness, unless the evaluation is done destructively. As a better alternative, a non-destructive technique (NDT) using a Kiwifirm device can be used to assess the ripeness of the fruit.

The Kiwifirm score correlates well with the Steven QTS 25 texture analyzer. A Kiwifirm value of 2.7, which is equivalent to 1750 g hardness, indicates that the fruit is ready for consumption. Values below 1.5 indicate that the fruit is overripe.

This technique is also able to predict the storage life and the internal quality of sapodilla. Fruits with a Kiwifirm score of less than 6.0 at harvest were found to be more acceptable by a panel of experts. Fruits with a score of between 6.1 and 7.0 can be stored for a longer period, but their quality is not as good as those of fruits with a Kiwifirm score of less than 6.0 at harvest. Fruits with a Kiwifirm score of less than 4.5 ripened 1-3 days after harvest, so are not suitable for storage.

NDT can be used to sort the fruit for marketing, storage or for processing. Alternatively, it can be used as a quality control inspection device which allows the on-line assessment of each fruit.

News source: MARDI Malaysia
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Brakmas, a new beef breed for integrated cattle under oil palm production

MALAYSIA, is a country with more than three million hectares of oil palm plantations. The country is promoting the integrated rearing of beef cattle in these plantation areas. This system of production has been found to be economically viable, because the large amount of vegetation found under the oil palms is a good source of feed for beef cattle. Plantations are capable of maintaining large herds of animals through the judicious matching of feed resources and animal requirements. To further enhance the productivity of this innovative system, a new beef breed, Brakmas, has been developed. This is a crossbred resulting from many generations of continuous selection and breeding of Brahman bulls from Texas, USA and the local indigenous Kedah-Kelantan beef cattle.

It fits well into an integrated cattle/oil palm production system. This new beef breed is medium in size, white to grayish in color, and has high resistance to infestations by local internal and external parasites. Generally, the productivity of the Brakmas is 30 – 35% better than that of the local Kedah-Kelantan cattle.

The Brakmas has an average birth weight of 20.2 kg, a weaning weight of 97.3 kg, a yearling weight of 119.0 kg, and a mature weight of about 316.0 kg. Its performance in an oil palm plantation is good, with an average daily weight gain of 0.5 kg, a body weight of 180 kg at one year of age, and a conception rate of 60 - 75%. This unique symbiosis of a tree crop, forage and beef cattle have proved to be a winning formula for turning beef production in Malaysia into an eco-friendly and viable production system.

News source: MARDI, Malaysia
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**Silage production in plastic drums and the use of Silager 1 technology**

Appropriate technology stands out as a key factor in successful silage making and utilization. The technology used should suit the type and scale of livestock production. In Malaysia, plastic drums have become popular as “container type silos” for ensiling forage resources, at both a small and large farm level. They are convenient to fill, pack and seal, are easy to handle, and can conveniently be used when feeding out. Unlike plastic bags or plastic film wrappings, the drums cannot be gnawed through by rats, which would cause spoilage.

Pasture and fodder grasses, oil palm fronds, sweet corn stover, kenaf (*Hibiscus cannabinus*) and other forage resources are ensiled in plastic drums of either 100 or 128 litres capacity. To complement this technology, a useful machine, named Silager-1, has been developed by researchers of the Department of Veterinary Services, Malaysia. This machine compacts the forage material in the drum, seals the drum, and finally extracts residual air from the sealed drum through a valve on the side. Benefits include an increase in the quantity ensiled, and less time and cost needed for ensiling.

Work done using the machine to ensile kenaf in drums showed that the quantity ensiled increased from 46.7 to 76.4 kg/drum (63.3% increase); the time taken to ensile fell from 0.3 to 0.13 minutes per kg (a reduction of 56.6%); the production (ensiling) rate increased from 99.4 to 229.3 kg/ha (130% more); while the cost of the ensilage was reduced from US$0.030 to US$0.026/kg (a reduction of 17.5%). The pH of 3.87 of silage produced using the Silager 1 is preferable to the pH of 4.49 in silage made without it.

News source: Veterinary Research Institute, Malaysia

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**Spent compost from mushroom cultivation is suitable as cattle feed**

The compost bed used as a growing medium for mushroom cultivation is prepared using rice straw mixed with various organic, and inorganic compounds. After the mushrooms have been harvested, two to six weeks after culturing, the spent straw (compost) is left, together with some of the mushroom’s mycelium. This has a crude protein content of 14%, compared to more than 40% in the mushrooms themselves.

An average mushroom cultivation facility discards about 200 mt of spent compost each week. This constitutes a very large amount of by-products. A trial using 20, 40 and 60% of the spent straw in a feed mixture for young cattle proved that it was suitable. The spent straw has no harmful effects when consumed by animals, as it is a policy in Malaysia to sterilize the by-product at 77°C before it is discarded.

Incorporation of 40% of the spent straw was found to give the best results. Young bull calves fed on 40% spent straw showed a weight gain of 0.40 kg per day, with a total daily DM intake of 6.24 kg of the feed. This spent straw is thus very valuable as a cattle feed, especially since its use transforms a food by-product into a useful resource. Animals have a higher feed intake and better performance when fed the spent straw, compared to when they are given just the untreated straw.

News source: Veterinary Research Institute, Malaysia

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