RUBBER PLANTING MATERIALS
APPROVED FOR 2016

The planting material recommendation of the Rubber Board is based on a multi clone concept. However, almost the entire planting carried out particularly in small holdings in the traditional region is with clone RRII 105 due to its outstanding yield potential and tolerance to abnormal leaf fall disease. Monoclonal plantations in general are prone to the outbreak of epidemics and RRII 105 is prone to *Corynespora* leaf disease as manifested in the Karnataka region during the year 2000. Realizing the potential risk involved in monoclonal planting, the Board from 1991, has been recommending planting of as many clones as practicable, out of a select list of desirable clones. The clones recommended comprise of such desirable ones, based on the above considerations as well as data available on yield potential and secondary characters.

The approved cultivars are classified into three major categories:

Category 1 Comprises clones approved for large scale planting. This consists of RRII 105, PB 260, RRII 414, RRII 417, RRII 422 and RRII 430 for the traditional rubber growing regions and RRIM 600 for the non-traditional rubber growing regions. The clones RRIM 600 and GT 1 are no longer recommended for large-scale cultivation in the traditional regions because of high susceptibility to diseases caused by *Phytophthora* species in RRIM 600 and low initial yield in GTI. Only 50% of the total area of any estate is recommended to be planted with anyone of the clones in Category 1

Category II consists of clones with consistent performance in this country over a long term in any one of the evaluation stages. It is recommended that three or more of these clones may be used to plant up to 50% of the total area of any estate.

Category III consists of clones on which there is only limited data from experimental planting. These clones are recommended for only small scale experimental planting not to exceed 15% of the total area in aggregate. These clones have exhibited good performance over a long period in small scale trials and / or over a short term in large scale trials in India or abroad. Polyclonal seeds are also recommended for planting in marginal areas.

The clones recommended under each category for the traditional area are listed below:

Category 1 Clones RRII 105, PB 260, RRII 414, RRII 417, RRII 422 and RRII 430

Category 11 Clone RRIM 600, GT 1, RRII 5, RRII 203, PB 28/59 PB 217, PB 312, PB 314, PB 255 and PB 280

Category 111 Clones RRII 118, RRII 208, RRII 300, RRII 429, PR 107, PR 255, PR 261, PB 86, PB 5/51, PB 235, PB 311, PB 330, RRIM 605, RRIM 701, RRIM 703, RRIM 712, RRIC 100, RRIC 102, RRIC 130, KRS 163, IRCA 111, IRCA 109, IRCA 130, SCATC 88-13, BPM 24 and Polyclonal seeds.

In addition, other promising clones approved by the Chairman, Rubber Board are also included.

The clones recommended for planting under each category in the North eastern states are listed below:

Category 1 RRIM 600, RRII 208.

Category 11 RRII 105, GT 1, PB 235, RRII 203, RRII 429, RRII 430 and RRII 417.

Category 111 RR11 5, RRII 422, RRII 118, PB 260, PB 310, PB 311, RRIM 703, SCATC 88-13, SCATC 93-114.

Planting materials suitable for Karnataka and South Konkan:

GT-1, RRII 203*, PB 260, PB 217*, RRII 414, RRII 430, RRII 422, RRII 429, PB 280, PB 312, PB 314, PB 235, RRII 5, RRII 300, PB 311* and RRII 105* have exhibited good growth and yield in the region.

* RRII 105 is highly susceptible to Corynespora leaf disease. Hence recommended prophylactic and control measures are to be adopted. PB 217 and RRII 203 are also susceptible to the disease and require prophylactic protection. PB 311 is wind susceptible, hence planting of this clone in wind prone areas is to be avoided.

Planting materials suitable for North Konkan:

RRIM 600, RRII 208, RRII 105, RRII 6, RRII 5, PB 260, PR 255 and RRIC 100 perform well in this region. The RRII 400 series clones have not been evaluated in North Konkan. However, the drought tolerant and stable clone RRII 430 shows good initial establishment and growth and could be planted in the region. Lifesaving irrigation is to be given to all clonal plantings in the first three years.

Most of the modern high yielding clones are prone to tapping panel dryness when tapped under half spiral alternate daily system. It is, therefore, strongly recommended that all such clones be tapped at a lower intensity, say, on half spiral once in three days. Prophylactic protection against diseases is recommended for the cultivation of all these clones.

SHORT NOTES ON CULTIVARS

01. RRII 105

A clone evolved by the Rubber Research Institute of India and currently enjoying maximum popularity in the country. Parents are Tjir 1 and Gl 1. Trunk tall and the presence of more than one leader is observed in many trees. Branching good with strong unions, canopy dense, foliage dark green, leaflets long and glossy. Wintering and re foliation are early and partial. Vigour before and after tapping average. Virgin bark and renewed bark thickness above average.

Yield is very good. The average commercial yield obtained over 22 years of tapping in the estate sector is 1712 kg/ha/yr. Latex is white and DRC high.

This clone has a fair degree of tolerance to abnormal leaf fall disease. Highly susceptible to pink disease and *Corynespora* leaf disease. Incidence of powdery mildew is medium. Occurrence of tapping panel dryness high and therefore adherence to tapping under half spiral, once in three days system is essential. Free from serious wind damage, if branch development is kept balanced. Small growers should take special care to avoid excessive or unbalanced manuring which can accentuate tapping panel dryness and wind damages. Corrective pruning of unbalanced branches can reduce incidence of wind damage. The clone is susceptible to drought in terms of growth, hence not advisable for planting in drought prone areas. However, if it survives and establishes in such areas yield is not much affected.

02. PB 260

A hybrid clone developed by the Prang Besar Estates Ltd. in Malaysia. Parents are PB 5/51 and PB 49. Trees have tall and straight trunk. Branching light and balanced with strong union. Canopy dense, foliage pale green. Vigour before initiation of tapping high and after tapping average. Thickness of virgin bark and renewed bark below average. Yield is high. In on-farm evaluation trial, mean yield over ten years of tapping is 1884 kg/ha/yr. Average yield from large scale trials over 10 years is 63 g/tap/tree.

The clone has moderate tolerance to pink, powdery mildew and abnormal leaf fall. High incidence of tapping panel dryness. Wind damage below average.

03. RRII 414

The parents of this clone are RRII 105 and RRIC 100. Trunk is tall, straight and cylindrical with open, broad canopy of heavy dark green leaves, restricted to the top. Girth, at opening is high and girth increment on tapping, average. This clone has recorded significant improvement in yield over RRII 105 during 11 years of tapping in small scale trial with 74.02 g/tree/tap and over 13 years in large scale trial (67.99 g/tree/tap).

Maintains better yield than RRII 105 in the on-farm trials. Moderately tolerant to Pink disease and abnormal leaf fall. Incidence of *Corynespora* leaf fall is low and powdery mildew is high.

04.RRII 430

Parentage comprises RRII 105 and RRIC 100.This clone has above average girth at opening. Canopy is open, broad and heavy with broad glossy leaves. Thickness of virgin hark is average and renewed hark is high. Recorded significant improvement in yield over RRII 105 during 11 years of tapping in small scale trial (63.37 g/tree/tap)and over 13 years of tapping in large scale trial (77.32 g/tree/tap). Maintains better yield than RRII 105 in the onfarm trial also.Tolerant to pink disease, abnormal leaf fall and *Corynespora* leaf fall, but susceptible to powdery mildew. This clone has recorded stability of performance across various locations in the traditional and non-traditional regions.

05. RRII 417

The parentage of this clone comprises RRll 105 and RRIC 100. Trunk is tall and straight with leaf scars. Canopy is broad, open and heavy with semi glossy leaves. Girth at opening is above average. Thickness of virgin bark is average and of renewed bark is high.The mean yield over 11 years in the small scale trial is 70.52 g/tree/tap and over 13 years of tapping in the large scale trial is 77.30 g/tree/tap. This clone has above average tolerance to wind. Susceptible to powdery mildew and moderately tolerant to pink disease, abnormal leaf fall *and Corynespora* leaf fall.

06. RR11 422

Parents of this clone are RRll 105 and RRIC 100. Stem is crooked with high branching. Canopy is open narrow with dark green glossy leaves. Girth at opening is above average. This clone has recorded 64.94 g/tree/tap in the small scale trial during 11 years of tapping and 7 2 . 3 5 g/tree/tap in the large scale trial over 13 years of tapping. Tolerant to pink disease and abnormal leaf fall, but susceptible to powdery mildew. Moderately tolerant to *Corynespora* leaf fall. This clone is susceptible to cold winter conditions in the north eastern states of India.

07. RRIM 600

A high yielding clone evolved by the Rubber Research Institute of Malaysia and extensively grown in all the rubber growing countries. Parents are Tjir 1 and PB 86. Tall, straight trunk, moderate to fairly heavy branching and branch unions rather weak. Young plants show spindly growth and late branching with occasional leaning. Narrow, broom shaped crown, foliage sparse with small yellowish green leaves, normal wintering and refoliation.

Girth at opening low. Girth increment after opening high. Virgin bark thickness low. Thickness of renewed bark being high, usually results in bulging above tapping cut.

The clone shows rising yield trend. Initial yield above average and subsequent yield high. Does not exhibit yield depression prominently during summer. Average annual yield per ha. in estates over 20 years is 1349kg.Latex unsuitable for concentration.

Highly susceptible to diseases caused by *Phytophthora.* Incidence of pink disease mild to severe. Requires effective control measures when planted in areas where these diseases are prevalent. Incidence of powdery mildew is mild.

08. RRII 208:

A hybrid clone of parentage Mil 3/2 x AVROS 255. This clone performs well in the agroclimatic conditions of North East India and has been recently been upgraded to Category 1. In the traditional region, the mean yield over 15 years of tapping in large scale trial is 66.2 g/tree/tap and in commercial plantings is 1900 kg/ha/year. This clone has shown stable tolerance to powdery mildew in screening trials in South India while in Assam and West Bengal this clone is moderately tolerant . It is also moderately tolerant to abnormal leaf fall and shoot rot, with above average tolerance to Corynespora, cold and drought. Incidence of TPD and wind damage in this clone is low in NE India.

Superior yield potential of RRII 208 in the cold season as well as above average annual yield coupled with stability in yield over both optimal and sub-optimal environments make the clone suitable for NE India. Mean yield from on-station trials in North East India over 14 years of tapping is 42 g/tree/tap. The clone also has good winter girth increment indicating its cold tolerance. Growth, tappability and stand of tapped trees over the long term are high in this clone compared to other clones in NE India.

09. GT 1

A primary clone developed in Indonesia and extensively planted in all rubber growing countries. Trunk upright hut slightly kinked. Variable branching habit. Main branches long and acute angled, secondary branches light. Narrow globular crown, dense dark green glossy foliage. Wintering and refoliation late and often partial. Girth at opening medium to high. Girth increment on tapping medium. Virgin and renewed bark thickness medium.

This clone shows rising yield trend. Summer yield fairly high. Average annual yield obtained in estates for 19 years is 1,420kg. per ha. Latex is white.

Fairly wind fast. Occurrence of tapping panel dryness and incidence of pink disease mild. Abnormal leaf fall mild to medium and powdery mildew medium to severe.

10. RR11 5

A primary clone developed by the Rubber Research Institute of India. Selected from Malankara Estate, Thodupuzha. Vigorous clone, trunk straight and terete, canopy dense, low branching, several branches arising at acute angles. Bark thickness high. High yield with rising yield trend. Mean yield from large scale trial over 16 years is 76.42 g/tap/tree and that from estate trial (one location) over five years is 1352 kg/ha/yr. Susceptible to abnormal leaf fall and powdery mildew. Tapping panel dryness high.

Pink disease and wind damage low. The quantum of timber yield from this clone is comparatively more.

11. RRII 203

A moderate yielding clone evolved by the Rubber Research Institute of India. Parents are PB 86 and Mil 3/2. Trunk straight and tall, rather robust, canopy well distributed and balanced. Above average vigour at opening. Virgin and renewed bark thickness average. Average tolerance to diseases. Average initial and subsequent yield. Mean yield over ten years of tapping from commercial plantings at two locations is 1818 kg/ha/yr. Coagulum from latex and scrap show discoloration. This however, does not affect the quality of rubber. The quantum of timber is high. This clone exhibits high yield in Kanyakumari district.

12. PB 28/59

A Malaysian primary clone with fluted and crooked trunk, sometimes showing a tendency for leaning. Moderate to heavy branches, branching low, Girth at opening average and girth increment on taping low. Virgin bark thickness low hut thickness on renewal high. Average annual commercial yield over 19 years is 1,477 kg/ha. Summer yield average.

Susceptibility to wind damage is average. Occurrence of tapping panel dryness is above average. The clone is highly prone to abnormal leaf fall, pink and powdery mildew diseases.

13. PB 217

The parents of this Malaysian clone are PB 5/51 and PB 6/9. Trunk tall and straight, branches light and foliage dense. Wintering and refoliation are normal to late. Girth at opening is average, girth increment on tapping high. Virgin bark thickness is low hut renewed bark thickness is average.

Initial yield average with rising trend. Average yield over the first 15 years from estates is 1508 kg/ha/year. Latex colour is light yellow.

Wind damage is very low. Tapping panel dryness low. Although incidence of *Phytophthora* is reported to be severe in Malaysia, the extent of abnormal leaf fall in India is low. Pink and powdery mildew diseases affect the clone severely.

14. PB 280

A Malaysian primary clone developed from PBIG seedlings. A clone with average vigour and high bark thickness. High yielder as per Malaysian reports. Incidence of abnormal leaf fall high and pink disease medium. Powdery mildew severe. Wind damage high and panel dryness low. Mean yield in large scale trials over ten years of tapping is 70.60 g/tree/tap.

15. PB 312

A Malaysian hybrid clone of parentage RRIM 600 x PB 235. Above average vigour. Trunk straight with balanced branching pattern and heavy canopy. Thickness of bark is average. Shows high incidence of abnormal leaf fall and powdery mildew and moderate tolerance to pink and *Corynespora* diseases. Wind damage is high and occurrence of tapping panel dryness is low. Mean yield over 10 years under large scale evaluation is 70.49 g/tree/tap and under on farm evaluation over 5 years is 1763 kg/ha/yr.

16. PB 314

A Malaysian hybrid clone of parentage RRIM 600 x PB235. Above average girth at opening. Trunk straight with light and balanced canopy. Thickness of bark is below average. Shows very high incidence of abnormal leaf fall and powdery mildew, high incidence of pink disease and moderate to high incidence of Corynespora disease. Has average tolerance to wind and low occurrence of tapping panel dryness. Mean yield under large scale evaluation across three locations is 74.09g/tap/tree and under on farm evaluation is 1967 kg/ha/year.

17. PB 255

A Malaysian hybrid clone of parentage PB 5/51 x PB 32/36. Above average girth at opening. Trunk straight and cylindrical with light and balanced canopy. Thickness of bark is high. Shows very high incidence of abnormal leaf fall and powdery mildew, high incidence of pink disease and low incidence of Corynespora disease. Has above average tolerance to wind. Mean yield over 10 years under large scale evaluation is 62.93 g/tap/tree and over 5 years under on farm evaluation is 1878 kg/ha/yr.

18. PB 235

This Malaysian clone has PB5/51and PB S/78 as parents. Very vigorously growing clone with very tall and straight stem. Branches light with spreading dense foliage which undergoes normal wintering and refoliation. Girth increment on tapping average. Thickness of virgin bark average and that of renewed bark low. Average annual yield obtained in estates over the first 15 years of tapping is 1501 kg/ha/yr. Summer yield average. Latex colour is pale yellow. The clone experiences high wind damage. Incidence of panel dryness is high. Abnormal leaf fall and pink diseases are medium but powdery mildew affects trees severely. Stem bleeding and attack of hark feeding caterpillar are noted in certain localities.

19. RRIM 703

The parents of this clone are RRIM 600 and RRIM 500. It has an upright hut slightly kinked trunk with a few heavy branches. The canopy is open and narrow. Wintering and refoliation occur early in the season. Girth at opening is high to average and girth increment on tapping low. Virgin hark thickness is high and renewed hark thickness average to high. Estate scale yield levels in India are reported for the first ten years. This averages to 1310 kg/ha/yr in one location. Summer yield is low. Latex colour is light yellow. Wind damage as well as tapping panel dryness high. Abnormal leaf fall is severe in India though reported to be only mild in Malaysia. Occurrence of powdery mildew is mild. The clone is susceptible to pink disease.

20. PR 255

The parents are Tjir I and PR 107. Vigour at opening above average and girth increment on tapping average. Trunk tall and straight. Canopy dense and balanced. High yielding, summer yield high. Incidence of abnormal leaf fall and pink disease moderate. Powdery mildew severe, panel dryness moderate. Wind damage low. Mean yield in large scale trial over ten years is 58.04g/tap/tree.

21. PR 261

The female and male parents are Tjir 1 and PR 107 respectively. Vigour average, bark thickness average. Crown balanced with dense foliage,. High yielding. Incidence of abnormal leaf fall and pink diseases moderate. Powdery mildew moderate to severe. Wind damage low. Occurrence of tapping panel dryness average. Mean yield in large scale trial over ten years is 51.34 g/tap/tree.

22. PB 311

The female and male parents are RRIM 600 and PB 235 respectively. Vigorous in growth. Trunk sometimes leaning. Canopy heavy with dense foliage. Thickness of virgin hark low and that of renewed bark average. A high yielding clone as per Malaysian reports. Summer yield high. Incidence of powdery mildew and pink disease mild to medium. Wind damage very high and occurrence of panel dryness low. Mean yield over six years in large scale trial is 50.58 g/tap/tree. Average commercial yield over five years is 1450 kg/ha/yr.

23. PB 86

A Malaysian primary clone of slow growth, high crown and pale green leaves. Not easily prone to wind damage. Suitable for planting in exposed areas. Not tolerant to poor soils. Yield above average. Latex white. Prolific seeder. Highly susceptible to abnormal leaf fall and shoot rot. It performs well in Kanyakumari District where incidence of these diseases is very mild. Commercial yield in India over 25 years is 1, 165 kg/ha/yr.

24. PR 107

This is a primary clone developed in Indonesia. Sturdy, wind resistant and of average vigour. Shows good girth increment on tapping. The clone though a slow starter, shows rising trend. In India, average yield over 15 years under commercial planting is 1,043 kg/ha/yr. Yield gets slightly depressed during wintering. Withstands higher intensities of tapping. Susceptible to *Phytophthora.* Tolerant to powdery mildew.

25. RRIM 605

Parents of this clone are Tjir 1 and PB 49. Its initial yield performance in the northern districts of Kerala is not encouraging. Growth average. Good performance reported in Punalur and Pathanamthitta areas. The average commercial yield over 20 years in India is 1, 135 kg/ha/yr.

26. RRIM 701

A moderate yielding clone with steady yield trend. Parents are 44/553 and RRIM 501. High vigour in the early years. Average girth increment on tapping. Susceptible to pink and powdery mildew diseases and wind damage. The average commercial yield over 15 years in India is 1,263 kg/ha/yr

27. PB 5/51

A clone evolved in Malaysia by crossing PB 56 and PB 24. Stem straight and upright, branches light, horizontal and well distributed. Crown conical, light sparse foliage, small yellowish green leaves. Virgin bark thickness average, renewed thickness low. Vigour average before tapping and low after opening. Initial as well as subsequent yield is average. Commercial yield in India is 1,389 kg/ha/yr during the first 20 years. Summer yield above average. Highly resistant to wind damage. Tolerance to abnormal leaf fall moderate, pink disease low. Highly susceptible to powdery mildew. Occurrence of panel dryness average.

28. RRII 118

A remarkably vigorous clone evolved by the Rubber Research Institute of India. Parents are Mil 3/2 and Hil 28. Trunk tall and stout. Prominent heavy branches, secondary branches long and slightly drooping in young stage. Several branches arise almost at the same level. Canopy dense, balanced crown. High vigour at opening . Virgin bark and renewed bark thickness average. Average initial yield with rising yield trend. In commercial plantings, an average yield of 1164 kg/ha/yr has been obtained during first ten years of tapping. Medium toterance to diseases. Tapping panel dryness average.

29. RRIl 429

Parents are RRII 105 & RRIC 100. This clone with tall, straight and cylindrical trunk has a dense, heavy canopy with dark green leaves. Girth at opening is high and girth increment on tapping average. Occurrence of TPD is above average. The mean yield over 11 years in small scale trial is 77.82 g/tree/tap. while it is 63.60 g/tree/tap in the large scale trial over 13 years of tapping. The incidence of *Corynespora* leaf fall and abnormal leaf fall are low. The clone is highly susceptible to pink disease.
