

## IMPACT OF TRAINING PROGRAMMES ON *BARI* DEVELOPMENT

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**Abstract:** *Baris* or the homestead gardens contribute around eighty per cent of fruit production in Assam. Due to lack of proper attention, the productivity of the *baris* has been reducing gradually. To improve the production of existing *baris* and to establish new improved *baris*, a series of training programmes have been undertaken. Impact analysis is done for the farmers' training programmes at Duliagaon village of Golaghat district (Assam). It is revealed that the production of various fruits, plantation crops and vegetables have increased in the village considerably after the training programme. As a result, the incomes from the *baris* of the village have shown considerable growth, though the cost of production increased. Various recommended practices have now been adopted by the villagers for cultivation of different crops in their *baris*.

**Keywords:** *Bari* and impact analysis.

Assam is endowed with highly suitable agro-climatic conditions, which permit growing of wide array of horticultural crops and it has been under cultivation traditionally both in *bari* system and under commercial plantation at limited scale. The homestead garden locally known as *bari* is a unique feature of common Assamese farmers who have an inherent tendency to be self sufficient with day to day family requirements of seasonal major and minor fruits, vegetables, spices, and even medicinal and aromatic plants. The whole campus of a house with fragrant flowers, fruits, vegetables, bamboos, ponds etc. is called the *bari*.

Horticulture crops occupy about 15% of the gross cultivated area of Assam (Annon, 2013). Among fruits, banana, pineapple, citrus, jackfruit, guava, litchi occupy important places, where as coconut, arecanut and black pepper are predominant plantation crops of *baris*. Potato, sweet potato, tapioca, colocasia and yams are leading tuber crops. Amongst vegetables, tomato, brinjal, chilli, cole crops, peas, beans, cucurbits and okra are predominant. Ginger and turmeric occupy prime positions among spices. Cultivation of these crops in the *bari* is organic by default. Several drawbacks of these *baris* were identified in a survey. The crops are grown in homestead garden without much care. Existence of age old unproductive plants, lack of knowledge in use of quality planting materials and improved package of practices, improper planting density, haphazard planting, inadequate plant

protection measures, lack of irrigation and drainage facilities, inadequate transport and communication facility, etc. are some of the prevalent problems existing in more or less in every *bari* of Assam. Hence productivity of crops is reducing day by day. It is imperative that any developmental efforts for improving production of horticulture in the state would have to focus on development of *baris*. Hence extensive training programmes have been undertaken in several villages of Jorhat, Sibsagar and Golaghat district of Assam. Because, training is recognized as one of the effective ways for developing attitude, knowledge and skill of farmers. The present study was designed to measure the impact of training programmes on 'Bari development'.

## MATERIALS AND METHODS

The study was conducted in Duliagaon village of Golaghat district of Assam. A total of twenty seven farmers of the village were provided with training on various aspects of *bari* development. In the training programme topics relating to various improved management practices for fruit, plantation crop and vegetables were covered along with general *bari* improvement measures. Records were collected from each of the trained farmers through personal contact about the production of *bari* crops and income before training and one year after training programme. The improvement measures adopted by the farmers were also recorded. The impact of training programme was assessed in terms of per cent increase of production and per cent change in income of the farmers from the *baris* of Duliagaon. The problems faced by the farmers in adoption of improved management practices of *baris* are also noted.

## RESULTS AND DISCUSSION

It was observed that as a result of the training programme farmers of Duliagaon are adopting the recommended package of practices for the crops in their *baris*. Various *bari* improvement measures have gradually been taken up by the farmers of the target village. Some of the adopted *bari* improvement measures are –

- By proper planning unproductive plants have been removed gradually and new productive plants have been planted.
- Proper plant spacing is being followed for each *bari* crop.
- Irrigation during dry period and provision for draining excess water during rainy days.
- Mulching has been followed with dry leaves, straws, water hyacinth during winter.
- Farmers are making compost pits in each *bari*

- Proper fertilization is being followed for coconut and also for other fruit and plantation crops.

### Impact on production

The production of major crops of *baris* was recorded before and after training programme. Arecanut, banana, coconut, Assam Lemon, pineapple, jackfruit, betelvine, ginger, turmeric, chilli, black pepper and vegetables were the major *bari* component of the village Duliagaon. The combined production of the twenty seven *baris* was considered to study the per cent increase of production. The highest increase in production was observed in Assam Lemon (231.66%), followed by chilli (166.67%) and betelvine (149.55%) (Table 1). The response of these crops to proper scientific management practices is quick. No increase in production was observed in jackfruit.

**Table 1.** Impact on production

Crops	Production of crop		Impact (% increase)
	Before intervention	After intervention	
	(1)	(2)	$= (2-1)/1 \times 100$ (3)
Arecanut (no.)	45360	61440	35.45
Banana (bunch no.)	280	531	89.64
Coconut (no.)	569	848	49.03
Assam Lemon (no.)	20720	68720	231.66
Pineapple (no.)	100	182	82.00
Jackfruit (no.)	10	10	0
Betelvine (no.)	24340	60740	149.55
Ginger (kg)	63	101	60.32
Turmeric (kg)	54	88	62.96
Chilli (kg)	60	160	166.67
Black pepper (kg)	23	40	73.91
Vegetables (kg)	3795	8640	127.67

### Impact on income

Cost of production: Total cost of the major variable items for cultivation of crops in *baris* was recorded before and after imparting training and depicted in Table 2. Except for plant protection measures, cost of other inputs increased after the training programme. The total variable cost before training programme was recorded to be Rs. 24,819.00, while it was Rs. 30,993.00 after the training programme.

Income generation: The training programme showed positive effect in income generation. Income from *baris* increased manifold after imparting the training in the village. To find the actual impact of trainings the per cent change of income under new technology over existing technology was calculated. The total income from the *baris* increased by 141.50 per cent.

**Table 2.** Impact on income

#### *Cost of items*

	Before intervention (Total costs in Rs.)	After intervention (Total costs in Rs.)
1. Seed/Planting material	10260.00	11000.00
2. Manures and FYM	5500.00	6810.00
3. Fertilizers	7069.00	10623.00
4. Plant protection measures	30.00	30.00
5. Miscellaneous cost	1960.00	2530.00
Total variable cost	24819.00	30993.00

Income generation before intervention		Income generation after intervention	
Items of income	Value (Rs.)	Items of income	Value (Rs.)
Gross income	100880.00	Gross income	138620.00
Income over total variable cost = (Gross income) – (Total variable cost)	76061.00	Income over total variable cost = (Gross income) – (Total variable cost)	107627.00

### Income generation

Per cent change of income under new technology over existing technology

$$\begin{aligned}
 &= \frac{\text{Income over total variable cost after intervention} \times 100}{\text{Income over total variable cost before intervention}} \\
 &= \frac{107627 \times 100}{76061} \\
 &= 141.50
 \end{aligned}$$

### **Problems faced by the farmers in adopting new technologies**

The study revealed that the villagers of Duliagaon faced several problems in adopting the new technologies for development of their *baris*. The trained farmers expressed that non-availability of quality planting material in their close vicinity, non-availability of fertilizers in time in the local market, inadequate source of water, non-availability of plant protection chemicals were the major problems faced in adoption of improved practices advocated in the training programme. High cost of plant protection chemicals is also a major concern expressed by the trainees. Such types of problems were also reported by Barman *et al.* (2002).

### **CONCLUSION**

The study revealed that the training programme had contributed greatly in improvement of farmers' knowledge and adoption of recommended practices for various crops of a *bari*. Hence, it may be concluded that a well organized training programme with adequate learning facilities and active participation of farmers could help in transfer of technology. For overall development of horticulture in Assam, much emphasis should be given towards such type of trainings on '*Bari* development'. It was found that non-availability of quality planting material, non-availability of fertilizers in time in the local market, inadequate source of water, non-availability of plant protection chemicals were the major problems faced in adoption of improved practices advocated in the training programme. Hence input supply agencies should give attention to make them easily available and thereby enhance the transfer of technology process.

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