

Impact of Additional Incentive Scheme for rubber in Assam

By
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DISSERTATION

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for the 'Post Graduate Diploma in Natural Rubber Production'*

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DECLARATION

I hereby declare that this dissertation entitled **"Impact of Additional Incentive Scheme for rubber in Assam"** is a bonafide record of research work done by me during the course of research and that the dissertation has not previously formed the basis for the award to me of any degree, diploma, associateship, fellowship or other similar title of any other University or Society.

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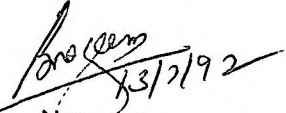
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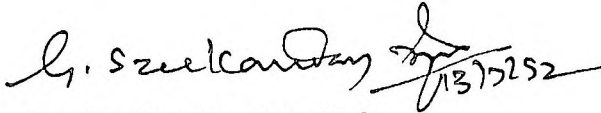
CERTIFICATE


Certified that this dissertation entitled "Impact of additional incentive scheme for rubber in Assam" is a record of research work done independently by **Sri Rabi Ram Baro** under our guidance and supervision and that it has not previously formed the basis for the award of any degree or diploma to him.

We the undersigned members of the Advisory Committee of Sri Rabi Ram Baro a candidate for the Post Graduate Diploma in Natural Rubber Production agree that the dissertation entitled "Impact of additional incentive scheme for rubber in Assam" may be submitted by **Sri Rabi Ram Baro** in partial fulfilment of the requirement of the diploma.


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Introduction

1. INTRODUCTION

The Hevea brasiliensis was first introduced into undivided Assam during the late 1950 from Southern Part of India. It was planted on an experimental basis in the different localities of the hill districts.

The first trial plantation of this crop was started in Ougury, Baithalangso and Kohora regions by the Soil Conservation Department. The plantings were carried out with the available selected seedling varieties. It was successfully raised in the three localities and the results in these plantations were encouraging. Since the initial attempt was successful the State Government took initiative for exploratory surveys and trial plantations were started in the different parts of the State.

The undivided Assam was later divided into seven States. Arunachal Pradesh, Nagaland, Mizoram, Manipur, Tripura, Meghalaya and Assam. Those states now situated in the North Eastern part of India are together known as North Eastern Region (NER). The whole of North Eastern Region is put as non-traditional rubber growing tract of India. The exploratory surveys and trials had been conducted by the Rubber Board in this region to identify suitable areas for rubber plantations. It was found that the State of Assam has better scope for establishing rubber plantations

although the climatic condition slightly varies with the optimum required for the growth of rubber.

Initially the plantations were raised by the Public Sector in Assam. The satisfactory result obtained from trial plantations in different areas in Assam, a state public sector corporation was set up by Assam Government for commercial rubber plantation. The first commercial scale rubber cultivation was started in 1974-75 by the Assam Plantation Crops Development Corporation. The plantations were established mainly in hilly district of Karbi Anglong, Assam.

Implementation of the New Plantation Subsidy Scheme 1979 and Rubber Plantation Development Scheme Phase I (RPD) (1980-1984) could bring the pace of adoption of agricultural practices of this crop in small way among private farmers in the state. As a result, development of rubber cultivations and expansion of areas also gradually took place in the state. The real achievements were brought only when the "Project for Accelerated Development of Rubber Plantation in North Eastern Region" under RPD Phase II was introduced and implemented by the Rubber Board in 1984-85. Under this scheme Rubber Board strengthened the set up in North Eastern Region to provide adequate facilities for extension of rubber cultivation.

The poor financial condition of farmers in Assam, though they have suitable land for planting rubber, prevented them from taking up this crop primarily due to its long gestation and cost intensive nature. The budded stumps planted directly in the field resulted in heavy casualties due to ignorance of technical knowledge. This caused in most of the growers losing interest in rubber cultivation. To encourage the poor farmer in the state, the Rubber Board introduced additional incentives under RPD Scheme Phase II and was implemented in 1986-87. The additional incentives included free supply of polythene bags and plants for raising nurseries along with a maintenance grant. The system was modified in 1987-88. The payment of maintenance grant was made in two equal instalment after planting the plants in the polybag. It was further modified in 1988-89 with the first instalment of maintenance grant released based on the sprouted and established plants in the polybag nurseries and the payment of second instalment made after transplanting on the basis of the available polybag plants in the main field.

The Rubber Board was implementing the New Planting Subsidy Scheme (1979) and the Rubber Plantation Development Scheme (RPD) Phase I from 1980 to 1985 and RPD Scheme Phase II from 1985 to 1990 in order to expand the rubber cultivation in the country. The real break through came only when RPD Scheme Phase I and II were implemented in the state.. An area of 644'82 ha was

brought under rubber during Phase I and 2404'88 ha in Phase II.

Based on exploratory surveys the estimated area available and the target fixed for the VIII Plan period in North Eastern States are shown as follows (Rubber Board, 1990 and 1991).

States	Estimated areas (in hectare)	Target fixed (in hectare)
Assam	2,50,000	19,000
Arunachal Pradesh	2,000	850
Meghalaya	25,000	4,350
Manipur	5,000	2,500
Mizoram	5,000	500
Nagaland	18,000	4,300
Tripura	50,000	18,000

It shows that the estimated areas and target fixed in Assam is comparatively more than the other states in North Eastern Region. Hence it is high time to study the impact of various incentives offered by the Board in adopting improved scientific practices for this crop in state.

The present study was conducted to assess the impact of various additional incentives which was given by the Board during Phase II Scheme (1985-1990) for the expansion of rubber cultivation in Assam.

Review of Literature

2. REVIEW OF LITERATURE

As the study is a new one no literature is available for review. However, the various incentives given to the farmer by the Rubber Board under the scheme are reviewed here.

2.1 The New Planting Subsidy Scheme 1979

The new planting subsidy scheme was operated and implemented by the Rubber Board in the country in 1979 with the aim to bring maximum development in small holding sector (Chithrangadan, 1985). The incentives included under this scheme are as follows:

1. Capital subsidy @ Rs.7500/- per ha. for holdings upto 2 ha. and @ Rs.5000/- for holdings above 2 ha and upto 20.23 ha. This was to be disbursed in 7 annual instalments. The instalments of payment was released after completion of stipulated items of work done satisfactorily for each year.
2. Input subsidy to those, whose area does not exceeds 6 ha. It includes reimbursement of cost of planting material, 50 per cent cost of prescribed fertiliser and subsidy for soil conservation work done in the field.
3. Interest subsidy @ 3 per cent for new planting loan availed from the bank.

4. Free advisory and extension service are given at all stages of planting.

2.2 Rubber Plantation Development Scheme Phase I (1980-1984)

The new planting subsidy scheme 1979 and also replanting subsidy scheme were replaced by an integrated Rubber Plantation Development Scheme Phase I during the sixth plan period (Rubber Board, 1980). The scheme which was in operation from 1980 to 1984 provided to the following incentives:

1. Cash subsidy @ Rs.5000/- per hectare to growers owning upto 20 ha. of rubber plantation including any area proposed for new planting under the scheme (Categories A & B) and Rs.3000/- per hectare to growers planted above 20 ha. (Category C). The subsidy was paid in seven instalment. The minimum area is to be new planted was 0.20 ha. and was 0.10 ha. for replanting.
2. For Category 'A' whose area does not exceed more than 6 ha. were offered additional assistance like reimbursement of cost of planting materials, half cost of prescribed fertiliser and subsidy Rs.150/- for soil conservation work.
3. Long term agricultural loan from banks for supplementing the Board's subsidy in order to meet the entire cost of cultivation.

4. Interest subsidy @ 3 per cent those who availed bank loans under this scheme.
5. Free technical assistance regarding all aspects of rubber.

2.3 Rubber Plantation Development Scheme (RPD) Phase II (1985-1990)

To motivate and promote large scale expansion of rubber cultivation the Rubber Board operated and implemented RPD Scheme Phase II from 1985 to 1990 in the non-traditional areas (Rubber Board, 1985). Under this scheme the project for "Accelerated Development of Rubber Plantation in North Eastern Region" was implemented on a large way. It really brought effective results in the development of rubber plantation and the scheme provided a package of assistance and incentives as follows:

1. Cash subsidy @ Rs.5000/- per hectare for all category of growers and disbursed in 6 to 7 annual instalment.
2. Long term soft loan of Rs.15,300/- per hectare to supplement the Board's subsidy.
3. Interest subsidy @ 3 per cent on bank loan availed.
4. Free technical assistance to rubber growers.

In addition to the above package of assistance and incentives, the additional incentives included were as follows:

- a. Free distribution of polybags and high yielding plants for raising polybag nurseries.
- b. Payment of maintenance grant @ Rs.2/- and Rs.4/- per established plant in polybag to general and SC/ST category of growers respectively in two equal instalment.
- c. Supply of rubber mixture @ 50 per cent subsidised rate whose area does not exceed 5.00 ha.in extent (for SC/ST).
- d. Free supply of fencing materials to SC/ST growers and reimbursement of cost of the materials.
- e. Financial assistance @ Rs.2500/- per hectare for promotion of irrigation subject to a maximum of Rs.50,000/- to any one growers.
- f. Supply of estate requisites like roller, alluminium dishes, cup hanger, plastic cup etc. at subsidised rates.
- g. Financial assistance for construction of smoke house.
- h. Distribution of seeds of leguminous cover crops at subsidy rate.

The supply of polythene bags and budded stumps free of cost to growers turned out to be a great relief and encouraged farmers to take up rubber cultivation in this region.

Korah (1990) in his evaluation report revealed that direct field planting of budded stumps especially by the small holders

to be a great failure in North Eastern Region. The establishment rate of polybag plants were 46 to 65 per cent in North Eastern Region. Where as the project for "Accelerated Development of Rubber Plantations in North East Region" in the first three years could achieve cent per cent of the target fixed for the scheme.

The quantity of polybags and plants supplied by the Rubber Board increased year by year as well as area under rubber also increased. This testifies the awareness created among the public in North East Region where rubber planting attained popularity in a short period of 2 to 3 years.

Korah (1990) also stressed that for further extension of new area under rubber and for better establishment of the crop in North Eastern Region this type of incentives are to be continued.

Materials and Methods

3. MATERIALS AND METHODS

The data required for the study were collected from the available records from four Rubber Board Regional Offices and Zonal Office, Guahati. The data for the area under rubber during 1980-1990 were collected from Permit Registers of the Regional Offices and other available records from Zonal Office. Details pertaining to the supply of polybags, budded stumps, fertiliser, fencing materials, estate requisites, payment of maintenance grant, payment of interest subsidy, assistance for installing irrigation machine and construction of smoke house etc. were collected from the available registers in the respective Regional Offices.

A questionnaire was prepared for eliciting information on the additional incentives availed like polybag, budded stumps, fertiliser, fencing materials, maintenance grant, irrigation facilities, interest subsidy, estate requisites, cover crop seeds, assistance for smoke house and other aspects of cultural operation in terms of knowledge and adoption (Annexure-I). Each item of additional incentive and cultural operations were allotted individual scores. The maximum score of forty was allotted each for knowledge and adoption separately. Eighty growers who have availed the additional incentives were selected at random and interviewed with the help of questionnaire. The interview was conducted at their respective places in Assam. The details collected are presented in Annexure-II.

The study on the basis of knowledge and adoption was analysed from the score obtained. Those who correctly answered were allotted one score in each question. The score was given to individuals for testing the knowledge and rate of adoption on additional incentives and cultural practices of this crop. The analysis of the score has been made to find out results in percentage by using the method as follows:

$$\frac{Y}{X} \times 100$$

Y = Individual total score.

X = Allotted total score.

The range of individual score was calculated with the help of the above formula and grouped into three categories as low, medium and high.

The details of area brought under rubber during Rubber Plantation Development Scheme Phase I (1980-1984) and Rubber Plantation Development Scheme Phase II (1985-1990) were also collected for comparative study.

The age group, occupation, education, size of family and source of information used for rubber cultivation were also studied and taken into account. The problem faced by the growers and their suggestion for further improvement were noted in the questionnaire. The main aim of the study was to assess how far these

growers had gained knowledge about the cultural practices of this crop and what were the future prospects for rubber cultivation in the state. The data collected is tabulated, presented and discussed.

Results and Discussion

4. RESULTS AND DISCUSSION

The results of the study are described and discussed in this chapter.

4.1 Area brought under rubber in Assam

The details of the area brought under rubber in Assam during the Rubber Plantation Development Scheme Phase I and II is presented in Table 1 and 2. The Phase II includes the period under additional incentive scheme.

During the period from 1980 to 1985 i.e. Phase I, an area of 645 hectares was brought under rubber. More than 15 per cent of this was covered during 1980 to 1981 period. During the Phase II period and area of 2405 hectares was brought under rubber (Table 2) showing the clear impact of additional incentive scheme in expanding the area under rubber in Assam.

4.2 Benefits of additional incentives availed by the farmers

Details collected during the survey regarding the benefits availed by the farmers under additional incentives scheme is presented in Table 3.

Under the additional incentives scheme 10 items were mainly included. The facilities extended to the farmers for availing

Table 1

Area brought under rubber in Assam during Rubber Plantation
Development Scheme Phase I (1980-1985)

Years	No. of units	Area under rubber (in hectare)	% (in ha)
1980	10	148.62	23.04
1981	22	217.01	33.65
1982	36	55.21	8.56
1983	44	51.46	7.98
1984	23	78.46	12.16
1985	29	94.06	14.58
Total	164	644.82	

Table 2

Area brought under rubber in Assam during Rubber Plantation
Development Scheme Phase II (1986-1990)

Years	No. of units	New area under rubber (in hectare)	% (in ha)
1986	73	164.77	6.85
1987	210	534.43	22.22
1988	518	625.98	26.02
1989	820	674.03	28.02
1990	392	405.67	16.86
Total	2013	2404.88	

polybags, budded stumps, maintenance grant, fencing materials and cover crop seeds were utilised to a great extent (77 to 100%). The other incentives like supply of fertiliser, assistance for irrigation, interest subsidy, assistance for smoke house and procurement of estate requisites were not found to be fully utilised by the farmers (Table 3).

The reasons for lack of fertilizer use could be attributed to local non-availability of recommended rubber mixtures in the state. The study reveals that many of the small holders had not applied recommended doses of fertilizers to their rubber plants. Even if some one wanted to purchase rubber mixture from local dealers it was not just available. Hence the supply at 50 per cent subsidy rate to all small holders may be continued in Assam at the same time ensuring its local availability.

The installation cost of irrigation equipments being high only limited number of growers had availed it. This facility may be extended especially where there is rain shadow area in the state.

Most of the farmers could not avail the bank loan due to lack of clear title of ownership over the land. As a result, interest subsidy also could not be availed. In fact, only very few growers had availed the same in the state (Table 3). The State Government, Rubber Board and financial institutions should take steps jointly to remedy this situation.

Table 3
Beneficiaries and non-beneficiaries of additional incentives in surveyed area (1986-1990)

Sl. No.	Items of additional incentives	No. of farmers contacted	Beneficiaries		Non-beneficiaries	
			No.	%	No.	%
1	Polybags	80	80	100	Nil	Nil
2	Budded stumps	"	80	100	Nil	Nil
3	Fertilisers	"	44	55	36	45
4	Fencing materials	"	65	81.25	15	18.75
5	Cover crops	"	62	77.5	18	22.5
6	Estate requisites	"	2	2.5	78	97.5
7	Maintenance grant	"	80	100	Nil	Nil
8	Assistance for irrigation	"	3	3.75	77	96.25
9	Interest subsidy	"	6	7.5	74	92.5
10	Assistance for smoke house	"	Nil	Nil	Nil	Nil

4.2.1 Polybags and budded stumps

Details of polybags and budded stumps supplied during 1985-86 to 1990-91 is presented in Table 4. It is observed that the supply of polybags was in excess to that of budded stumps supplied during the period. Maximum planting materials were supplied during the period of 1988-89 to 1990-91. As a whole more than 56 lakhs budded stumps were supplied free in the additional incentives scheme. They are found sufficient for planting an area of 11,220 hectares with a planting density of 500. The actual area brought under rubber during this period was only 2405 hectares (Table 2) i.e., around 20 per cent of the area that could have been covered with the materials supplied under the scheme. This indicates the poor establishment of the budded stumps supplied. The reasons for poor establishment might be due to (a) the severe winter affect and hail storm damage, as a result, of which the budded stumps failed to sprout at polybag nursery stage, (b) poor attention given to the plants both by the farmers and the extension officers of the Rubber Board and (c) due to the political instability and insecurity in the state.

In Guwahati regions where the survey work was concentrated the establishment rate was found to be far better than the state average (Table 5). In the area surveyed, a total of 1.36 lakhs budded stumps were supplied of which 0.61 lakhs established

Table 4
Distribution of polybag and budded stumps under additional
incentive scheme (1986-1990)

Years	No. of polythene bags supplied	No. of budded stumps supplied
1986-87	6,89,200	3,24,250
1987-88	7,87,000	9,66,775
1988-89	21,35,642	17,82,362
1989-90	22,67,125	10,03,506
1990-91	5,87,305	15,32,776
Total	64,66,272	56,09,669

Table 5
Survival of polybag plants in the surveyed area of Guwahati
region (1986-1990)

No. of growers contacted	: 80
No. of budded stumps supplied	: 1,35,800 nos.
No. of establishment	: 67,460 nos.
Percentage of survival	: 45.00
Area brought under rubber	: 135 ha

in the field indicating around 45 per cent survival. An area of 135 hectares was brought under rubber by the growers in this surveyed project. Details of the individuals interviewed is presented in Annexure-II. The clones supplied for planting under the scheme were RRII 105, RRIM 600 and GT I. Most of the farmers have used RRII 105 for planting. Few of the farmers (14%) had adopted mixed planting with RRIM 600, RRII 105 and GT I.

4.2.2 Fertiliser, fencing materials and cover crop seeds

The details of fertiliser, fencing materials and cover crop seeds supplied under additional incentives scheme in Assam is given in Table 6. It was found that there was no fertiliser supply under the scheme till 1988-89. It was started only in 1989-90. A total of 2500 kgs of fertiliser mixture was supplied in 1989-90 which was substantially increased to 10,000 kgs in 1990-91. The fertiliser mixture was supplied at 50 per cent of the original cost to the farmers.

The supply of fencing materials in the form of barbed wire was started in 1988-89 and total supply for the Assam state upto 1990-91 was 117 MT. It was supplied free of cost to small holders of SC/ST category.

In the area surveyed the benefits obtained to the farmers in terms of fertiliser was satisfactory. Only 55 per cent of the

farmers could get fertilisers under the additional incentive scheme (Table 7). Eighty one per cent of the farmers surveyed could avail the fencing materials supplied by the Board. The supply of fertiliser and fencing materials were not adequate in the state so as to cover all the rubber growers in the area.

The cover crop seeds were supplied to the farmers of Assam right from the beginning of the Phase II scheme. As a whole 2234 kgs of cover crop seeds were distributed to the farmers (Table 6). In the area surveyed 62 farmers (77.5%) had availed cover crop seeds through the scheme at the rate of Rs.20/- per kg. An area of 123 hectares was cover cropped in the surveyed area with the seeds supplied (Table 7). Though there was sufficient supply of cover crop seeds farmers were not fully utilising the benefit extended to them.

4.2.3 Estate requisites

The distribution of estate requisites in the Phase II scheme was started in 1990. The items supplied included rubber rollers, tapping knives, aluminium dishes, cup hangers, collection cups, spouts, rubber coat and emission. The details of the quantity supplied for the whole Assam during 1990 is presented in Table 8. These estate requisites were supplied at subsidy rate in the state. Out of the eighty growers surveyed only two had rubber

Table 6
Distribution of fertilisers, fencing materials and cover crop seeds
(1986-1990)

Years	Qty. of fertiliser supplied (in kgs)	Qty. of fencing supplied (in MT)	Qty. of cover crop seeds supplied (in kgs)
1986-87	Nil	Nil	356
1987-88	Nil	Nil	406
1988-89	Nil	22.680	490
1989-90	2,500	56.585	360
1990-91	10,000	37.220	622
Total	12,500	116.485	2,234

Table 7
Details of additional incentives (fertilisers, fencing materials,
cover crops seeds) provided in the surveyed area

Items	No. of farmers contacted	No. of farmers availed	% of total	Total area in ha.	Qty. of materials supplied in kgs.
Fertilisers	80	44	55	30.04	5900
Fencing materials	"	65	81	41.93	9700
Cover crop seeds	"	62	77.5	123.10	531

Table 8
Distribution of Estate requisites in Assam
(1986-1990)

Items of estate requisites	Quantity supplied
Roller machines	8 nos.
Aluminium dishes	350 "
Tapping knives	17 "
Plastic cups	10,000 "
Cup hangers	10,000 "
Spouts	10,000 "
Rubber coat	200 kgs.
Emisan.	4 "

plants in tappable stage. They had availed the facilities extended in the form of estate requisites. The details are shown in Table 9. The supply of estate requisites was found adequate with respect to the number of trees that has attained tapability.

4.2.4 Financial assistance

Financial assistance in the Phase II scheme included maintenance grant, irrigation facilities, interest subsidy and smoke house construction. An amount of Rs.32,39,309/- was found paid to the farmers during the period from 1985 to 1990 (Table 10). Among the eighty growers surveyed, all the farmers had availed the maintenance grant for polybag nurseries. Irrigation facilities were availed only by three growers amounting to Rs.60,540/- (Table 11) in the whole state. Hence all the three farmers who had availed the irrigation facilities in Assam state were among the farmers surveyed under this project. The interest subsidy was availed by six growers. Financial assistance for smoke house was not availed at all in the area surveyed (Table 11).

4.3 Regular incentives

The regular incentives given to the farmers in Assam are shown in Table 12. As a whole in Assam, an amount of Rs.117,05,421/- was released towards regular incentives during 1986-1990. In the area studied, Rs.4,52,551/- had been availed as incentives by eighty growers (Table 13).

Table 9
Supply of estate requisites in the surveyed area

of ners tacted	No. of farmers obtained tappable rubber	No. of farmers availed	No. of tappable plants	No. of cup hangers supplied	No. of spouts supplied	No. of collection cups supplied	No. of tapping knives supplied	No. of aluminum dishes supplied	No. of roller machines supplied	Rubber coats in kgs	Emission in kgs
0	2	2	1200	1000	1000	1000	4	10	2	Nil	Nil
			1500	1500	1500	1500	5	10	2	10	Nil
al		2	2700	2500	2500	2500	9	20	4	10	Nil

Table 10
Financial assistance availed in Phase II Scheme in Assam State
(1986-1990)

Maintenance grant	: Rs.31,63,778/-
Irrigation facilities	: Rs. 60,540/-
Interest subsidy	: Rs. 11,991/-
Smoke house	: Rs. 3,000/-
Total	: Rs.32,39,309/-

Table 11
Financial assistance provided in the surveyed area

Items	No. of farmers contacted	No. of farmers availed	Area covered in ha.	Total no. of plants	Amount released in Rs.
Maintenance grant	80	80	135	67,440	1,85,080
Irrigation facilities	"	3	24.99	12,495	60,540
Interest subsidy	"	6	33.55	14,375	11,991
Smoke house	"	Nil	Nil	Nil	Nil

Table 12
Regular incentive under Phase II in Assam (1986-1990)

Years	Amount released in Rs.
1986	10,39,927.45
1987	20,11,989.05
1988	26,97,896.75
1989	32,11,476.50
1990	27,44,130.85
Total	1,17,05,420.60

Table 13
Regular incentives availed by the farmers in the surveyed area

No. of farmers contacted	Area covered in ha.	Amount released in Rs.
80	135	4,52,551

4.4 Educational status, knowledge and adoption of the farmers

The educational status of the farmers surveyed is shown in Table 14. Out of the eighty farmers surveyed, 15 per cent of the farmers were illiterate while the rest were having primary school education or above. Members with college educations were only 19 per cent among the respondents. According to the mark scored for the questions in the questionnaire, the farmers were grouped into low, medium and high in terms of knowledge and adoption of scientific practices under the scheme. The details are presented in Table 15. It was found that more than 50 per cent of farmers could be grouped under "medium" with respect to knowledge, whereas 92 per cent could be grouped under "high" in terms of adoptions. This indicates that the farmers in Assam has got good initiation in adopting the scientific practices and availing the facilities extended by the Board. It was interesting to note that the adoption rate was relatively high compared to knowledge.

Table 14
Education status, occupation, source of information used and age group of the farmers in the surveyed area

Status	Education status		Occupation		Source of information used			Age group (average) years
	No. of farmers	%	Status	No. of farmers	%	Source	No. of growers	
Illiterate	12	15	Service	12	15	Radio	1	1.25
Can read	Nil	Nil				News Paper	23	28.75
Can write	Nil	Nil				Agencies	Nil	Nil
Primary school	17	21.25	Cultivator	68	85	Societies	2	2.5
Middle school	18	22.5				Friends	Nil	Nil
High school	18	22.5				Rubber Board	54	67.5
College and above	15	18.75						
Total	80			80			80	

Table 15
Knowledge and rate of adoption of the surveyed growers (1986-1990)

	No. of farmers contacted	Group					
		Low (40-60)		Medium (61-80)		High (81-100)	
		No.	%	No.	%	No.	%
Knowledge	80	15	18.75	45	56.25	20	25
Adoption	80	Nil	Nil	6	7.5	74	92.5

Summary and Conclusion

5. SUMMARY AND CONCLUSION

An attempt was made in this study to evaluate the impact of additional incentive scheme for rubber in Assam. There were four Rubber Board Regional Offices in the State and one Zonal Office at Guwahati. All the available data were collected from the above offices. In the surveyed area, the impact of various additional incentives was studied and interpreted.

The total area brought under rubber during the Rubber Plantation Development Scheme Phase I was 645 hectares which the area increased substantially to 2405 hectares under the Phase II scheme when the additional incentives had been extended.

In additional incentives offered by the Board during Phase II were utilised to a great extent in the state. It was observed that the supply of polybags was in excess to that of budded stumps during Phase II (1985-1990). Total fifty six lakhs budded stumps were supplied free of cost under the scheme in Assam. With these plants, an area of 11,220 hectares could have been brought under rubber at a planting density of 500 plants per hectare. But the actual area brought under rubber was only 2405 hectares during the Phase II. This indicates that the establishment of budded stumps was poor and as a result, area under rubber was much less than the expected. In the surveyed area, the establishment rate of budded stumps were found to be 45 per cent at the

time of planting in the field. The data collected for the whole Assam revealed that the area brought under rubber was only 20 per cent of the area that could have been actually brought under the crop with the planting materials supplied. It showed that the survival of polybagged plants may vary from region to region.

As a whole, in Assam 12,500 kgs of fertilizers, 116 MT fencing materials and 2234 kg of cover crop seeds were distributed. In the surveyed area the polybags, budded stumps, fencing materials, maintenance grant and cover crop seeds were utilised by maximum (77 to 100%) growers. It was indeed a good response from the farmers in the state. The other incentives like fertilizers, assistance for irrigation, interest subsidy, assistance for smoke house and estate requisites were not fully utilised by the growers of surveyed area. It was found that 55 per cent farmers only used fertilizer at half cost, 3.75 per cent farmers availed irrigation facilities, 2.5 per cent farmers took advantage of the interest subsidy and nobody availed assistance for smoke house.

The supply of estate requisites was satisfactory in the state. In the surveyed area, both the farmers who had tappable rubber had utilised this facility.

During the period of Phase II, an amount of Rs.32,39,309/- was released towards maintenance grant, irrigation facilities,

interest subsidy and smoke house in the state. Maximum amount was released as maintenance grant (Rs.31,63,778/-).

The regular incentives released in the state amounted to Rs.117,05,421/-. In the surveyed area, an amount of Rs.4,52,551/- had been released as regular incentive.

The adoption of the scientific practices in the case of this crop was satisfactory in the studied area. It was found that more than 50 per cent of the farmers had attained knowledge and 92 per cent had adopted the scientific practices of this crop. This showed that farmers of Assam had the awareness, attitude and initiative to adopt the scientific practices for rubber cultivation.

From the study, conclusion could be derived which have a bearing on further development of rubber plantation in Assam:

1. Additional incentives may be extended during the next plan period also to bring more area under rubber in the state.
2. The supply of bags and budded stumps to individual may be restricted to actual requirements.
3. District/Block demonstration plots may be established in the area.
4. Wide publicity/advisory extension activities may be organised extensively in the state.

5. Organising of Rubber Growers Societies/Block Plantations may be encouraged.
6. Service area of Junior Field Officers/Field Officers may be reduced and their strength increased.

There is bright prospects and future for successful development of rubber plantation in Assam provided farmers and Rubber Board take up this as a challenge. The achievement made in Phase II though not creditable is encouraging.

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Annexure

ANNEXURE-I

IMPACT OF ADDITIONAL INCENTIVE SCHEME FOR RUBBER IN ASSAM

PROFORMA

- | | |
|--|--|
| 1. Name and address of the growers : | |
| 2. Age : | |
| 3. Occupation : | |
| 4. Education : | Illiterate/can read/can read and write/primary/middle/high school/Collegiate |
| 5. Size of family : | |
| 6. Source of information about rubber plantation : | Radio/Newspaper/State Agency/Society/Friends/Rubber Board Official |
| 7. Total area planted : | ha. |
| 8. Year of planting : | |
| 9. Details of planting materials used : | Budded stump/Polybag plant/Polyclonal seed/unselected seedlings/Assorted |

DETAILS OF ADDITIONAL INCENTIVES AVAILABLE

- | | |
|---|--|
| 1. Total area covered : | ha. |
| 2. Polybags : | No. |
| 3. Budded stumps : | No. |
| 4. Maintenance Grant : | Rs. |
| 5. Fertiliser : | Half cost Rs.
Free supply kg |
| 6. Fencing materials : | Free supply kg
Reimbursement of Rs. |
| 7. Assistance for installing irrigation machine : | Yes/No, if yes Rs. |

8. Estate requisite : Yes/No, if yes mention
- | | |
|-------------------|-----|
| Cup hanger | No. |
| Spout | No. |
| Collection cup | No. |
| Tapping knife | No. |
| Rubber coat | kg |
| Roller Machine: | |
| Groove | No. |
| Plain | No. |
| Alluminium dishes | No. |
9. Assistance for smoke house : Yes/No, if yes
amount Rs.
10. Cover crop at subsidy rate : Yes/No, if yes
kg
11. Long term agricultural loan :- Yes/No, if yes
amount Rs.
12. Interest subsidy availed : Yes/No, if yes number of
instalment 1, 2, 3, 4, 5

DETAILS OF REGULAR INCENTIVES

- Total area : ha.
- Cash subsidy : 1st, 2nd, 3rd, 4th, 5th
Rs. Rs. Rs. Rs. Rs.
- 6th, 7th
Rs. Rs.
- Technical Assistance : Yes/No, if yes mention
the agent

KNOWLEDGEPOLYBAG

1. What are the additional incentives included in the scheme? : Correct/Wrong
2. What was the size of polybag supplied by the Rubber Board? : Correct/Wrong
3. Is there any limitation for getting bags : Correct/Wrong
4. How many polybags are required for one hectare of land? : Correct/Wrong
5. What are the advantages of polybagged plant planting? : Correct/Wrong

BUDDED STUMPS

1. Please tell why it is budded? : Correct/Wrong
2. Can you tell the name of some clones? : Correct/Wrong
3. What is the difference between seedling and budded stumps? : Correct/Wrong
4. What is the cost of per budded stump? : Correct/Wrong
5. In which month, field planting is done? : Correct/Wrong

MAINTENANCE GRANT FOR POLYBAG NURSERY

1. Please tell why maintenance grant was given to growers? : Correct/Wrong
2. What was the amount of maintenance grant per polybag plant? : Correct/Wrong
3. What is the amount of maintenance grant offered to SC/ST and general growers? : Correct/Wrong

FERTILISER

1. Please tell the name of chemical fertiliser? : Correct/Wrong
2. Why do you apply fertiliser? : Correct/Wrong

3. Please tell few name of fertiliser that you : Correct/Wrong
have applied in polybag plants and plantations

FENCING MATERIALS

1. Do you know what is the important of fencing : Correct/Wrong
materials?
2. What is the maximum extent of area that can be: Correct/Wrong
availed fencing materials?

COVER CROPS

1. Can you tell the names of cover crop? : Correct/Wrong
2. What are the importance of cover crop : Correct/Wrong
in rubber plantation?
3. Please tell the pretreatment to be given : Correct/Wrong
to cover crop seeds before sowing?
4. What is the quantity of cover crop seeds : Correct/Wrong
required per hectare?
5. How do you sow cover crop in rubber : Correct/Wrong
plantation?

INSTALLATION OF IRRIGATION MACHINE

1. What is the financial assistance per : Correct/Wrong
hectare for installing irrigation machine?
2. What is the maximum amount given by the Board: Correct/Wrong
for installation of irrigation machine?

ESTATE REQUISITES

1. Do you know what are the estate requisites given: Correct/Wrong
by the Rubber Board?
2. Please tell what are the use of estate requisites
- Cup hanger : Correct/Wrong
- Collection cup : Correct/Wrong

- | | | |
|-----------------------|---|---------------|
| Spout | : | Correct/Wrong |
| Tapping knife | : | Correct/Wrong |
| Rubber coat | : | Correct/Wrong |
| Roller machine-Groove | : | Correct/Wrong |
| Plain | : | Correct/Wrong |
| Alluminium dishes | : | Correct/Wrong |
3. Please tell the name of one knife that used for tapping : Correct/Wrong

SMOKE HOUSE

1. What is the use of smoke house? : Correct/Wrong
2. Why do you keep the sheet inside smoke house : Correct/Wrong

TAPPING COVERED ADDITIONAL INCENTIVES

1. Do you know tapping rest? Please tell in which month tapping rest is given to rubber tree : Correct/Wrong
2. Please tell the tapping panel : Correct/Wrong
3. What is the time of tapping? : Correct/Wrong

INTEREST SUBSIDY

1. What is the amount of bank loan per hectare of Rubber Plantation? : Correct/Wrong
2. What is the rate of interest subsidy given by the Board? : Correct/Wrong

REGULAR INCENTIVES

1. What is the name of the scheme operated by the Rubber Board? : Correct/Wrong
2. What is the amount of subsidy per hectare? : Correct/Wrong
3. What is the purpose of giving subsidy to rubber growers? : Correct/Wrong
4. Was it given cash/draft/check? : Correct/Wrong

5. Who is giving the technical assistance for rubber plantation? : Correct/Wrong

ADOPTION
POLYBAG & BUDDDED STUMPS

1. Please tell filling of bags : Correct/Wrong
2. Please tell the planting of BS in to polybag : Correct/Wrong
3. Can you tell how to put the polybagged plants into trenches : Correct/Wrong
4. Watering of polybagged plants : Correct/Wrong
5. Manuring the polybagged plants : Correct/Wrong
6. Removal of false shoots : Correct/Wrong
7. Stage of transplanting of polybagged plants : Correct/Wrong
8. Month of transplanting in the main field : Correct/Wrong

CULTURAL OPERATION

1. Lining : Correct/Wrong
2. Pitting size : Correct/Wrong
3. Planting distance : Correct/Wrong
4. Refilling the pits : Correct/Wrong
5. Planting polybagged plants/budded stumps : Correct/Wrong
6. Manuring : Correct/Wrong
7. Weeding : Correct/Wrong
8. White washing : Correct/Wrong
9. Mulching : Correct/Wrong

FERTILISER

1. Month of manuring in rubber plantation : Correct/Wrong
2. Type of manuring used : Correct/Wrong
3. Method of manuring : Correct/Wrong

FENCING

1. Protection of rubber plantation from cattle : Yes/No
2. Fenced the area as per specification : Yes/No
3. Type of fencing materials used :
Goat proof
Barbed wire

COVER CROP

1. Method of pretreatment of cover crop seeds : Yes/No
2. Method of sowing cover crop seeds. : Yes/No
3. Manuring of cover crop seeds : Yes/No
4. Quantity requirement per hectare of cover crop seeds : Yes/No

MATURED AREAESTATE REQUISITES

1. Use of cup hanger : Correct/Wrong
 - collection cup : Correct/Wrong
 - tapping knife : Correct/Wrong
 - spout : Correct/Wrong
 - rubber coat : Correct/Wrong
 - roller machine - Groove : Correct/Wrong
 - Plain : Correct/Wrong
 - alluminium dishes : Correct/Wrong

TAPPING

1. Measurement of girth before the commencement of tapping : Yes/No
2. Tapping system : Yes/No
3. Angle of cut : Correct/Wrong
4. Collection of latex : Yes/No
5. Type of knife used : Yes/No
6. Used of preceagulant : Yes/No
7. Tapping rest : Yes/No

SMOKE HOUSE

1. Size of smoke house : Correct/Wrong
2. Capacity of smoke house : Correct/Wrong
3. Operation of smoke house : Correct/Wrong

INTEREST SUBSIDY
(those who availed)

1. Did you avail bank loan? : Yes/No

IRRIGATION MACHINE

1. Frequency of operation : Correct/Wrong

IN CASE OF IMMATURED AREA

- | | | |
|---|---|---------------|
| 1. Doses of manuring | : | Correc/Wrong |
| 2. Terracing/plateform | : | Correct/Wrong |
| 3. Selection of sites | : | Correct/Wrong |
| 4. Selection of clones | : | Correct/Wrong |
| 5. Soil testing | : | Correct/Wrong |
| 6. Cultural operations done in January/February | : | Correct/Wrong |
| 7. March/April | : | Correct/Wrong |
| 8. May/June | : | Correct/Wrong |
| 9. July/August | : | Correct/Wrong |
| 10. September/October | : | Correct/Wrong |
| 11. November/December | : | Correct/Wrong |

CONSTRAINS INVOLVED

Please indicate the problems that you have experienced in rubber plantation and suggest what are the improvement needed to over come those problems:

<u>Sl.No.</u>	<u>Problems</u>	<u>Suggestion</u>
1.		
2.		
3.		
4.		

ANNEXURE-II
Details information of farmers in the surveyed area

Sl. No.	Permit No.	Occu- pation	Educat- ion	Age (years)	Size of family	Source of in- formation	Total area owned in ha.	Year of planting	Details of planting materials used	No. of polybag supplied	No. of budded stumps supplied	No. of plants estab- lishment
1	2	3	4	5	6	7	8	9	10	11	12	13
1	22/88, 28/89 39/90	S	5	39	Nil	Np	4.75	1988/89/ 90	RRII 105	3500	3500	2380
2	89/89	C	5	42	5	R	0.41	1989	RRIM 600	500	500	200
3	267/89	C	0	39	6	RB	0.21	1989	Assorted	500	500	100
4	35/89	C	5	49	6	NP	0.66	1989	Assorted	1500	1500	330
5	174/89	C	0	39	5	RB	0.64	1989	Assorted	1500	1500	320
6	274/87	C	0	48	5	RB	0.22	1989	Assorted	500	500	100
7	289/89	C	4	42	5	RB	0.38	1989	RRIM 600	1000	1000	200
8	38/89	C	3	39	5	RB	0.44	1989	RRII 105	1000	1000	220
9	30/89	C	0	42	6	RB	0.65	1989	RRII 105	1500	1500	330
10	130/88	C	3	42	6	RB	0.45	1988	RRII 105	500	500	225
11	179/89	C	3	49	5	RB	0.67	1989	RRII 105	1500	1500	340
12	76/89	S	6	43	7	NP	0.64	1989	RRII 105	1500	1500	300
13	156/89	C	5	45	5	NP	0.26	1989	RRII 105	500	500	130
14	311/89	C	6	42	5	NP	1.18	1989	RRIM 600	2500	2500	600
15	301/89	C	4	39	5	NP	0.60	1989	RRIM 600	1500	1500	300

Contd.

Annexure -II. Continued

1	2	3	4	5	6	7	8	9	10	11	12	13
16	298/89	S	6	36	5	NP	0.68	1989	RRII 105	1500	1500	350
17	124/89	S	6	40	5	NP	1.28	1989	RRII 105	2000	2000	650
18	30/88	C	4	45	5	RB	0.25	1988	RRII 105	500	500	135
19	21/88	S	6	39	4	RB	0.37	1988	RRIM 600	500	500	200
20	36/89	C	5	45	5	NP	0.46	1989	Assorted	1500	1500	250
21	175/89	C	4	38	5	NP	0.63	1989	RRIM 600	1500	1500	300
22	111/89	C	4	38	5	RB	0.48	1989	RRII 105	500	500	250
23	54/89	C	4	49	5	RB	0.50	1989	Assorted	1500	1500	255
24	40/89	C	5	45	5	RB	0.56	1989	RRII 105	1000	1000	200
25	105/89	C	4	45	4	RB	0.49	1989	Assorted	500	500	250
26	7/88	C	4	42	5	NP	0.72	1988	RRII 105	1500	1500	360
27	10/88	C	3	52	6	RB	0.44	1988	RRII 105	500	500	220
28	6/87	C	4	39	4	RB	0.48	1987	RRII 105	500	500	240
29	20/87, 97/88, 25/89	C	6	57	6	NP	4.62	1987	RRII 105	3500	3500	2300
30	40/89	C	4	45	6	RB	0.52	1989	RRIM 600	500	500	250
31	59/89	C	5	39	5	RB	0.44	1989	RRIM 600	500	500	200
32	1/86, 25/87	C	6	50	3	RB	60.00	1986	Assorted	35500	35500	24900
33	160/89	C	5	42	5	RB	0.81	1989	RRIM 600	2000	2000	400
35	52/89	C	6	53	6	RB	1.28	1989	RRII 105	1500	1500	650

Contd.

Annexure -II. Continued

1	2	3	4	5	6	7	8	9	10	11	12	13
36	23/89	C	5	38	5	RB	0.60	1989	RRII 105	1500	1500	300
37	366/89	C	0	52	6	RB	0.36	1989	RRII 105	500	500	200
38	206/89	C	0	38	5	RB	0.38	1989	RRII 105	500	500	200
39	265/89	C	5	46	6	RB	0.64	1989	RRII 105	1500	1500	320
40	163/89	C	4	38	4	RB	0.88	1989	RRII 105	1000	1000	440
41	162/89	S	6	44	5	NP	0.84	1989	RRIM 600	1000	1000	400
42	290/89	C	4	38	5	RB	0.57	1989	RRII 105	500	500	280
43	1/88	C	5	55	6	RB	1.51	1988	"	1500	1500	750
44	3/86, 22/87, 42/88	S	6	47	0	RB	10.02	1986	"	8000	8000	4500
45	276/89	C	5	38	5	NP	0.87	1989	"	1500	1500	425
46	28/87, 124/88, 37/90	S	6	48	7	NP	10.22	1987	"	6500	6500	4700
47	77/88	C	4	39	5	RB	0.21	1988	"	500	500	100
48	46/89	C	0	36	5	RB	0.28	1989	"	500	500	140
49	116/89	C	5	39	5	RB	0.10	1989	"	500	500	50
50	8/88	C	5	42	5	RB	0.62	1988	"	1500	1500	300
51	19/88	C	3	49	6	RB	0.27	1988	"	500	500	100
52	28/88	C	3	45	6	NP	0.27	1988	RRIM 600	500	500	150
53	80/88	C	4	39	7	RB	0.43	1988	RRII 105	500	500	220

Contd.

Annexure-II. Continued

1	2	3	4	5	6	7	8	9	10	11	12	13
54	50/88	C	0	60	7	RB	0.60	1988	RRIM 600	1500	1500	300
55	16/87	C	4	48	6	RB	1.09	1987	RRII 105	4500	4500	590
56	9/87	C	4	40	5	RB	0.48	1987	RRII 105	500	500	250
57	87/89	C	0	38	5	RB	0.16	1989	RRIM 600	500	500	80
58	269/89	C	5	49	5	RB	0.60	1989	RRII 105	1500	1500	300
59	106/89	C	3	38	6	RB	0.27	1989	Assorted	500	500	130
60	390/89	S	6	39	5	RB	0.48	1989	Assorted	1000	1000	240
61	173/89	C	3	48	6	RB	0.42	1989	RRIM 600	800	800	200
62	161/89	S	6	42	5	RB	1.19	1989	RRII 105	1500	1500	600
63	293/89	C	3	42	5	NP	0.85	1989	RRII 105	1500	1500	450
64	100/90	S	6	40	4	NP	2.55	1990	RRII 105	2500	2500	1280
65	19/89	C	0	38	5	RB	0.37	1989	RRII 105	500	500	180
66	13/87	C	5	32	4	NP	0.38	1987	RRII 105	500	500	200
67	26/88	C	3	33	4	RB	0.20	1988	RRII 105	500	500	100
68	21/87	C	3	38	5	RB	0.20	1987	RRII 105	500	500	120
69	8/88	C	5	36	4	NP	0.40	1988	RRII 105	500	500	190
70	4/88	C	5	45	5	NP	0.37	1988	RRIM 600	500	500	180
71	15/88	C	3	45	5	NP	0.72	1988	RRII 105	1000	1000	360
72	73/90	C	3	42	6	S	0.62	1990	"	1500	1500	300
73	32/89	C	3	42	6	RB	0.52	1989	"	1500	1500	260

Contd.

Annexure-II. Continued

1	2	3	4	5	6	7	8	9	10	11	12	13
74	288/89	C	4	49	5	S	1.12	1989	RRII 105	1000	1000	360
75	46/89	C	3	48	6	RB	0.65	1989	Assorted	1500	1500	330
76	21/87	C	0	49	6	RB	0.60	1987	RRII 105	1000	1000	300
77	80/89	C	4	37	6	RB	1.32	1989	"	1500	1500	660
78	3/88	S	6	44	5	NP	1.39	1988	"	1500	1500	690
79	32/88	C	0	35	5	RB	0.32	1988	Assorted	500	500	150
80	287/89	C	3	46	6	RB	0.37	1989	RRII 105	500	500	180

Code: R = Radio; NP = Newspaper; S = Society; RB = Rubber Board

Score for educational status: Illiterate = 0; Can read = 1; Can read and write = 2; Primary school = 3; Middle school = 4; High school = 5; College and above = 6

Occupation: C = Cultivator; S = Service

ANNEXURE-III
 MAP OF NORTH EASTERN STATES SHOWING RUBBER BOARD
 ESTABLISHMENTS AND RUBBER GROWING AREAS

