

MILLET-BASED FARMING OPERATIONS AND WOMEN: A MICRO-ANALYSIS IN KORAPUT DISTRICT, ODISHA

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Women are major contributors in the various agricultural operations and value chain system. They are the torchbearer of the local and indigenous farming operations and rural livelihood. Millet is a staple food for most of the tribal communities and also regarded as a pro-women crop. As most of the on-farm and post-production activities are undertaken by women farmers so analyzing the role of women for the millet farming operation is needed. With these backdrops this paper intended to examine the role of women in the production and post-production activities of millet cultivation in the study area based on both primary data and secondary data. Primary data has been collected from 300 millet producing households in the study area and secondary data has been used to explain the role of Odisha Millet Mission for improving and facilitating the agronomic practices especially for women. This paper is both descriptive and analytical in nature. This study found that the women are major contributors in most of the farming operations starting from on-farm production activities like land preparation, variety selection, manuring, sowing, weeding, harvesting to post-production activities like threshing, cleaning and drying of the grain, winnowing etc. and value-addition and marketing. It is also found that Millet farming is not only a source of food and nutrition to the tribal communities but also related to the deep-rooted culture for the tribal women. This gives some degree of social and economic empowerment and decision-making power to the women.

Introduction

Agriculture is considered as the foundation of economic growth and poverty reduction in countries like India with large labour availability. India is an agrarian economy with 54.6 percent of the total workforce depends on agriculture and allied activities¹. Women are the significant contributor to the workforce participation in agriculture and allied operations i.e. 41.8% in case of rural area and 35.31% in case of urban females². So, women have played major role for the conserving and maintaining the basic life support system like land, forest and other natural resources.

Rural women contribute to the agricultural activities by performing various on-farm and other activities including the main crop production, processing and marketing, livestock production, post-harvest operations, agro/social forestry etc. Women are not only engaged in farming operations but also took the responsibility of the produce for storage and management for the multiple household responsibilities and livelihood strategies throughout the year for food security and health of her family³. Women are essential contributors to agricultural operations and rural livelihood in contemporary changing economies where agricultural sectors continuously transforming with social and economic forces⁴. Rural and tribal women are the torchbearer of millet cultivation operations in tribal areas. Millet is considered as women's crop because all most all the major decisions and operations are carried out by women like selection of crop variety, field cleaning and land preparation, seed treatment,

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seed selection and storage, sowing of the seed, hand weeding, harvesting, threshing, cleaning and drying grain. The nature and extend of agricultural operations and involvement of women differs in regions, sub zones, castes and classes. But irrespective of these variations' women are involved in every farming operations except ploughing⁵. Regardless of such significant involvement of women in various agricultural operations, many of their labour are not considered as 'economically active employment' even if considered then they are taken for granted and ignored^{4,5}. Millet has been one of the staple diets and predominantly grown in the tribal dominated area in Odisha as both food and fodder. Odisha is a tribal dominated state and many of the rural tribal women have deep-rooted connections with millet-based farming operations.

Millet cultivation has significant role not only for tribal livelihood, consumption but also the socio-cultural aspects of tribal life⁶. Millets have been an integral component not only in their farming systems and the agricultural operation but also various socio-cultural aspects of tribal life. Especially tribal women with their traditional knowledge and practices focus more for the cultivation of millet against the decision of their husbands to retain their cultural beliefs along with food and nutritional security of their family⁷. Adhere to the millet farming operations also provide some degree of empowerment socially and economically. The cultivation of local crops such as millet can improve the strategic role of women in terms of decision-making process, income generation activities, saving habits, entrepreneurship opportunities⁸. Millets are rich sources of minerals and nutrients like iron, magnesium, phosphorous and potassium. It not only serves as an income crop for farmers but also improve the health of the community as a whole⁹. Finger millet is the richest in calcium content, about 10 times that of rice or wheat and has the potential to improve resource management in the hilly areas and serve as a staple food, weaning food and also a cash crop which

provides income generating opportunities. Millet was considered to be the one of the most staple food and great economical option for various nutritional disorders for poor and tribal people of Odisha¹⁰. Millet production and value addition also helpful to establish successful livelihood source for the firm and tribal women by converting farm produce into final products¹¹. Hence, gender analysis provides lights to the role and responsibility of men and women in agricultural operations and also the drudgery of women mainly in rural areas (Jeeva et.al, 2019). And a better understanding of the gender role and its impact on marginalised, tribal women will help the government and policy makers to promote increase production and value addition, more consumption. With these backdrops this paper intended to examine the role of women in the production and post production activities of millet in the Koraput district of Odisha.

Research Design

Study Area and Sampling Method: Koraput is purposively selected for this study because it is the highest producer of millet-based cereals in Odisha and rich with various tribal cultures. It has highest area coverage i.e. 2709.8 ha for the cultivation of millet¹². In Koraput district out of 14 blocks 10 blocks are predominantly grown different kinds of millet mainly finger millet (Mandia) and little millet (suan). Three blocks Lamptaput, Nandapur and Kundra out of theses ten predominant millet producing blocks has been selected randomly. After selecting the blocks two-gram panchayats has been chosen from each block then 50 farmers have been selected from each gram panchayat using simple random sampling. Thus, the population of the study will be farming households and the sample size will be 300 for this study. The socio-economic profile of sample household is portrayed in table 1.

Data and Methodology: This research work is based on primary data from field survey. Primary data has been

Table 1 Socio-economic Profile of Sample Household

Block	Gender		Education				Social Category			Types of House			Monthly Income		
	Male	Female	Illiterate	Primary	Secondary	Higher	SC	ST	OBC/Gen	Kacha	Partially pucca	Pucca	<20000	20001-50000	50001-100001
Nandapur	79%	21%	30%	67%	3%	0	23%	61%	16%	88%	10%	2%	90%	8%	2%
Kundra	94%	6%	32%	59%	8%	1%	2%	91%	7%	34%	61%	5%	72%	27%	1%
Lamptaput	89%	11%	41%	50%	7%	2%	14%	77%	9%	27%	57%	16%	89%	11%	0

Source- Primary data from field survey

collected through structured question schedule from predominantly millet producing households on examining role of women in the different production and post production activities. For analyzing the role of women in millet farming operations data on different on-farm production and post production activities are taken on input supply, production and post-production activities like processing, trading etc. Along with that to measure the degree of empowerment among the millet producing farming women some aspects like development of skill, self-confidence, leadership quality and decision-making power also examined.

Findings and Discussion

Status of women in Koraput District: Koraput is one of the poverty-stricken tribal dominated districts of Odisha. Poverty, illiteracy, lack of job opportunity, malnutrition is some of the basic characteristics of the district. Women in the Koraput district are deprived of many of their basic rights and confined to the village boundaries, domestic chores and dogmas. Only 39.7% of the women are literate and very few women i.e. 14.5% have completed 10 or more years of schooling. The health and nutritional conditions of the women are also very pity in the district. The tribal dominated backward KBK region continues to have high incidence of stunting, wasting, anemia, malnutrition among both children and women which needs special attention¹³. Around 35% of the women within the age group of 15-49 years have Body Mass Index (BMI) below normal ($BMI < 18.5 \text{ kg/m}^2$) and 10.2% of the women are overweight ($BMI > 25.0 \text{ kg/m}^2$). Lack of hemoglobin and anemia is another common disease among the females in the district. Around 71% of the children within the age group of 6-59 are anemic and 63% of the non-pregnant women and 60.5% of the pregnant women are anemic¹⁴. But they are very much hardworking, active women with inherent leadership qualities. They have significantly contributed as productive labour in agricultural and related sectors. But their potentialities and contribution are neglected than their male counterparts.

Role of Women in the Millet Farming Operations: Women are not only major contributors to the millet farming operations but also at the same time more likely than men use the available knowledge, skills and resources to enhance wellbeing of their family members in terms of management of the available food grains to provide food security along with health and nutrition. Women are actively engaged in almost all the farming activities including on-farm production operations like selection of crop variety, field cleaning and land preparation, seed

treatment, seed selection, sowing of the seed, hand weeding, harvesting and post production activities like seed storage, Threshing, Cleaning and drying grain, marketing etc. So, it is noteworthy to acknowledge their role in different on farm and value chain role to reinforce the production and supply chain of the millet in Koraput district along with empowerment of their social, economic and skill-based opportunities.

Gender role in the millet farming operations reveals that women are the sole contributors of various agricultural operations in millet farming. Many of the on-farm operations are performed by women in case of traditional and local crops which is the main reason that their men counterparts are less bothered for cultivation of millet¹⁵. As major farming activities are performed by women so male members are engaged in cultivation of other cash crops. The figure-1 depicts that women contributed significantly in field cleaning, seed management, manuring, weeding, sowing and harvesting. While men are contributed significantly in procuring the inputs, preparing the field like ploughing or digging, applying chemical fertilizers and irrigation. It can also be seen that in case of field cleaning 81% of women in kundra block, 78% in Lamptaput block, 86% in Nandapur block and in case of seed selection and storage 85% of women in kundra block, 72% in Lamptaput block, 79% in Nandapur block were actively involved. Manual hand weeding, sowing of the seed and harvesting of millet are the exclusive task of the tribal women where contributions of women are 89% to 95% in case of weeding, 81% to 87% in sowing and 88% to 92% in case of harvesting.

Women are also active contributors in the post production activities. They are contributed significantly in threshing, cleaning and drying of the grain, winnowing, storing the produce for both consumption and selling, marketing of the produce in the local market and managing the seed such as treatment and storage for the next season cultivation. Figure 2 shows contribution of women in different post production care and management of miller grain including its marketing. Women are significant contributors in case of cleaning and drying of grain where 82% to 89% of the women were involved. In case of management of the seed like treatment, storage for further cultivation 68% to 77% of the women are engaged. Winnowing and storage of grain are two exclusive responsibility of women in the Koraput district. Around 81% - 84% of the women are involved in storing and managing the produced grain for assuring food security of their family members. Similarly, for winnowing 93% to 98% of the contribution is given by women. There is less

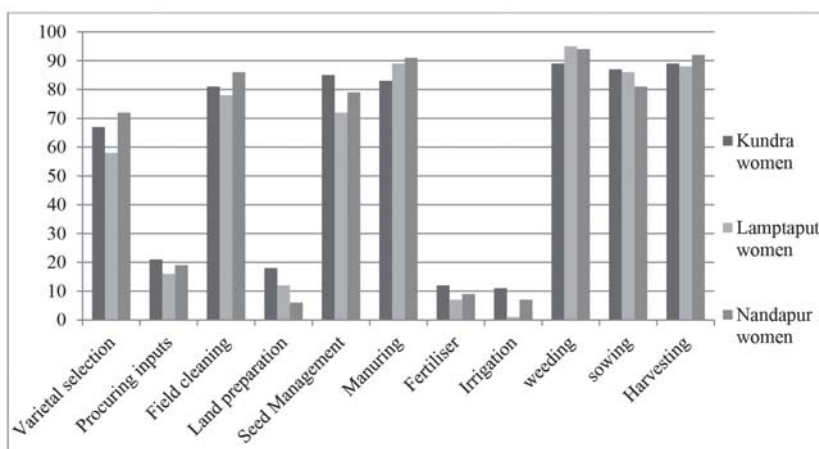


Fig. 1 Gender role in the millet production operations (Values in percentage)
Source: Compiled by Author based on Field Survey

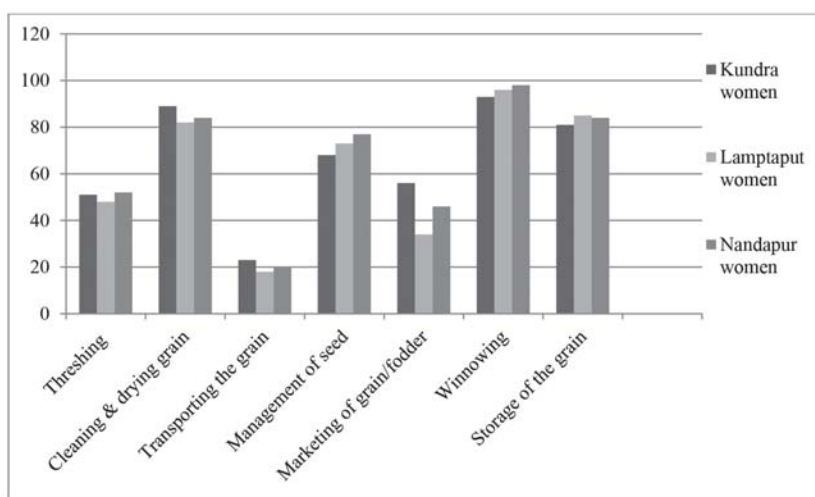


Fig. 2 Gender role in the millet post-production operations (Values in percentage)
Source: Compiled by Author based on Field Survey

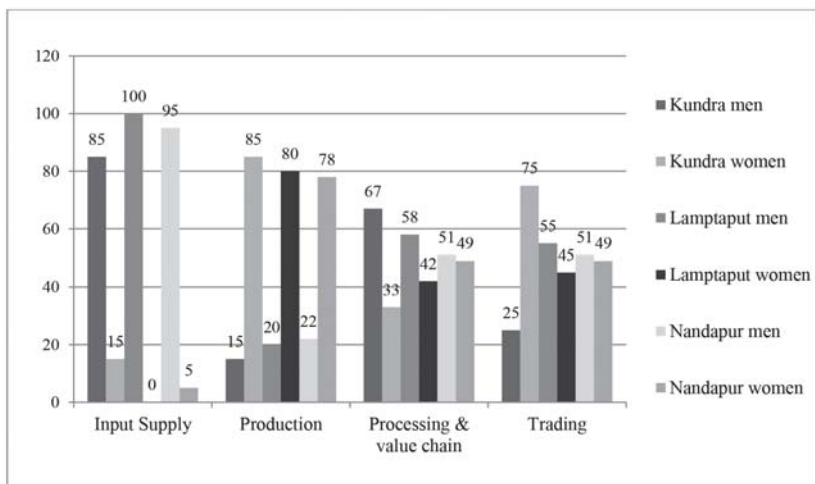


Fig. 3 Gender role in millet value chain (Values in percentage)
Source: Compiled by Author based on Field Survey

participation of women in threshing (38% - 52%), transporting of grain and fodder (18% - 23%) and marketing of the produced output (34% - 56%).

The above figure reveals the role of men and women in the millet based post-production activities mostly value chain of millet. The value chain system of the ragi and suan was not very diversified in Odisha before Odisha Millet Mission and was only confined to making ragi flour only. After the intervention through Odisha Millet Mission the value chain system has been strengthened. This mission helps to provide a number of diversified options to the food palate. The women in the Self-Help Group and Mission Shakti together roped for the making of ragi flour, ragiladoo pre-mix for the pre-school children and other ready to eat millet-based tiffin and snacks. This table shows that in most of the aspects of value addition such as production, processing, value addition and trading women plays a significant role in the millet farming operations in each of the three blocks except supply of the inputs. In case of the production activity 85% of women in Kundra, 80% in Lamtaput and 78% in Nandapur were involved. Similarly, for processing and value addition process 33% to 49% of the responsibilities and in case of trading 49% to 75% of the local trading were taken by women in millet farming and value addition. Women are normally found as labourers in the agricultural fields, processing mills and small sellers in the local village hat. Men were found as supplier of the inputs, traders, middlemen, wholesaler and mill owners.

Contribution of Odisha Millet Mission for Women: With an aim to tackle malnutrition and increase production and commercialisation Govt. of Odisha has introduced a programme called Odisha Millet Mission (OMM) also known as the special programme for promotion of millet in tribal areas of Odisha in the year 2017 to revive millets in farms and on plates

Table 2 Enterprises with WSHGs under OMM

Enterprises with WSHG	2020-21	2021-22	2022-23	Total
Millet Shakti Tiffin Centre	15	81	27	123
Millet Shakti on Wheel	0	1	0	1
Mission Shakti Cafe	0	2	0	2
Millet Shakti Outlet	0	1	1	2
THR Units (under ICDS)	59	0	0	59
Total	74	85	28	187

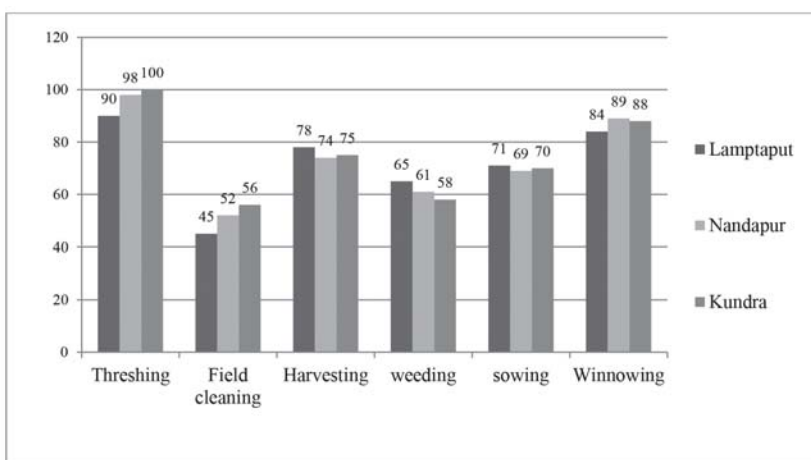
Source: Odisha Millet Mission Dashboard, 2022

(both production and consumption) by introducing millets in various public distribution system and other state nutrition schemes like Integrated Child Development Scheme (ICDS), Mid-Day Meal (MDM), Integrated Tribal Development Agency (ITDA) supported Welfare Hostels etc. Government, under this programme also provide market linkage to the millet farmers. Thus, this initiative encourages

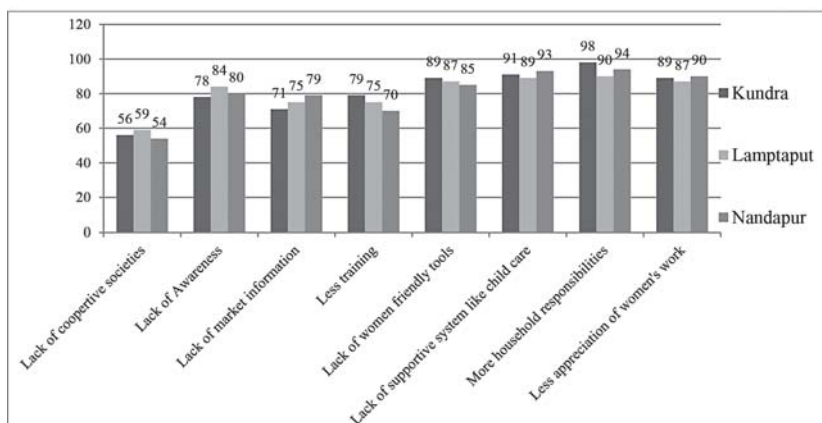
not only production of millets but also provide opportunity for varieties of millet-based food. Local SHGs and specifically women are empowered economically and socially after getting some income generating sources due to millet-based value chain. The WSHGs with the help of mission shakti, under OMM established millet-based tiffin centre to serve highly nutritious millet-based ready to eat food (table 2).

As the major farming operations in millet are performed by women so this causes drudgery of women during the production and post production activities. Before OMM, women normally performed most of the on-farm and post production activities manual which causes lots of pain and drudgery for the women. But, Odisha Millet Mission helpful for the farmers and women in different post production activities including providing different technology and machineries like thresher, pulverizer, cleaner-grader-stoner etc.

Including to that Odisha Millet Mission also helpful for increasing ease of doing agriculture for women through improve agronomic practices and mechanization of the processing of the millet grains. This will also helpful for understanding and reducing the drudgery of women farmers by providing various on-farm and post harvesting technological development in sowing, weeding, harvesting, winnowing and post harvesting processing. The fig 4 shows the major drudgery-prone activities during the production and post production activities as identified by the women farmers in the Koraput district. This shows threshing (90-100%), winnowing (84-89%) and harvesting (74-78%) are three major drudgery-prone activities followed by sowing (69-71%), weeding (58-65%) and field cleaning (45-56%).

**Fig. 4** Block wise major drudgery-prone activities for women

Source: Compiled by Author based on Field Survey

**Fig. 5** Problems for women in millet farming

Source: Compiled by Author based on Field Survey

The above figure shows the constraints faced by women in the millet farming operations while on farm production processing and marketing of millet as perceived by women respondent. It can be seen that the gender specific social problems are more road blocker for the women farmers. More household responsibilities, lack of women friendly tools, less appreciation of the work done by women and lack of support systems

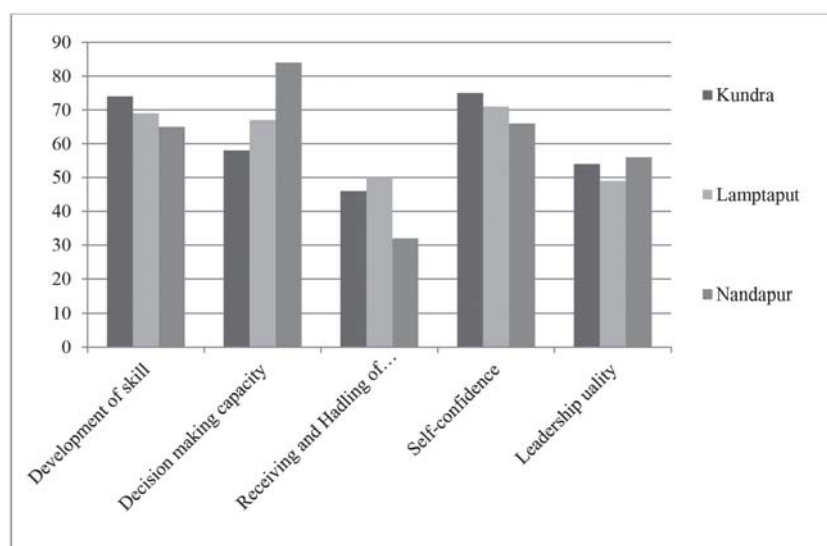


Fig. 6 Livelihood status and empowerment of the women

Source: Compiled by Author based on Field Survey

like child care are the major constraints for the women farmers.

Women empowerment is a holistic approach involving social, economic and financial strengthening and decision making of the women in her household, community and society as a whole. This figure shows that due to intervention and recent development in the millet farming operations due to Odisha Millet Mission the status of the women is improving. Along with different production and post production they are also now actively participated in the marketing and value-addition process. Now, marketing and processing is not the only task of men. From the figure it can be seen that due to skill development related to production, processing and value-added product, receiving money from the sale of the millet grain in the market or sale of different millet-based value-added product social status of women increased. As a result of some degree of financial independence the social and economic decision-making capacity of the tribal women increased in the family and local community. This also leads to empower the women and improve their self-confidence. This figure shows that 69% to 74% of the women respondents agreed that millet mission helps to improve their farming skills. Almost 58% to 84% of the women said that millet cultivation operations help them for taking various financial and economic decisions regarding their family like types of crop to be cultivated, seed selection, financial management of their family etc.

Discussion

Most of the findings of the study reveals similar and consistent with the findings of the literature. Tribal women

are the major contributors of the different millet producing activities stating from on-farm production activities like variety selection, land preparation, manuring, irrigation, weeding etc. and post harvesting activities like threshing, winnowing, seed management, storage^{5,15}. The tribal women are active workers in various production and post production farming operations and tribal men are normally engaged in production of cash crops. They are also actively engaged in various post production value addition and marketing activities as small sellers, traders in the local hat etc. But the value chain system in millet farming is not well developed in the Koraput district as compared to other millet producing states like Karnataka, Tamil Nadu¹⁶. Millet is a staple food and

widely produced among the tribal communities in Koraput district and but the processing involves pain and drudgery for the women^{15,16} because most of the processing activities done manually by women like threshing, winnowing and harvesting. But with the implementation of Odisha Millet Mission encourages postproduction and value addition operations of millet. This also helpful to empower the women economically and socially within the household and local communities by developing their skill and leadership quality, finance related decisions and handling money⁸.

Conclusion

Gender role analysis and women entrepreneurship are a significant factor to analyse the picture of agriculture, rural livelihood and the status of tribal women especially millet producing farm communities. The implementation of Odisha Millet Mission, a flagship programme of the Govt. of Odisha to revive and strengthen the production, consumption and marketing structure of millet production through mechanisation of agronomic practices which is earlier done manually and development of marketing linkage of the farm produce in PACS and Mandis etc. The development of mechanisation of agronomic practices not only makes the farming operations easy but also helpful to reduce the drudgery of women. The WSHGs in the Keonjhar and Sundergarh district are engaged in making the ragiladoo pre-mix which are distributed among the preschool going (Anganwadi) children. This helps the women for improving the value chain system and increasing the income level of the women and nutrition level of the school going children. The WSHGs with the

help of mission shakti, also establish millet based ready to eat tiffin centres in different programmes to boost the consumption of millet outside the farming communities. But still government need to aware the farmers about the benefit and facilities available for the development of the millet farming operations. Along with that these two initiatives need to be encouraged in each and every district so the income of the women and the value chain system of millet will be increased. □

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