

Research Article

Medicinal and other uses of small millets by the tribal farmers of the Bastar Plateau Zone of Chhattisgarh

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SUMMARY : This study was focused to investigate the communicational traits of the tribal millet farmers which are affecting their level of awareness and utilisation of the recommended cultivation practices of small millets in the Bastar Plateau Zone of Chhattisgarh State of India. Data were collected through the personal interview, with the help of interview schedule prepared in Hindi. The results revealed that, millets were used for strengthening of mud walls, as fertilizer for onion fields, diseases and insect-pest control, protecting pulses in storage, for baking of earthen pots, treatment of animals and poultry, raising milk productivity in cattle, treatment of burns, etc. and many more uses. The other uses of small millets included, use as snacks, green fodder, medicinal uses, useful in diabetes for lowering of blood sugar, nutritionally superior to other fine cereals, and many more.

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Millets, Medicinal properties

BACKGROUND AND OBJECTIVES

Millet is one of the oldest foods known to humans and possibly the first cereal grain to be used for domestic purposes. It is mentioned in the Bible, and was used during those times to make bread. Millet has been used in Africa and India as a staple food for thousands of years and it was grown as early as 2700 BC in China where it was the prevalent grain before rice became the dominant staple. It is documented that the plant was also grown by the lake dwellers of Switzerland during the Stone Age.

Today millet ranks as the sixth most important grain in the world, sustains 1/3 of the world's population and is a significant part of the diet in northern China, Japan, Manchuria and various areas of the former Soviet Union, Africa, India, and Egypt.

Millet is a major crop in many of these countries, particularly Africa and the Indian

subcontinent where the crop covers almost 100 million acres, and thrives in the hot dry climates that are not conducive to growing other grains such as wheat and rice.

Small millets are the traditional crops, agronomically more adopted to impoverished soils. These crops are grown in diverse soils, varying rainfall regimes and in areas widely differing in thermo and photoperiods. The resilience exhibited by these crops is helpful in adjusting themselves to different kinds of ecological niches. All these have made them quite indispensable to rainfed, tribal and hill agriculture where crop substitution is difficult. That is why it is important to enhance production and productivity of these crops to ensure food and nutritional security not only to people living in harsh and difficult terrains, but also in other areas.

Utilization of these crops is mainly as food for human consumption. The straw is often a precious fodder for bovines. The grain is

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consumed in traditional way and almost the entire produce is utilised at the farm / village level. Inspite of superior nutritive value of grains their use is largely confined to rural areas and very little find its way to urban markets.

Millets are nutritionally comparable or even superior to major cereals, especially with respect to protective nutrients. Carbohydrates comprises about 85 per cent of the edible portion of millets of which nearly 20 per cent are in the form of non starch polysaccharides, which are considered as dietary fibre components. The protein content of millets range from 6 to 10 per cent and the finger millet protein is a rich source of sulphur amino acids (4.2 g/16 g N). Among the cereal food grains, finger millet is the richest source of calcium (340 mg/100g). Millet is tasty, with a mildly sweet, nut-like flavour and contains a myriad of beneficial nutrients. It has nearly 15 per cent protein, contains high amounts of fibre, B-complex vitamins including niacin, thiamine, and riboflavin, the essential amino acid methionine, lecithin, and some vitamin E. It is particularly high in the minerals iron, magnesium, phosphorus and potassium. The seeds are also rich in phytochemicals, including phytic acid, which is believed to lower cholesterol and phytate, which is associated with reduced cancer risk.

Before consumption, millets in general are grind in to flour without decortications, which can produce some undesirable nutritional effects. Millets contain anti-nutritional factors such as polyphenols and phytates and these may interfere with the bio availability of major nutrients such as proteins or minerals. Processing such as dehulling, can eliminate these anti-nutritional factors and improve the availability of various nutrients present in these grains.

Till now no systematic effort have been taken to study the medicinal properties of millets in the country in general and in the state, in particular. In this context, the present study was carried out in Bastar Plateau Zone of Chhattisgarh state with the following objective:

- To find-out the medicinal properties of small millets as prevalent among the tribal farmers of the tribal belt of Bastar Plateau Zone of Chhattisgarh state.

- To reveal the other than food uses of small millets by the tribal farmers of the study area.

RESOURCES AND METHODS

The study was conducted in Bastar Plateau Zone of Chhattisgarh state. This agro-climatic zone was purposively selected because the maximum area under small millets exists in this agro-climatic zone. Out of the total six small millet crops, only three important crops viz., little millet, Kodo millet and finger millet were selected purposively for this study as they were having the maximum area under coverage as compared to other millets. Out of the total 25 blocks of Bastar Plateau Zone comprised of Bastar, Dantewada,

Narayanpur and Bijapur districts, only one third of the total blocks *i.e.*, 9 blocks were selected purposively on the basis of maximum area under selected small millets for the purpose of the study. Out of the selected 9 blocks, a total of 18 villages (2 villages from each block - 9x2=18) were selected purposively on the basis of area under small millets for collection of data. From the total small millet growers of the each selected village, 15 farmers (who were growing at least two crops out of the selected three small millet crops) were selected randomly as respondents for the study. Thus, in this way, a total of 270 farmers (18x15 = 270) were considered as respondents for collection of data.

OBSERVATIONS AND ANALYSIS

Other than food, the millets are used for some other purposes also which are having importance in tribal life. A little less than half of the respondents were using the straw of the kodo millet for making the mud walls. They reported that if the kodo straw is mixed with mud and then the wall is made, the resulting mud wall is very strong and moreover it is resistant to termite, which is a menace in the Bastar region (Table 1).

Nearly 40 per cent of the respondents reported that they burn the straw of the kodo millet and spread the ash in the field of onion, which results in higher yields. Nearly one third of the respondents reported that they mix the husk of the finger millet with green gram and pigeonpea and store them, to protect them from storage pests and that the potters prefer the kodo millet straw for baking of their earthen pots. They believe that by burning the straw of the kodo millet the pots bake better.

Nearly one third of the respondents reported that they use the husk of finger millet mixed with green gram and pigeonpea to protect them from storage pest and a same number of the respondents informed that the Kodo millet straw is preferred by potter for baking of pots as they result in a better product with more durability.

Nearly seven per cent of the respondents reported that Kodo millet straw provides instant relief for tympani disorder in cattle, which is a fatal disease in which the stomach of the animal swells enormously and the cattle may dies if effective treatment is not provided in time while nearly six per cent of them informed that three to four years old grains of Kodo millet works as medicine for instant relief in Ranikhet disease of poultry, which is again a very infectious and dangerous disease of foul, leading to heavy toll is not controlled effectively and timely. Other uses of small millets as reported by the respondents were that the spreading of the Kodo straw in paddy field is helpful for control of leaf folder and blast diseases (4.81 %), mixing millet grains in cattle feed are helpful for increasing the milk productivity and minimising the feed cost (4.44 %). Another effective use of millets was

Table 1 : Perception of the respondents about utilisation pattern of selected small millets by them

Uses	(n=270)	F*	%
Kodo millet straw mixed with mud for making very strong termite-resistant walls	127	47.04	
Burnt Kodo millet straw applied as fertiliser in the onion field for higher yields	107	39.63	
Husk of finger millet mixed with green gram and pigeonpea to protect them from storage pest	89	32.96	
The Kodo millet straw preferred by potter for baking of pots	87	32.22	
Kodo millet straw provides instant relief for tympani disorder in cattle	19	67.04	
Od grains (3-4 years) of Kodo millet works as medicine for instant relief* in Rankhet disease of poultry	15	55.56	
Spreading of the Kodo straw in paddy field is helpful for control of leaf folder and blast	13	64.81	
Mixing millet grains in cattle feed are helpful for increasing the milk productivity and minimising the fecal cost	12	64.44	
The use of thick paste of finger millet flour works as effective medicine for minimising burning sensation and healing of wound	09	33.33	
Finger millet grain is wrapped in cloth piece with ash, and salt to tie up in neck as <i>Taabiz</i>	06	22.22	
The finger millet as <i>Prasaad</i> of <i>Gaadi</i> festival, f thrown on mango or tamarind tree, which is not fruiting since years, starts fruiting	05	18.5	

* Data are based on multiple responses

that in case of burns, the use of thick paste of finger millet flour works as effective medicine for minimising the burning sensation and is also very effective in quick healing of wound (3.33 %).

Some respondents also reported that the finger millet grain is wrapped in cloth piece with ash and salt to tie up in neck as *Taabiz* (2.22 %), which works as an effective measure to check the bad omen, while some others reported that if the finger millet as *Prasaad* of *Gaadi* festival, if thrown on mango or tamarind tree, which is not fruiting since years, starts fruiting (1.85 %). Mango and tamarind are major trees of Bastar resulting in an alternative source of income for the tribal farmers and if the trees are not fruiting for years it is a very sad occasion. *Gaadi* is a major festival of tribals of Bastar, in which the *Prasaad* given is the grains of finger millet and if these grains of finger millet which are received as *Prasaad* of *Gaadi* festival are sprinkled on the non-bearing trees of mango and / or tamarind, they start fruiting the very next season.

Yadav (1997) studied that the Kodo millet is used as food. It is usually cooked as rice after milling. Tribal of Madhya Pradesh use Kodo rice in preparation of *paye* (cooked and fermented Kodo rice). Popped grains are used as snacks. The plant is used as green fodder in early stages. Stover is used as feed mixed with green fodder. In rural areas of Madhya Pradesh the stover is used in making earthen bins, pots and local mattresses besides as a roofing material. Industrial utilization of the grains is still to be explored. Medicinally, Kodo plant is styptic used in inflammation, diseases of liver, ulcers, dysentery and considered to keep the body warm.

Studies were conducted by Pradhan *et al.* (2008) at Bastar, Chhattisgarh, by survey and selection of 18 persons, who were having problem of diabetes and gave them prepared multigrain flours of ragi and wheat, having ragi 30 – 70 per cent. They recommended to replace their roti (*chapatti*) with multigrain flour *chapatti*. Every third day observations of capillary blood glucose were recorded. No change was made in their daily dietary feeds or their controlled diet. Decreased blood glucose was recorded as people continued consuming the flour. In all cases, whether the diabetic belonged to rural or urban areas, it was observed that the glucose in blood was drastically reduced, whereas the people who did not take ragi due to some unavoidable circumstances for some period, during the period high level of glucose was noticed in their blood.

Seetharama and Rao (2008) opined that millets are nutritionally superior to other fine cereals such as rice, give special health benefits, such as high fibre, minerals and slow digestibility well-suited to diabetes-prone Indian population. The millets are known for their role as a shield against food and nutritional insecurity and are better designated as ‘nutritious cereals’. They are excellent dual-purpose fodder

crops. The protein content of most of these millets compares well with that of many pulses. Millets contain more protein, fibre, minerals, vitamins, etc., which are normally deficient in Indian diets. Jowar has 8 times more fibre, ragi has 40 times more calcium and bajra has 8 times more iron and 5 times more both riboflavin and folic acid than rice.

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