International Journal of Life Sciences
International Peer Reviewed Open Access Journal

Special Issue A 13, December 2019
ISSN:2320-7817(p) 2320-964X(0)

Original Article Open Access

Diversity of Some less-known economic species of sorghum in tribal region of Western Madhya Pradesh, India

Dawar suwalal[1] and Satya Veena[2]

[1]PMB Gujarati science college, Indore
[2]SBN Govt. PG College Barwani, (M. P)
Email: dawar33@gmail.com

Manuscript details:

Available online on
http://www.ijlsci.in

ISSN: 2320-964X (Online)
ISSN: 2320-7817 (Print)

Cite this article as:
Dawar suwalal and Satya Veena (2019) Diversity of Some less-known economic species of sorghum in tribal region of Western Madhya Pradesh, India , *Int. J. of. Life Sciences*, Special Issue, A13: 173-177.

ABSTRACT

This paper informs about diversity and traditional utility in view of food security in tribal tehsils of western Madhya Pradesh region of India. In all 21 species belonging to Poaceae family are utilized as food security. Apart from dietary uses, other miscellaneous and traditional use reports are also studied. Overall subsistence throughout the year is highlighted. Utilization, apart from the classic purposes, adapted by the tribals is noteworthy. The study showed that about 21 sorghum landraces were in active cultivation in the four sub regions, though there is a possible duplication in the naming of landraces. Among of landraces was based on maturity dates, grain color, plant height and uses. Sorghum Grain was used for home consumption in the form of roti (90%), Ghat (50%) papad (30%) and local alcoholic beverages (5%). And maturation time of different species are 2 species are 3 months duration, 2 species are 3.5 months , 7 species are 4 months, 3 species are 4.5 months, 6 species are 5 months, and 1 species are 6 months duration. Western Madhya Pradesh region of India has remained hitherto unstudied. The present authors carried out in-depth study especially in the tribal region of western Madhya Pradesh (India). Fruit security a segment of their study, are being communicated in this paper. The utilization and cultivation of these species should be promoted to maintain the dietary needs of the household in Western Madhya Pradesh region of India. The study can provide a baseline data that may be helpful for prioritization of conservation through sustainable use and management of the resources.

Key words: *Sorghum,* Western Madhya Pradesh, landraces, less-known economic species.

INTRODUCTION

Agriculture is the lifeline of economic system. India is the region of diversity of many major cultivated crop plants like rice, wheat, millets, sorghum etc. The traditional crop varieties are important element of genetic resources (FAO 1997). Agro biodiversity is confluence of the past, present and future and both a tangible and intangible resource critical for both rural and urban food and nation security (Kumar et al. 2015). The diversity in the wild species not only gives variation in diet but also provides nutritional diversity. It contributes to the house hold food security in this region.

Western Madhya Pradesh is one the most ancient, religious and visited region of the Madhya Pradesh in India. Major tribes inhabiting of this area are Bhils, Bhilala, Barela, and other diverse groups. their inhabitance is located around the areas of Alirajpur, Barwani, Dhar, Jhabua and Khargone. Majority of the tribes practice agriculture and also depend on wild/natural resources for their subsistence. Various studies have found that wild edible species are potential source of nutrition while in many cases they are more nutritious then conventionally eaten crops. Western Madhya Pradesh region of India has remained hitherto unstudied. The present authors carried out in-depth study especially in the tribal region of western Madhya Pradesh (India).

MATERIAL METHODS

The present study was conducted in some important districts i.e. Alirajpur, Barwani, Dhar, Jhabua and Khargone of Western Madhya Pradesh during 2015-2018.

Fig. 1: Map Showing Study area

A village wise study was conducted of tribal families residing in different villages was prepared with the help of local tribals. We are selected tribal families residing in selected village, owning large number of traditional sorghum species. These are select randomly from each village. Information was obtained through personal observation, consultation with tribal family members having detailed discussion with key informants, aged persons and housewives etc. During the period of study the farmers and agriculturists of each districts were interviewed about seasonal crops and their flowering and fruiting season. Plant collection and herbarium preparation was carried out by standard method (Jain and Rao, 1977). Plant specimens were preserved by dipping the whole specimens in saturated solution of Mercuric chloride and alcohol. Dry and preserved plants mounted on herbarium sheets by fevicols. Identification of plants done with the help of flora (Verma et.al., 1993; Mudgal et al,.1997; Khanna et al., 2001; Shah, 1978; Duthi, 1960; Hains,1921-1924; Cook, 1903; Hooker, 1872-1897) and other taxonomic literature. The entire plant specimen was deposited in herbarium of SBN Govt. PG College Barwani, M.P.

RESULTS & DISCUSSION

The investigation of diversity of the wild species in forest of Western Madhya Pradesh region of India has been carried out in the year 2015-2018. The variation in this region the heavy rainfall, humid climate and red lateritic soil is helpful for the new regenerated vegetation variety of resources wild plant rich diversity which is nutritional value and edible by farmers and people in this region. Wild Edible Plant Diversity- During the field survey 21 species was documented in the Poaceae family (Table 1).

The present report on the use of wild vegetable plant for food purposes draws support from earlier studies in different parts of India (Arinathan et al 2007, Reddy et al 2007; Sharma and Savant, 2012). *Sorghum* is the most important staple food crop in India. A study conducted in western Madhya Pradesh of India to determine farmers' perceptions on sorghum diversity and utilization. sorghum are used extensively in this region and this species are used during festival of "Gauri & Ganpati" as a food offering to the Goddess. In the plants nutritional value means, out of the 21 recorded species some are good source of protein some are carbohydrate and some are variable minerals (Shore, 2000) indicated that uncultivated foods constituted nearly 40 per cent of

food requirement of the communities in India. Amongst the very poor, landless members of these communities dependence on such sources of food and fodder is nearly 100 per cent. The study highlighted that most of the tribal preferred to make use of sorghum plant for staple food. Sorghum Grain was uses showed in table-2(Fig.2) and maturation time of different species are showed in table-3(Fig.3).

Table-1: characteristics of sorghum species

Local name	Hight (inch)	No of node	Leaf (Inch)	Ear in (Inch)	Grain (mm)	Shape of grain	Colour of grain	Color of glume	Covered grain %
			L×W	L×W	L×W				
Mavdi Juwar	75	9	30×3	10×4	6×3	Ovate	white	black	20
kantholi (Kalikiray)	82	10	31×3	8×3	4×3	Ovate	white	black	50
Aadam	131	15	33×4	15×5	5×3	ecoit round	gerua	white	75
Safed dhani	93	11	23×3	11×4	5×3	Ovate	white	white	25
Chari juwar	133	11	33×3	14×4	5×4	Ovate	orange	orange	80
watadi dhni	131		31×3	13×4	6×3	Ovate	white	white	80
Chikani lal	120	12	30×3	11×6	4×3	Rounded	Red	Broun red	20
Chikani safed	104	12	30×4	11×6	5×4	Plated round	white	black	20
Bajri kanthali	52	13	24×3	6.5×2	4×2	rounded	white	black	20
Haldiya ghati juwar	77	10	26×3	7×3	5×3	Plated round	white	black	40
Gorunawad	82	15	33×3	9×5	6×4	Ovate	white	grey	10
Aagiyu juwar	100	12	30×3	10×6	5×4	Round	white	Broun	40
Bhaliya juwar	93	12	27×3	8.5×3	4×2	Ovate	white	Broun red	60
Bhuyda juwar	91	12	24×3	13×10	5×4	Plated round	milky white	Broun white	20
Nanbay juwar	54	9	14×2	5×2	4×2	Hearted	white	black	20
Ratlitusali mogari	118	10	36×3	9×5	5×4	Round	white spotted	red	30
Kalatusa kantoli	58	8	28×3	7×3	4×3	long Ovate	poor white	poor black	20
Laltusa kantoli	60	5	26×3	8×4	4×3	long Ovate	poor white	poor red	20
Bani juwar	94	10	24×3	12×3	4×4	plated round	white	white	50
Fikali juwar	106	15	30×3	6×3	4×3	white	white	white	30
Mandavi juwar	45	11	27×3	10×4	3×3	white	white	white	20

Table-2: Sorghum Grain uses

S.N.	USES	PERCENTAGES (%)
1	Roti	90
2	Ghat	50
3	Papad	30
4	Alcoholic beverages	5

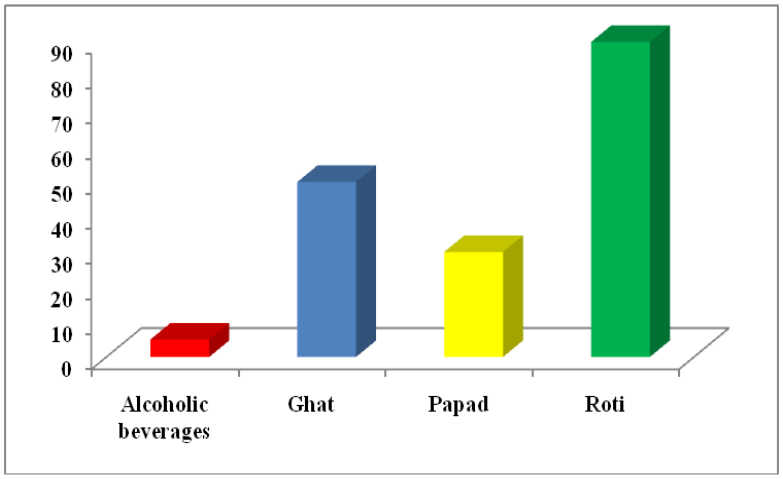

Fig.2 Sorghum Grain uses

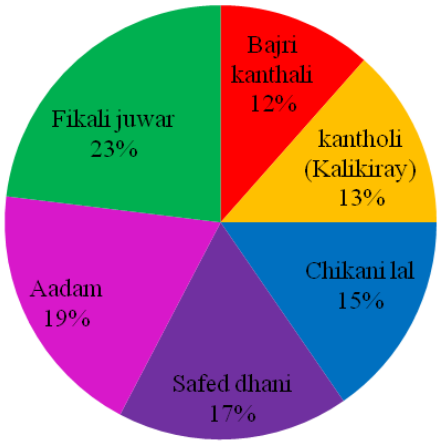

Fig.2: Maturation time of different species

Table-3: maturation time of different no. of species

SN	No. of species	Maturation time in months
1.	Bajri kanthali	
2.	Mandavi juwar	3
3.	kantholi (Kalikiray)	
4.	Nanbay juwar	3.5
5.	Chikani lal	
6.	Chikani safed	
7.	Haldiya ghati juwar	
8.	Aagiyu juwar	
9.	Bhaliya juwar	
10.	Ratlitusali mogari	
11.	Kalatusa kantoli	4
12.	Safed dhani	
13.	Chari juwar	
14.	Mavdi Juwar	4.5
15.	Aadam	
16.	watadi dhni	
17.	Gorunawad	
18.	Bhuyda juwar	
19.	Laltusa kantoli	
20.	Bani juwar	5
21.	Fikali juwar	6

CONCLUSION

The present investigators obtained information about food resources, and result is being presented in the research paper. Utilization of plant resources needs the survey and exploration of factual data. Our data of Sorghum species diversity *is* offer critical knowledge of food plants. Results from the study showed that about 21 sorghum landraces were in active cultivation in the four sub regions, though there is a possible duplication in the naming of landraces. Among of landraces was based on maturity dates, grain color, plant height and uses. Sorghum is the second most important cereal after wheat with followed by millets. *Sorghum* is the most important staple food crop in India. A study conducted in western Madhya Pradesh of India to determine farmers' perceptions on sorghum diversity, utilization. Resources of food are always in great demand all over

the world. Assessment of the Food wealth and the resulting inventory of plant resources of potentially economic value would not only help plant based industries but also encourage rural people to utilize the food products in Western Madhya Pradesh.

Acknowledgement:
We are very much thankful to Principal PMB Gujarati science college, Indore for providing research and library facilities. The help and co-operation during plant survey rendered by informants, guide, and local people of Western Madhya Pradesh is highly acknowledged.

Conflicts of interest: The authors stated that no conflicts of interest.

REFERENCES

Arinathan V, Mohan VR, Britto AJD, Murugan C. Wild edibles used by Palliyars of the Western Ghats, Tamil Nadu. Indian Journal of Traditional Knowledge. 2007; 6(1):163-168.

Cook T, 1903.Flora of the presidency of Bombay.BSI Publications Calcutta, India.1-3.

Duthi JF, 1960.Flora of the upper Gangetic plains.BSI Publications Calcutta, India.2

FAO, (1997)**.** The state of the world's plant genetic resources for food and agriculture FAO, of the United Nations, Rome.

Hains HH, 1921-1924.The Botany of Bihar and Orissa.BSI Reprint, Calcutta, India.1-3

Hooker JD, 1892-1897.Flora of British India.BSI Publication, Calcutta, India.1-7.

Jain SK and Rao RR, 1976.A Handbook of Herbarium methods. Today and tomorrow publ. New Dehli.

Khanna KK, Kumar A, Dixit RD and Singh NP, 2001. Supplementary flora of Madhya Pradesh. BSI Publications, Calcutta, India.

Kumar NA, Nambi VA ,Rani MG,King edio,Chaudhary SS, Misra S. 2015. Community agro biodiversity conservation continuum: an integrated approach to achieve food and nutrition security. Current Science. 109; 3; 474-487.

Mudgal V,Khanna KK and Hajara P K, 1997. Flora of Madhaya Pradesh.2.

Reddy KN, Pattanaik C, Reddy CS, Raju VS. Traditional knowledge on wild food plants in Andhra Pradesh. Indian Journal of Traditional Knowledge. 2007; 6(1):223-229.

Samvatsar S.1996. The flora of Western Tribal Madhya Pradesh, India. Scientific Pub. Jodhpur.

Shah GL, 1978.Flora of Gujarat state. University press, S. P. University, Vallabh Vidhyanagar, Gujarat, India.1-2.

Sharma PP, Savant RJ. Some less-known plants parts as supplementary foods. International Multidisciplinary Research Journal. 2012; 2(12):12-13**.**

Shore K. 2000. Protecting uncultivated food sources in south Asia.

Singh NP, Khanna KK, Mudgal V and Dixit RD (2001). Flora of Madhaya Pradesh (BSI Publication, Calcutta, India) 3.

Verma DM, Balakrishnan, NP and Dixit RD, 1993. Flora of Madhya Pradesh. BSI Publication, Calcutta, India.1.