EARLY GERMINATION AND SEEDLING SELECTION IN COCONUT

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EARLY germination is considered to be an important criterion in the selection of seedlings of the Tall variety of coconut and all workers on coconut have stressed the importance of early germination in the selection of seedlings for planting out in the field. It is generally believed that late germinated seedlings are inferior to early germinated ones and that early germinated nuts produce seedlings having a faster rate of leaf production. This impression has been created because seednuts harvested during different months of the seednut collecting season are generally pooled, stored and sown in the nursery when the monsoon sets in and those which germinate earlier are selected as early germinated ones. But recent studies made on the germination of seednuts harvested during the months January to May and sown separately in the nursery in June, when the South West Monsoon sets in on the West Coast of India, present a different picture. In this paper results of studies made on the germination and growth of seedlings germinated during the months July to November from the seednuts harvested during January to May and sown separately in the nursery in June are presented and discussed with reference to germination of seednuts, growth of seedlings germinated during July to November in the nursery and the yield performance of seedlings germinated during August to October in the field.

GERMINATION TREND IN THE SEEDNUTS HARVESTED DURING THE MONTHS JANUARY TO MAY:

Studies made earlier have shown that there is a distinct trend in the germination of seednuts harvested during January to May of the seednut collecting season on the West Coast of India and that seednuts harvested earlier and sown in the nursery in June germinated earlier than those harvested later (Satya-balan, 1983). Further studies also have confirmed that there is a germination trend in the seednuts harvested during the different months of the season and sown in the nursery during the beginning of the South West Monsoon in June. The germination data of 648 seedlings of West Coast Tall obtained from the seednuts harvested during January to May and germinated during the months July to November when planted in the nursery in June, are presented in Table 1. The data indicate that in the case of seednuts harvested in January, 89% of the seednuts sown germinated during July-August months while only 9% germinated in September and 2% in October. Similarly in the case of seednuts harvested in February, 83% of the seednuts germinated during July-August months while

the germination percentage was only 12 in September and 5 in October. But in the case of seednuts harvested in March, only 4% of the seednuts germinated in July whereas the germination percentage was 76 in August-September months, 17 in October and 3 in November. In the case of seednuts harvested in April, only 15% germinated in August while the germination percentage was 76 during September-October months and 9 in November. In the seednuts harvested in May, only 8% of the seednuts germinated in September while 92% germinated during October-November months. The data generally indicate that earlier harvested seednuts germinate early whereas later harvested nuts germinate late. Hence it is difficult to apply the early germination criterion in the selection of seedlings of the Tall variety coconut.

GROWTH OF SEEDLINGS GERMINATED DURING JULY TO NOVEMBER MONTHS IN THE SEEDNUTS HARVESTED DURING THE MONTHS JANUARY TO MAY:

Selection of seedlings is made on the basis of their vigorous growth characters like leaf production and collar girth for planting out in the field during the beginning of the South West Monsoon in June. The growth of 648 seedlings as indicated by leaf production and collar girth was measured in the nursery every month from the first to the tenth month from the time of germination to find out whether there was any difference in their growth characters in respect of the month of germination or month of harvest. The data on the growth characters, leaf production and collar girth of 648 seedlings germinated during July to November in the seednuts harvested in each month January to May at the fifth and tenth month from the time of germination in the nursery are presented in Table 2a. The data indicate that there is only slight variation in the growth characters of the seedlings whether they germinate early or late if the growth characters are measured to a particular period from the time of germination. The data pertaining to all the seedlings from the seednuts harvested during January to May and those germinated during July to November are separately presented in Table 2b, which also indicate that there is only slight variation in the growth characters of the seedlings if the growth characters are measured from the time of germination to a particular period. These variations may be due to the climatic factors prevailing during the development of the seedlings. The data also indicate that whatever be the month of germination, the growth of the seedlings during the first five months from the time of germination is more than that of the second five months. Studies have shown that the high rate of growth in the beginning decreases slowly resulting in a set back in growth which is attributed to the utilisation of the endosperm by the the seedling till the fifth or sixth month and afterwards to a gradual change over to full dependence on photosynthesis for nutrition, and thereafter the growth slowly increases (Satyabalan 1984a). The nursery is not fertilised and in the sandy soil of the nursery, the growth is naturally slow.

GROWTH AND YIELD OF NUTS OF SEEDLINGS GERMINATED DURING THE MONTHS AUGUST TO OCTOBER:

It has been reported that early germinated seedlings not only become early bearers but also turn out to be high yielders. Results of studies made on the growth and nut yield in seedlings of selected high yielders of West Coast Tall germinated during the months August to October on the west coast of India have shown that there was very little difference in the rate of leaf production from the time of germination to the time of removing them for transplanting whatever be the month of germination. In the field also there was not much difference in the rate of leaf production per year during a period of 10 years after transplanting in the field in the seedlings germinated during the months of August and September while the seedlings germinated in October recorded a high rate of leaf production only during the fifth to seventh year after transplanting and afterwards the rate of leaf production was similar to those of August and September germinated ones. Hence the total number of leaves produced up to the tenth year from the time of germination was more in the seedlings germinated in October. It was also found that the time of germination also had no influence on the height of the seedlings attained during a period of 26 years after transplanting. There was also no significant difference in the mean yield of nuts of the seedlings germinated during the months August to October. The cumulative yield of nuts per palm from the time of flowering was slightly more in the seedlings germinated during September and October months than in the seedlings germinated in the month of August in spite of early germination. The number of high yielders yielding 80 and above nuts per palm per year were 12 out of 16 in seedlings germinated in August,

10 out of 14 and 11 out of 12 in seedlings germinated in September and October respectively indicating that all early germinated seedlings need not necessarily turn out to be high yielders. The data reported earlier is abstracted in Table 3 (Satyabalan, 1985).

All these studies indicate that if the seedlings are measured for their growth characters like leaf production and collar girth from the time of germination to a particular period, there may not be much variation between them whatever be the month of germination resulting in the availability of a higher percentage of quality seedlings as reported earlier (Satyabalan, 1984 b). Kannan and Nambiar (1979) have reported that the performance of seedlings, vigorous and intermediate studied by them has shown that the yield difference between them is not significant and that seedling selection need not be stringent as is advocated at present. According to them only poor seedlings should be rejected. These studies indicate that early germination cannot be considered as an important criterion for selection of seedlings of the Tall variety of coconut in the nursery.

References

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Table 1

Pattern of Germination in Seednuts Harvested During January to May

Month of harvest	Month of sowing	No. of seednuts germinated during					
		July	August	September	October	November	Total
January	June	14	65	8	2	-	89
February	"	14	91	15	7	-	127
March	"	6	75	46	27	4	158
April	"	-	32	71	87	18	208
May	"	-	-	5	32	29	66
	Total	34	263	145	155	51	648

TABLE 2a

DATA ON THE GROWTH CHARACTERS OF THE SEEDLINGS GERMINATED DURING THE MONTHS JULY TO NOVEMBER IN SEEDNUTS HARVESTEDDURING THE MONTHS JANUARY TO MAY

Month of harvest	Month of Germination			Mean leaf production		Mean collar girth (cm)	
				5th month	10th month	5th month	10th month
				(From the time of germination)			
January	July	(14)		4.1	7.1	9.2	14.1
	August	(65)		4.2	7.0	9.3	13.9
	September	(8)		3.8	7.1	8.5	13.1
	October	(2)		3.5	7.0	9.4	14.6
	Total	(89)	Mean	4.1	7.0	9.2	13.8
February	July	(14)		3.9	7.1	8.6	13.1
	August	(91)		4.1	7.0	9.0	13.3
	September	(15)		3.7	6.3	8.4	12.3
	October	(7)		3.7	7.0	9.1	13.3
	Total	(127)	Mean	4.0	6.9	8.8	13.1
March	July	(6)		4.3	7.3	9.1	13.3
	August	(75)		4.0	6.8	8.9	13.1
	September	(46)		3.8	6.7	8.9	13.3
	October	(27)		3.5	6.1	8.7	12.3
	November	(4)		3.5	6.3	9.7	12.7
	Total	(158)	Mean	3.8	6.7	8.9	13.1
April	August	(32)		3.8	6.9	9.1	14.2
	September	(71)		3.8	6.8	9.0	13.4
	October	(87)		3.5	6.3	8.6	12.6
	November	(18)		3.6	6.4	8.7	12.2
	Total	(208)	Mean	3.6	6.6	8.8	13.1
May	September	(5)		3.4	5.8	8.4	13.4
	October	(32)		3.5	6.5	8.3	12.1
	November	(29)		3.5	6.5	8.3	12.3
	Total	(66)	Mean	3.5	6.5	8.3	12.3
	Total	648	Mean	3.8	6.7	8.8	13.1

TABLE 2 b

GROWTH CHARACTERS OF SEEDLINGS FROM THE SEEDNUTS SOWN IN JUNE FROM THE TIME OF GERMINATION AT THE FIFTH MONTH AND TENTH MONTH OF GROWTH IN THE NURSERY

Month of harvest	No. of seedlings		Mean leaf production 5th month	Mean leaf production 10th month	Mean collar girth (cm) 5th month	Mean collar girth (cm) 10th month
January	89		4.1	7.0	9.2	13.8
February	127		4.0	6.9	8.8	13.1
March	158		3.8	6.7	8.9	13.1
April	208		3.6	6.6	8.9	13.1
May	66		3.5	6.5	8.3	12.3
Total	648	Mean	3.8	6.7	8.8	13.1

Month of germination	No. of seedlings		Mean leaf production 5th month	Mean leaf production 10th month	Mean collar girth (cm) 5th month	Mean collar girth (cm) 10th month
July	34		4.1	7.1	8.9	13.5
August	263		4.1	6.9	8.9	13.5
September	145		3.8	6.7	8.8	13.2
October	155		3.5	6.4	8.5	12.5
November	51		3.5	6.4	8.5	12.3
Total	648	Mean	3.8	6.7	8.8	13.1

TABLE 3

LEAF PRODUCTION, HEIGHT AND YIELD OF NUTS IN SEEDLINGS GERMINATED DURING THE MONTHS AUGUST TO OCTOBER

Month of germination	No. of seedlings	Mean total leaf production from the time of germination upto 10th year	Mean height attained during a period of 26 years after transplanting	Mean yield of nuts per palm per year during 14th to17th year from the time flowering	Mean cumulative yield per palm from the time of flowering	No. of high yielders yielding 80 nuts and above per palm per year
August	16	88.8	841.7 cm	100.8	1088.8 nuts	12 out of 16 palms
September	14	87.0	799.2 cm	104.4	1136.3 nuts	10 out of 14 palms
October	12	93.7	841.9 cm	100.8	1141.8 nuts	11 out of 12 palms