

The MD2 'Super Sweet' pineapple (*Ananas comosus*)

A new pineapple variety, MD2, has been selected to spearhead Malaysia's new ambitions in pineapple export.

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P ineapple (*Ananas comoscs*) is an important tropical fruit. It is the only important fruit crop in the family Bromeliaceae. Its importance is reflected in the ranking of commercial tropical fruits for production on a worldwide basis by the United Nations Conference on Trade and Development (UNCTAD), in which pineapple comes second after bananas. However, from once a major producer in the world in the 1970s, Malaysia has fallen to the 15th position based on 2014 data, according to the Malaysian Pineapple Industry Board (MPIB). Still, pineapple remains a major fruit crop in Malaysia, amongst other major fruit crops such as papaya, pomelo, banana, water melon, jackfruit, and mango (Department of Agriculture, 2013). MPIB is the major force for planning and boosting pineapple industrial planting and its downstream industry.

"It is the resemblance to a pine cone which gives the fruit its Spanish name *pina* and the English name pineapple" (Purseglove, 1972).

Pineapple is recognized as one of the fifty plants that changed world history. It was 'discovered' in America as a cultivated plant by Christopher Columbus in 1492, who took specimens back to Europe. Subsequently the fruit was introduced to rest of the world by the Spanish and Portuguese via sea routes. It is now widely grown in the tropics and subtropics. One of its original native names in Brazil was *nana*, from which the



MD2 promotion in Chinese. The label says "MD2 pineapple RM5.99 each"

scientific name *Ananas* and Malay name *nanas* have been derived. The date of introduction of the pineapple to Malaysia is unknown. From to I.H. Burkill we learn that tinned pineapples from Singapore were exhibited in London at the Colonial and Indian Exhibition of 1886 by J.F. Nicholson. This led to the expansion of plantations in Malaya and the establishment of canneries in Penang, Johore and Selangor. Burkill listed nine cultivars grown in Malaya: they were Singapore, Mauritius, Red Spanish, Queen, Red Ripley, Black Jamaica, Pernambuco and Smooth Cayenne.

Currently there are nine major pineapple varieties planted in Malaysia, namely Moris, N36, Sarawak, Moris Gajah, Gandul, Yankee, Josapine, Masapine and most recently MD2. Some of these cultivars such as N36 and Josapine were locally developed for the local fresh fruit market and have not been grown outside Malaysia. In 2012, the areas planted with pineapples in Malaysia totaled 15,649 ha, with total production estimated at 335,000 MT (metric tons). MPIB has projected that the supply of Malaysian



MD2 pineapple covered to prrevent sun scorching for their skin is thinner than other varieties

pineapple will increase from 350,000 MT in 2013 to 700,000 MT in 2020. The expected plantation area to support this production volume is expected to be around 23,000 ha. Of the nine cultivars, MPIB has chosen to promote the MD2 variety for industrial planting.

MD2 has been identified as a key crop under the National Key Economic Area (NKEA) of the Economic Transformation Programme (ETP). With regard to agriculture, NKEA's key objectives are to penetrate global markets and to ensure national food security. 16 Entry Point Projects (EPPs) and 11 business opportunities have been planned and carried out to achieve these objectives. The MD2 cultivar has been identified as EPP7's catalyst for the premium fruit market.

The MD2 cultivar is also positioned as the key crop under the Dasar Agromakanan Negara (DAN) 2011–2020 policy with the same objectives as EPP 7. With an allocation of RM45 million budget, MPIB is tasked as

the implementation agency by the Malaysian government.

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MD2 was developed to fulfill market demand for fresh pineapples with exceptional sweetness as well as uniformity and consistency in size and ripeness. Its development can be traced back to 1961 when the Pineapple Research Institute (PRI) in Hawaii was funded by a consortium of companies formed by Dole, Del Monte and Maui Pineapple Company to select and breed a new variety with such qualities. When PRI was dissolved in 1975, all developed hybrid seedlings were subsequently evaluated at Maui Pineapple Company. An exceptional hybrid selection "73-114" was singled out from the project and it was later renamed MD2, in honour of Millie Dillard, the wife of the then General Manager of the pineapple company. MD2 was taken to Costa Rica for the first trial industrial planting in the 1980s.

MD2 is known by its trade names as "Golden Ripe", "Super Sweet", "Rompine" or "Gold".



Compared to other pineapple cultivars, MD2 is better in several qualities. Among them are: uniform bright gold colour, sweeter taste, fourtimes Vitamin C content, lower fiber, lower acidity, thinner skin, smaller fruits at an average of 1.5 kg each, and longer shelf life. Additionally, because of its superior eating qualities, MD2 can command three times the price of other pineapple varieties. These are the major factors that have motivated pineapple planters to grow MD2. For example, pineapple planters in Ghana have replaced the Smooth Cayenne varieties with MD2. Because MD2 has longer shelf-life of 30 days compared to 21 days for other varieties, it performs better in long-distance shipping. Prior to MD2, consumers outside the tropics had to consume mostly canned pineapples. With the arrival of MD2, these consumers can finally enjoy fresh pineapples.

The introduction of MD2 to Malaysia started in 2008 when MPIB bought 100,000 suckers from the Philippines. Pineapple Technology Development Division (BPTN), a division of MPIB, was put in charge of planting the pioneer batch before releasing the cultivar for industrial planting. Initially, suckers were sold at RM2.50 per stalk but eventually the cost was brought down to its present level of RM1.70. To bring down the cost MPIB had to work out a scheme that required registered planters to provide two suckers in return for every sucker they received from MPIB. This scheme made it possible to increase MPIB's sucker stock exponentially and eventually to bring down the cost. The scheme commenced in 2012 with the involvement of 16 industrial planters in Peninsular Malaysia with a total area of 55 ha. Currently, the majority of MD2 growers are located in Johor. In Perak, MD2 is only planted in Pengkalan Pegoh.



MD2 sold under Rompine brand in supermarkets such as Giant in Malaysia

In other states such as Pulau Pinang, Kedah, Selangor, and Pahang, the planting of the first batches has just begun.

Planting MD2 is similar to planting other pineapple cultivars in terms of site preparation, cultural practices, final harvesting, and propagation. However, there are some differences in relation to disease control and hormone application. MD2 is prone to bacterial heart rot which is caused by Erwinia chrysanthemi and fungal black rot by Thielavipos paradoxa. Bacterial heart rot of pineapples was first reported in 1957 in Malaysia. These diseases are also regarded as a serious disease by pineapple planters of other varieties around the world. Growers of MD2 are required to spray fungicide benomyl 50% in the first week after planting. Other fungicides to be used include copper hydroxide 77%, Mancozeb 80% and Thiram 80%. For hormone application with the objective of inducing flowering, a mixture of 140 ml of Ethrel (2-Chloroethylphosphonic acid), 180 g of urea fertilizer, and 18 L of water should be prepared for spray application. 50 ml of the mixture should then be watered onto shoot tips. Hormone application is best carried out when the plants' stomata are opened which is before 9am and after 5:30pm. It is a known fact that pineapple stomata close during daytime to prevent water loss. When all best practices are diligently carried out, MD2 pineapples are ready for harvesting for export at around 142 to 150 days after flowers are first formed.

Resulting from Del Monte's highly successful introduction of MD2 from Costa Rica to the global market in 1996, MD2 has become the most popular fresh pineapple variety for now. Costa Rica is today's largest world exporter of MD2 fresh pineapples while Thailand and the Philippines are the largest producers of pineapples for canned pineapple. The United States of America is the largest fresh pineapple importer, followed by the European Union, Japan, Canada and France. Malaysia's current fresh pineapple export markets are Middle Eastern countries. However, Malaysia plans to start exporting fresh pineapples, particularly MD2, to China in 2015. China has placed a request of 100 containers on monthly basis, but Malaysia can only supply 10 containers monthly at present.

MD2 has a weight range between 1.3kg and 2.5kg. There are three grades – A, B and C – based on the weight of the fruits. Grade A

pineapples are more than 1.7kg which would be selling at RM 3.20 (or more) per fruit, and these are mainly for export. Grade B pineapples are between 1.3kg to 1.6kg and Grade C pineapples are below 1.3kg. At time of this writing, the price is RM2.40 for Grade B and RM1.50 for Grade C. These are average farm prices at growing sites in Perak.

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For Malaysia to acquire larger market share, and to meet the target production of 700,000 MT in 2020, both smallholders and industrial planters will need to play a critical role. For that, MPIB has set up the MD2 Pineapple Unit to provide technical and funding assistance, especially to smallholders. The unit is led by the Director General of MPIB and it aims to nurture 20 new growers every year. Each grower is expected to plant a minimum 10 acres of MD2. MPIB has set a target of 300 acres of MD2 planting for 2015. Area size is expected to reach 5,000 ha in 2020. At the end of 2014, 2,250 ha had been planted with MD2, an increment of 18% from 2013. Total production for 2014 was 412,720 MT.

MPIB is determined to drive Malaysia into becoming, once again, a prominent pineapple producer. With MD2 as the new lead, the pineapple industry in the country is poised for a bright future.

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