Rubb. Board bull. 23, No. 3

Adoption of Improved Planting Materials in Rubber Small Holdings: An Analysis

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Optimal investment decisions are important tools in farm business management to achieve the long-run objective of maximum continuous profits. In enterprise selection, the farm manager has to decide the various crop combinations which will yield maximum continuous net returns over a period of time. Once a particular crop enterprise is selected, the selection of the best variety assumes prime importance. This is more important in the case of perennial crops like rubber involving substantial amounts of initial fixed investments and an extended period of output resulting from it.

Being a commercial crop with the whole produce being marketed (Market economy), the object of rubber grower is to maximise profits from a unit area. With the introduction of high yielding clones, growers were found shifting on a large scale from traditional varieties to improved clones iike RRII 105, RRIM 600, GT 1 and PB clones. RRII 105 is an improved clone developed by the Rubber Research Institute of India. Eversince its release for commercial planting, the area under this variety has been fast increasing. The large scale adoption of this variety has been due to its high yielding capacity. Its mean yield in experimental plantation has been estimated at 2880 kg per hectare per year, in small scale trials during 15 years of tapping. So the present study attempts to analyse the coverage of different clones among thc areas planted during 1984 in small holdings with special emphasis on RRII105.

Methods

Data on the extent of area planted with different planting materials during 1934 were collected from all the Rubber Board Regional Offices in Kerala, Tamil Nadu and Karnataka states. Data thus collected were tabulated for different varieties and their distribution according to size. The analysis followed the tabular methods of analysis.

Results

Table 1 shows the extent of area planted with the different varieties in small holdings in Kerala, Tamil Nadu and Karnataka during 1984. The total area planted was 13313.08 hectares in 21070 units. Out of which 11842.84 ha was with RRII 105 in 19525 units. Relating to the totals RRII 105 alone accounted for 88.96 percent of the total area planted and 92.67 percent of the total number of units. RRII 105 has also been found to be planted along with other clones in mixed plantings which accounted for 6.85 per cent of the total area and 4.15 percent of the total number of units. This practice of growing more than one variety in mixtures can be viewed as a measure to avoid risk associated with spacific varieties. Thus rubber producers were found to resort to diversification within an enterprise using different varieties. RRII 105 alone and RRII 105 along with other varieties together accounted for 95.81 percent of the total area and 96.82 percent of the total number of units. This shows the wide popularity and the consequent large scale adoption of RRII 105 in the small holdings.

Table 1 : Extent of area planted with RRII 105 and other clones during 1984 in Kerala, Tamil Nadu and Karnataka.

Variety	No. of units	Area (Hect)
1. RRII 105 sub total (a)	19525 (92.67)	11842.84 (88.96)
2. RRII 105 along with other clones in mixtures:		
a. RRII 105 and GT 1	420 (1.99)	399.13 3.00
b. RRII 105 and RRIM 600	102 (0.48)	110.27 (0.82)
c. RRII 105, RRIM 600 and GT 1	31 (0.14)	71.97 (0 54)
d. RRII 105 and PB 235	160 (0.75)	130.19 (0.97)
e. RRII 105 and PB 5/51	10 (0.04)	9.74 (0.08)
f. RRII 105, PB 28/59	26 (0.12)	14.88 (0.11)
g. RRII 105, PB 28/59 and GT 1	16 (0.07)	9.43 (0.07)
h. RRII 105, GT 1 and PB 235	14 0.06	25 39 (0.19)
i. RRII 105, RRII 118 and GT 1	10 (0.04)	18.60 (0.14)
j. RRII 105 plus other clones not mentioned above	84 (0.39)	123.21 (0.93)
Sub total (b)	873 (4.15)	912.86 (6.85)
3 Other clones		
a. PB 235	126 (0.59)	87.98 (0.66)
b. GT 1	207 (0.98)	154,19 (1.16)
c. PB 28/59	3 (0.01)	2.41 (0.02)
d. RRIM 600	47 (0.22)	43.87 (0.33)
e. PB 5/51	15 (0 07)	16.17 (0.12)
f. PB 311	13 (0.06)	16.45 (0.13)
g. PB 215+217	5 (0.02)	1.63 (0.01)
h. Poly clonal	30 (0.14)	24.55 (0.18)
i. Unselected	226 (1·07)	210.13 (1.58)
Sub total (c)	672 (3 18)	557.38 (4 19)
Grand total (a)+(b)+(c)	21070 (100)	13313.08 (100)

(Figures in parentheses are percentages to the total)

Table 3: Distribution of area planted with RRII 105 according to size during 1984 in the different rubber growing regions. (Figures in parentheses are percentages to the total)

Region	Size classes											
	Upto 5 ha		0.5 ha to 1 ha		1 to 2 ha		2 to 4 ha		Above 4 ha		Total	
	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area
I. 1. Kerala:												
Southern	2381	699.79	963	723.75	274	363.27	61	157.37	11	72.3	3690	2016.48
Kerala	(64.52)	(34.70)	(26.10)	(35.89)	(7.43)	(18.02)	(1.65)	(7.8)	(0.30)	(3.59)	(100)	(100)
2. Central	4800	1500.85	2346	1580.29	629	823.01	105	270.90	15	146.76	7895	4321.81
Kerala	(60.79)	(34.73)	(29.72)	(36.57)	(7.97)	(19.04)	(1.33)	(6.27)	(0.19)	(3.39)	(100)	(100)
3. Northern	4193	1369.9	2052	1410.76	979	1322.62	252	658.41	32	164.16	7508	4925.85
Kerala	(55.85)	(27.81)	(27.33)	(28.64)	(13.04)	(26.85)	(3.36)	(13.37)	(.43)	(3.33)	100)	(100)
Kerala-	11374	3570.54	5361	3714.8	1882	2508.9	418	1086.68	58	383.22	19093	11264.14
Total	(59.57)	31.70)	(28.08)	(32.98)	(9.86)	(22.27)	(2.19)	(9.65)	(0.30)	(3.40)	(100)	(100)
II. Karnataka	64	20.91	110	79.31	133	194.08	57	162.09	15	73.36	379	529.75
	(16.89)	(3.95)	(29.02)	(14.97)	(35.0)	(36.64)	(15.04)	(30.6)	(3.96)	(13.85)	(100)	(100)
III. Tamil Nadu	30	9.53	6	3.9	14	21.13	1	3.1	2	11.29	53	48.95
	(56.6)	(19.47)	(11.32)	(7.97)	(26.42)	(43.17)	(1.89)	(6.33)	(3.77)	(23.06)	(100)	(100)
Grand total	11468	3600.98	5477	3798.01	2029	2724.11	476	1251.87	75	467.87	19525	11842.84
	(58.74)	(30.41)	(28.05)	(32.07)	(10.39)	(23.0)	(2.43)	(10.56)	(0.38)	(3.95)	(100)	(100)

Note: 1. Southern Kerala: Areas under the Regional office of the Rubber Board at Trivandrum, Punalur and Pathanamthitta.
2. Central Kerala : " Changanacherry, Kottayam, Palai, Kanjirappally, Moovattupuzha, Thodupuzha, Ernakulam and Trichur.
3. Northern Kerala: " Palghat, Calicut, Nilambur, Tellicherry, Taliparamba and Kanhangad.

There has been a gradual shift in the distribution of rubber holdings towards smaller size classes over the last two decades.[1] To analyse the distribution of areas planted with all varieties during 1984, the holdings were classified into five size groups viz., upto 0.5 ha, 0.5-1 ha, 1-2-ha, 2-4 ha and above 4 ha and the results are presented in table-2. Relating to the total area, the second size class (0.5-1ha) recorded the highest percentage followed by the first. The first and the second size classes (holdings with size less than 1 ha) accounted for 60 percent and 85.8 percent of the total area and number of units respectively. Holdings with size above 2 ha accounted only 16.71 percent of the total area, and 3.19 percent of the total number of units. The above results are in line with earlier studies by Haridasan (1980)[1] and Ipe (1987)[2]

Table 2: Distribution of area planted with all varieties during 1984 in Kerala, Tamil Nadu and Karnataka according to size.

No.	Size class	Number	Area (Ha)	(Average holding size (Ha)
1.	Upto 0.5 ha	12120 (57.62)	3826.04 (28.74)	0.3157
2.	0.5 to 1 ha	5981 (28.39)	4165.45 (31.29)	0.6964
3.	1 to 2 ha	2294 (10.89)	3096.55 (23.26)	1.3498
4.	2 to 4 ha	555 (2.63)	1468.03 (11.03)	2.645
5.	Above 4	120 (0.57)	757.01 (5.68)	6.3084
	Total	21070 (100)	13313.08 (100)	0.6318

(Figures in parentheses are Percentages to the total)

Table 3 shows the distribution of areas planted in 1984 with RRII 105 according to size in the different rubber growing regions. In all the three regions in Kerala, the second size group ranked first in area as a percentage of the total area. Notably, in Northern Kerala, the third size group (1-2 ha) shared a higher percentage of the total area as compared to central and south Kerala. This is only to be expected since the size of land holdings are in general larger in northern Kerala than those in southern and central Kerala. In Tamil Nadu and Karnataka the third size class was the largest in respect of the proportionate area.

The large scale adoption of RRII 105 as the planting material may be due to its superior yield performance. Thus the study reveals that rubber growers in India are rational in their decision as to the choice of planting materials with the object of maximising returns from a unit area under this crop.

Acknowledgement

The Authors are grateful to Dr. M. R. Sethuraj, Director of Research for examining the paper critically and offering valuable comments. The help rendered by Shri. V. Purushothaman of Economic Research Division is acknowledged.

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