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Constraints Perceived by Farmers in Adoption of Recommended Aonla (*Emblica officinalis*) Production Technologies: Evidences from Udaipur District of Rajasthan, India

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A B S T R A C T

The present study highlights different constraints perceived by tribal aonla growers in adoption of recommended aonla production technology. The study was carried out in purposively selected Jhadol Panchayat Samiti from out of the three tribal Panchayat samities of Udaipur district of Rajasthan. The quantitative and qualitative data were collected through interview schedule, discussion, observation and available secondary sources. A list of constraints was prepared and divided in four major categories *viz.*, technical, economical, storage, marketing and general constraints. Total 80 respondents were randomly selected from the identified villages as sample. The responses were counted and converted into mean percent score and were accorded rank based of mean percent score. It was observed that economical constraints (MSP 65.51%) were most important and ranked 1st was followed by storage and marketing constraints (MSP 64.13%), general constraints (MSP 55.77%) and technical constraints (MSP 52.89%) which were accorded II, III and IV ranks in rank order by the respondents. Lack of skill in using modern irrigation system, Long juvenile period, High cost of establishment of orchards, lack of credit facilities, lack of preservation industry, lack of storage facilities in the area, managing big trees, were major constraints causing serious concern to the aonla growers.

Introduction

Aonla (*Emblica officinalis*) or Indian gooseberry is the most ancient and common fruit of India which ranks first in the world in area and production. Apart from India, it grows naturally in different parts of the world like Sri Lanka, Cuba, Puerto Rico, USA, Iran, Iraq, Pakistan, China, Malaysia, Bhutan, Thailand, Vietnam, Philippines, Trinidad, Panama and Japan.

Aonla fruit is especially significant in view of its nutritive value in terms of Vitamin C, E and fibre. It has good antioxidant properties and can be preserved in many forms like

preserve, *chutney*, candy, sauce, dried chips, tablets, jam, pickle as well as in Ayurvedic medicines like *chyawanprash, tripala* powder *etc.* which are preferred by the consumers rather than consuming aonla in raw form. The excellent nutritive and therapeutic values of fruit have great potentiality for processing into various quality products which can get position in national and international markets.

It is widely grown in tropical India. Being a hardy fruit, it can be grown even in an inferior or marginal land. The main limitation of fruit production in arid and semi arid regions are water and high atmospheric aridity but the Aonla trees are drought resistant and can be grown under most hazardous conditions of soil, water and climate.

In view of good returns of Aonla, its cultivation is becoming increasingly popular in north India, especially in Uttar Pradesh, Haryana and Rajasthan. It is suitable for arid and semi-arid regions, and indeed an ideal fruit tree for Rajasthan.

This horticulture crop has higher productivity per unit area even in the wastelands, particularly in salt affected soils which are plenty in our country (Table 1).

Although, aonla plantation in the country is widely spread but its systematic cultivation is sporadic. To increase the area under aonla orchards, greater awareness is required with regard to the importance of this fruit in augmenting income and nutrition as well as it is deemed necessary that we understand the impediments that come in the way of the aonla cultivators while following the package of practices. Therefore, keeping this in view, a study has been undertaken with an objective to study the constraints in adoption of recommended aonla production technologies by the tribal aonla growers of Udaipur district of Rajasthan.

Materials and Methods

The present study was conducted in Udaipur district of Rajasthan. This district was selected purposively on the basis of highest tribal population in the state. The district is predominantly inhabited by tribals mainly Bhils and Bhil Meenas. Out of three tribal *panchayat samities* of Udaipur district *viz.*, JhadolSarada and Kotra; Jhadol is selected purposively for the study. The villages with maximum number of families engaged in Anola plantation were identified in Jhadol panchayat samiti. Finally, 80 (having anolawadi) respondents were randomly selected from the identified villages as sample. To find out the constraints that hinders the adoption of improved practices of aonla plantation, a separate schedule was prepared for the study. A personal interview schedule was developed keeping in view the objectives and variables of study. All possible constraints were included in the schedule in accordance with the package of improved practices of aonla plantation. Background information of the study area was obtained through personal observation, consultation with officials and available reports. Quantitative and qualitative data were collected through observation, interaction dialogue, detailed discussion with key informants, aged persons and housewives. Departmental documents, records, reports, books, newspaper reports and other available literature were also consulted to collect secondary data on different parameters. The responses obtained from respondents were recorded on a three-point continuum scale viz., most important, important and least important and were assigned 3, 2 and 1 score respectively. The responses were counted and converted into mean percent score and were accorded rank based of mean percent score. For the analysis of data, various statistical measures were used *viz.,* percentage, mean, mean percent score, standard deviation and rank etc.

Results and Discussion

The constraints in adoption of recommended aonla production technology among the aonla growers refer to the barriers or barricades which come in the way of adoption of scientific package of practices by the farmers. These constraints may be of different types and might be perceived by the farmers with different magnitude. Considering the significance of constraints, it was felt necessary to find out the major barricades which hinder the adoption of recommended aonla production technology among aonla growers in the study area. In the present study, efforts were made to categorise the possible constraints *viz.*, technical, economical, storage, marketing and general constraints as perceived by the aonla growers. The data related to each of these categories of constraints are presented below:

Technical constraints

The data in table 2 reveals that lack of skill in using modern irrigation system (85.83%) and long juvenile period i.e. unproductive period (84.17%) were the constraints realized with high intensity by the aonla growers, which were ranked on the 1st and 2nd priority by them.

Other constraints *viz.* unavailability of reliable plant propagation materials (50%), non availability of improved varieties of aonla (49.0%) and inadequate knowledge of manure and fertilizer application (42.77%) were accorded 3rd, 4th, and 5th ranks intherank order respectively.

On the other hand, the constraints like lack of knowledge about recommended plant to plant (PxP) and Row to Row (RxR) distance (39.17%), lack of knowledge about intercropping (38.61%) and high disease susceptibility of fruit plants (33.61%)which

ranked 6th,7thand 8th were minor technical constraints as perceived by the aonla growers respectively.

Economic constraints

The data presented in Table 3 indicates high cost of establishment of orchards (84.72%) and lack of credit facilities in the area to be the constraints ranked as 1st and 2nd rank respectively and were considered as hard core constraints perceived by the aonla growers. These findings are in line with the study done by Kumari (2012). The other constraints *viz.* high cost of insecticides and pesticides (70.06), high cost of plant material (66.46) and perishable nature of commodity (66.40%), results in economic losses were also serious constraints faced by aonla growers in the study area which were accorded 3rd, 4th and 5th ranks by the respondents.

On the other hand, the constraints like high cost of transport of fruits and plants materials to the nearby market (64.69) and non existence of grading practices in the fruits in the study area (26.30) were considered as minor constraints by the respondents and were depicted on 6th and 7th rank places respectively.

Storage and marketing constraints

The data in Table 4 reveals that lack of preservation industries in the area (84.72%) and lack of storage facilities (84.17%) were the most important constraints faced by the aonla growers and ranked 1st and 2nd respectively. The other important constraints considered by the aonla growers were general unawareness about aonla by-products and their nutritional importance (68.33%), unpopular cooperative marketing system (66.94%) and high fluctuation in marketing prices (60.56%) which were ranked at 3rd, 4th, and 5th place respectively.

Table.1 State-wise area, production & productivity of aonla during 2016-2017

State	Area ('000 Ha.)	Production ('000 MT)	Productivity (MT/Ha.)
Uttar Pradesh	34.90	380.70	10.91
Gujarat	8.54	85.35	9.99
Rajasthan	1.70	14.50	8.53
Maharashtra	0.88	8.45	9.59
Haryana	2.26	14.71	6.51
Mizoram	0.30	1.32	4.40
Tamil Nadu	8.40	164.50	19.59
Andhra Pradesh	0.78	15.68	20.00
Karnataka	0.16	0.88	5.50
Bihar	0.91	14.95	16.44

Source: Ministry of Agriculture & Farmers' Welfare, Government of India

Table.2 Technical constraints as perceived by the Aonla growers

S.No.	Technical Constraints	MPS	Rank
1.	Long juvenile period *i.e.* unproductive period	84.17	2
2.	Non availability of improved varieties of aonla	49.0	4
3.	Unavailability of reliable plant propagation material	50.00	3
4.	Lack of knowledge about recommended PXP and RXR distance	39.17	6
5.	Lack of knowledge about intercropping	38.61	7
6.	Inadequate knowledge of manure and fertilizer application	42.77	5
.	High disease susceptibility of fruits plants	33.61	8
8.	Lack of skill in using modern irrigation system (drip/sprinkler)	85.83	1

Table.3 Economic constraints as perceived by the Aonla growers

S.No.	Economic constraints	MPS	Rank
1.	Perishable nature of commodity results in economic losses	66.40	5
2.	High cost of orchards	84.72	1
3.	High cost of plant materials	66.46	4
4.	Lack of credit facility in the area	80.00	2
5.	High cost of transport of fruits and plant material to the nearby market	64.69	6
6.	High cost of insecticides and pesticides	70.06	3
7.	Non existence of grading practices in the study area	26.30	7

Table.4 Storage and marketing constraints

S.No.	Storage and marketing constraints	MPS	Rank
1.	Lack of storage facilities	84.17	2
2.	Lack of storage facility and preservation	84.72	1
3.	Lack of satisfactory transportation facilities	54.44	7
4.	Lack of proper market in the vicinity	38.89	8
5.	Unpopular cooperative marketing system	66.94	4
6.	High fluctuation in marketing prices	60.56	5
7.	Mal practices of middle men	55.00	6
8.	Unawareness about aonla by products	68.33	3

Table.5 General constraints

S.No.	General constraints	MPS	Rank
1.	subdivision and fragmentation of land	67.17	2
2.	threat from wild and stray animals	33.89	8
3.	Reluctance for fruit growing	43.61	6
4.	Lack of motivational agencies in the area	66.67	3
5.	Unpopular cooperative marketing system	65.56	4
6.	Managing big trees in orchards in practically impossible	84.44	1
7.	lack of coordination among the farmers	39.17	7
8.	Lack of need based training programme by the training institution	45.67	5

Table.6 Major categories of constraints perceived by the aonla growers

S.No.	Major categories of constraints	MPS	Rank
1.	Technical constraints	52.89	4
2.	Economical constraints	65.51	1
3.	Storage and marketing constraints	64.13	2
4.	General constraints	55.77	3

Mal practices of middle men (55%), lack of satisfactory transportation facilities (54.44%) and lack of proper market in the vicinity (38.89%) were also perceived as constraints with comparatively less magnitude by the respondents and they were ranked 6th, 7th and 8th respectively. A close observation of data indicates that lack of storage facility and preservation of fruits were creating big problems for aonla growers in the study area.

General constraints

Further study of Table 5 vividly indicates that managing big trees in orchards is partially impossible (84.44%) and subdivision and fragmentation of land (67.17%)were severe constraints perceived by the aonl a growers and were ranked 1st and 2nd respectively in the category of General constraints. The other constraints considered important by the aonla

growers were lack of motivational agencies in the area (66.67), lack of reliable sources of plant materials (65.56%) and lack of need based training programme by the training institutions (45.67%) and were ranked at 3rd, 4th and 5th place in the rank order. On the other hand, the constraints like reluctance for fruit growing (43.61%), lack of coordination among the farmers (39.17%) and threat from wild and stray animals (33.89%) were considered with less intensively and were placed at 6th, 7th and 8th positions respectively.

It is clear from Table 6 that the major categories of constraints perceived by the aonla growers in the orchard development were economical constraints (65.5%) and which was the top ranked impediment as perceived by the aonla growers. Other major categories of constraints in this section as perceived by the aonla growers in the orchard development were storage and marketing constraints (64.13%) and general constraints (55.77%) which were accorded 2nd and 3rd rank order by the respondents whereas, the technical constraints (52.89%) were perceived to be the least.

In conclusion, the findings of the study reveals that major constraints faced by the farmers in adoption of recommended aonla production technology were lack of skill in using modern irrigation system, long juvenile period, high cost of establishment of orchards, lack of credit facilities, lack of preservation industry, lack of storage facilities in the area, managing big trees. Overall, economic constraints were the main constraints followed by storage and marketing constraints, general constraints and technical constraints by the aonla growers. Therefore, it is suggested that need based training programme should be conducted during crop season to improve the knowledge as well as skill of the

aonla growers especially in the use of modern irrigation systems and good number of awareness programmes should be conducted for the farmers on credit and marketing facilities like *Kisan Credit Cards*, e-Nam (Electronic National Agricultural Marketing) *etc.*

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