Spread and Acceptance of Arka Sahan–Annona Hybrid

ABSTRACT

A study was conducted to assess the spread and acceptance of ICAR-IIHR released annona Hybrid–ArkaSahan in 3 major states such as Karnataka, Andhra Pradesh and Rajasthan. From each state, predominant annona growing district was purposively selected. Using multistage sampling methodology, 60 annona growers were selected. The data was collected using pre-tested interview schedule and analyzed by using appropriate statistical tools. The results revealed that Arka Sahan was spread in 12.50 per cent of total area under annona production in Tamil Nadu, followed by 9.78 per cent in Karnataka, 1.60 per cent in Rajasthan and 0.28 per cent in Andhra Pradesh. Higher pulp recovery (90.00 %) and higher productivity (76.67 %) were the major reasons for adoption of Arka Sahan variety. Non availability of quality planting material (96.67 %) and drudgery in doing hand pollination (86.67 %) were the major constraints faced by the farmers in adoption of Arka Sahan.

Keywords: Annona, Arka Sahan, Spread, Acceptance

1. INTRODUCTION

Annona is a fruit from a small deciduous, semi-evergreen plant belonging to the Annonaceae family. It is widely known as custard apple or Sitaphal all over India. In India, it is grown in a total area of 46,000 hectares with an average annual production of 4,01,000 MT[1]. The expansion of annona consumption is related to the medicinal and nutritional properties, as well as its pleasant flavor. Traditionally, it is used as an antitumor agent, anti-diabetic, antioxidant, anti-lipidemic, and anti-inflammatory agent [2].

The successful cultivation of any crop mainly depends on the suitability of the cultivar(s) for a specific area or zone, and the selection or recommendation of such cultivars requires thorough scientific investigation. In different parts of India, suitable or selected cultivars are grown (Girwani et al., 2011; Bhatnagar, 2012; Rymbai et al., 2014; Ghosh, 2017). In West Bengal, particularly in the red laterite zone where rainfall is less compared to other parts of the state, no such varietal recommendation is available. Thus, a study was undertaken in this direction. Annona hybrid 'Arka Sahan' was developed at ICAR-Indian Institute of Horticultural Research Institute, Hessarghatta, Karnataka in 1995. Arka Sahan is an inter-specific hybrid, fruits characterized with slow ripening, better shelf-life (5 days), less number of seeds and more sweetness (>300 brix). Artificial pollination with the help of Annona squamosa improves fruit set, size and shapep [9,10,11]. Fruits of fine quality weighing 500-600g can be harvested and yields of 45-50 kg per tree can be obtained.

The planting material of Arka Sahan has been multiplied and supplied to the farmers of all annona growing regions over the country from 1996-97 onwards. A study was conducted to assess the spread and acceptance of Arka Sahan variety of annona among the farmers in major annona growing states viz, Karnataka, Rajasthan and Andra Pradesh. Apart from assessing spread and acceptance, the constraints faced by the farmers in adoption of Arka Sahan variety and suggestions put forth by them to overcome the constraints were also documented.

2. METHODOLOGY

The objective of the study was to assess the spread and acceptance of Arka Sahan variety in major annona growing states, apart from documenting the constraints in cultivation of Arka Sahan variety. Multistage sampling procedure was adopted to select the respondents. Accordingly, Vijayapura district from Karnataka, Udaipur and Chitorgarh districts of Rajasthan and Namakal district of Tamil Nadu were selected based on criteria of area under annona cultivation in these districts. A sample of 60 annona growers was selected from the above mentioned districts. The data pertaining to acceptance and constraints were collected from selected farmers using a structured interview schedule. The data pertaining to spread was calculated from the secondary data available with the nursery. Thus, collected data were analyzed using descriptive statistics.

3. RESULTS AND DISCUSSION

3.1 Spread of Arka Sahan variety

Based on the analysis of secondary data, it was found that the spread of Arka Sahan variety was 12.50 per cent of total area under annona in Tamil Nadu. Similarly, it was found that the spread was 1.60 per cent in Karnataka and 0.28 per cent in Andra Pradesh.

Based on these data, it could be inferred that there is a need for intensive extension efforts to bring more area under annona cultivation in these districts.

3.2 Factors for acceptance of Arka Sahan

It could be understood from Table 1 that more than four-fifths (90.00%) of the annona growers accepted Arka Sahan variety for its higher pulp recovery. More than three-fourths (76.67%) of the annona growers accepted this variety for its higher productivity. More than two-third (70.00%) of the farmers accepted this variety because of its better sweetness, where as more than half of them (60.00%) accepted the variety for its enhanced shelf-life. More than two-fifths (46.67%) of annona growers accepted this variety because it fetches premium price in the market. Hence, it could be inferred from the result that apart from productivity, pulp recovery, sweetness, shelf-life and market price were the factors that affect the acceptance of annona varieties.

Table.1 Distribution of Respondents according to their Adoption of Arka Sahan (n=60)

S.No.	Particulars	Adoption	
		Number	Percentage
1	Higher pulp recovery	54	90.00
2	Productivity is higher	46	76.67
3	More Sweetness	42	70.00
4	Better shelf life	36	60.00
5	Premium price	28	46.67

3.3 Cost of Arka Sahan cultivation

From table 2, it could be understood that cultivation of Arka Sahan is more profitable than other varieties of Annona. Though the cost of cultivation of Arka Sahan was 1.3 times more than other varieties (Custard apple), the net returns were better by 3 times.

Table.2 Economics of Arka Sahan and Custard apple:

No	Details	Arka Sahan	Custard apple
1.	Cost of Establishment per acre Planting material 150x50 = 7,500 Drip irrigation per acre = 25,000 Land preparation & pit making = 45,000 FYM application and planting = 29,000	Rs. 1,06,500	40,946
2.	Cost of cultivation		
	a. Maintenance cost Inter-cultivation operation = 10,000 FYM and fertilizer application = 25,000 Pruning charges = 10,000 Irrigation and plant protection = 25,000	Rs. 70,000	33,425
	b. Harvesting cost	Rs.10,000	6,000
	c. Watch and ward cost	Rs. 5,000	2,000
	d. Packing cost	Rs.36,000	11,000
	e. Ammortized cost	Rs. 10,852	6,348
	Total cost of cultivation	Rs.1,31,852	98,064
3.	Gross Returns		
	5^{th} year 30 kg x150 trees @80	Rs.3,60,000	1,27,536
	Net returns 360000-131852	Rs.2,28,142	71,406

	Return on Investment	2.73	1.30

3.4 Constraints in cultivation of Arka Sahan

The findings from table 3 elicited that non availability of quality planting material (96.67 %) as the major constraint in adoption of Arka Sahan variety, as it was difficult to the farmers to procure true-to-type, quality planting materials from the local nurseries and neighbourhood. Hand pollination was found to be another major constraint (86.67 %), since it requires skilled labour to perform pollination techniques, which was not known to all. Lack of knowledge on pruning (76.67 %) and incidence of fruit fly insect in the crop (63.33 %) were also ranked as other major constraints. It could be inferred that arranging adequate and quality planting material, organizing adequate training on pollination technique, pruning and fruit fly management techniques will enhance the spread of Arka Sahan variety in annona growing regions.

Table.3 Distribution of Respondents according to constraints faced by them in cultivation of Arka Sahan (n=60)

S.No.	Constraints	Number	Percentage
1	Non availability of quality planting material	58	96.67
2	Hand pollination	52	86.67
3	Lack of pruning knowledge	46	76.67
4	Fruit fly	38	63.33
5	Labour scarcity for pruning and harvesting	24	40.00

Suggestions offered by the farmers to enhance area under Arka Sahan

The data in table 4 revealed that arranging good quality planting material, arranging training/ awareness creation programmes on hand pollination and processing techniques were the major strategies suggested by farmers in enhancing the area under Arka Sahan cultivation. There were also suggestions pertaining to arranging training on canopy management and linking farmers with processing industry.

Table.4 Distribution of Respondents according to their suggestions offered (n=60)

S.No.	Suggestions	Number	Percentage
1	Arrangements for quality planting materials	52	86.67
2	Training in pollination	44	73.33
3	Awareness creation on processing	34	56.67
4	Training on canopy management	28	46.67
5	Linkage with processing industry	28	46.67

4. CONCLUSION

The study conducted on spread and acceptance of Arka Sahan variety in major annona growing states revealed the extent of spread of this variety and the need for intensive extension efforts to spread this variety. Pulp recovery, productivity, sweetness, shelf-life and market price were the factors that decided the acceptance. Non availability of quality planting material was the major constraint for the spread of this variety by overcoming which can spread faster in major annona growing regions of the country.

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