



Towards food sovereignty

# MILLET FROM FARM TO FORK

## Facts, Challenges, & Recommendations

A Policy paper on  
strengthening Millet Ecosystem  
and incorporating Millet  
into welfare schemes  
(PDS, ICDS and MDM)

**SwitchON Foundation**  
DECEMBER 2023

# Table of Content

Millet: The tragedy of a lost superfood .....	03
The urgency: Climate change and Indian Agriculture .....	04
Crop Production and Food Security Scenario .....	07
Towards food sovereignty: Millet from farm to fork .....	08
Challenges .....	14
Scope of Including Millet in ICDS and MDM .....	18
Policy Recommendations for strengthening Millet Ecosystem and incorporating Millet into welfare schemes (PDS, ICDS and MDM) ...	19
Conclusion & Way Forward .....	23
Bibliography .....	24





# Policy paper on strengthening Millet Ecosystem and incorporating Millet into welfare schemes (PDS, ICDS and MDM)

## Millet: The tragedy of a lost superfood



Shortly after a decade of independence, the goal of the Indian Govt. in the 1960s was to quickly increase the output of wheat and rice as the nation battled to feed its people. While the resultant Green Revolution was indeed successful in increasing agricultural yields by 44 percent from 1965 to 2010, the focus of the Revolution was on a selective few grains such as rice and wheat, therefore neglecting India's huge array of indigenous grains. Both rice and wheat consume more water than millet and their cultivation throws up challenges for farmers in those parts of India that are dry and already facing water scarcity.

While 42.1 percent of the global population cannot afford healthy food, that number is 74.1 percent for the Indian population, according to a joint report by FAO, IFAD, UNICEF, WFP and WHO. Further, out of every three malnourished children in the world, one is from India. Taking into consideration the whole range of nutritional deficiencies, the National Health Survey 5 found that from 2019 to 2021, 35.5% of children under the age of five had stunting, 19.3% had wasted, and 32.1% had an underweight condition. On the other hand, India's rank in Global Hunger Index is constantly declining (94th in 2020, 101st in 2021, 107th in 2022, and 111th in 2023)

Communities from remote interiors of rural India that had withstood the 1769-1772 worst famine in Indian history, due to the diversified and plentiful food available from the forests and swidden farming, are today one of the most grain insecure. As compared to the early times when these communities had a plethora of wild food (particularly wild yams and animals) and cultivated items (especially millets), current level of deterioration in quality of land, water and forest coupled with complete dependence on PDS (Public Distribution System) rice (which contains some of the least levels of nutritive elements) leaving the communities are literally starved like a silent famine. On the other hand, the entire dependence on Govt. supplementary nutrition supply (Iron Folic Acid and Vitamin A syrup) has proved to be a risky bet (one evidence is recent disruption in supply during COVID-19-induced nationwide lockdown) .



## The urgency: Climate change and Indian Agriculture



The intertwined challenges of climate change and a growing global population intensify food and water insecurity. Climate change, marked by droughts, floods, unpredictable rain, high temperatures, and extreme weather, causes short-term crop failures and long-term declines in agricultural productivity. Prolonged dry spells and heat waves strain water resources, emphasizing the need for sustainable, climate-smart agriculture. Millet emerges as a promising alternative in the global shift towards resilient crops.

India heavily relies on rain-fed agriculture, a historical and contemporary cornerstone of its economy. The nation's diverse geography encompasses various agro-climatic zones and ecosystems, resulting in disparate rainfall patterns. Some regions depend heavily on monsoons, while others benefit from irrigation systems. The southwest monsoon, a pivotal climatic event, delivers the majority of India's annual rainfall.

The climatic and agricultural landscape poses a significant challenge, and the reliance on rain-fed agriculture underscores the socio-economic intricacies of the nation. The urgency to adapt to climate change and explore alternatives like millet becomes imperative in safeguarding India's food security.



**Table 1. Distribution of rainfed areas & rainfed areas as percentage of total sown land (2017-2018)**

States	Rainfed areas (hundred thousand ha) in 2017-18	Rainfed Areas as % of Net Sown Areas in 2017-18
Andhra Pradesh	60	55.9
Bihar	33.8	50.6
Gujarat	60.7	58.9
Karnataka	67.5	68.1
Madhya Pradesh	84.5	42.6
Maharashtra	138.3	81.3
Rajasthan	99.7	55.3
Tamil Nadu	19.9	43.2
Assam	24.3	87.8
Odisha	29.5	72.7
<b>India</b>	<b>708.9</b>	<b>50.9</b>

Source: Under the Shadow of Development: Rainfed Agriculture and Droughts in Agricultural Development of India, NABARD (2022)

Recent scientific reports highlight significant shifts in India's monsoon patterns, attributed to climate change (Subramanian, 2022). Alterations include deviations in the path of monsoon systems, resulting in flash floods in previously unaffected regions. These changes pose a severe threat to food security, with potential socio-economic repercussions. Understanding this variability proves challenging due to complex factors like La Niña conditions, East Indian Ocean warming, negative Indian Ocean Dipole, southward movement of monsoon systems, and pre-monsoon Himalayan heating causing glacier melting.

Approximately 51% of India's cultivated land relies on rainfall, contributing nearly 40% to overall food output. Rain-fed agriculture, integral to India's economy, engages a significant portion of the population. The GDP is substantially influenced by the agricultural sector, making fluctuations in monsoon patterns a critical economic concern.

India's crop choices align with rainfall availability. Kharif crops like rice, millets, and pulses are sown during the monsoon, while Rabi crops, including wheat and oilseeds, are planted in less rainfall-dependent winter months.



Climate change introduces erratic monsoons, marked by extreme localized rainfall, dry August, and wet September. While average monsoons benefit farmers, uneven distribution creates worries, leading to instability in staple food crop yields. Irregular rainfall, prolonged droughts, and sudden floods increase farmer vulnerability, especially for those lacking modern irrigation like micro irrigation.

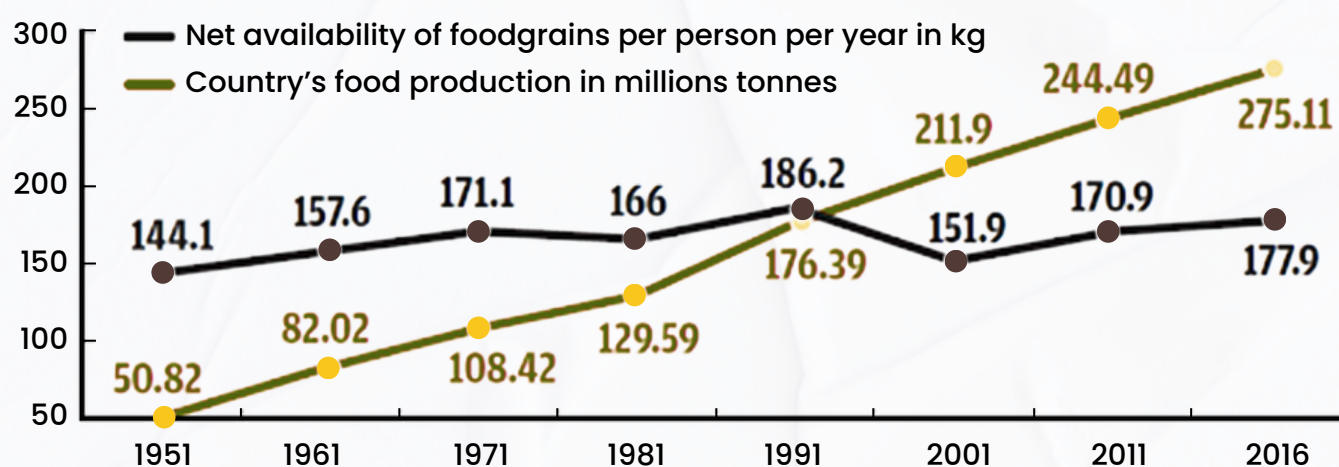
To address rain-fed dependence, India invests in irrigation infrastructure through initiatives like Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) and Rainfed Area Development under the National Mission for Sustainable Agriculture (NMSA). Despite efforts, a substantial gap remains between potential and actual irrigated areas. A crucial shift toward a more resilient cropping system is imperative. Millet, with lower water demands than rice or wheat, emerges as a key tool in combating climate change's adverse effects and ensuring food security.



## Crop Production and Food Security Scenario



The trajectory of India's food landscape signals a shift towards healthier, diverse options. However, an alarming decline is observed in the millet share within cereals, raising serious concerns. Per capita millet production plummeted from over 30 kg in the early 1970s to a mere 13 kg today. This drastic drop slashed their contribution to total cereals from over 20% to a meager 6% in the last 50 years (Chand & Singh, 2023).



- Source: Agriculture statistic, Ministry of agriculture and family Welfare

According to the first advance estimates by the Ministry of Agriculture & Farmers' Welfare for the 2023-24 kharif season, India's rice production is expected to be 1,063.13 lakh metric tonnes (LMT), indicating a 3.7% decrease compared to the previous year when it was 1,105.12 LMT. This production estimate for 2023-24 is also lower than the figure for 2021-2022, which was 1,110.01 LMT. The decline in rice production for 2023-24 is attributed to the uneven distribution of monsoon rain, even though there was an increase in the area dedicated to paddy production. The area for rice cultivation during the 2023 kharif season is 411 lakh hectares, which is higher than the 404.27 lakh hectares during the same season in 2022 (Sharma, 2023).



## Towards food sovereignty: Millet from farm to fork



In the pursuit of food sovereignty, rural India holds the key to liberating itself from external dependencies. Empirical evidence resoundingly attests to the nutritional superiority of various millets, encompassing popular types like Sorghum, Pearl Millet, Finger Millet, and lesser-known varieties such as Foxtail Millet, Little Millet, Kodo Millet, Job's Tear Millet, and Barnyard Millet. These millets outshine milled and processed rice in essential components like Proteins, Minerals, Crude Fiber, Calcium, Iron, Carotene, Zinc, and Vitamins A/B/D. In stark contrast, the prevalent Public Distribution System (PDS) supply, including milled rice, lacks these vital nutrients, posing a precarious threat to the health of children reliant on programs like the mid-day meal scheme.

### Nutritional Profile of Millet

Table 2. Nutritional profile of millets in comparison with cereals (per 100 g)

Grains	Energy (kcal)	Protein (g)	Carbo hydrate(g)	Starch (g)	Fat (g)	Dietary Fiber(g)	Minerals (g)	Ca (mg)	P (mg)
Sorghum	334	10.4	67.6	59	1.9	10.2	1.6	27	222
Pearl millet	363	11.6	61.7	55	5	11.4	2.3	27	296
Finger millet	320	7.3	66.8	62	1.3	11.1	2.7	364	283
Proso millet	341	12.5	70	-	1.1	-	1.9	14	206
Foxtail millet	331	12.3	60	-	4.3	-	3.3	31	290
Kodo millet	353	8.3	66.1	64	1.4	6.3	2.6	15	188
Little millet	329	8.7	65.5	56	5.3	6.3	1.7	17	220
Barnyard millet	307	11.6	65.5	-	5.8	-	4.7	14	121
Maize	334	11.5	64.7	59	3.6	12.2	1.5	8.9	348
Wheat	321	11.8	64.7	56	1.5	11.2	1.5	39	306
Rice	353	6.8	74.8	71	0.5	4.4	0.6	10	160

Source: Indian Food Composition Tables and nutritive value of Indian foods (IIMR, ICMR)



From the table 2, nutritional supremacy of millets over rice and wheat is glaringly apparent across various aspects. Millets stand out as a rich reservoir of antioxidants, minerals, and proteins. With a high dietary fiber content, millets play a crucial role in regulating bowel function, blood sugar, and lipid levels, thereby contributing to a healthier diet. Particularly noteworthy is millets' affordability as a source of iron, addressing nutritional deficiencies prevalent in regions grappling with iron intake concerns. Additionally, being gluten-free, millets emerge as an ideal choice for individuals with celiac disease or gluten intolerance. Their low glycemic index further renders them suitable for those managing high blood sugar or diabetes.



## India's Existing Millet Policy around Food Security



In the grand scheme of India's National Food Security Mission (NFSM), a concerted effort to boost foodgrain output by 25 million tonnes is underway since 2018-19. Millets, in this endeavor, have been allotted a significant role, earmarking 2 million tonnes or 8% of the total. Riding the momentum, India proudly designated 2018 as the National Year of Millets, paving the way for the UN International Year of Millets in 2023. However, despite these initiatives, the existing policies surrounding millet promotion have faced criticism from policy analysts who deem them insufficient compared to those championing staples like rice and wheat.

The NFSM, with its focus on millets, extends financial and technical aid to augment millet production. Under this umbrella, the Initiative for Nutritional Security through Intensive Millets Promotion (INSIMP) was launched, aiming to showcase improved production and post-harvest technologies. Other players in the policy arena include the Rainfed Area Development Programme (RADP) and the Integrated Cereals Development Programmes in Coarse Cereals (ICDP-CC) under the Macro Management of Agriculture.

India's National Mission for Sustainable Agriculture (NMSA) has also joined the millet movement, striving to enhance water-use efficiency and champion organic farming practices. The Production Linked Incentive Scheme for Food Processing Industry (PLISFPI), approved in 2021, includes the Millet-based Products (PLISMBP) component launched in FY 2022-23 with an ₹800 crore budget. While not on par with rice and wheat, Minimum Support Prices (MSPs) are periodically announced for millets, a step towards ensuring fair compensation for farmers.

Under the broader umbrella of the Central government's Promotion of Nutri-Cereals initiatives, programs promoting millets and other nutri-cereals have been set in motion. Simultaneously, millet awareness campaigns such as "Go-Millet" and "Eat Smart, Eat Millets" aim to enlighten the masses about the nutritional benefits of millets, fostering a culture of millet consumption. Despite these strides, disparities in state enthusiasm for integrating millets into programs persist, underscoring the need for more uniform adoption across the nation.





## Cases of Indian states on incorporating millets in welfare schemes

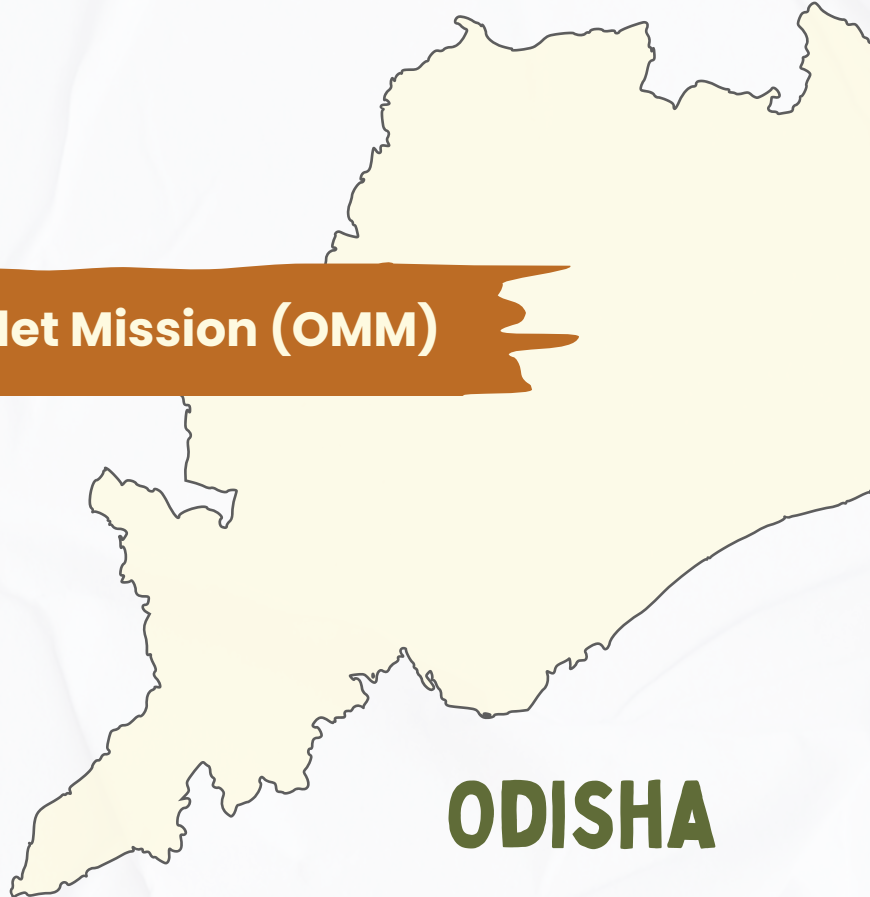


The creation of a resilient ecosystem for millet needs to consider the whole pathway (from seed to market) and the systems and institutions attached to it. International academic and research institutions such as Cambridge University and agencies such as UN-IFAD and UN-FAO have recommended the Odisha Millet Mission (OMM) model as a good framework to adopt. The Government of India (GOI) has urged other Indian states to follow the Odisha model for promoting not only millet but also pulses and oil seeds. Furthermore, GOI has established a task force to study the Odisha model and apply the learning to create sub-national frameworks for production, incentivization, and distribution (OMM website,n.d.). From the food security perspective, OMM has successfully reduced hunger by setting up distribution channels through Public Distribution System, Integrated Child Development Services, and Mid Day Meal. However, except for a few states such as Andhra Pradesh, Tamil Nadu, Telangana, Madhya Pradesh, and Chhattisgarh, the inclusion of millet in centrally-run schemes, programs, and distribution channels has largely remained absent.



## Odisha Millet Mission (OMM)

In 2017, the Government of Odisha unveiled the **Odisha Millet Mission (OMM)** with a singular focus on promoting millet cultivation in tribal areas. The mission's ambitious goals encompassed not only revitalizing millet in agricultural practices but also addressing issues spanning production, processing, consumption, marketing, and integration into government schemes.



Prior to OMM, Odisha grappled with pressing challenges, including high rates of child malnutrition among the tribal population. A shift from millet to more lucrative crops was underway, fueled by changing food habits, processing challenges, and insufficient government support, resulting in a decline in millet production and consumption.

OMM, however, emerged as a comprehensive program advocating millet cultivation as a staple crop. Operating across production, processing, consumption, marketing, and government scheme integration, the initiative garnered support from farmer producer organizations (FPOs) and local NGOs at district and block levels.

The impact of OMM was transformative. Starting with 30 blocks in 2017, it expanded to 142 blocks across 19 districts, witnessing a substantial surge in millet cultivation. Over 11 lakh farmers embraced improved agronomic practices. OMM ensured a reliable market for farmers through government-supported ragi procurement, establishing markets with remunerative prices.

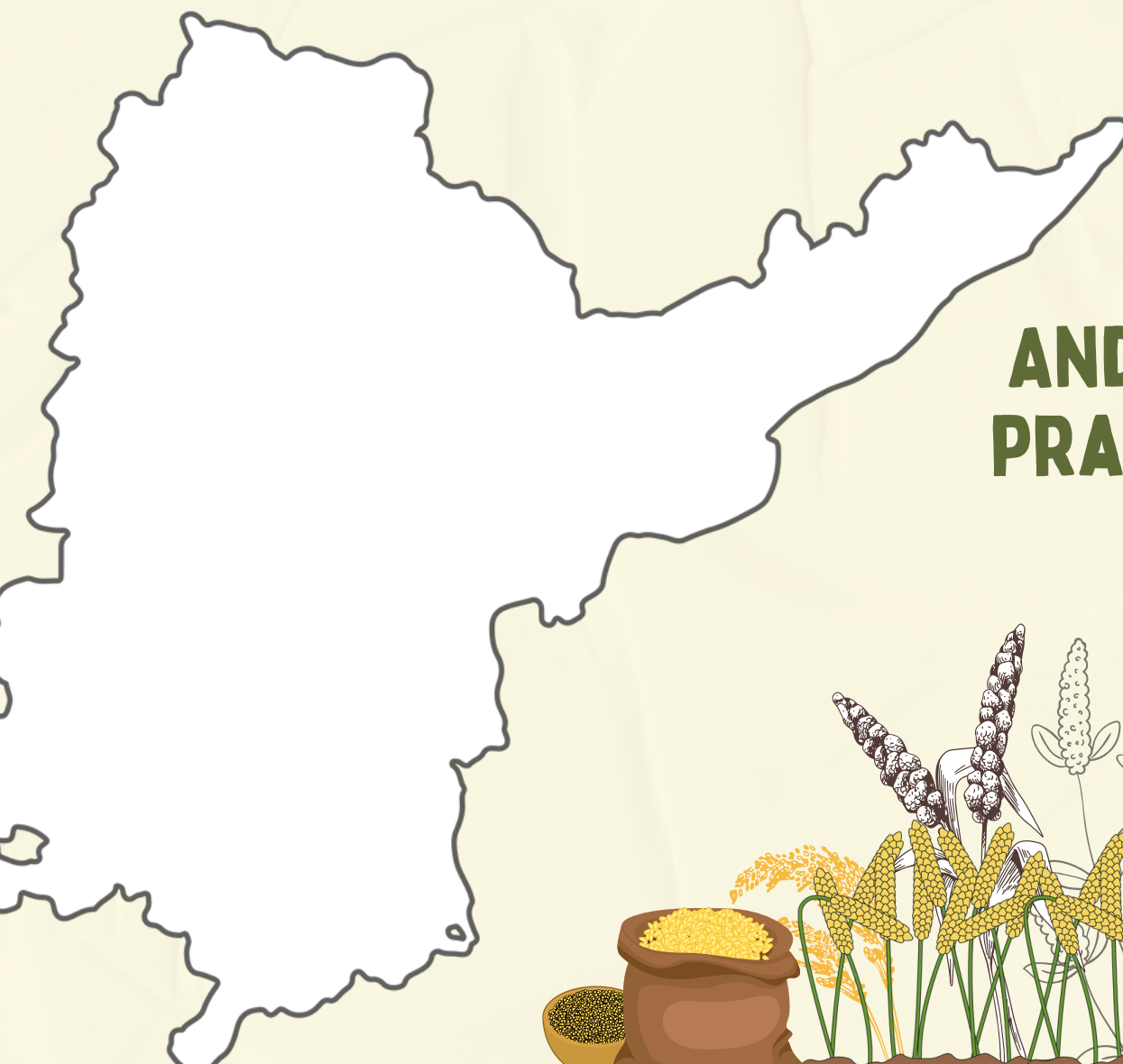
The program's success reached beyond economic realms. Millets became an integral part of government schemes, including the Public Distribution System (PDS), with ragi-based entitlements enhancing millet consumption, especially among children. The decentralized processing approach alleviated the burden on women in millet production, promoting gender equity.

OMM's achievements extended to resilience against drought, as millets proved less susceptible to deficient rainfall compared to paddy. The success story prompted the extension and expansion of OMM, turning it into a model for other states. Its recognition at both national and international levels underscored its profound impact on agriculture, nutrition, and economic development in Odisha.

## Andhra Pradesh's Comprehensive Revival of Millets Cultivation Program (CRMP)

Initiated in 2016 by the State Government of Andhra Pradesh, the Comprehensive Revival of Millets Cultivation Program (CRMP) aimed to breathe new life into millet cultivation, particularly among tribals in north Coastal Andhra and parts of Rayalaseema. Executed through various agencies, including ATMA, WASSAN, and NGOs, the program had a multifaceted approach to boost millet productivity, household consumption, and value addition.

CRMP's strategy encompassed trials in small millet intensification, awareness campaigns, and the establishment of processing and seed production centers. This holistic approach resulted in a substantial surge in millet production, elevated household consumption, and the creation of processing enterprises and markets. The program spanned multiple districts, mandals, involved various NGOs, and covered vast expanses of agricultural land.



# ANDHRA PRADESH





## Madhya Pradesh Kodo-Kutki Millet Inclusion

The "Inclusion of Kodo-Kutki Millets through Tejaswini Rural Women Empowerment Programme in ICDS, Madhya Pradesh" represents a commendable initiative focused on promoting the consumption of millets, specifically Kodo and Kutki millets, within the diet of children and mothers through the Integrated Child Development Services (ICDS) program. Here is a concise summary of this impactful initiative:

Madhya Pradesh has embarked on a journey to incorporate millets-based recipes into the Anganwadi Services and the POSHAN Abhiyaan, aiming to enhance the nutritional intake of children and mothers. Currently implemented in Dindori and Mandla districts, this initiative provides millets-based recipes to children aged 3-6 years. Kodo (Dutch Millet) and Kutki (Little Millet), resilient and well-suited for cultivation in dryland areas, have been historically grown by local tribal communities, including Baigas and Gonds, in the semi-arid regions of Madhya Pradesh. Unfortunately, over the years, their cultivation and value witnessed a decline, leading to abandonment.

In 2013, the Tejaswini program staff collaborated with the Federation and Women Self-Help Group (SHG) members in Dindori district to revive the cultivation of Kodo and Kutki as climate-resilient and nutritionally dense crops. In Dindori and Mandla, millets-based recipes such as Kodo Namkeen and Cookies have been consistently provided to children aged 3-6 years in 3714 Anganwadi Centers every Wednesday and Thursday since 2017.

A stylized map of Madhya Pradesh, India, colored in a light yellowish-green. The state's irregular border is clearly defined. To the right of the map, the text "MADHYA PRADESH" is written in a bold, dark green, sans-serif font.

## MADHYA PRADESH



## Challenges



### SwitchON's Field Experience

SwitchON's field researchers have unraveled a significant hurdle in the millet cultivation landscape—the inadequacy of welfare support. In a comprehensive baseline study conducted in West Bengal, alarming results surfaced. Shockingly, 100 percent of the interviewed farmers expressed their non-receipt of Minimum Support Prices (MSPs) for millet cultivation, despite the government's provision of MSP. Farmers stressed that government support is pivotal to fortify the millet cultivation ecosystem and boost production. A staggering 54 percent of farmers emphasized the dire need for training in millet cultivation, while 56 percent cited that a government subsidy for seed procurement could substantially amplify their production.

This trend persisted in SwitchON's baseline study in Jharkhand, echoing the sentiments of farmers. The majority outlined the crucial requirements for technical training to enhance productivity, establish market linkages, gain access to seed banks, navigate post-production processing, and stay informed about subsidies and schemes. Evidently, a holistic, end-to-end solution across the value chain is imperative for farmers to elevate their production and income levels. A resounding 98 percent of farmers believed that government subsidies would serve as a positive step, especially benefiting marginal farmers. Technical training emerged as a pressing necessity for 51 percent of farmers, while market linkage support was underscored by 48 percent of the farming community.





## **Misaligned Priorities: Rice and Wheat Dominance in Welfare Schemes (ICDS, MDM, & PDS)**

Despite the grand declaration of 2023 as the International Year of Millets by the central government and some proactive state initiatives, the stark reality persists—government welfare programs such as the Integrated Child Development Scheme (ICDS), Mid-Day Meal (MDM), and the Public Distribution System (PDS) predominantly revolve around rice and wheat. This myopic focus on two staples undermines the broader nutritional landscape and the potential of millets.

A 2022 press release from the Ministry of Women and Child Development elucidates the prevalent trend. The Wheat-based Nutrition Programme under Saksham Anganwadi and Poshan 2.0, previously known as ICDS, allocates fortified rice to all states and Union Territories. Similarly, the Pradhan Mantri Poshan Shakti Nirman, formerly the Mid-Day Meal Scheme, caters to school children in government and government-aided schools from Balvatika to classes I-VIII. The central government approved a pilot scheme for "Fortification of Rice & its Distribution under Public Distribution System" in 2019, focusing on fortifying rice with essential micronutrients like iron, folic acid, and vitamin B12.

The commitment to supply fortified rice through ICDS and MDM across all states and union territories by 2024 reflects the government's intention to address malnutrition and anemia among vulnerable populations. The Department of School Education & Literacy mandates the use of fortified rice supplied by the Food Corporation of India, distributed and consumed nationwide. The ambitious initiative also integrates technology, with the "Poshan Tracker" platform facilitating real-time monitoring of activities at Anganwadi Centers.

While these efforts aim to bolster nutritional outcomes, the glaring omission of millets in such schemes underscores the challenge of motivating farmers to transition from traditional rice cultivation. The absence of comprehensive support for millets in these welfare programs hampers the diversification of crops, hindering the potential benefits that millets bring to the table. It's evident that a recalibration of priorities is essential to truly embrace the diverse nutritional advantages that millets offer.





## Minuscule share of budget for procurement of Millet



As of December 4, 2022, the ongoing Kharif and Rabi Marketing Seasons in India have witnessed substantial procurement of paddy and wheat, with a total Minimum Support Price (MSP) value exceeding Rs. 107,000 crores. In stark contrast, the procurement of coarse grains, including millet, is a mere 13 LMT (13,03,075 MT). Subtracting maize leaves a paltry 11 LMT dedicated to millet. This discrepancy is accentuated by the central government's whopping allocation of Rs. 2.37 lakh crores for rice and wheat procurement under MSP operations for fiscal 2022-23. (ET Online, 2023).

A call for budgetary realignment emerges when one contemplates the potential impact of redirecting a fraction of the resources allocated to staples like rice towards millet procurement. If a modest 5 percent of the budget earmarked for rice procurement were diverted to millet, it could herald a significant boost in income and livelihoods for numerous Indian farmers. Despite Finance Minister Nirmala Sitharaman's acknowledgment of key areas for millet promotion—enhancing local production, efficient marketing, and post-harvest value addition—strategies to elevate the share of millets in the Public Distribution System were conspicuously absent from her 2022 Union Budget speech.

**Table 3. Hypothetical situation on potential of diverting 5% of budget earmarked for rice procurement**

State	Budget allocation for rice procurement (Rs crore)	5 percent of allocated budget (Rs. crore)	Amount of millet that can be procured with budget reallocation (in quintal)	Total acres for producing this millet	No. of farmers benefited (5 farmers work on each acre)
West Bengal	4028.7	201.435	523751.9501	87291.99168	436459.9584
Odisha	1035	51.75	134555.3822	22425.89704	112129.4852
Jharkhand	1648	82.4	214248.5699	35708.09499	178540.475



To illustrate the tangible impact, consider West Bengal. Allocating just 5 percent of the government's procurement budget for rice could benefit 436,459 farmers—a staggering number compared to the current 5000 millet-producing farmers in the state. This juxtaposition underscores the substantial room for budgetary adjustments to fortify the millet sector. The potential benefits extend beyond economic considerations, encompassing ecological sustainability, nutritional diversity, and the empowerment of local farmers. Redirecting a fraction of the budget could pave the way for a transformative shift in India's agricultural landscape, promoting resilience, diversity, and the well-being of its farming community. The onus lies on recognizing and rectifying the imbalance in budgetary allocations to unlock the full potential of millets in the country's agricultural narrative.



## **Shifted focus from Nutrition to Commercialization: Revisiting Odisha Millet Mission**

According to other experts, like Dr. Debashish Mahapatra (Professor, KIIT), in an interview from 2023, a significant concern in Odisha's millet promotion efforts is the shift from its original purpose of addressing local malnourishment to a focus on commercialization by the Odisha government. While the Odisha Millet Mission is a source of pride for the state and its residents due to its successful implementation, it is crucial to prioritize localized processing units and support for smallholders to access local markets. While some initiatives, such as the installation of local processing units with pulverizers, have been initiated, there is a need to accelerate these efforts to fully capitalize on the Mission's potential benefits for rural communities. To build a strong ecosystem, Mahapatra emphasizes, will mean promoting more varieties of millets other than Raagi.



## **Inefficiency of programs to attain economic viability**

The promotion of millets by the government of India has received significant attention; however, food policy analysts, including Devinder Sharma (interview, 2023), argue that government interventions fall short in making millet production economically sustainable for farmers in the long run. Despite the central government's launch of millet promotion initiatives, none of the plans or programs adequately address the crucial issue of increasing farmers' incomes, which remains the most significant challenge. Unfortunately, this challenge often goes unnoticed or is disregarded by the urban population, academia, researchers, and policymakers. Despite the sentiment that farmers are the "annadataa" or food providers, their economic condition in India is currently worse than that of daily wage workers. This disparity places farmers at the bottom of the economic pyramid.

## Empowering Diets: Scope of Including Millet in ICDS and MDM



Introducing millets into the Integrated Child Development Services (ICDS) and Mid-Day Meal (MDM) programs can be a transformative step in improving the nutritional outcomes and food security of children in India. Millets are a group of small-seeded grains that have been traditionally grown and consumed in India for centuries. They offer a wide range of benefits, making them a suitable addition to these government-run programs. Let's explore the scope of introducing millets in ICDS and MDM:

- **Nutritional Benefits:** Millets are rich in essential nutrients, including protein, dietary fiber, vitamins, and minerals. Incorporating millets into the diet of children through ICDS and MDM can help combat malnutrition and provide a well-rounded source of nutrition.
- **Health Benefits:** Millets have a low glycemic index, making them a suitable choice for managing diabetes and obesity, which are growing concerns in India. This can have long-term health benefits for children and their families.
- **Food Security:** By diversifying the food offerings in ICDS and MDM, the government can enhance food security, especially in regions prone to food shortages or crop failures.
- **Diverse Varieties:** Millets come in various types, such as pearl millet, finger millet, sorghum, and foxtail millet. Introducing a variety of millets in the programs can promote dietary diversity and expose children to different tastes and textures.
- **Sustainability:** Millets are well-suited to India's diverse agro-climatic conditions and can be grown with minimal water and input requirements. This makes them environmentally sustainable and resilient in the face of climate change.
- **Affordability:** Millets are often more affordable than other staple grains like rice and wheat. By incorporating millets into ICDS and MDM, the government can manage program costs more effectively.
- **Local Crop Promotion:** Promoting millets encourages local crop cultivation and supports small-scale farmers. This aligns with the government's goal of strengthening rural economies and increasing income for farmers.
- **Cultural Significance:** Millets have cultural significance in many Indian communities. Including millets in the diet can help preserve and promote traditional food habits, which have intrinsic value for a nation's cultural heritage.
- **Community Engagement:** Introducing millets can involve local communities in the planning and implementation of these programs. This can enhance the sense of ownership and participation in the well-being of children.
- **Research and Awareness:** This initiative can stimulate research and awareness about millets' benefits and encourage their consumption among the general population.



# Policy Recommendations for strengthening Millet Ecosystem and incorporating Millet into welfare schemes (PDS, ICDS and MDM):



India's quest for sustainable agriculture and improved nutritional outcomes necessitates a comprehensive policy framework to strengthen the millet ecosystem. Integrating millets into welfare schemes such as the Public Distribution System (PDS), Integrated Child Development Services (ICDS), and Mid-Day Meal (MDM) programs is crucial for enhancing food security and nutrition across the country.

## 1. Millet Awareness and Education:

- **Campaigns for Holistic Awareness:** Launch extensive awareness campaigns targeting farmers, consumers, and policymakers to elucidate the myriad benefits of millets. Emphasize their nutritional value, resilience in challenging environmental conditions, and potential to bolster food security.
- **Integration into Education:** Integrate millets into school curriculums, fostering an understanding of their nutritional significance and cultivation methods among children. This approach ensures a generational understanding and appreciation for millets.
- **Consumer Awareness Programs:** Implement consumer awareness initiatives detailing the nutritional advantages of millets and providing guidance on seamlessly incorporating them into daily diets.
- **School Nutrition Programs:** Enhance school nutrition programs by including millet-based meals for children in the Mid-day Meals program, promoting their consumption from an early age.
- **Awareness Among Stakeholders:** Raise awareness among stakeholders, including parents, teachers, and program administrators, about the benefits of millets in improving child nutrition, agricultural practices, and local economies.





## 2. Agronomic Practices and Farmer Support:

- **Crop Diversification Advocacy:** Encourage farmers to diversify crop rotations, promoting soil health and mitigating risks associated with pests and diseases. Promote intercropping of millets with other crops for optimal land utilization.
- **Sustainable Farming Promotion:** Advocate for sustainable farming practices, including organic cultivation and water-efficient methods like drip irrigation, reducing reliance on chemical fertilizers and pesticides.
- **Technical Knowledge Gathering:** Take farmers on visits to millet cultivation sites to gather technical knowledge and offer exposure to high-yielding varieties.

## 3. Research & Collaboration:

- **High-Yielding Variety Research:** Invest in research to develop high-yielding millet varieties resistant to pests and diseases, ensuring increased productivity and farmer resilience.
- **Stakeholder Collaboration:** Foster collaboration between diverse stakeholders, including government agencies, NGOs, research institutions, and private sector entities. This collaborative approach enhances the collective promotion of millets.
- **Quality Standards Establishment:** Establish stringent quality standards and certifications for millet products, ensuring consumer confidence in their safety and nutritional value.



## 4. Capacity Building and Livelihood Support:

- **Training Programs:** Provide comprehensive training and workshops to farmers on millet cultivation techniques, post-harvest management, and value addition, empowering them with the knowledge needed for successful millet farming. Conduct farmer workshops focusing on the cost-benefit analysis of millet cultivation compared to dominant crops like rice and wheat, promoting informed decision-making.
- **Package of Practices (PoP) Adoption:** Encourage farmers to adopt better Packages of Practices (PoPs) on Minor Millets, offering high-yielding varieties at subsidized prices.
- **Entrepreneurship Ecosystem:** Encourage the growth of small-scale millet-based businesses such as mills and snack production units, fostering economic opportunities and value addition.
- **Culinary Promotion:** Promote millet-based cuisine in restaurants and hotels, creating a market demand that supports both farmers and culinary enterprises.



## 5. Government Policies and Incentives:

- **Incentivizing Cultivation:** Create policies offering subsidies and price support mechanisms for millet cultivation, motivating farmers to choose millets over other crops.
- **Procurement Centers:** Establish millet procurement centers to ensure fair prices for farmers, facilitating a direct link between cultivation efforts and economic returns.
- **Nutrition Program Integration:** Integrate millets into government nutrition programs, including mid-day meals in schools and broader food security initiatives.
- **Scheme Linkages:** By integrating millet programs with schemes targeting rural communities, women, children, and vulnerable populations, efficiency is enhanced, preventing duplication of efforts and improving resource mobilization. Notably, linking millet promotion with gender-focused schemes provides valuable support to women's Self-Help Groups, offering training in agro-marketing, packaging, and financial literacy. Additionally, connecting millet promotion with public health and maternal/infant health programs recognizes the essential role of women in caregiving and elevates their position from pre-production participants to active consumers, fostering holistic well-being.

## 6. Learning from and replication of operational success from other states:

### Example of Andhra Pradesh

- **Identification of focus area:** Andhra Pradesh's Millets Revival program has effectively identified tribal areas and regions with limited irrigation, particularly North Coastal Andhra, as Millet-Hubs, showcasing a strategic approach to integrate millets across the entire value chain.
- **Establishment of Millets Promotion Board:** The state has proactively established a dedicated Millets Promotion Board along with technical and advisory committees. This organizational setup efficiently manages the Minimum Support Price (MSP) program for Sorghum.
- **Farmer Training Initiatives:** Andhra Pradesh's commitment extends to organizing farmer training programs specifically focused on enhancing millet production. This targeted training encourages farmers to adopt improved practices.
- **Procurement through MARKFED and FPOs:** The state has streamlined millet procurement by actively involving entities like MARKFED (Marketing Federation) and Farmer Producer Organizations (FPOs), ensuring fair prices and market access for farmers.
- **Consumer Incentives:** As part of the initiative, the Andhra Pradesh government has released a millet recipe book in the local language (Telugu). This targeted effort aims to encourage local consumers, especially lactating and pregnant women, to incorporate millets into their regular meals.
- **Nutritional Emphasis in Tribal Areas:** Launching the millet recipe book as a pilot project in tribal areas, particularly focusing on indigenous new mothers and mothers-to-be, underscores the government's commitment to improving food and nutritional security. The emphasis on essential micro-nutrients in millets is a key aspect of these campaigns.

## 7. Demand Creation and Market Access:

- **Market Ecosystem Development:** Develop a robust market ecosystem with government support and private sector involvement, positioning millets as preferred choices for breakfast cereals, snacks, and flour, with the help of IIMR and ICRISAT.
- **International Market Access:** Facilitate access to larger domestic and international markets for millet producers, enhancing their reach and creating sustainable market dynamics.
- **Supply Chain Strengthening:** Strengthen millet supply chains, from farm to market, to minimize post-harvest losses and ensure a seamless transition.
- **Storage Facilities:** Offer free or subsidized storage facilities to Farmer Producer Organizations (FPOs) to store harvested millets.

## 8. Consumer Incentives:

- **Incentivizing Consumption:** Incentivize consumers through initiatives like millet vending machines, making millet products more accessible and appealing to the wider population.
- **PDS Enhancement:** Enhance the Public Distribution System (PDS) to include subsidized millet alongside rice and wheat, increasing affordability and accessibility.
- **Recipe Development:** Develop recipes and meal plans that incorporate millets in an appealing and culturally appropriate manner, ensuring acceptance and enjoyment by diverse populations.

## 9. International Outreach:

- **Global Promotion Initiatives:** Organize international food festivals featuring diverse millet preparations, engaging the Indian diaspora as ambassadors to spread awareness globally.
- **Collaboration with Nations:** Collaborate with other nations and international research institutions for joint research and development initiatives aimed at increasing millet production.
- **Global Conferences and Exhibitions:** Extend millet promotion globally by organizing conferences, studying millet genetics, sharing global case studies, launching global recipe projects, and hosting international exhibitions dedicated to millets.

## 10. Evaluation and Monitoring:

- **Nutritional Assessments:** Conduct rigorous nutritional assessments to determine the specific benefits of millets for children.
- **Monitoring and Evaluation:** Implement a robust system for monitoring and evaluating the impact of introducing millets, with a focus on child nutrition, agricultural practices, and the overall success of the programs.



## Conclusion & Way Forward



Millet's have a rich history in various regions, particularly Sub-Saharan Africa and South Asia, where India stands as the largest producer of these crops. Millet's quick maturation, low input requirements, adaptability to various environments, and ecological, nutritional, and socioeconomic benefits make millets a promising solution to food insecurity and malnutrition, especially as wheat and rice production stagnates amidst a growing global population. Millets can enhance genetic diversity in the food supply, ensuring improved food and nutrition security and encouraging local farming in dry regions, promoting dietary diversity through the use of local biodiversity. Therefore, there is a compelling case to promote millet cultivation and consumption as it has the potential to bridge the yield gap in food production, potentially addressing the caloric needs of millions in low-performing areas.





## Bibliography



1. Awal, V. (2023). What the Union Budget's focus on millet might mean for the humble grain. Indian Express. <https://indianexpress.com/article/lifestyle/food-wine/what-the-union-budgets-focus-millet-might-mean-humble-grain-8448492/>
2. Behera, M. K. (2017). Assessment of the state of millets farming in India. *MOJ Eco Environ Sci*, 2(1), 16-20.
3. Chand, R. and Singh, J. (2023) From Green Revolution to Amrit Kaal, NITI Working Paper 02/2023, Available at: [https://www.niti.gov.in/sites/default/files/2023-07/Aggricultrue\\_Amritkal.pdf](https://www.niti.gov.in/sites/default/files/2023-07/Aggricultrue_Amritkal.pdf) (Accessed: 22 December 2023).
4. Davis, K. F., Chhatre, A., Rao, N. D., Singh, D., & DeFries, R. (2019). Sensitivity of grain yields to historical climate variability in India. *Environmental research letters*, 14(6), 064013.
5. Dayakar Rao, B., Bhaskarachary, K., Arlene Christina, G. D., Sudha Devi, G., Vilas, A. T., & Tonapi, A. (2017). Nutritional and health benefits of millets. ICAR\_Indian Institute of Millets Research (IIMR) Rajendranagar, Hyderabad, 2.
6. Department of Agriculture & Farmers Welfare, Government of India. (n.d.). Rainfed Farming System. <https://agricoop.gov.in/en/RainfedDiv>
7. Department of Food and Public Distribution. [https://dfpd.gov.in/new-riceBudget\\_C.htm](https://dfpd.gov.in/new-riceBudget_C.htm)
8. Deshpande, R.S. (2022). Under the Shadow of Development: Rainfed Agriculture and Droughts in Agricultural Development of India. NABARD Research and Policy Series 2/2022. <https://www.nabard.org/auth/writereaddata/tender/2007223429Paper-2-%20Rainfed-Agriculture-Dr.-Deshpande.pdf>
9. ET Online. (2022). Government to pay Rs 2.37 lakh crore for procurement of wheat, paddy under MSP. Economic Times. <https://economictimes.indiatimes.com/news/economy/agriculture/government-to-pay-rs-2-37-lakh-crore-for-procurement-of-wheat-paddy-under-msp/articleshow/89266405.cms>
10. FAO. Committee on Agriculture. *Proposal for an International Year of Millet*. <https://www.fao.org/3/mx753en/mx753en.pdf>
11. Kane-Potaka, J., and Kumar, P. (2019). "Smart food - food that is good for you, the planet and the farmer," State of India's Livelihoods Report 2019 (New Delhi: Access Development Services), 71-82.
12. Kumar, A., Tomer, V., Kaur, A. et al. 2018. *Millets: a solution to agrarian and nutritional challenges*. Agriculture and Food Security. 7,31.
13. Longvah, T., Anantan, I., Bhaskarachary, K., Venkaiah, K., & Longvah, T. (2017). Indian food composition tables (pp. 2-58). Hyderabad: National Institute of Nutrition, Indian Council of Medical Research.



14. Mal, B., Padulosi, S., & Bala Ravi, S. (2010). Minor millets in South Asia: learnings from IFAD-NUS Project in India and Nepal.
15. Mishra, P. (2022). Conservative level. Rice procurement target for 2022-23 fixed at 62.1 mt, rabi-grown rice to be 10.6 mt. The Hindu Business Line. <https://www.thehindubusinessline.com/economy/agri-business/rice-procurement-target-for-2022-23-fixed-at-621-mt-rabi-grown-rice-to-be-106-mt/article66572121.ece>
16. PIB.(2022) Fortified Rice under ICDS. <https://pib.gov.in/PressReleasePage.aspx?PRID=1846133>
17. PIB. (2022). Year-End Review of Department of Food and Public Distribution. [https://pib.gov.in/PressReleasePage.aspx?PRID=1882759#:~:text=Procurement%20of%20Foodgrains%20\(paddy%2F%20wheat\)%3A&text=2022%2C%20a%20quantity%20of%20339.88,70015.19%20crore.](https://pib.gov.in/PressReleasePage.aspx?PRID=1882759#:~:text=Procurement%20of%20Foodgrains%20(paddy%2F%20wheat)%3A&text=2022%2C%20a%20quantity%20of%20339.88,70015.19%20crore.)
18. PIB. Ministry of Consumer Affairs, Food & Public Distribution. (2022). Rice procurement estimated at 518 lakh metric tonnes during kharif crop of Kharif Marketing Season 2022-23, for Central Pool. <https://pib.gov.in/PressReleaselframePage.aspx?PRID=1855586>
19. Secretary DFPD chairs a meeting of State Food Secretaries and FCI to discuss the procurement arrangements for Kharif Crop ensuing Kharif Marketing Season 2022-23
20. Report on Introduction of locally-produced millet in ICDS, PDS in Keonjhar Odisha. <https://agricultureandfoodsecurity.biomedcentral.com/articles/10.1186/s40066-018-0183-3/tables/2>
21. Saxena, R., Vanga, S. K., Wang, J., Orsat, V., & Raghavan, V. (2018). Millets for food security in the context of climate change: A review. Sustainability, 10(7), 2228.
22. Shalya, C. (2020). Odisha set to introduce locally produced millet into ICDS, PDS. Times of India. <https://www.downtoearth.org.in/news/agriculture/odisha-set-to-introduce-locally-produced-millets-into-icds-pds-72039>
23. Sharma, H. (2023). Rice production to dip 3.7% due to uneven monsoon. Indian Express. <https://indianexpress.com/article/india/rice-production-to-dip-3-7-due-to-uneven-monsoon-9002809/>
24. Sharma, H. (2022). Budget documents show: Fund cut for food grain procurement. Indian Express. [https://dfpd.gov.in/new-riceBudget\\_C.htm](https://dfpd.gov.in/new-riceBudget_C.htm)
25. Status of malnutrition in India and World. <https://agricultureandfoodsecurity.biomedcentral.com/articles/10.1186/s40066-018-0183-3/tables/2>
26. Subramanian, A. (2022). How climate change is altering Indian monsoon. The Hindu. <https://www.thehindu.com/sci-tech/how-climate-change-is-altering-indian-monsoon/article65900632.ece>
27. T20ind, (2023). Millets as a Key to Improving Food and Nutrition Security and Promoting Sustainable Consumption. <https://t20ind.org/research/millets-as-a-key-to-improving-food-and-nutrition-security/>

28. Mahera, A. B., Lokesh, K., Dudhagara, C., & Patel, H. D. (2022). *Millets: The future smart food*. ResearchGate. Retrieved from [https://www.researchgate.net/publication/359758525\\_Millets\\_The\\_future\\_smart\\_food/link/624d0d8def013420665af092/download](https://www.researchgate.net/publication/359758525_Millets_The_future_smart_food/link/624d0d8def013420665af092/download)
29. Manivannan, S., Pulivarthi, M. K., Raj, A. S., Iftikhar, M., Prasad, P. V., & Siliveru, K. (2023). *Considerations for gluten free foods – pearl and finger millet processing and market demand*. Grain & Oil Science and Technology, 6(2), 59–70. Retrieved from: <https://www.sciencedirect.com/science/article/pii/S2590259822000395>
30. Jagdish. (2019, September 16). *Foxtail Millet Cultivation Income, Yield, Project Report*. Agri Farming. Retrieved from: [https://www.agrifarming.in/foxtail-millet-cultivation-income-yield-project-report#google\\_vignette](https://www.agrifarming.in/foxtail-millet-cultivation-income-yield-project-report#google_vignette)
31. Khader, V. (2021). *Millets for Dietary Diversification*. Acta Scientific Nutritional Health. Retrieved from: <https://actascientific.com/ASNH/pdf/ASNH-06-0973.pdf>
32. Pti. (2023a, February 11). *Millets to increase income of small and marginal farmers: Govt*. The Economic Times. Retrieved from <https://economictimes.indiatimes.com/news/economy/agriculture/millets-to-increase-income-of-small-and-marginal-farmers-govt/articleshow/97828596.cms>
33. Pib, (2023, August 11). *Promoting Millets*. Ministry of Agriculture & Farmers Welfare. Retrieved from: <https://pib.gov.in/PressReleaseFramePage.aspx?PRID=1947884#:~:text=Ministry%20of%20Food%20Processing%20Industries,800%20crores.>
34. PIB. Ministry of Consumer Affairs, Food & Public Distribution. (2022). *521.27 LMT rice estimated for procurement during the forthcoming KMS 2023-24 (Kharif Crop)*. <https://pib.gov.in/PressReleaseFramePage.aspx?PRID=1855586>
35. Wire News Desk. *It's Time for a 10-Year-Plan that Says How Much Rice and Wheat Will Be Procured From Each State*

**www.SwitchON.org.in**     **@SwitchONIndia**

**SwitchON Foundation**, established in 2008, is a leading non-profit organisation focusing on Environment Sustainability and Equal Opportunities. Operating in 10 Indian states. It leads initiatives in Clean Energy Access, Sustainable Agriculture, Skilling, Clean Air and Sustainable Cities. Key strengths encompass innovative project implementation, capacity building, field support, awareness and advocacy.

