Economic importance and consumer preferences for neglected and underutilized crop species in Karnataka

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ABSTRACT

Food and nutritional security has been increasingly narrowing down to a few crops. More than 50 per cent of the Global requirement of proteins and calories are being met by just three crops namely, maize, wheat and rice. Only 150 crops are being commercially cultivated at the Global level, while mankind had used more than 7000 edible plant species over time. The narrowing base of Global food security crops and also the climate change is limiting livelihood options for the rural poor particularly those dwelling in the marginal areas. There is an urgent need to shift the focus of agricultural research and development to include a wider range of crop species by including the neglected crops as one of the options. Neglected and Underutilized crop Species (NUS) are emerging as one such option as they have higher nutrition content and also climate resilient.

Keywords: Nutritional security, food security, climate change, neglected and underutilized crop species.

NUS are those crops to which little attention is paid or entirely ignored by agriculture researchers and policy makers. Typically, NUS are highly localized and commercially underexploited but a part of larger biodiversity. There were once more popular and later neglected by the users because of a variety of agronomic, genetic, economic, social and cultural reasons. Yet NUS present tremendous opportunity for fighting hunger, malnutrition and rural poverty and also help in making agriculture production system more climate resilient.

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Globally there were 146 million people suffering from undernourished, in that about 41 per cent are in India. Further, another 20 million people were in severe acute malnutrition (figures 1 & 2). In India, death due to diabetes mellitus was increasing trend and it stood upto 3.5 per cent annually. Hence, NUS are rich in

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micronutrients which are helpful in combat various nutritional disorders. At Global level, there are number of crop species which comes under the NUS list. Similarly, in India also the list continues, in which minor millets stood at the top. Minor millets are small seeded crops but nutritionally they are superior compared to any other cereals. Moreover these millets are full of micronutrients like Mg, Ca, Mn, tryptophan, phosphorous, fibre, B vitamins and also acts as antioxidants are essential to human body. Another specialty of minor millets is, they require very less water for their cultivation and can withstand harsh climatic conditions.

Table 1: Availability of NUS in Bengaluru retail shops

(N=30)

Sl. No.	Items	No.	%	No. of Varieties/ brands	Price (₹/kg)
	Minor millets				
1	Finger millet	8	27	2	24
2	Finger millet in polythene cover	30	100	4	27
3	Finger millet flour	12	40	1	30
4	Finger millet flour in pack	30	100	3	34
5	Finger millet malt	17	57	3	86
6	Finger millet papad (100gms)	5	17	1	26
7	Finger millet snacks(biscuits, chakli, mixture, laddu) (200gms)	10	33	5	50
8	Polished foxtail millet in pack	13	43	3	78
9	Polished little millet in pack	13	43	3	123
10	Proso millet in pack	8	27	3	105
11	Pearl Millet in pack	9	30	3	44
12	Kodo Millet in pack	8	27	3	84
13	Millet Cookies (150gms)	11	37	4	65
14	Millet dosa mix (500gms)	4	13	2	42
15	Amaranthus seed	2	07	1	120
	Fruits and vegetables				
16	Custard apple	5	17	1	42
17	Jamoon	3	10	1	85
18	Gooseberry	1	03	1	54
19	Pomelo	2	07	1	28
20	Fig	6	20	1	90
21	Tapioca	3	10	1	38
22	Elephant Foot Yam	3	10	1	24

Table 2: Socio-economic profile of the respondents

(N=60)

Sl. No.	Particulars		
1	Average Age (Years)		40
2	Education level (%)	PUC	21
		Degree and above	79

3	Gender	Male	38
		Female	62
4	Average family size	Numbers	04
5	Diabetic (%)		17

Table 3: Consumer's utilization pattern of minor millets and their products

Sl. No	Food uses	N	%
	Staple food		
1	Ragi mudde	35	58
2	Foxtail millet / little millet rice	7	12
3	Ragi roti	43	72
	Breakfast food		
4	Saame idli	1	02
5	Ragi dosa	12	20
	Health food and beverage		
6	Ragi malt	20	33
7	Ragi ambali	16	27
	Other food items		
8	Ragi papad	5	08
9	Ragi mixture	12	20
10	Ragi chakli	9	15
11	Ragi biscuit	14	23

Table 4: Consumers awareness about minor millets

Sl. No	Awareness	Respondents	Per cent
1	Nutritional value of millets are known	23	38
2	Good for diabetic patients	14	23
3	Healthy food	27	45
4	Medicinal value	34	57

Table 5: Reasons for neglect of NUS in human diet

Sl. No	Reasons	Respondents	Per cent
1	Not known how to cook	46	77
2	Not followed as regular consumption	50	83
3	Not aware of millet recipes	34	57
4	Millet recipes are costly compared to other recipes	18	30

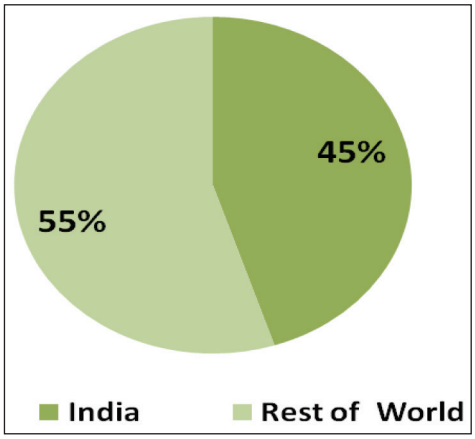

Fig. 1: Undernourished (%)

India: 60 million, Rest of World: 86 million
Source: Economic Survey of India, 2014-15

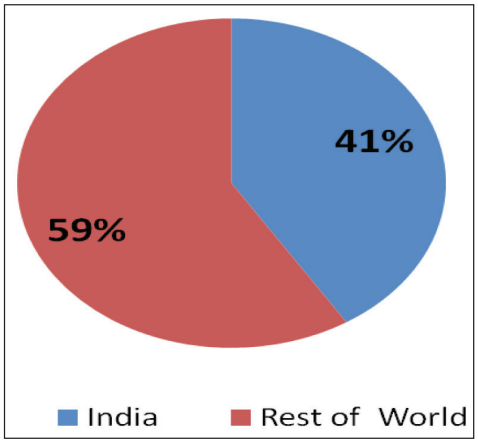

Fig. 2: Severe acute malnutrition (%)

India: 9 million, Rest of World: 11 million
Source: Economic Survey of India, 2014-15

Photo gallery

Minor millet recipes were placed in retail outlets in Bengaluru

Bakery products prepared from millets were available in selected retail stores, Bengaluru

Minor millets in India are finger millet, foxtail millet, proso millet, kodo millet, little millet, barnyard millet and are mostly confined to semi-arid, dry and hilly regions. The area under minor millets is gradually decreasing from 15 lakh ha to 8 lakh ha during 2000-01 to 2014-15. The reason behind in neglect of these crops is mainly due to less attention towards research and development and lack of promotional policies. Moreover, minor millets apart from their traditional role as a staple food for the poor in the marginal agricultural regions, they are gaining a new role as crops for healthy food and for the urban high income people. In this regard it is an important issue in the context of present focal point of food and nutritional security.

Database and Methodology

A micro level study was undertaken mainly to understand the consumers' awareness about NUS and their products as well as to find out the availability of these products in Bengaluru retail outlets and to document the factors motivating use of NUS as a part of regular food diet. Thirty retail outlets were selected at random and data pertaining to NUS and their products, availability, prices, consumers demand, etc were collected. Information on consumers' awareness about NUS and their products were collected from 60 randomly selected consumers. The information collected was tabulated and analyzed using simple averages and percentages.

Results and Discussion

The availability of millets and their products was fairly good and the products were displayed prominently in most of the retail stores (table 1). The prices were competitive and generally lower than the alternative cereals. There were whole grains as well as processed products of millets available in the selected stores. It's the finger millet and their products dominated in all stores. It was interesting to note here that, finger millet and finger millet flour was available in polythene covers in each and every retail outlets which fetches higher price compared to finger millet available in without packing. Consumers prefer packed finger millet as well as flour. The reason behind was quality and convenience of the product are most important for buying packed flour. Some judged quality by attractively packed products with information about the product, while others judged quality by the company that produced the product. This indicates that, consumers are preferred value added products which are in the form of cleaned, good packing and branding products. However, rest of the millets was available only in few retail outlets (13 to 43 %). In the case of neglected fruits and vegetables, the Indian gooseberry, pomelo, jamoon and tapioca were hardly found (less than 10 %) in the retail outlets along with the other popular fruits and vegetables. Even though, NUS are rich in vitamins and minerals, retail outlets fail in placing the product in well position in the market. This was mainly due to lack of awareness about the NUS among consumers and youths are attracted towards energy rich but nutrient poor food stuffs which resulted to lack of demand for NUS.

Table 2 summarizes the key socio-economic variables of sample respondents. The respondents selected for understanding the consumer behavior were mostly females (62 %) in the age group of 35 - 45 years (Avg. age 40 years). Most of them (79 %) were college educated. The average household size was 4 members.

In general, the utilization pattern of minor millets was studied and the results were tabulated in table 3. It was interesting that, about 72 per cent of the consumers were aware of the benefits of using millets and millet products and are using finger millet in their regular diet in the form of roti, ragi balls (58 %) and malt (33%), respectively. Only a few consumers (8 - 20 %) were aware of diversified products of finger millet like dosa, chakli, biscuits, etc.

A common fact that minor millets were highly nutritious and is good for children, weaning mothers, pregnant women and sick and elderly people. Therefore it is interested to see in how far respondents are aware of the nutritional value of minor millets (table 4). The majority of the respondents were not aware of minor millets and their products. However, it's important to note that about 45 per cent and 57 per cent of the consumers were aware of health benefits and medicinal value of millets, respectively, while 38 per cent were aware of higher nutrition value of millets.

There are specific reasons why consumers not preferring minor millets in their diet. It's observed from table 5 that, majority of the consumers (83%) didn't use minor millets as a regular part of their diet mainly because they were not aware of how to prepare millet food items (77%). Interestingly, about 57 per cent of the respondents were not aware of millet recipes. This was mainly because of changing food habit due to busy schedule work and their by ready to serve foods are entering the market which ultimately resulted to shrinking the food basket.

Conclusion

The number of crops in Indian food basket is dwindling over the years primarily due to wheat and rice being available at subsidized rates. NUS have immense potential to improve the nutritional status compared to other cereal based diets and also have climate resilience. In this direction, it is important to organise and conduct social events, seminars and school education to create awareness among the youths regarding nutritional values of NUS which combat against various nutritional disorders. Meanwhile, promotional strategies and policies are necessary to increase the area under NUS crops to achieve food and nutritional security as well as sustain rainfed farming in the country.

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