



Socio-Economic and Psychological Attributes of Sugarcane Grovers of Bareilly District of Uttar Pradesh

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The study was conducted in Bareilly district U.P., and the result of study will assist to various government organisation, stakeholders, sugarcane industry and NGOs to frame a specific programme, plan and policy for their further developments. The sugarcane industry refers to processing, manufacturing and value addition of sugarcane produces to produce jaggery, sugar, bagasse, molasses, papers, plastic, alcohol and biofuels etc. It is one of the most important sectors of the Indian economy, as it contributes to the rural development, employment generation, and export earnings. The study was carried out with 100 respondents. The result explore that, majority of respondents (70%) belong to middle age group, most of them (80%) were literate with formally

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educated (25%) up to high school level, majority of them (58%) were belongs to other backward cast, with mostly of them (96%) were Hindu, their family were nuclear type (64%) with medium family size (65%), majority of them (42%) were small land holders, maximum (87%) had pukka house, and agriculture as a main occupation, majority of respondents (45%) belong to ₹120001-₹180000 annual income, they were (100%) ensure participation in gram panchayat activity, majority of them (62%) have medium level of overall material possession, under the various aspect of material possession, most of respondents (93%) possess diesel engine, they were (100%) perform their agriculture field operation by use of sickle, most of them (99%) were also use bicycle as a transportation mean, they (100%) had cots as household materials possession, most of them (55%) were medium level of communicational media, also most of them (65%) and (66%) were have medium level of economic motivation and risk orientation respectively.

Keywords: Agriculture; socio-economic; communicational and psychological attributes; sugarcane grover.

1. INTRODUCTION

Agriculture is one of the most significant sectors of the Indian economy. These include different food crops, commercial crops, oil seeds crop etc. Sugarcane is grown in diversified climatic conditions; tropical and sub-tropical. Out of 115 countries of world where sugarcane is cultivated, India is the only one in which both types of the climate found. Therefore, experience gained in India for sugarcane cultivation might prove useful in almost all the countries where sugarcane is grown. Sugarcane is one of the most important commercial crops of the country. The sugar industry occupies and important place in the economy of our country. Sugarcane crop provides raw material to sugar industry which is one of the largest agro-based processing industries, helpful for socio-economic development of rural masses and national economy of our country [1,2].

The sugarcane is Latin word *Saccharum* given by Carolus Linnaeus in 1753. This is belong to the Poaceae (Gramineae) family. Five different species of *Saccharum* have been identified, which are important in cane breeding. All of them are indigenous to old world *Saccharum officinarum*, *Saccharum barberi*, *Saccharum sinense*, *Saccharum spontaneum* and *Saccharum robustum* in which last two species are wild.

The sugarcane cultivation and sugar industry in India plays a vital role toward socio-economic development in the rural areas by mobilizing rural resources and generating higher income and employment opportunities for rural farmers. India is the largest consumer of sugar and second largest producer in the world. In Brazil 670.75 million tones production of sugarcane first

position and its 37.80% total contribution in the worlds. India's 352.14 million tones production and its 19.60% contributions in the world in 2021-22 and occupy second position in sugarcane and sugar production.

Agricultural based agro-industry refers to the processing and manufacturing of agricultural products, such as food, beverages, sugar and textiles. It is playing an important role in the economic development, rural employment, and food security of many countries. Sugarcane-industry contributes to the value addition, income generation, and export earnings of the agricultural sector. It also provides backward and forward linkages to other sectors, such as transport, storage, packaging, and distribution.

1.1 Statement of the Problem

Uttar Pradesh is the largest producer of sugarcane in India. The profile attributes of sugarcane growers actively influence the knowledge, perception, adoption of improved packages of practices. Hence it is essential to bring an overall view towards profile attributes of sugarcane growers which influences and affect their frame of mind regarding sugarcane cultivation.

1.2 Objective

To know the profile attributes of sugarcane growers in Bareilly district (U.P.).

1.3 Scope of the Study

This study will be helpful to the planners and the extension workers too in formulation of strategies for transfer of technology to the sugarcane farming sectors that earnestly need for their sound status socially and economically.

1.4 Limitations of the Study

Though the study has practical relevance, it has the following limitations.

1. The findings were based on the honesty of the respondent in providing their response.
2. The study was conducted in particular conditions and with limited sample size.
3. The time and money were very much limited.

2. LITERATURE REVIEW

Lakshminarayan et al. (2001) reported that majority of respondents were belong to middle age group, most of them possess up to matriculation level of education, medium level of economic motivation, medium farming experience, low level of farming commitment, medium level of mass media use, low level of extension contact, and medium level of extension participation.

Srivastava et al. (2002) reported that the farm implement industry had played an important role in farm mechanization in this region.

Solomon (2011) reported that industry produces around 300-350 million tonnes (Mt.) cane, 20-22 Mt white sugar and 6-8 Mt. jaggery and *khandsari* to meet the domestic consumption of sweeteners. Besides, about 2.7 billion liters of alcohol and 2,300 MW power and many chemicals are also produced. The industry is able to export around 1,300 MW of power to the grid. Indian sugar industry is fully capable of meeting demand of potable alcohol as well as 10% blending in gasoline. Sugar industry is the second largest agro-based industry in India and contributes significantly to the socio-economic development of rural population [3].

Jaya (2012) reported that Indian Sugar Industry has total turnover of Rs. 500 billion per annum and contributes almost Rs. 22.5 billion. The industry currently has 453 operating sugar mills in different parts of the country. Indian Sugar Industry generates power for its own requirement and even gets surplus power for export to the grid based on byproduct bagasse. Indian sugar industry has always been a focal point for socio-economic development in the rural areas. Sugar Companies have been established in large sugarcane growing States like Uttar Pradesh, Maharashtra, Karnataka, Gujarat, Tamil Nadu, and Andhra Pradesh and are the six States contributing more than 85% of total sugar production in the India.

Shrivastava (2013) reported that the most of sugarcane grower were belong to young age groups followed by that majority of respondent's 51.00 percent had medium level of mass media exposure, followed by 24.00 per cent have high and 25.00 per cent have low level of mass media exposures.

Waghmode et al. (2014) analyzed that the cost benefit ratio at total cost of production was found to be 1.29 in small size farm, 1.24 in medium farm and 1.19 in large farm, whereas, it was 1.20 at overall level. Most of respondents have small size of land holding, medium level of annual income, most of them belong to low level of material possession.

3. MATERIALS AND METHODS

The study was carried out in Bareilly district (U.P.) in 2016-17. There are 15 total blocks in the Bareilly district. Out of which, 1 block were purposely selected. From selected block, total 10 villages were selected. From each selected villages, 10 respondents were selected by using simple random sampling method without replacement. Thus, total 100 respondents randomly selected. The researcher personally gathered the data by using a structured interview schedule. For analysis the data, the percentages and frequency statistical tools were used.

4. RESULTS AND DISCUSSION

4.1 Socio-Economic Profile of Respondent

4.1.1 Age

The Table 1 represents that majority of respondents (70%) were observed in the middle age category i.e. 40-62 years followed by, 17 per cent were observed in young age category i.e. up to 38 years and remaining 13 per cent respondents were found old age category i.e. 63 years & above. It could be concluded that mostly middle-aged respondents were involved in sugarcane production. whereas younger age group was slowly getting attracted for an opportunity to carry out sugarcane cultivation and engaged in related enterprises. This result was in line with the findings of Kourav et al. [4].

4.1.2 Education

The higher percentage of sugarcane growers (25%) were formally educated up to high school level. followed by up Inter mediate (21%),

Table 1. Distribution of respondents according to their socio-economic and communicational variables

(N=100)				
S.No.	Characteristic	Category	frequency	Percentage
1	Age	Young (up to 35 year)	17	17.00
		Middle (36 to 50 year)	70	70.00
		Old (above 55 year)	13	13.00
2	Education	Illiterate	20	20.00
		Primary	05	05.00
		Middle	20	20.00
		High School	25	25.00
		Inter mediate	21	21.00
		Graduate	05	05.00
		Postgraduate	04	04.00
3	Cast Composition	General caste	25	25.00
		Other Backward caste	58	58.00
		Scheduled caste	17	17.00
4.	Religion composition	Hindu	96	96.00
		Muslim	04	04.00
5.	Family Type	Nuclear family	64	64.00
		Joint family	36	36.00
6.	Family size	Small (up to 4 members)	26	26.00
		Medium (5 – 9 members)	65	65.00
		Large (10 members and above)	09	09.00
7.	Size of land holding	Marginal (below 1 ha.)	20	20.00
		Small (1-2 ha.)	42	42.00
		Medium (2-3 ha.)	20	20.00
		Large (3 ha. And above)	18	18.00
8.	Housing pattern	Pucca	87	87.00
		Mixed (kachcha + pacca)	13	13.00
9.	Occupation	Agriculture labour	00	0.00
		Caste based occupation	00	0.00
		Service	08	08.00
		Agriculture	87	87.00
		Agro-based farming	05	05.00
		Business	00	0.00
10.	Annual income	Up to 60000	10	10.00
		60001 – 120000	22	22.00
		120001 – 180000	45	45.00
		180001 – 240000	15	15.00
		240000 & above	08	8.00
11.	Social participation	Co – operative societies	31	31.00
		NGO'S	02	02.00
		SHG'S	03	03.00
		Gram panchayat	100	100.00
		Yuvak mangal dal	06	06.00
		Mandi samiti	44	44.00
		Sugarcane society	98	98.00
12.	Material possession	Low (up to 36)	21	21.00
		Medium (37-67)	62	62.00
		High (68 and above)	17	17.00

middle school (20%), primary & graduate (5%) and post graduate (4%). Education may assist them to take decisions independently

or by consulting with others while performing activities and can also help them interpret

information. This result was supported by findings of findings of Rajpoot et al. [5].

4.1.3 Caste

Majority of them (58%) were belongs to other backward classes (OBC) followed by general cast (25%) and scheduled cast (17%). The caste composition is mostly based on their previous local generation of ancestors. The above findings was supported by the findings of Rani et al. [6].

4.1.4 Religion composition

Most of respondents (96%) had belonged to Hindu religion followed by, 04 per cent Muslim religion. The religious composition of study area is also based on their generation of ancestors. The above findings was supported by the findings of Rani et al. [6].

4.1.5 Family type

It was found that the majority of respondents (64%) are belong to nuclear family and remaining 36 per cent were joint family. The probable reason may be that the middle and young aged respondents have a preference to live in nuclear family with no family disputes and have consciousness regarding big family maintenance and it was revealed that the joint family system of rural society is now breaking up. These findings are supported by the result of Sarkar et al. [7].

4.1.6 Family size

Further it was revealed that majority of respondents (65%) had medium size of family, followed by small (26%) and large family (09%). The category of family size depends upon their perception regarding family type. This result was supported by findings of findings of Rajpoot et al. [5].

4.1.7 Land holding

It was explored that higher percentage (42%) of respondents had a small size i.e. 2 to 4 hac. Land or farm, followed by marginal & medium (20%), large farm contains only 18 per cent of respondents. The possible reason may be due to agriculture is a main source of occupation in the study area and most of the respondent's inherent land from their previous generation. This result was supported by findings of findings of Pal et al. [8].

4.1.8 Housing pattern

It was observed that most of respondents (87%) had pukka house and 13 per cent respondents had mixed housing pattern. It was focused that village residents are becoming economically sound day by day, which has encouraged them to convert their houses as Hut and Kuchcha houses to mixed and Pucca type of houses. This result was supported by findings of findings of Malkunje [9].

4.1.9 Occupation

It was found that agriculture was emerged as main occupation for 87 per cent of respondents followed by service 8 per cent, agro-based farming 5 per cent, as their main occupation. The probable reason may be due to most of respondents adopt their ancestor occupation besides this most of respondents have formal education as up to high school level so that for most of them the future opportunity towards professional's work may be demolished. This result was supported by findings of findings of Chouksey [10].

4.1.10 Annual income

It was found that the majority of respondents (45%) have income between Rs. 120001 to 180000, followed by 22 percent respondents have income Rs. 60001 to 120000, 15 percent have income between Rs.180001 to 240000, 10 per cent have income up to Rs 60000, 8 per cent of respondents have income above 240000. The Variation of total income of respondents directly proportional with income from sugarcane and jaggery sale and their other sources, so that respondents have medium level income from sugarcane and jaggery sale [11]. The present findings were supported by findings of Raj et al. [12].

4.1.11 Social participation

It was found that the overall respondents (100%) have ensure their participation in gram panchayat activity followed by 98% respondents' participation in sugarcane society, 44% respondents participation in mandi samiti, 31% respondent's participation in cooperative societies, 06% respondents participation in yuvak magdal dal, 03% respondents participation in SHG's, and 02% respondents participation in NGO's respectively. This result was supported by findings of findings of Malkunje [9].

4.1.12 Material Possession

It was revealed that highest number of the respondents 62% were observed in the medium category (37-67) of materials possession followed by low category (up to 36) 21% and high categories (68 & above) 17% respectively. Thus, it can be concluded that the materials possession of respondents was appreciably better. This result was supported by findings of findings of Dhakad [13].

4.1.12.1 Farm power, agricultural implements and transportation medium

From Table 2, it was found that 93 per cent, respondents were found having their diesel engine followed by 54 per cent tractor, 37 per cent tube-well and 5 per cent electric motor.

Regarding agriculture implements majority of the respondents 100% was reported having sickle followed by 99% khurpi, 97% shavel, 95% kudal, pata 67%, cultivator 52%, disc plough 51%, sprayer 44%, thresher 43%, chaff cutter 32%, leveler 31%, ratavator 24%, seed drill 17%, duster 09% and cane crusher 5%. Regarding transport medium majority of the respondents 99% were found having bicycle as a mains conveyance of transportation followed by motor cycle 79%, tractor- trolley 54%, bullock cart 32%, jeep/car 26%, trolley/ handcart 7% and 3% truck respectively. Thus, the interference can be drawn from the above data that bicycle was important main of transportation with the respondents. This result was supported by findings of findings of Bor [14].

Table 2. Distribution of respondents according to their material possession as farm power, agricultural implements and transportation medium

(N=100)			
S. No.	Characteristic	Material possession	frequency Percentage
1	Farm Power	Tractor	54 54.00
		Diesel engine	93 93.00
		Electric motor	05 05.00
		Tube-well	37 37.00
2	Agricultural Implements	Deshi plough	09 09.00
		Cultivator	52 52.00
		Disc plough	51 51.00
		Seed drill	17 17.00
		Rotavator	24 24.00
		Chaff cutter	32 32.00
		Thresher	43 43.00
		Cane crusher	05 05.00
		Leveler	31 31.00
		Sprayer	44 44.00
		Duster	09 09.00
		Kudal	95 95.00
		Shavel	97 97.00
		Khurpi	99 99.00
Sickle	100 100.00		
3	Transportation Medium	Pata	67 67.00
		Truck	03 03.00
		Tractor-trolley	54 54.00
		Jeep/Car	26 26.00
		Bullock cart	32 32.00
		Motor cycle	79 79.00
		Bicycle	99 99.00
Trolley/Handcart	07 07.00		

Table 3. Distribution of the respondents according to their extension contact of respondents with different information sources

N=100			
S. No.	Categories of information sources	Mean score value	Rank order
A. Formal sources			
1.	B.D.O.	0.44	VIII
2.	A.D.Os	0.82	V
3.	V.D.Os	0.77	VI
4.	Kishan sahayak	2.07	III
5.	Gram pradhan	4.53	I
6.	Cooperative societies	0.69	VII
7.	Agril. College/ university	0.07	IX
8.	Mandi samiti	1.54	IV
9.	Fertilizer / Seed store	2.85	II
10.	Agril. Scientist	0.03	X
Average		1.381	
B. Informal sources			
1.	Family members	5.93	I
2.	Neighbours	4.96	II
3.	Friends	4.09	III
4.	Relatives	3.32	IV
5.	Local leaders	2.19	V
6.	Progressive farmers	1.72	VI
Average		3.701	
C. Mass media exposure			
1.	T .V.	4.92	II
2.	Radio	3.66	IV
3.	News paper	3.41	V
4.	Agriculture Books	1.04	VII
5.	News bulletins	3.76	III
6.	Farm fairs	0.21	XVI
7.	Farm magazine	0.78	IX
8.	Posters	0.74	X
9.	Mobiles/cell phone	5.95	I
10.	Farmers fair	0.51	XII
11.	Demonstration	0.45	XIV
12.	Folders	0.40	XV
13.	Film shows	0.97	VIII
14.	Exhibitions	0.56	XI
15.	Internet	0.48	XIII
16.	Desktop/laptop	1.22	VI
Average		1.816	
Overall average		2.30	

4.2 Communicational Variable

From Table 3, it was clear that the extension content of respondents with different information sources. The extension contact with formal sources was concerned, as Gram Pradhan, fertilizers/seed stores, Kisan Sahayak, mandi samiti, ADOs, VDOs, cooperative societies, BDOs, Agricultural school/college, and

Agricultural Scientists had got the rank orders I, II, III, IV, V, VI, VII, VIII, IX and X respectively on the basis of their mean score. The average mean score was 1.38 for formal source of extension contact.

As for as contact with informal sources was concerned, family members, neighbor's, friends, relatives, local leaders and progressive farmers,

Table 4. Distribution of the respondents according to their psychological variables

S.No.	Characteristic	Category	Frequency	Percentage
1	Economic motivation	Low (up to 22)	30	30.00
		Medium (23-25)	65	65.00
		High (26 and above)	05	05.00
2	Risk orientation	Low (up to 20)	25	25.00
		Medium (21-23)	66	66.00
		High (24 and above)	09	09.00

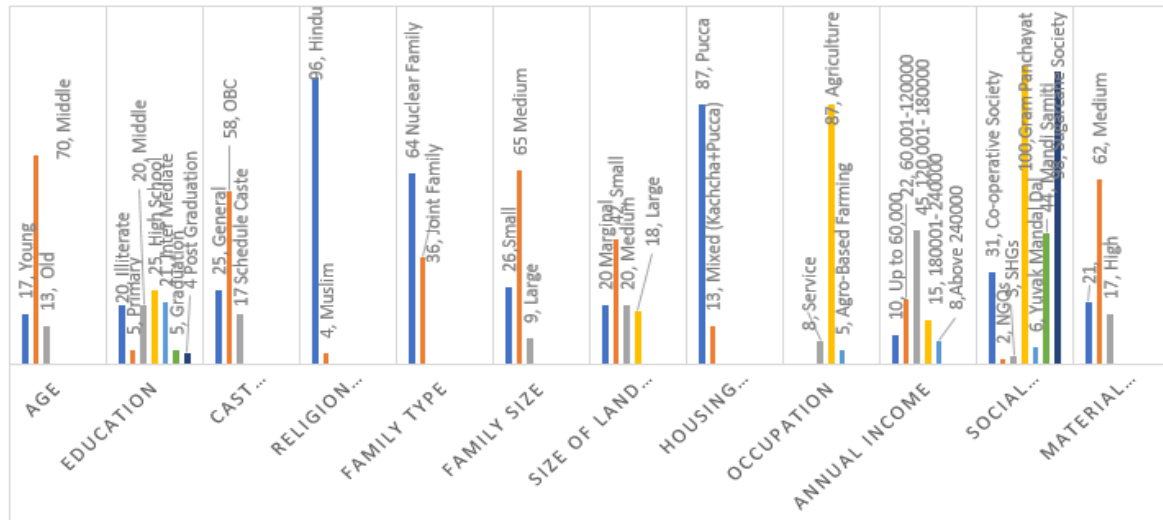


Fig. 1. Socio-economic profile of respondent

had got rank order I, II, III, IV, V and VI respectively on the basis of their mean score. The average mean score was 3.70 for informal source of extension contact.

Among the mass media exposure, mobile /cell phone, T.V, News bulletin, Radio, Newspaper, desktop/ laptop, Agricultural books, Film shows, farm Magazines, Poster, Exhibition, Farmers fair, Internet services, Demonstration, Folders, and farm fairs had got rank order I, II, III, IV, V, VI, VII, VIII, IX, X, XI, XII, XIII, XIV, XV and XVI respectively on the basis of their mean score. The average mean score was 2.30 for mass media exposure. This result was supported by findings of findings of Chavhan [15].

4.3 Psychological Variable

4.3.1 Economic motivation

From Table 4, It was found that the maximum number of respondents (65%) have medium level of economic motivation, followed by 30 per cent have low level of economic motivation and 5 per cent have high level of economic motivation. it can be concluded that most of the respondents

were found to have medium level of economic motivation (65%). This result was supported by findings of findings of Nath [16].

4.3.2 Risk orientation

From table 4, it was revealed that majority of respondents (66%) have medium level of risk orientation, followed by low 25% and high 09% levels of risk orientation. The mean of scores for risk orientation was observed to be 21.76 with a range of minimum 19 and maximum 27. Hence, it can be concluded that the respondents have average interest to bear the risk relating to improved farming of sugarcane cultivation. This result was supported by findings of findings of Shankar [17].

5. CONCLUSION

The major findings of the study explore that, majority of respondents belong to middle age group followed by, most of them were literate with formally educated up to high school level, majority of them were belongs to other backward class, they have mostly Hindu, majority their family were nuclear type with medium family

size, majority of them were small land holders, maximum number of respondents had pukka house, with agriculture operation as a main occupation, majority of respondents belong to ₹120001- ₹180000 annual income range, they were ensure for participation in gram panchayat activity, majority of them have medium level of overall material possession, under the various aspect of material possession, most of respondents possess diesel engine, they were perform their agriculture field operation by use of sickle, most of them were also use bicycle as a transportation mean, they had cots as household materials possession, majority of them were belong to medium level of communicational media, also majority of them were have medium level of economic motivation and risk orientation.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Goswami P, Rajan P, Jaiswal DK. Effectiveness of Deendayal Antyodaya Yojna- National rural livelihoods mission on empowerment of women in Sagar District of Madhya Pradesh. *Indian Journal of Extension Education*. 2021;57(2):162-165.
2. Kamatar D, Bose DK and Iliger KS. Profile characteristics of progressive and non-progressive sugarcane growers. *The Pharma Innovation Journal*. 2021;10(10): 555-559.
3. MSME. A Study report on khandsari sugar and jaggery. Ministry of MSME, New Delhi, MSME Development Institute Kanpur; 2018. Available: <http://msmedikanpur.gov.in/>
4. Kaurav PS, Bisht K, & Singh PK. An Analysis of sugarcane farming and jaggery production in Narsinghpur District of Madhya Pradesh vis-a-vis growers' characteristics and economic motivations. *Asian Journal of Agricultural Extension, Economics & Sociology*. 2022;40(12):522-530. Available: <https://doi.org/10.9734/ajaees/2022/v40i121836>
5. Rajpoot AS, Rajan P, Raut A, Srivastava A, Singh RB. Profile of National Rural Livelihood Mission (NRLM) beneficiaries in Madhya Pradesh. *Asian Journal of Agricultural Extension, Economics & Sociology*. 2023;41(11):249–257. Available: <https://doi.org/10.9734/ajaees/2023/v41i112282>
6. Rani K, Preethi V and Prassana PK. A study on socio-economic conditions of sugarcane farmers in Aggichenupalli, Chittoor district, Andhra Pradesh. *International Journal of Creative Research Thoughts*. 2021;9(12):119-141.
7. Sarkar R, Rajan P, Bisht K, Singh SRK. Perception of tribal farmers toward training and services provided by Krishi Vigyan Kendra, Kanker (Chhattisgarh). *Indian Journal of Extension Education*. 2022;57(3):73-77.
8. Pal AK, Katiyar R, Singh HC, Rajmani. Socio-economic profile of sugarcane growers in District Moradabad, Uttar Pradesh, India. *International Journal of Current Microbiology and Applied Sciences*. 2017;6(9):1217-1229.
9. Malkunje NM, Lembhe JV and Kharat HV. Marketing analysis of organic and inorganic jaggery in Kolhapur district of Maharashtra. *International Journal of Commerce and Business Management*. 2017;10(2):129-138.
10. Chouksey P, Kashyap Y and Sarawgi AK. Economic analysis of gur (jaggery) production in Narsinghpur district of Madhya Pradesh. *Bulletin of Environment, Pharmacology and Life Sciences*. 2019; 8(5):26-30.
11. Shivakumar MT. Bitter days for jaggery units, workers in Mandya, Karnataka. *The Hindu*; 2015. Available: <https://www.thehindu.com/news/national/karnataka/>
12. Raj HPL, Aski SG. Entrepreneurial behaviour of sugarcane growers in Northern Karnataka. *Agriculture Update*. 2019;14(4):330-333.
13. Dhakad K. A study on entrepreneurial behavior of sugarcane growers of Guna district (M.P.). M.Sc. (Ag) thesis. Rajmata Vijayraje Scindia Krishi Vishwa Vidyalaya Gwalior, Madhya Pradesh; 2018.
14. Bor GK, Kalaivani S, Balasubramaniam P, Balaji P. Knowledge and utilization of information and communication technology tools among sugarcane farmers in Erode district, Tamil Nadu. *International Journal of Agriculture Science and Research*. 2020;10(2):81-90.

15. Chavhan MR, Bhaltilak KB, Bodake TA. Constraints faced by the sugarcane growers in Yavatmal district. *Journal of Pharmacognosy and Phytochemistry*. 2018;7(1):2606-2610.
16. Nath A, Dutta D, Kumar P and Singh JP. Review on recent advances in value addition of jaggery based products. *Journal of Food Process Technology*. 2015;6(4):1-4.
17. Shankar MA. Evaluation of RKVY project establishment of jaggery park in Southern Karnataka department of agriculture (2008-09 to 2012-13). Karnataka Evaluation Authority. 2017; 81:134.

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