

RESEARCH ARTICLE :

Production and marketing constraints of Nagpur Mandarin growers in Madhya Pradesh

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SUMMARY : The study was conducted in Shajapur and Chhindwara; predominantly Nagpur mandarin growing two districts of Madhya Pradesh. The total sample of 100 was derived from three each talukas of two districts using simple random and proportionate random sampling method for data collection. Of the total four categories of constraints, technical and personal factors superseded the socio-natural and financial constraints. Although Phytophthora induced diseases considered the major malady affecting Nagpur mandarin, the respondents did not feel it as a directly responsible factor in production. On the contrary, inadequate irrigation was cited to be the crucial constraint (49 %) followed by the erratic electric supply (18 %). Subsequently insect pest management received third rank as the damage caused to fruits due to insects pests like mites, thrips during initial stages of fruiting prominently surfaced to the extent of affecting marketability of the produce. As regarding marketing, lack of farmer's co-operatives considered as the most pressing problem by 56 per cent farmers. It connotes that, realization has dawned in them about the importance of organized marketing. The other concerning factors included lack of technical expertise regarding grading and packing of fruits (49 %) and selling of produce to pre-harvest contractors in order to repay the loan of input providers.

KEY WORDS :

Nagpur Mandarin,
Production
constraints,
Marketing, Credit
needs

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BACKGROUND AND OBJECTIVES

Mandarins belong to Rutaceae family of genus- *Citrus* and cultivated on commercial scale worldwide since 17th century. Indo-China region said to be the origin of citrus and mandarin ascribe its name to deep orange colored robe of the Buddhists monks. The name *naringi or santra* acquired cultural identity and the monk's discourses became synonymous with Chinese tongue designated later as Mandarin-the official language of

China. Nagpur mandarin (*Citrus reticulata* Blanco) traditionally grown since past 300 years in central India comprising the Vidarbha region of Maharashtra and Chhindwara district of Madhya Pradesh.

Citrus is the third largest fruit industry of India and of the total area under citrus, mandarins' cover 42 per cent, sweet oranges 30 per cent, acid lime 25 per cent and other miscellaneous citrus fruits cover 3 per cent area. Mandarins have been identified by the region where it is grown and known as Nagpur

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mandarins, Coorg mandarin, Darjeeling mandarins etc. Unlike tight peeled sweet orange, Nagpur mandarin is a table purpose fruit being easy peeler. Two flowerings are generally preferred and those having adequate sources of irrigation prefer *Ambia* flowering whereas those dependent on monsoon rains prefer *Mrig* flowering. *Ambia* bahar mandarins mature in October-November whereas *Mrig* season mandarins mature during February-March. The entire Nagpur mandarin industry in Central India is on budded plants hence starts bearing after 5-6 years, although commercial crop obtains only at 7th years. The average productivity, however, is only 9-10 tons/ha, that is considerably low as compared to 25 tons/ha in other citrus growing countries of the world. Hence, to understand the various impeding constraints of productivity and profitability of Nagpur mandarin this project was undertaken.

RESOURCES AND METHODS

The study was carried out in Chhindwara and Shajapur districts of Madhya Pradesh. In each districts, three taluka, and four villages in one taluka predominantly covering large acreage under mandarin whereas three villages in rest two taluka and five respondents from each village formed the total sample of 100. The respondents comprised Nagpur mandarin growers whose orchards were under fruiting. The tabular method and percentage analysis were carried out to examine the production and marketing constraints. For collection of data, simple random sampling method was used and a structured interview schedule based on the objectives of the study was administered to the respondents. For analyzing

production constraints, proportionate random sampling method was used based on the land holding of respondents. The sample was divided into three categories viz., 1-10 acres, >10 but ≤15 acres and more than 15 acres. The rationale for 40:25:35 proportions were based on earlier studies in Central India conducted by the researcher himself.

Chhindwara district		Shajapur district	
Taluka	Villages	Taluka	Villages
1. Mohkhed	Mainikhapa	2. Agar	Batawda
	Pandhrikhapa		Dupada
	Bicchua		Susner
2. Saunsar	Ridhora	2. Nalkheda	Damdham
	Lodhikheda		Pankhedi
	Khairipantha		Pilwas
3. Pandhurna	Khedikala	1. Shajapur	Mevasa
	Bhandargondi		Sajod
	Teegaon		Barodiya
	Peepalpani		Rampura

OBSERVATIONS AND ANALYSIS

Production as a process involves combination of various material inputs like insecticides, fertilizers and immaterial inputs such as proper planning, technical expertise etc to result in desired output. As the output depends upon input, the profile characteristics as baseline information helps to understand the extent to which it affected other factors of production and marketing as well.

Seven variables as profile characteristics and the corresponding values in Table 1 reflect that, middle

Sr. No.	Characteristics	Category of respondents		
		1 to 10 acres (n=40)	>10 acres but ≤15 acres (n=25)	15 acres and above (n=35)
		Mean	Mean	Mean
1.	Education	4.10	5.56	4.77
2.	Citrus farming experience	3.20	3.28	3.23
3.	Irrigated land holding	5.00	12.96	25.4
4.	Dry land holding	1.12	1.0	6.6
5.	Land holding under mandarin	3.15	4.52	5.05
6.	Occupation	2.68	2.36	2.11
7.	Bahar preference	1.97	2.44	2.31

Edn: Functional literacy=1, Primary=2, middle school=3, High School=4, College=5, Graduate=6, Post graduate=7

Citrus farming Experience : 0-5 Yrs=1, 5-10 yrs=2, 10-15 yrs=3, 15-20 yrs=4, ancestral profession=5

Occupation: Farming only=3, Farming + Govt. service=2, Farming + business=1

Bahar : Ambia only =3, Mrig only =2, Mrig and Ambia=1

Land holding: in acres

category of respondents were comparatively more educated (upto college level) than the first and third category. However, there was insignificant difference in citrus farming experience of all the tree categories of growers. In case of irrigated land holding, compared to first category of respondents, the second category had double the holding size and third category had further double holding than their counterparts did. Due to scanty sources of irrigation, the first category of farmers mostly preferred *Mrig* bahar and occasionally *Ambia* bahar whereas the second and third category farmers preferred *Ambia* than the *Mrig*.

It is evident from Table 2 that, of the total four categories of constraints, technical and personal factors superseded the socio-natural and financial factors. It means there are technical complexities but inadequate mechanism to address those issues satisfactorily. The problem demands adequate attention as most of the farming community is still entrenched in the traditional mindset driven outlook that acts as an impediment in becoming venturesome. At times, they are stuck up in such a perplexing situation that they become helpless due to socio-natural constraints. The resource rich

farmers cope up faster with the socio-natural constraints but their counterparts; the resource poor farmers tend to be fatalistic. Moreover, the government machinery cannot adequately cater to the needs of all the categories of farmers. Therefore, the varied constraint needs to be tackled on a pragmatic perspective rather than general prescriptive recommendations.

In the production process of Nagpur mandarin orchard, the farmer faces various types of constraints that demand due attention. However, certain predictable as well as some of the unforeseen constraints if not attended properly, adversely affect the production and productivity of orchard. Although *Phytophthora* has been the major malady affecting Nagpur mandarin orchards, only 4 per cent respondents considered it crucial and 11 respondents deemed it as secondary (Table 3). On the contrary, 49 respondents pinpointed inadequate irrigation as the main constraint followed by the erratic electric supply. Subsequently insect pest management received third rank as the damage caused to fruits due to insects like mites; thrips during initial stages prominently surfaced and affected the marketability and in turn the market value of the produce. The excessive

Table 2 : Nature of constraints affecting the production of Nagpur mandarin

Nature of constraints	No. of sample farmers expressed the problem*	Rank	Overall rank
Technical			
1. Not understanding the real crux of problem	32	II	
2. Complexity in use / application	27	III	I
3. Inability of the extension staff to offer satisfactory remedial measures	38	I	
4. Labor scarcity during peak season	10	IV	
Personal			
1. Individual apathy in approaching government agency for the solution	35	I	
2. Dependency on the government system for inputs like chemicals and fertilizers	26	III	
3. Limited resources	29	II	
4. Absentee landlordism	06	IV	II
Socio-natural			
1. Late monsoon affecting Mrig bahar / rise in temperature during Ambia bahar	20	I	
2. Hailstorm / Untimely rains.	09	IV	
3. Soaring input costs and low output prices	17	II	
4. Low output income for preceding two-three years	12	III	III
Financial			
1. Inability to purchase inputs like agrochemicals and fertilizers in time	34	I	
2. Non-availability of credit from the government agency	2	IV	
3. Dependency on the private moneylenders	6	III	IV
4. Inputs being very costly	8	II	

*multiple responses

fruit drip although was a cause of concern in certain areas, it received fourth rank for which received sixteen responses as a main and only three cited as secondary critical constraint. Only 8 per cent respondents expressed the problem of theft and menace of wild animals after fruit maturity. Nine per cent growers expressed Ybar (*Waibar*) as a critical constraint as it directly affected the marketability hence low prices in the market. This problem was noticed only in Agar Taluka of Shajapur district.

Table 4 shows that, absence of farmers cooperatives

was the most important problem expressed by 56 per cent farmers. It connotes that, realization has dawned in them regarding the importance of organized marketing. It was followed by lack of technical expertise regarding grading and packing of fruits (49 %) and selling produce to pre-harvest contractors in order to pay the credit of input providers. Moreover, bumper harvest of the crop resulting into fall in prices indicated by 43 per cent respondents acquired fourth position, followed by uncertainty of the market price (36 %), high rate of transaction commission paid to the market intermediaries

Sr. No.	Constraints	Main	Secondary
1.	Inability to apply required doses of fertilizers in time	-	12
2.	<i>Phytophthora</i> induced diseases like gummosis etc.	4	11
3.	Inability to undertake insect pest management measures	17	-
4.	Inadequate water supply	49	6
5.	Excessive fruit drop	16	3
6.	Theft of fruit /menace of wild animals	8	-
7.	Any otherErratic electric supply	18	-
	Ybar (<i>Waibar</i>)	9	-

*Multiple responses

Sr. No.	Constraints relating	No. of sample farmers expressed the problem	Rank order
1.	Selling fruits to pre-harvest contractors in order to pay the credit to input providers	46	III
2.	High rate of commission to market intermediaries	30	VI
3.	Higher cost of transportation	18	X
4.	Lack of organized marketing due to absence of farmers' co-operatives	56	I
5.	Price fluctuations/uncertainty of price	36	V
6.	Lack of nearby market	29	VII
7.	Lack of storage facilities	23	IX
8.	Bumper harvest of the crop leading to fall in prices	43	IV
9.	Lack of technical expertise on grading and packaging	49	II
10.	Lack of easy access about the market information	27	VIII

*Multiple responses

Institutional/non-institutional credit agencies	Persons approached	Reasons for non-approval of loan case (Loan takers=56)		
		Cases approved	Track record as defaulter	Lack of collateral security
Nationalized Banks	33	31 (93.93)	-	2
Co-operative /Rural Bank	19	18 (94.73)	1	-
Private money-lenders	4	4 (100.00)	-	-
Not required	44	-	-	-
Reasons for approaching private money lenders				
Urgency			2 (50.00)	
Convenient loan sanction			2 (50.00)	

(30 %) and lack of nearby market (29 %). The lack of storage facilities (23 %) received the ninth and higher transportation cost (18 %) received the tenth rank out of the total marketing constraints enlisted.

Table 5 indicates that, 56 per cent farmers approached various agencies for their credit needs. However, 44 per cent farmers did not require the credit entails their attitude of avoidance or bare sustenance. Merely 33 per cent farmers seeking financial credit from nationalized banks attribute to the prosperity of farmers mostly from second and third category. The less venturesome and easygoing attitude or easy accessibility contributed towards 19 per cent farmers approaching co-operative banks for their credit needs. Sivagami *et al.* (2010) also observed similar findings in a study on production and marketing of maize in Tamil Nadu.

Conclusion :

It is noteworthy that, the longevity of *Ambia* bahar orchards is more as compared to the *Mrig* orchards. However, farmers having small holding were constrained to prefer *Mrig* bahar due to their dependence on monsoon unlike the middle and large landholding farmers preferring *Ambia*. The varied nature of constraints in each respondent category necessitated differential treatment for addressing the problems specifically instead of a general prescription. Of the critical constraints directly affecting production and productivity, inadequate irrigation

cited to be the main constraint followed by the erratic electric supply. It shows that, there is a further scope for increasing the area under Nagpur mandarin if adequate irrigation facilities created and sufficient elective supply given to them. Although *Phytophthora* induced diseases like gummosis and twig blight are a serious menace in mandarin orchards, it received fourth rank as a critical constraint. Moreover, in Shajapur district, it has not yet reached in alarming proportions as that of Chhindwara. As regarding marketing constraints, absence of farmers' co-operatives was the most important problem expressed by 56 per cent farmers, signifying thereby the importance of organized marketing. It was followed by lack of technical expertise regarding grading and packing of fruits (49 %). Thus, if the farmers go for organized marketing, not only the various marketing costs could be curtailed but the benefits of technical expertise can also be accrued to the group. Hence, the technology as a measure of socio-economic development could be made more acceptable if the constraint at various stages of production and marketing process are addressed in a holistic manner.

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