

Rubber Trees – Green and Sustainable

Systematic breeding and selection works of rubber clones to improve productivity has been an ongoing process in the Malaysian Rubber Board for almost nine decades.

Since it embarked on the process, six series of clones with a total of 185 clones had been developed and recommended to the industry under the names RRIM 500 (1928-1931), RRIM 600 (1937-1941), RRIM 700 (1947-1958), RRIM 800 (1959-1965), RRIM 900 (1966-1973) and RRIM 2000 (1974 till now) series clones.

Some of these clones are also widely planted in other rubber growing countries.

The success of the rubber breeding programme can be seen from the multifold yield increase, from about 500 kg/ha/year for unselected seedlings to about 3,000 kg/ha/year in the modern clones.

In the past, greater emphasis was given to produce high latex yielding clones, giving rise to a spectacular increase in yield.

This was considered amazing given the narrow genetic base of the breeding population and this was achieved within two to three cycles of breeding and selection.

But it could not be sustained largely due to the narrow genetic base.

With the introduction of new genetic materials from Brazil in the 1950s in the development of the RRIM 900 and RRIM 2000 series clones have successfully increased the yield potential to about 3,000 kg per ha per year.

In recent years rubberwood furniture gained wide acceptance by domestic and foreign consumers after rubberwood was accepted as alternative timber to the natural forest species.

Rubber breeding and selection has now been re-emphasised to produce rubber clones with high latex content as well as rubber wood, known as latex-timber clones.

Clones that were developed recently are RRIM 928, RRIM 929, RRIM 2001, RRIM 2002, RRIM 2007, RRIM 2008, RRIM 2009, RRIM 2014, RRIM 2015, RRIM 2016, RRIM 2020, RRIM 2023, RRIM 2024, RRIM 2025, RRIM 2025, RRIM 2026, RRIM 2027, RRIM 2029 and RRIM 2033.

Some of the promising latex timber clones being developed in the breeding programme for the next Planting Recommendations include KT 39/35, L 7/2, D 9/12, N 25/1, R 30/9, OR 23 and X 28/1.

Every three years, planting recommendations are updated to provide new information on the availability, status, and performance of the planting materials for the rubber plantation industry.

Currently, the clones in the LGM Planting Recommendations are categorised in two groups i.e. Group 1 and Group 2. Group 2 clones are further subdivided into Group 2A and Group 2B. Within the group, the clones are divided into latex-timber clones and latex clones in relation to their rubber and wood productivity.

Rubber growers, nursery operators and implementing agencies are advised to refer to the latest planting recommendations.

The Group 1 consists of high yielding clones based on at least five years yield data on panel BO-I and two years on panel BO-II with desirable secondary characteristics in large scale trials in different environmental conditions. These clones are recommended for commercial planting in estates and smallholdings without any restriction. It comprises 10 latex timber clones and four latex clones.

The Group 2A comprises all the new clones, which showed good early performance for at least three years in large scale trials in different environmental conditions.

This would enable the rubber growers to select promising new clones with lesser risk. However, planting of these clones should not be more than 50 per cent of the area.

It comprises nine clones of which seven are latex timber clones and two latex clones.

The most promising clone after three years tapping in the large scale clone trials in different environments is RRIM 2007 with mean yield of 2831 kg per ha per year. All the other clones produced mean yields of more than 1600 kg per ha per year.

This Group 2B comprises all the newly recommended clones from the small scale clone trials as well as clones with less than three years yield data in large scale clone trials in different environmental conditions. Due to limited data in different environmental conditions, these clones should be planted with basket of clones with not more than 20 per cent of the area planted from this group to reduce risk.

The recently developed clones with yield potential of about 3,000 kg per ha per year is still far below the theoretical yielding potential of rubber tree, which is about 10,000 kg per ha per year.

The sustainable yield improvement through breeding can only be achieved with the availability of large genetic base compared to the narrow genetic base of the progenitors of the commercial planting materials in Malaysia, originating from 22 seedlings introduced to Singapore in 1877.

Broadening the genetic base is one of the key areas in future strategy of rubber breeding to reinforce the additive genetic component for yield, girth and other important secondary characters.

The utilisation of these large genetic materials collected from wild germplasm of *Hevea brasiliensis* and different *Hevea* spp during the 1981 and 1995 expeditions in Brazil would enable the rubber breeders to develop new latex timber clones having yield potential of about 4,000 kg/ha/year and wood volume of 2.0 m³/tree in the near future.