Reasons for Decline of Ber Orchards in Solapur District

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ABSTRACT

Ber (Ziziphus mauritiana Lamk) is an important indigenous fruit and one of the most ancient fruits of India. It is grown to a limited extent in selected locations in almost all the states of India. The ber tree is draught, hardy and can grow under the most hazardous conditions of soil, water and climate. In fact its wild forms are the only fruits worth mentioning in the extremely harsh conditions of the Indian deserts.

Among the fruits trees ber cultivation requires the least inputs and care. It can give good yield even without irrigation and assured income even under marginal growing conditions and provides nutritious food at a very low cost. Ber fruit can be within the reach of the purchasing power of the common people. It is righty known as a poor man's apple. By continuous research various practices for ber cultivation have been evolved by the agricultural universities. The present study "Reasons for decline of Ber orchards in Solapur district "was carried out in three talukas of Solapur district in Maharashtra state viz. North Solapur, Mohol and Barshi with the following objectives viz to study the extent of decline in area under ber, to study the relationship of selected personal, situational, socio economic and psychological characteristics of ber growers with the extent of decline in area under ber and to study the reasons for decline ber orchards.

Findings revealed that majority of the respondents possessed low level of knowledge about the recommended ber cultivation practices. The per cent change in area under ber was 36.77 per cent and majority of the respondents had high decline in area under ber orchards which was shifted to pomegranate and other crops.

Findings of relational analysis revealed that education, land holding, annual income, socio-economic status and experience in ber cultivation were positively and significantly correlated with knowledge. While land holding, size of orchard annual income, socio-economic status and knowledge were negatively and significantly correlated with decline in area under ber orchards.

Further, the results of multiple regression analysis revealed that variables namely land holding, socio-economic status and experience in ber cultivation had significant contribution in the variation of knowledge. Whereas age, education, size of orchard and socio-economic status had contributed significantly in the variation of decline in area under ber orchards. It could therefore, be stated that socio-economic status was influential variable in case of knowledge and decline in area under ber orchards.

Findings regarding reasons for decline in area under ber orchards revealed that among the reasons lack of knowledge about processing, high wages rates, low market price to fruits, lack of labours during harvesting of fruits, load shedding of electricity, incidence of powdery mildew disease, incidence of fruit fly, daily harvest of fruits and less market to fallen and other fruits were the important.

Key Words : *Ber**; Orchards; Decline; Reasons; Ber Growers;*

Ber (Ziziphus mauritiana Lamk) is an important indigenous fruit and one of the most ancient fruits of India. It is grown to a limited extent in selected locations in almost all the states of India. The ber tree is draught, hardy and can grow under the most hazardous conditions of soil, water and climate. In fact its wild forms are the only fruits worth mentioning in the extremely harsh conditions of the Indian deserts.

In India, jujube tree has great commercial importance owing to the usefulness of almost all its parts. Its fruits have higher protein mineral and vitamins A and C content than apple or citrus. The total area under ber in India is 90,000hectares with an annual production of 750,000 ton fruits. (More and Awasthi, 2008).

In Solapur 5565 ha. area is under ber cultivation .The North Solapur, Barshi and Mohol tahsils contribute about 30% of the total area under ber orchard in Solapur district.

Since 1990 the area under orchard increased very rapidly in all Tahasil of Solapur district & yielded high profits. But after 2000 the area under ber decreases rapidly due to many reasons. The ber cultivation in the area suffered heavily due to fruit tly and powdery mildew disease. This has affected greatly the economy of ber growers. Huge expenses were made on sprays to cure the problem which could not be wiped off completely.

In addition to this due to high wage rates, lack of availability of labour during harvesting and fluctuation of ber market price etc. there was great economic losses to the ber growers. This has resulted in decrease in area under ber cultivation.

Ber is an important dryland fruit crop of Solapur district. All the Talukas of Solapur districts of Maharashtra state are known as for the best Shabri ber throughout india. However from 2005-06 the area under of ber cultivation has been declining. It is

Table 1. Declining area under ber orchards in Solapur district.

Sr.No.	Taluka	Area (ha) under Ber (year wise)		
		2007-08	**2008-09**	**2009-10**
1.	North Solapur	365.71	297.14	228.57
2.	South Solapur	362.44	265.51	196.68
3.	Akkalkot	697.24	566.51	435.78
4.	Mohol	1206.13	976.65	751.97
5.	Pandharpur	815.04	661.21	510.23
6.	Mangalweda	623.94	519.21	388.49
7.	Malshiras	526.76	427.67	328.98
8.	Sangola	1133.6	918.20	707.80
9.	Madha	1710.05	1386.15	1065.66
10.	Karmala	374.30	302.09	232.38
11.	Barshi	1164.28	1059.42	731.39

Source : District Superintendent Agriculture Officer, Solapur.

assumed that the adoption behaviour of the farmers is influenced by various reasons and if they are identified the change agents can tackale them effectively. The present study was conducted in 3 talukas of Solapur district viz. North Solapur, Mohol and Barshi with following objectives.
1. To study the extent of decline in area under Ber.
2. To study the relationship of selected personal, situational, socio economic and psychological characteristics of ber growers with reasons for decline in area under Ber.
3. To study the reasons for decline of ber orchards.

METHODOLOGY

Ber is an important dryland fruit crop of Solapur district. According to Superintendent Agricultural & Officer, Solapur, the area under ber is 5565 ha. During 1990 the ber crop emerges as an economic crop in dryland agriculture but since 2005-06 it was observed that the area under ber is declining day by day. Knowing to this fact this problem has been selected to find out the reasons behind decline in area under ber. Hence 150 respondents from three different talukas viz. North Solapur, Mohol and Barshi of Solapur district were selected and the present study was carried to find out the reasons for decline of area under ber orchards. The list of ber growers from the selected 15 villages along with the area put by them under ber crop since 2009-2010 was prepared on the basis of data available from three talukas. Secondly, from this list of the ber growers whose area under ber crop was decline-since, 2007-2008 was identified and from them 150 ber growers were selected by adopting the procedure of proportionate random sampling. An interview schedule was prepared based on the objectives of the study and data were collected by personal interview of the selected ber growers.

RESULTS AND DISCUSSION

A. Extent of decline in area under ber orchards :

Data from Table 2 show that the total area put by the selected respondents (N=150) under ber was 493.12 ha. during the base year and 311.78 ha. Therefore, decrease in the area under ber crop was 181.34 ha. Hence per cent of decline area under ber cultivation was 36.77 per cent.

Logical reasoning behind this could be that the farmers with medium land holding did not allow them to try new technology on their farm. The less annual income did not allow to spend more money on plant protection, fertilizers, etc (Bagle, et. al).The farmers with lower middle socio-economic status did not possess improved implements required for Ber cultivation. They might not be getting the expected price for ber in market. They also might have medium knowledge about recommended ber cultivation practices because of less extension contact. Therefore, the area under ber cultivation was declined. During survey, it was observed that ber growers were diverting towards pomegranate, chickoo and other vegetables. This has happened because of uncertainty of ber crop and fluctuating market prices to this crop. Same type of finding was also observed by Rajput et .al (2007) regarding decline in area under chilli and its diversification.

Table 2. Decline in area under ber orchards of the respondents (N=150)

Sr. No.	Particulars	Area
1.	Area during base year (2007-2008)	493.12 ha.
2.	Area during study year (2009-2010)	311.78 ha.
3.	Decrease in area under Ber	181.34 ha.
4.	Per cent of decline area under Ber	36.77%

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B. Relational analysis with reasons for decline in area under ber orchards.

The data depicted in Table 3 showed that among the 11 characteristics studied three characteristics, land holding, size of orchard, and knowledge were found to have negatively and significantly correlation with decline area under ber cultivation at 0.01 level of probability. Whereas, annual income, socio-economic status were related negatively and significantly at 0.05 level of probability. Further, it was noticed that age, education, family size, sources of information, source of irrigation and experience in ber cultivation did not show any relationship with decline area under ber cultivation.

From the present findings it could be inferred that increase in land holding; size of orchard; knowledge; annual income and socio-economic status of ber growers there was decrease in area of ber It could thus be inferred that the farmers with small landholding; less annual income; lower socio-economic status; less size of orchard and low knowledge about recommended ber cultivation practices tend to have more decline area under ber. The declined area was abviansly diveired towards like bine pomogranate and others.

Table 3. Coefficient of correlation of selected characteristics of ber growers with their reasons for decline in area under ber orchards.

Sr. No.	Variables	'r' values
1	Age	-0.0541
2	Education	-06397
3	Family size	-0.1249
4	Land holding	-0.2839*
5	Annual income	-0.1777**
6	Size of orchards	-0.2490*
7	Socio-economic status	0.1762**
8	Source of information	0.0309
9	Source of irrigation	0.0501
10	Experience in Ber cultivation	-0.0742
11	Knowledge	-0.2567**

* Significant at 0.01 probability level
** Significant at 0.05 probability level

C. Multiple regression analysis of independent Variables with reasons for decline in area under ber orchards.

It is evident from the data in Table 4 that the coefficient of multiple determination (R^2) of eleven independent variables was -0.0272. It means that -2.72 per cent of total variation in decline area under ber orchard was explained by the independent variables selected for the study.

Table 4. Multiple regression analysis of reasons for decline in area under ber orchards of respondents with their independent variables.

Sr. No.	Variables	Regression coefficient 'b' value	S.E.(B)	't' values
1	Age	-0.3808	0.1733	-2.1962**
2	Education	-2.2760	0.6011	-3.7864*
3	Family size	-0.7019	0.6889	-1.0188
4	Land holding	-0.5525	0.9958	-0.5548
5	Annual income	-0.0316	0.3527	-0.3977
6	Size of orchards	1.2985	0.0181	-1.7421**
7	Socio-economic status	0.8505	0.5362	-6.0454*
8	Source of information	0.9911	0.7277	1.1688
9	Source of irrigation	-0.1169	1.2240	0.8092
10	Experience in ber ultivation	-3.2421	0.3005	-0.3889
11	Knowledge	-0.1079	0.0978	0.2720
R^2 = -0.0272		F = -0.3024		

*= Significant at 0.01 probability level   **= Significant at 0.05 probability level

However, out of these variables, namely education and socio-economic status were found to have negatively and significantly influenced on the decline in area under ber orchard at 0.01 level of probability. It therefore could be concluded that area under ber has emerged as an influencing factor for decline area of ber towards other crops.

Multiple regression analysis revealed that the variables namely, age, education, size of orchard, socio-economic status were consistent in exerting the influence over decline area under ber orchards. By and large, it could thus be concluded from the multiple regression analysis that these variables emerged as crucial variables influencing the decline in area under Ber orchard level of the ber growers.

Besides investigation of per cent decline area under ber cultivation the respondents were also categorized on the basis of decline in area under ber cultivation which has been presented in Table 5.

Table 5. Distribution of the respondents according to reasons of decline in area under ber orchards.

Sr. No.	Category	Respondents (N=150)	
		Frequency	Percentage
1	Low	5	3.33
2	Moderate	44	29.33
3	High	101	67.34
	Total	**150**	**100.00**

Distribution of the respondents according to their decline in area under ber cultivation (Table 5) revealed that majority of the respondents (67.34%) had high decline area under ber cultivation followed by one fourth respondents (29.33%) had moderate decline area under ber cultivation. While 3.33 per cent of the respondents had low declining area under ber cultivation.

Further probe in the reasons behind declined area under ber was undertaken and the data have been presented in Table 6.

Table 6 : Reasons for decline in area under ber orchards.

Sr. No.	Reasons for decline in ber area	Respondents (N=150)	
		Frequency	Percentage
1.	**Reasons related to input supply**		
	1. Non-availability of FYM at proper time	50	33.33
	2. Non-availability of chemical fertilizer at proper time.	89	59.33
	3. Non-availability of Pesticides at proper time.	61	40.66
	4. Delay in budding/Girdling due to rains	58	38.66
2.	**Reasons related to technical aspects**		
	1. Lack of knowledge about girdling.	42	28.00
	2. Incidence of powdery mildew disease	118	78.66
	3. Incidence of fruit fly.	115	76.66
	4. Load shedding of electricity	129	86.00
	5. Lack of knowledge about training and pruning	42	28.00
3.	**Reasons related to economic aspects**		
	1. High cost for pruning	47	31.33
	2. Low market price	132	88.00
	3. High cost of insecticides and fertilizers	76	50.66
	4. High cost for girdling.	61	40.66
	5. High labour cost for waste material removal and interculture operations.	55	36.66
	6. High cost of packing material.	89	59.33
4.	**Reasons related to information sources**		
	1. Lack of knowledge about the fertilizers doses	96	64.00
	2. Inadequate guidance from the dealers	47	31.33
5.	**Reasons related to labours**		
	1. Lack of labours during harvesting of fruits	123	82.00
	2. High wage rates	139	92.66

6.	**Reasons related to harvesting**		
	1. Daily harvesting is must	113	75.33
	2. Less market rate to fallen fruits and other fruits	102	68.00
	3. No keeping quality of fruits	99	66.00
	4. Lack of knowledge about processing	146	97.33
7.	**Reasons related to climatic conditions**		
	1. Vagaries in monsoon	79	52.66
	2. Long dry spell	73	48.66

Reasons encountered by the respondents that made them to put less area under ber were identified and classified into seven heads viz. reasons related to input supply, technical aspects, information sources, labours, harvesting and climatic conditions, respectively.

I) Reasons related to input supply

Among the reasons related to input supply, non-availability of chemical fertilizer at proper time was one of the major reasons encountered by 59.33 per cent of the respondents, followed by 40.66 per cent of the respondents who reported non-availability of insecticides at proper time, while 38.66 per cent of the respondents reported delayed in budding/girdling due to rains and 33.33 per cent of respondents reported non-availability of FYM at proper time.

II) Reasons related to technical aspects

Among the technical aspects load shedding of electricity was the major reason encountered by majority of the respondents (86.00%), followed by 78.66 per cent of the respondents who reported that incidence of powdery mildew was the major problem. Salame (2000) noted that churda murda disease in chilli was major reason expressed by 90% of the respondents in reducing area under chilli. As much as 76.66 per cent of the respondents reported that incidence of fruit fly was the major problem and about equal per cent of the respondents (28.00%) reported that lack of knowledge about girdling, training and pruning. The similar findings were observed by Nayak (2000).

III) Reasons related to economic aspects

Among the economic aspects low market cost was one of the major reasons encountered by the majority of the respondents (88.00%), followed by 59.33 per cent of the respondents who reported high cost of packing material and 50.66 per cent of the respondents reported high cost of insecticides and fertilizers. As much as, 40.66 per cent of the respondents reported high cost required for girdling, 36.66 per cent of the respondents reported high labour cost required for waste material removal and intercultural operations whereas 31.33 per cent of the respondents reported high cost of pruning.

IV) Reasons related to information sources

Among the information sources, lack of knowledge about the fertilizers doses was one of the major reasons encountered by majority of the respondents (64.00%), followed by 31.33 per cent of the respondents who reported inadequate guidance from the dealers.

V) Reasons related to labours

Among the reasons related to labours high wage rates was one of the major reasons encountered by majority of the respondents 92.66 per cent, followed by 82.00 per cent of respondents who stated lack of labours during harvesting of ber as the major reason.

VI) Reasons related to harvesting

Among the reasons related to harvesting majority of respondents (97.33%) had lack of knowledge regarding processing of ber fruits, followed by 75.33 per cent respondents mentioning daily harvesting of fruits, 68 per cent of the respondents told that there was less market rate to fallen fruits whereas 66 per cent respondents reported that there was no keeping quality to ber fruits.

VII) Reasons related to climatic conditions

Among the climatic conditions, vagaries in monsoon was one of the major reasons encountered by majority of the respondents (52.66%), followed by 48.66 per cent of the respondents, mentioning long dry spell as a important reason. Thus, it is revealed that the reasons like lack of knowledge about processing, low market price to fruits, high wage rates, lack of labours during harvesting of fruits, load shedding of electricity, incidence of powdery mildew disease, incidence of fruit fly, daily harvest of fruits and less market to fallen and other fruits were the main reasons encountered by the ber growers that made them to reduce their area under ber orchards. The findings are similar with the findings of Rajput, (2007). Whereas, Thyagarajan and Prabhu, (2005) reported that wide price fluctuation for tomato was emerged as the first and foremost constraint by majority of tomato growers in their cultivation.

CONCLUSIONS

The per cent decline area under ber cultivation was 36.77 per cent. Majority of the respondents 67.34 per cent had high decline in area of ber orchard, followed by 29.33 per cent of the respondents who reported moderate decline in area under ber orchard.

Findings of the relational analysis revealed that out of 11 characteristics studied only landholding, size of orchard, annual income, socio-economic status and knowledge contributed significantly towards the

variation in decline area under Ber cultivation. Therefore it, could be concluded that these variables are influencing factors for decline in area under ber orchard The findings with regards to the reasons for decline in area under ber orchards revealed that the reasons related to input supply expressed by the respondents were non-availability of chemical fertilizers at proper time (59.33%) and non-availability of insecticides at proper time (40.66%) were the major reasons. While reviewing the data with reference to technical reasons majority of the respondents reported the load shading of electricity (86.00%) and incidence of powdery mildew (76.66%). Analysis of economic reason revealed that low market price was major reasons encountered by the majority of respondents (88.00%) followed by 59.33 per cent of the respondents who reported high cost of packing material and 50.66 % of the respondents reported high cost of insecticides and fertilizers.

The analysis of reasons related to information sources indicated that lack of knowledge about the fertilizers doses (64.00%) were the main reasons. In the analysis of reasons related to labour, high wage rates was the major reason encountered by majority of the respondents (92.66%), followed by 82.00 per cent of the respondents who stated lack of labour during harvesting of ber as the important reason.

Among the reasons related to harvesting, majority of respondents (97.33%) had lack of knowledge regarding processing of ber fruits, followed by 75.33 per cent respondents mentioning daily harvesting of fruits and reasons related to climatic conditions like vagaries in monsoon (52.66%) and long dry well (48.66%) were expressed as major reasons.

IMPLICATION

Findings with respect to reason for declined in area under ber orchard revealed that maximum number of the respondents show lock of knowledge about processing (97.33%), high wages rates of labour (92.66%) and low market price to produce (88%) are the major reasons. Hence the policy maker should look in this matter and like cotton, there should be ber federation for procurement of ber and other dryland fruit crops for enhancing its cultivation, production , marketing and processing.

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