

THREE YEARS OF RUBBER BUDDED STUMPS PRODUCTION IN RUBBER RESEARCH INSTITUTE OF NIGERIA: DEMAND AND SUPPLY

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Abstract

Rubber Research Institute of Nigeria (RRIN) is the sole authentic body responsible for the production of the rubber planting material in Nigeria. The production and distribution of budded stumps at RRIN, Iyanomo near Benin City between 2003 and 2005 was analyzed to influence the factors that determine the production demand, and supply situation of budded stumps in Nigeria. Data used for the study were the field records accumulated during the period, observation of budding activities in 2005 and interaction with the field staff of RRIN Nursery at Iyanomo. The study revealed that production of budded stumps was dominated mainly by exotic clones and put increased from year to year. However, demand for budded stumps increased from year to year and out weighed the supply. The reasons for the above and suggested solutions are discussed.

Introduction

Rubber (*Hevea brasiliensis*) is a tree crop valued principally for its latex content. Therefore, Hevea genotypes with high latex yielding ability are desired for plantation established. To obtain these desired genotypes in large quantities, vegetative propagation using budding techniques is employed. In this method, the principle involved is the replacement of the shoot system of a rootstock with that of the desired ones (scion). Simply, a patch of the bark of the seedling plant (stock) is replaced with a patch of the bark with dominant bud (bud patch) taken from the genotype to be multiplied (scion) (Marattukalam and Sarawathymma, 1992). This process preserves the genetic constituent of the desired genotypes from one generation to the next. -

To this end, Rubber Research Institute of Nigeria (RRIN) established two major nurseries in Nigeria (Main station at Iyanomo near Benin City and substation at Akwete, in Abia State) to produce and distribute to farmers, rubber planting materials of desired qualities. Available data showed that RRIN developed rubber clones that have yield potentials of up to 3200kg/ha/yr of dry rubber compared the local and adopted exotic clones that yield only 300kg/ha/r. and 1600kg/ha/yr of dry rubber respectively (Alika, 1982; Mekako, 1983 and Onokpise et al, 1986). Awareness programme to highlight the good qualities of these improved planting materials to farmers through training workshops, technology review meetings, on farm-training, agricultural shows and exhibitions have • been on.

However, the study of Aigbeaen et al (2000), on the rate of adoption by farmers of RRIN developed technologies; the authors reported that most farmers were not aware of the RRIS developed clones. In addition to this problem the current efforts by Presidential Initiative on rubber pose a big challenge to the Institute to increase the production of rubber planting materials and find a better way of distributing of her high yielding budded stumps to farmers in Nigeria. This study therefore, examined three years of production, demand and supply of budded stumps in RRIN to ascertain the current state of production, demand and supply in the country. The data may help guide policy makers in channeling both human and material resources to achieving a better result.

Materials and Methods

The study was conducted at the Rubber Research Institute of Nigeria, Main station Iyanomo Benin City, South Western Nigeria, between 2003 and 2005. Iyanomo is located between latitude 5°00' and 6°00' N and longitude 6°00' and 7°00' E. The area is hot and humid with a bimodal rainfall pattern. The mean annual rainfall for the past seven years was 2602.9mm. The soil is acidic (5.82 medium level of organic carbon and total nitrogen 1.5-2.82 g/kg. Percentage phosphorous was 6.55 mg P/kg soil.

The nurseries units in RRIN produced most of her seedlings for budding using the ground nursery and a few in polythene bags. Seeds for seedling production are collected from plantation of

good rooting and arc pre-germinated in the pre-nursery. The budding procedure adopted in the Institute is as described by Delabarre and Serier (2000).

The data for this study were generated through Held records and farmers requests for budded stumps during the period (2003-2005) at the Nursery Unit of RRIN at Iyanomo. Field observations of operations in the nursery were also carried out within the past 12 months. Budded and supervisors were interviewed and their comments were noted. The data were analyzed to generate information on expected hectares to be planted by farmers based on the demand, actual hectares to be planted by the supply and the percentage deficit. The percentage deficit was computed as:

$$\frac{\text{Demand-Supply}}{100\% \text{ Demand}} \times 100$$

Results

The analysis of budded stumps produced in RRIN in 2003, 2004 and 2005 are presented in table 1. The result indicates that a total of 36 clones of rubber made of 25 RRIN developed and 11 exotic clones were available for budding at Iyanomo during the period under review. The total production of budded stumps during this period was 137,236 made of 5,815 of RRIN developed clones and 131,421 of exotic clones representing 4 and 94 percent of total production respectively. The result also showed that the highest most singular clonal production among the exotic clones during this period GT 1 (56,359) followed by RRIN 600 (47,057) and PR 107(26 - 021) representing 41, 34 and 19 percent of total production respectively. Conversely, among the RRIN developed clones, the highest most singular clonal production was NIG 901 (922) followed by NIG 804 (858) and NIG 903 (750) representing 0.67, 0.63 and 0.56% respectively. The data presented showed an annual increase in the number of budded stumps produced at Iyanomo from 24,273 in 2003 to 43,334 in 2004 and 69,6629 in 2005.

The result in table 2, shows a summary of the total budded stumps produced, supplied and farmers demand. It shows budded stump demand deficit of 78%, 78% and 84% in 2003, 2004 and 2005 respectively.

Discussion

The result of this study showed that budded stumps production at Iyanomo in 2003, 2004 and 2005, was dominated by exotic clones such as GT 1, RRIN 600 and PR 107 despite the reported high yield advantages (>2000 kg/ha/yr of dry rubber) of RRIN developed NIG 800 and 900 series over the exotic clones as reported by Mekako, (1983) and Omokhafa and Nasiru (2005). This could be explained by the fact that NIG 800 and 900 series bud-wood nursery in RRIN main station was gutted by fire and had not been replaced. It could also be as a result of lack of awareness by the farmers on the existence of the RRIN developed clone. This assertion is supported by the findings of Aigbckacn et al (2000) who reported that most farmers were not aware of the RRIN developed clones. This situation is further aggravated by the lack of deliberate policy by RRIN to mass-produce and distribute more of her high yielding clones. It is suggested that the Institute should develop an elaborate bud wood nurseries for developed clones and embark on a massive enlightenment campaign using Radio and Television jingles, pamphlets and hand bills on the high yield potentials of her rubber clones. In addition, RRIN should put in place deliberate policy to mass produce and distribute more of high yielding clones. These will enhance awareness; boost rubber production and farmers income in Nigeria.

The very high demand of budded stumps in Nigeria could be ascribed to the increasing prices of rubber at the international market (IRSG, 1999) and the current efforts for the Federal and State governments to increase the share of agricultural products in the international market to improve the crude RRIN still remains the only major source of rubber planting materials for farmers in Nigeria. This deficit could be met by the expansion of existing nurseries and improvement of oilier factors of production such as the use of irrigation facilities to ensure all year round production of budded stumps in the nurseries and the use of biotechnology to mass-produce planting materials. Also, suggested is the encouragement of private participation in budded stumps production and distribution in Nigeria through organization of training workshops involving ADI's and private nursery owners in the rubber belt of Nigeria. The results also show a marginal difference between the number of budded stumps

produced and those supplied in each year. The difference may be accounted for by poor logistics of budded stumps lifting in the nursery. However, those ones not lifted each year are normally carried over to the next year.

Conclusion

To bridge the gap between demand and supply of budded stumps in Nigeria, RRIN should expand the existing nurseries, develop bud wood nurseries for her high yielding developed rubber clones. She could also employ the use of biotechnology to mass-produce rubber planting material and acquire irrigation facilities for the nurseries at the stations to ensure all year round production of rubber seedlings in Nigeria. The Institute should also attract the participation of private sector and ADPs in the production and distribution of rubber planting materials in Nigeria. These will create another source of income for the small holders who would be involved in planting material production and distribution in the rubber industry. It could also help the institute meet the very huge challenge of additional demand the current presidential initiative on rubber will bring to bear on her. Finally, the Extension Division of the Institute should be strengthened to meet up the challenge of information dissemination on the high yield potentials of Nigeria developed clones.

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Table I: Production of Budded Slumps in RUIN Main Nursery at Iyanoiuo (1993 - 2005)

Clone	Budded Slump Production			Total
	2003	2004	2005	
NIG 800	0	0	394	394
NIG 801	0	0	434	434
NIG 802	172	0	198	370
NIG 803	226	0	299	525
NIG804	390	0	468	858
NIG 805	105	0	324	429
NIG 806	0	0	0	0
NIG 807	0	0	0	0
NIG 808	0	0	0	0
NIG 809	0	0	0	0
NIG 8 10	0	0	0	0
NIG 811	0	0	0	0
NIG 812	0	0	0	0
NIG813	0	0	0	0
NIG 814	0	0	0	0
NIG 901	160	192	570	922
NIG 902	0	0	28	28
NIG 903	224	290	236	750
NIG 904	0	0	229	229
NIG 905	0	0	284	284
NIG 906	0	0	324	324
NIG 907	0	0	36	36
NIG 908	0	0	61	61
NIG 909	0	0	87	87
NIG910	0	0	84	84
Sub Totals	1,277	482	4,056	5,815
RRIM600	9480	13299	24278	47057
RRIM614	0	0	0	0
RRIM707	0	0	0	0
RRIM 501	0	0	0	0
RRIM 62	0	0	0	0
RR1C 45	0	370	212	582
PB 28/59	24	0	475	499
PB 5/5 1	0	0	31	31
PB217	0	0	872	872
PR 107	6559	8703	10759	26021
Sub Total	22,996	42,852	64,573	130,421
Grand Total	24,273	43,334	69,629	136,236

Table 2: Budded Stumps Production, Demand and Supply (2003 - 2005)

Year	Production	Supply	Demand	Expected to be Planted		% Deficit
				Demand	Supply	
2003	24,273	20,965	95,790,	212	47	78
2004	43,334	50,256	231,300	514	112	78
2005	69,629	53,497	340,825	757	119	84