



FOOD SYSTEM DIALOGUE

Mainstreaming Minor Millets into Food System

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Directorate of Research

**Maharana Pratap University of Agriculture and Technology,
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ACRONYMS

<i>CMSS</i>	<i>Community Managed Seed System</i>
<i>CSO</i>	<i>Civil Society Organization</i>
<i>FCRA</i>	<i>Foreign Contribution Regulation Act (FCRA)</i>
<i>GPDP</i>	<i>Gram Panchayat Development Plan</i>
<i>ICAR</i>	<i>Indian Council of Agricultural Research</i>
<i>ICDS</i>	<i>Integrated Child Development Services</i>
<i>MPUAT</i>	<i>Maharana Pratap University of Agriculture and Technology</i>
<i>PDS</i>	<i>Public Distribution System</i>
<i>OMM</i>	<i>Odisha Millet Mission</i>
<i>OPCA</i>	<i>Organic Product Certification Agency</i>

Introduction

India has the largest area under millet cultivation in the world which accounts for around 41 percent of the world's total production of these crops. In India, millets have been traditionally grown in dryland regions, making them a staple crop for farmers in arid and semi-arid areas. Millets are known for their drought resistance and ability to thrive in low-fertility soils, making them a sustainable and reliable food source even in challenging agricultural conditions. Their cultivation requires minimal water and inputs compared to other cereal crops like rice and wheat. In the southern area of Rajasthan, tribal farmers in the districts like Banswara, Dungarpur and Pratapgarh still cultivate millets due to their traditions and mostly for their household consumption. Millets have remained an identity of their lifestyle for ages.

However, the presence of these crops has been declining in the food basket over the years, which has also contributed to nutritional challenges severely among women and children. The decline in the popularity and cultivation of millets can be attributed to several factors:

- 1. Shift towards Modern Cereal Crops:** With the Green Revolution in the mid-20th century, there was a strong emphasis on increasing the production of high-yielding crops like rice and wheat. These crops required intensive irrigation, fertilizers, and pesticides, which led to a decrease in the cultivation of traditional millets that thrived in low-input and rainfed conditions.
- 2. Changing Dietary Preferences:** As India underwent urbanization and economic development, there was a shift in dietary patterns towards processed and refined foods. Millets, being perceived as "poor man's food" or suitable only for livestock, lost their appeal among urban consumers who favored polished rice, wheat, and other modern cereals.
- 3. Lack of Awareness and Promotion:** Millets received relatively less attention and promotion compared to major cereal crops like rice and wheat. Limited awareness among consumers about the nutritional benefits and versatility of millets contributed to their declining popularity. Additionally, the marketing and branding of millets lagged behind, making it challenging to create a demand for these ancient grains.
- 4. Infrastructure and Market Challenges:** The lack of proper post-harvest infrastructure, storage facilities, and processing units for millets posed challenges for farmers in terms of value addition and marketing. Limited market linkages and price incentives for millet cultivation further discouraged farmers from growing these crops.
- 5. Urbanization and Migration:** Rapid urbanization led to the migration of rural populations to cities in search of better economic opportunities. This shift disrupted traditional agricultural practices,

including millet cultivation, as farmers pursued more lucrative options or faced difficulties in accessing agricultural land.

- 6. Policy Neglect:** For many years, government policies and agricultural support systems focused primarily on rice and wheat, neglecting millets. The lack of policy incentives, research, and development for millets hindered their growth and contributed to their declining popularity.

However, it is important to note that in recent years, there has been a renewed interest in millets due to their nutritional value, climate resilience, and sustainable farming practices. Efforts are being made by governments, NGOs, and individuals to revive the cultivation, consumption, and promotion of millets through awareness campaigns, policy interventions, and market development initiatives. The recognition of millets' potential in addressing food security, nutrition, and sustainable agriculture is gradually reversing their decline and re-establishing their importance in India's agricultural landscape.

Although, the whole world is celebrating **International Year of Millets -2023** and have commitment for its promotion, but it seems like to have focus on major millets like Pearl Millets (*Bajra*), Sorghum (*Jwar*) and others. The significance of minor millets like Foxtail millets (*Kangni*), Finger millets (*Ragi*), Proso Millet (*Chena*), Kodo Miller (*Kodo*), Barnyard Millet (*Sanwa*), Little millet (*Kutki*) have been shadowed. There is a need to promote local food diversity to increase the nutritive value of food. The possible opportunities need to be explored for community owned approaches to process and promote minor millets in the local areas and other areas as well.

With the purpose to discuss the possible strategies and approaches for increasing production and promotion of minor millets in the State, a **Food System Dialogue** titled "**Mainstreaming Minor Millets into the Food System**" was organized on 07 June 2023, on the occasion of **World Food Safety Day**, in joint collaboration of Maharana Pratap University of Agriculture and Technology (MPUAT), Udaipur, Bhoomi-Ka and VAAGDHARA.

Inaugural Session

The inaugural session commenced with the ceremonial lighting of the lamp by the chief guest, Dr. Ajeet Kumar Karnatak, Hon'ble Vice Chancellor of MPUAT. Mr. B.M. Dixit, a distinguished figure who previously held positions as Additional Director in the Agriculture Department and Managing Director of the Rajasthan State Seeds Corporation Ltd., Jaipur, warmly welcomed Dr. Karnatak. Mr. Dixit outlined the objective of the 'Food System Dialogue,' which aimed to incorporate minor millets into the food system through collaborative efforts involving subject experts, agricultural practitioners, researchers, members of FPOs, and farmers from eight different states across India.

The context was then set by the Secretary, VAAGDHARA MR. Jayesh Joshi quoting the historical incident of the Rajput emperor Maharana Pratap who is said to have eaten 'Ghaas Ki Roti' whilst the battle with the Mughal rulers. This so called 'Ghaas Ki Roti' was not made of grass but of minor millets which were small grains and were then called 'Ghaas by the people.' It was the power of millets that he fought till his last and did not give up till the end.

Providing historical background, Mr. Jayesh Joshi, Secretary of VAAGDHARA, set the context by giving reference of the remarkable story of Maharana Pratap, a Rajput emperor who, during his battle with the Mughal rulers, is believed to have consumed 'Ghaas Ki Roti.' This 'Ghaas Ki Roti' was not made from actual grass but from minor millets, which were referred to as 'Ghaas' by the people due to their small grain size. Maharana Pratap's unwavering determination and resilience, demonstrated by his reliance on the power of millets, inspired him to fight until the very end without surrendering.

In order to seek scientific validation and gain support from the government, the community, farmers, and the organization joined forces to promote millets. Recognizing the significance of the University,



Photo 1: Mr Jayesh Joshi, Secretary VAAGDHARA, welcoming the Chief Guest and other dignitaries

Mr. Joshi expressed gratitude for organizing this Dialogue on the occasion of World Food Day. He emphasized that by incorporating millets into the Dialogue as part of research and extension efforts, these crops could effectively become a staple in the food platter. However, the challenge lies in ensuring the accessibility of millets to the general public. Mr. Joshi expressed optimism that this Dialogue would be disseminated nationwide through the University, farmers, state government, ICAR, and the community, thereby facilitating its widespread adoption. Mr Jayesh Joshi proposed to organize millet food festivals at regular intervals and airing of series on millets jointly with the University on Vagad Community Radio run by Vaagdhara.

The food system included all the activities from production to the consumption. Ms Shruti Pandey from Welthungerhilfe, representing Bhoomi-Ka stressed upon the need of the hour that the resilient food system is conserved around the environment for the coming generations. It is the nutrition security and food security that is the talk of the town these days and was catching up with the youth also. Millets is the best suited crop in the food system as it is the best for the farmer as well as the consumer also protecting the soil. It was because of this that the whole exercise was being done by Bhoomi-Ka to bring all the stakeholders together to discuss the challenges arising in the food system in context to millets and finding means for addressing them and focus on promotion of the millets; increasing the farmers' income and act as a connect between the producer and the consumer.



The qualities of millets and especially minor millets were echoed by almost all the speakers including Dr S R Maloo, Former Director Research and BoM of MPUAT, Udaipur; Dr. O.P. Khedar, Member – Kisan Aayog, Rajasthan; Mr. Bhuralal Patidar, Additional Director, Agriculture, Udaipur;

Taking forward the session, Dr S.R. Maloo appreciating VAAGDHARA's efforts for bringing millets in the food system laid down the major challenges for the farmer in growing millets which were the absence of subsidy for the farmer and no MSP for the crop. He said that though the government is also working on how to bring the small millets in the food system there is still a need on the part of other stakeholders to work on the execution part and develop a mechanism with the state to carry this dialogue further.

Commencing with a formal welcome extended to the chief guest and fellow participants, **Dr. O.P. Khedar** drew a comparison between the price and nutritional value of millets in relation to rice and wheat, revealing an inverse relationship. However, as awareness regarding millets grows, even the elite class is adopting millet-based diets, leading to increased demand and fostering hope for a surge in production. Given the higher cultivation costs associated with millets, an additional impetus for production growth would be the assurance of procurement and a minimum support price (MSP), along with the necessity for subsidies to render production costs economically viable. Furthermore, addressing the primary processing of millets requires machinery and technological advancements, which remain essential requirements.

Mr. Bhuralal Patidar emphasized on addressing the challenges faced by the farmers on the cultivation of the mainstream crops. He was of the opinion that millet cultivation is the best in two contexts:

1. Since it does not require any chemical inputs, it becomes easier for the farmer to be free from the challenges faced by him during the cultivation of the mainstream crops.
2. Today's youth want to do a job that is less tedious and free from challenges.

Millets are the best suited to combat both these challenges. Finger millet 'Ragi' is the best example and is very easy to grow. Preparation of the nursery for this crop is easy, transferring is also easy and so is the cultivation. It gives both food and fodder. He remembered old days sharing the memories that earlier millets were the staple food and wheat and rice was consumed occasionally on festivals. He suggested that the inclusion of millets in the government schemes like Indira RasoI and ICDS would act as a support system to bring the millets in the food system.

Key features of millets highlighted during the dialogue

- These are nutritious and hence are called nutri-cereals or nutri- grains
- Rich sources of minerals, small millets need very less water to grow and do not require any fertilizers or pesticides.
- It is not only good for health but also ecology and the environment.
- Climate resilient crops – can be grown on marginal lands, can survive in any sort of environment and are sufficient for the area specific in which they grow.
- These are sufficient to meet the daily needs of the human body; easy to cook it is also easy to eat.
- These are the best source of food and nutrition security and can be called as super food.
- Growing millets is beneficial to the farmer compared to the cultivation of other crops like wheat and rice because it is a short duration contingency crop.
- It provides food, fodder, fuel, feed and much more.

Dr. Arvind Verma, Director Research, MPUAT shared in details the government's schemes on the promotion of the millets, the statistical data, steps taken by the government so far and the elements of the food system. He highlighted the Eat Right India Movement which is an effort to transform the country's food system in order to ensure safe, healthy and sustainable food for all Indians through the 'Eat Right India' movement. The tagline '*Sahi Bhojan - Behtar Jeevan*' forms the foundation of this movement. Eat Right India adopts a judicious mix of regulatory, capacity building, collaborative and empowerment approaches to ensure that our food is good both for the people and

the planet. Further, it builds on the collective action of all stakeholders - the government, food businesses, civil society organizations, experts and professionals, development agencies and citizens at large.

Dr. S.K. Sharma, ADG-HRM, ICAR, outlined the national perspective on promoting small millets, emphasizing that millets are not just food but also deeply intertwined with culture, traditions, and civilization. Looking ahead to a fit and healthy world by 2070, millets are crucial components of our food platter. In fact, if any food sustains beyond 2070, it will be millets. He said that to make millets a part of our character, it is necessary to adopt them into our habits, transitioning from desire to trust and action. Dialogues like these play a vital role in bridging the gap and connecting millets with the broader food system. As grains that have been present since the dawn of humanity, millets, often referred to as

the mother of all grains, encompass all the essential nutrients to address various ailments. Dr. Sharma emphasized that food system transformations occur over extended periods, highlighting the need for developing a comprehensive food system rather than solely focusing on localized approaches. Implementing a real-time model that addresses crucial aspects like timely payment to farmers, increased production, benefits to specific millet types, marketing strategies, branding, and investor support is imperative.

Before concluding the first session, it was time for Dr. Ajeet Kumar Karnatak, Vice Chancellor of MPUAT and the esteemed Chief Guest, to address the plenary. Delivering his keynote speech, he emphasized that millet crops have a rich history spanning over 5000 years. These resilient grains have been an integral part of not only India's food system but also the oldest civilizations in South Africa



Photo 2: The chief guest Mr Karnatak lighting the holy lamp; with distinguished guests Dr Arvind Verma on his right and Dr S K Sharma on his left

and South East Asia. However, due to the lack of profitability and comparatively lower production compared to wheat and rice, farmers have gradually shifted away from millet cultivation. Dr. Karnatak underlined that the primary objective is not solely to increase millet production but also to focus on processing, value addition, and product development. State-level policy interventions are also crucial in promoting minor millets and

**Minor Millets
should be
called small**



integrating them into the broader food system. He further said that the government of India started programmes in 2018 for the promotion of millets and a lot is being done in this year of millets. Organizations like Vaagdhara have done a lot and have preserved the germ-plasm of four varieties of millets from the Vagad Region which is a natural resource of bio diversity. Sorghum and the pearl millet are grown in high quantities in Rajasthan and Banswara is a home of small millets whether it is finger millet; foxtail, Proso, Kodo, or Barnyard or little millet. But in totality if it has to be seen then according to the 2021-22 data 50.9 million tonnes is the estimated production of millets. 80% of this comes from Asia and the rest 20% is the global production. 13.89 % production of millets come from Rajasthan. Taking the opportunity, the Vice Chancellor highlighted the university's efforts in the past year to promote millets and shared the various activities undertaken in this regard. He said that though the millet year began from 1st January, 2023 but MPUAT initiated the process of promoting millets and started celebrating the millets year since December last year. He said that an action plan was developed by the Director Research, Dr. Sharma as to how the MPUAT would be celebrating the International Year of Millets and what all activities the University would be doing. This was also shared with the ICAR online and was much appreciated by the Director ICAR. Dr. Karnatak expressed his thoughts to seek the cooperation of VAAGDHARA and use its experiences in the making of a Millet Hut which is under construction, and a video documentary on millets which is ongoing on the agenda of the University. Moreover, he emphasized that VAAGDHARA is the perfect choice as a brand ambassador for Rajasthan when it comes to promoting millets. Additionally, he suggested the idea of collaborating with VAAGDHARA to organize a vibrant Millet Mela. He highlighted that the basic objective of MPUAT as:

1. Increased production of millets – it is not very difficult as millets are a climate resilient crops, does not catch much diseases, very little pests are there, need very less water and very little fertilizers.
2. Enhancing consumption: It will provide health benefits and bring nutritional security. Will be helpful in curing skin diseases, ailments related to stomach and would be a natural cure for diabetes and BP.
3. Millet Processing: Millet processing is very important and equally significant is the value addition. Companies are adding value and taste to millets making it presentable and the youth wants to eat what is tasty ignoring the adverse health effects of the otherwise tasty consumables. Adding taste and making the value-add products presentable is a big challenge.
4. Product development: new products should be made out of millets which have never been thought of. Like the dehusking of the Kuttu and making new products from it.

Agriculture Policy intervention by the centre and the state: Policy intervention will play a significant part in the promotion of the minor millets and bring it into the food system leveraging the benefits to the farmer.

Session II

Panel Discussion 1: ‘Scaling up production and diversity of minor millets in the State’

Moderator:

Dr. S.R. Maloo, Former Director Research and BoM Member of MPUAT, Udaipur

Panellists:

- 1) **Dr. M. Elangovan**, Principal Scientist, - ICAR, Indian Institute of Millets Research, Hyderabad
- 2) **Dr. Hemlata Sharma**, HoD, Department of Plant Breeding and Genetics, MPUAT, Udaipur
- 3) **Shri Mansingh Ninama**, Mangarh agro producer company Ltd., Banswara (*Community perspective*)
- 4) **Shri Trinath Taraputia**, Revitalizing Rainfed Area Network, Odisha (*Online*)

The second session of the day began with a panel discussion on ‘**Scaling up production and diversity of minor millets in the State**’ moderated by Dr. S R Maloo. The session was intended to address local seed availability through community operated seed trials & banks, and cover the issues like: 1) Existing situation of minor millets diversity; 2) Report, Conserve, and Maintenance for promotion of minor millets; 3) Tactics and technology to increase production of minor millets; and 4) Existing and improved agro-practices for minor millets.

Initiating the discussion Dr Maloo stated that millets are genetically potential of systemic increased production if proper agronomic practices are promoted and put in place.

- One of the esteemed panelists, Dr. M. Elangovan, Principal Scientist (Economic Botany) responsible for Millet Genetic Resource Management at ICAR, provided an informative overview of millet origin and the diverse varieties. The discussion highlighted pictorial presentations showcasing the different millet varieties found across the country, the status of millet germplasm and gene banks, as well as the states known for small millet cultivation.



Photo 4: Dr Hemlata Sharma, Mr. B M Dixit, Dr S R Maloo and Mr. Mansingh Ninama during the first panel discussion

- Dr. Hemlata Sharma, Head of the Department of Plant Breeding and Genetics at MPUAT, Udaipur, focused on enhancing the quality seed chain. She said that she has been responsible for preparing the seed varieties and the focus always remains on developing a variety that has a high yield potential. The normal variety seed has a lower yield potential compared to that of the hybrid variety. Key points included exploring public-private partnerships for seed procurement, expanding millet production areas, and conducting research to develop hybrid varieties. Dr. Sharma further highlighted that the cultivation of millets has witnessed a consistent decline over the past 13 years, with little attention given to this issue. Despite their natural growth and increasing importance, millets have been overlooked. However, now that their significance is being recognized, there is a need to expand the cultivation area and ensure an adequate supply of seeds. The main objective is to explore breeding methods that can enhance millet production. By focusing on targeted breeding, it becomes possible to develop seed varieties that will boost production levels. She emphasized the necessity of government intervention in this regard. One of the primary requirements is to strengthen the quality seed chain, which includes breeder seeds, foundation seeds, and certified seeds. Another essential aspect is establishing a public-private partnership for seed production and multiplication.
- Sharing valuable insights from the field, Shri Mansingh Ninama from Mangarh Agro Producer Company Ltd, Banswara, who is also a farmer, highlighted the importance of such dialogues for future generations to understand the significance of millets. He emphasized the long-term viability of millet seeds compared to other crops and their role in restoring the organic nature of the soil. Mr. Ninama expressed concerns about the need for small machines for primary processing and establishing markets for millets. He also shared his initiatives for the community, such as organizing nutrition fairs and facilitating seed exchange for multiplication.
- Continuing the panel discussion, R.C. Trinath Tarapatia, a development professional from Odisha representing RRA Network, presented the initiatives under Odisha Millet Mission to promote minor millets. This mission aimed to enhance millet production and diversify cultivation practices, with the objective of integrating millets into both cultivation practices and the food platter of the region.

Concluding the session, Dr. Maloo suggested that during the international year of millets, the Farmers' Commission (*Kisan Aayog*) and the Directorate of Millets Development can highlight that the organizations which are working relentlessly on the promotion of millets for the past 15-20 years. Vaagdhara can also provide certain recommendations to the government which could be as follows:

1. ICAR gets some seeds from Indian Institute of Millet Research and get them multiplied through the community seed bank – the result will be an increase of about 50% in the productivity.

2. The movement of the seeds through the mini-kits for through the community seed bank can be ensured by the agriculture department.
3. The OPCA agrees to certify the seeds as organic as the millet's seeds are organic. This would fetch a premium price for the farmers,

If the production increases there will be industrialists and businessmen who would lap the opportunity to make value added products. He quoted the example of quinoa how the industry had developed and prospered in Jodhpur. Millets is not just a super food it is also a smart food.

Panel Discussion 2: Streamlining approaches for processing minor millets by community-led approach.

Moderator

Shri M.N. Dinesha Kumar, Managing Director, Earth 360 Eco Ventures, Andhra Pradesh

Panellists

- 1) **Shri Shashank Guwalani**, Bhoomgaadi Organic Farmer Producer Company Ltd., Chhattisgarh (*Community perspective*) - *Online*
- 2) **Mr. Ramveer Singh**, Program Manager, National Institute of Women Child and Youth Development, Jabalpur
- 3) **Ms. Rekha Pendram**, Chairman, Karanjiya Millets Farmer Producer Company limited, Dindori (M.P.)

The second panel discussion commenced under the moderation of Shri M.N. Dinesha Kumar, Managing Director of Earth 360 Eco Ventures, Andhra Pradesh, who initiated the conversation by highlighting the significant challenges faced by farmers and Farmer Producer Organizations (FPOs). He emphasized that millet processing posed difficulties, as it was a time-consuming task and lacked specialized machinery. The development of technology in this area has also been limited, with certain units operating for only a few months and remaining idle for the remainder of the year. Previously, there was minimal interest in millet processing; however, larger companies are now recognizing the potential in this field. Nevertheless, there remains much work to be done in increasing local-level opportunities and addressing these challenges.

Ms. Rekha Pendram, Chairperson of Karanjiya Millets Farmer Producer Company Limited in Dindori (M.P.), was the first speaker in the session, sharing her experiences in millet promotion and processing. Initially, millets were processed using local methods such as using the 'Okhli' stone, but later, small machinery was introduced. While the small machine aided processing, it required intensive labour. Ms. Pendram expressed her grievance about the lack of government support.

The second panellist, Mr. Ramveer Singh, Program Manager at the National Institute of Women Child and Youth Development in Jabalpur, echoed similar concerns. He emphasized that millet processing is

highly labour-intensive, and existing machines are not well-suited for processing large quantities of millets. Even after processing, there are often remaining weeds in the millets, which necessitate manual efforts for grain cleaning. Transporting machinery and calling technicians from distant locations increases the processing cost. Furthermore, since millet varieties exhibit significant variation, one machine is not sufficient to process all types of millets. There is a need for a versatile machine capable of processing a wide range of millet varieties.

Shri Shashank Guwalani from Bhoongaadi Organic Farmer Producer Company Ltd., Chhattisgarh, discussed the three stages of processing: procurement, post-processing, and storage. The major procurement issue highlighted was the inconsistency in raw material quality. Another challenge was the mixing of 2-3 varieties during the procurement process, which could be resolved by avoiding lot mixing. Implementing a systematic agronomy approach would help in weed management during harvest.



Photo 5: Mr. Ramveer Singh, Mr. B M Dixit, Mr. M N Dinesha Kumar and Ms Rekha Pendram during the second panel discussion

However, he emphasized that developing processing technology remains the biggest challenge. The session concluded with the moderator sharing his insights. Emphasizing the significance of planning, he highlighted that meticulous planning is crucial for millet processing. Unlike rice and wheat, millets require a multi-stage grading process, which includes rough cleaning, fine cleaning, and super fine cleaning. The grading is conducted based on density. Initially, behaviour-wise cleaning is carried out, followed by processing the grains using machines. This system is capital-intensive and involves high costs, indicating the necessity for streamlining technology, agro processing, and technology development to make the process more efficient.

Panel Discussion 3 and 4: ‘Approaches to Enhance Consumption of Minor Millets’ and ‘Strengthening Local Markets and Small Enterprises in Tribal Areas for Promotion of Minor Millets’

Moderator

Dr. O.P. Khedar, Sr. Consultant, Directorate of Millets Development, Jaipur - Rajasthan and Member – Kisan Aayog, Rajasthan

Panellists

1. **Shri Sanjay Patil**, Chief Thematic Programme Executive, BAIF Development Research Foundation (*Other states perspective*) - *Online*
2. **Shri Anil Uppalapati**, WASSAN, Hyderabad – *Online*
3. **Shri Sanjeev Kumar Sharma**, Kheti Virasat Mission, Punjab
4. **Dr. Sarla Lakhawat**, HoD, Department of Food Science & Nutrition, MPUAT
5. **Dr. Latika Sharma**, HoD, Department of Agriculture Economics, MPUAT, Udaipur
6. **Shri Sanjeev K. Pandya**, Deputy Director, Agri-Marketing, Udaipur (*Policy perspective*)
7. **Shri Rohit Jain**, Founder - Banyan Roots, Udaipur
8. **Shri Gurmukh Singh**, Kheti Virasat Mission, Punjab

The last two sessions were merged into one and was moderated by **Dr. O.P. Khedar**, Member – Kisan Aayog, Rajasthan. The first panellist Shri Sanjeev Kumar Sharma of the Kheti Virasat Mission, Punjab began with the basic question:

Why should one consume millets? The answer to this is very simple – for health benefits.

Quoting Dr Khedar Vali – the millet man of India who is engaged in reviving millets for over 20 years, Dr Khedar said that millets were part of mainstream diet for long, but were “sabotaged” in the last 75 years by corporate that marketed rice and wheat, which are “disease-causing negative grains”. Diseases can be managed by medicines but can be cured by foods like millets. Consumption of millets has shown results in people getting rid of diseases like diabetes and hypertension. Issues like the availability and the ‘how to cook’ (recipes of millets) have been tackled by pitching organic retailers and forming a chain of businessmen leading to about 100 millet outlets and on the other hand training new local chefs under the guidance of trained chefs from the south. Self-help groups were organized and millets were connected culturally also.

Start eating millets to get rid of medicines.

Dr. Sarla Lakhawat, HoD, Department of Food Science & Nutrition, MPUAT was the next panellist who came up with some specific points:

- Millets should be included in ICDS and PDS.

- The area specific millets should be used in that particular area which would also be a source of employment generation locally.
- The consumption of millets also depends on the specific reason to eat.
- Excess use of millets in the diet should also be avoided.
- Only one variety millet should be eaten at one time and that too only for two days.
- Sometimes the government policy also poses a challenge like in schools where the children are given hot milk – millets cannot be taken with hot milk.

Shri Sanjeev K. Pandya, Joint Director, Agriculture and Marketing, Udaipur detailed the participants on the relevant government schemes for the promotion of millets which could be availed by the stakeholders on various segments. He also briefed the plenary that the department has been engaged in the marketing of the millets, giving financial assistance for processing purposes, and helping the farmers garner maximum price for their produce and subsidy wherever applicable. He further highlighted various schemes of the government (*mentioned in the box below*) which are providing support, especially subsidy, to the farmers. He further said that the department is now focussing on value addition because without this the farmer is not going to benefit. Value addition needs financial assistance and both subsidies – capital and interest- are available.

- *'Agri-processing, agri business and agri export promotion policy' launched in 2019 under which, if a farmer/FPO/Co-op society, sets up any processing unit the government provide a subsidy of 50% of the project cost or a maximum of Rs. 1 Crore.*
- *In case of a non-farmer or any entrepreneur the capital subsidy that can be availed is 25% of the project cost or a max of 50 Lakh. In case of any credit linked scheme an additional subsidy of 6% on interest is also given. (5% for other regions and 1% extra for the tribal belt). In case a solar plant is used for running the unit an additional subsidy of 30% or Rs 10 Lakh can be availed.*
- *Export promotion schemes where the raw material is exported or a processed material is exported a flat subsidy in case of non-organic 25% of the freight is reimbursed and in case of organic product 40% will be reimbursed. Till now in Rajasthan about Rs. 300 Crores of financial assistance has been provided to 1000 units.*
- *A provision of 50% capital subsidy to the first 50 millet units was announced in the last year's budget by the state to both the farmer or / and the non-farmer. This has been raised further in this year's budget vide a notification wef 5th May, 2023 to 75% in case of a farmer or SC-ST promoter and 50% for others.*
- *The address of the website for details was given: rajkisan.rajasthan.gov.in where all relevant information of the schemes is available.*
- *In the allotment policy for promoting entrepreneurship there is a provision for reservations of 20% plots for the farmers in the Mandis. 30% of this 20% is reserved for SC / ST farmers.*
- *Infrastructure in the Mandis are also being improved for farmers – domes are being built to avoid the contamination of produce; electronic weighing machines are being arranged. An eNAM scheme has also been announced for the farmers to get them registered and avail the market in the entire country. The portal helps in increased competition and also the chances of getting a better price for the produce have increased.*

Details of various schemes of Agriculture Marketing Department



Photo 6: Dr. Sarla Lakhawat Mr. B M Dixit, Dr. O P Khedar, Mr. Sanjeev Kumar Sharma and Mr. Sanjeev Pandya during the panel discussion

Shri Sanjay Patil, Chief Thematic Programme Executive at BAIF Development Research Foundation, connected online and highlighted the transformation of millets from being the "poor man's food" to becoming the "food of the future." He emphasized that millet consumption is essential for people of all age groups. However, the availability of quality millets and the absence of small-scale processing units are significant challenges that need to be addressed. As far as the availability of quality seeds is concerned, he stressed upon that the seeds can be produced at the community level because the community has their indigenous knowledge. Also, it is needed to work on the small and marginal farmers and the community facing the situation of mal-nutrition. The millets should be linked with the culture if it needs to be promoted. He quoted the example of Karnataka and Andhra Pradesh where millets are associated with the culture and the social aspect should also be seen. Community managed seed bank programme can be associated with the production of seeds at the community level. Shri Patil stressed the importance of policy interventions, such as identifying genotypes and promoting quality seed production, as actionable steps in the advancement of millet cultivation and consumption.

Dr. Latika Sharma, Head of the Department of Agriculture Economics at MPUAT, Udaipur, emphasized the importance of prioritizing the market before focusing on production, drawing from her expertise as an economist. She highlighted the current imbalance where the supply side has received more attention while the demand side has been neglected, which poses challenges in effective management. To address this, Dr. Sharma emphasized the need for a robust market that can accommodate increased demand. Farmers are inclined to grow crops that yield higher profits, but making a strong brand and effective branding is also essential for successful millet sales. Targeted marketing strategies and the development of regional supply chains are necessary. Dr. Sharma emphasized the significance of setting specific targets and adopting a cluster-based approach, which can help reduce costs and ultimately benefit the farmers financially. She cited the example of oats, which were successfully marketed as a health product and a diabetic-friendly food. To increase demand, Dr. Sharma suggested managing the balance between

supply and demand, leveraging social media platforms and engaging influencers to promote millets with a modern touch.

Rohit Jain, the founder of 'Banyan Roots', an organic products company based in Udaipur, has been actively engaged in promoting organic foods in the state and has consistently supported farmers in marketing and selling their produce through value supply chains. As a panellist, he shared his valuable insights into the millets market. Over the past 12 years, his organization has been deeply involved in understanding what farmers are cultivating, adding value to their produce, and undertaking marketing activities to create awareness and drive demand. Based on his experiences, he offered the following suggestions:

- Establishing local procurement centers at the grassroots level
- Ensuring the availability of experts to guide farmers through the intricate processing methods
- Facilitating one-on-one interactions to foster direct connections between producers and consumers
- Developing a recipe book that showcases the versatility and culinary uses of millets
- Organizing food festivals and events to promote millet consumption and engage with a wider audience.

Mr. Anil Uppalapati from WASSAN, Hyderabad made a presentation on their efforts to promote millets and the objective to include millets in the ICDS. Organizing food festivals at the community level, mobilizing farmers and proper seed distribution has led to the increase in awareness leading to increase in production.

Mr. Gurmukh Singh from '*Kheti Virasat Mission*' the last panellist of the panel discussion drew attention to the Cancer Special Train, that operates between Punjab and Bikaner to transport cancer patients from Punjab to Bikaner for treatment. The prevalence of this devastating disease among the people of Punjab is largely attributed to the consumption of wheat and rice cultivated using chemical fertilizers and pesticides. In light of this alarming situation, Shri Gurmukh Singh in Punjab took the initiative to introduce millets into the local diet as a means to protect people from this dreaded illness. As a panellist, he shed light on the situation in Punjab concerning millets. He explained that most farmers in Punjab are individual farmers who prefer mechanized cultivation methods. To kickstart the mission, Kodo seeds were obtained from a seed festival in the south and subsequently multiplied for cultivation. Over the past four years, through the sharing of seeds with individual farmers, there has been a significant increase in millet production and consumption. Presently, Punjab boasts 60 sale points where organic foods, including millets, are available while maintaining high quality standards. Furthermore, 300-400 farmers are actively engaged in growing millets of various varieties. To support these efforts, three processing units have been established along with training programs for farmers.

Excessive growth of cereal crops leads to poor soil health.

However, in order to further promote millet cultivation, some policy changes from the government are required. Offering subsidies to millet-growing farmers would enhance their income, leading to increased production and consumption. Since the current production levels are relatively low, there is a lack of significant technological interventions in this sector.

Later, Mr Jayesh Joshi also added his point that if the farmer increases the production of millets by himself some of the challenges and issues stated above would be addressed automatically in the due course.

The moderator concluded the session by highlighting the key takeaways as follows:

- Millets should be cultivated for the sake of future generations, as the soil and water resources belong to them.
- Health is a shared concern, and growing millets is essential for maintaining good health.
- Soil health has been neglected over the years, and growing millets can contribute to its improvement.
- Our ancestors provided us with water, but we have depleted this resource. Previously, water was accessible at a depth of 20 feet, whereas now it requires drilling up to 800 feet.
- Small millets have a limited number of genotypes compared to major millets, emphasizing the need for a quality seed chain.
- Offering initial incentives to farmers can incentivize increased millet production.
- Utilizing media and social media platforms, similar to Nestle's promotion of 'Maggi,' can help generate awareness about millets.
- Introducing millets as a subject in schools and colleges can contribute to their promotion among younger generations.
- Establishing market linkages is crucial for the successful promotion and consumption of millets.



Photo 7: Panellists -Mr. B.M. Dixit; Dr. O P Khader, Mr. Sanjeev Sharma, Mr Gurmukh Singh and Mr. Rohit Jain

Mr. B M Dixit shared several notable suggestions during the conclusion of the session:

- There is a significant focus on micro-level initiatives, but macro-level efforts are lacking.
- Bridging the gap between the reasons to grow and consume millets is crucial. Government procurement of millets can play a vital role in narrowing this gap.
- Ensuring that farmers receive a fair price and consumers pay a reasonable price will contribute to bridging the divide.
- The farmer should be involved in the entire cycle, from production to marketing, to establish a more inclusive and efficient system.

Additionally, Mr. M.N. Dinesha Kumar emphasized the need for policy intervention at the higher level, specifically for price support. This support is essential to encourage farmers to increase production and ensure stable productivity.

Conclusion and Key takeaways

The key takeaways from the panel discussions were summed up by agriculture expert Mr. Deepak Sharma, in simple language for the convenience of the farmers and the community representatives inducting the local flavour. Before summing up he mentioned that 35 participants out of total participants in the auditorium were farmers and the practicality of all that needs to be done as discussed during the day lies on the shoulders of these farmers. If these farmers do not get into the production of millets nothing can be done on the processing and marketing.

He revisited the discussion points that how do the production increases and how does the consumption. He said that the farmers might understand *Kang*, *Bawta* and *Maal* but the word millets may not be so familiar to them. So, he told the farmers to keep in mind the names of the local crops and understand that they have to focus on the production of these foods - *Kang*, *Bawta* and *Maal* and similar others that they have been growing so far.

Capsulating the takeaways from the sessions Mr Deepak said:

1. Documentation of the diversity of the millet crops and bring them forward with a significant role of the farmers. The farmers can grow the varieties of the small millets in their area of operation maintaining the diversity of the local landraces.
2. Exchange of seeds: Since the seeds are available with the farmers in the tri-junction – Rajasthan-Gujarat and MP- the exchange of seeds would continue for the increased production of the millets.

3. Systematic production or agricultural practices: Action research in these practices with the agriculture scientists is needed.
4. Economic viability: If the production is not financially viable for the farmer, he will not grow the millets. Mechanism will have to be devised for this economic viability in production.
5. Processing: If the processing is possible and the facility is available at the small scale at the gram level then only it will be beneficial for the farmer.
6. Agronomic practices: If good agronomic practices are adopted then the issue of sorting the grains at the harvest can be resolved.
7. Registration in OPCA: The certification of the seeds and the millets as organic would fetch a fair price for the farmer.
8. Wide portfolio: Since the millet portfolio is very vast, the start should be from the minimum what has been growing as a practice and at a later stage other varieties could be grown. Like the farmers in Banswara region could start with Ragi and Maal in the separate fields; Kaang is grown with Maize and Kodo-Kutki in the slopy regions to begin with and continue with these who are growing it now. This would also be helpful in easy processing as the local processing methods are known.
9. Consumption: There is a need to understand the role of our local millets in our food habits. Like 'Makki Ki Papdi' is a running item in Banswara region. Similarly going down in the areas the 'Ragi Ki Papdi' is famous. How can these be inducted in our food habits – is to be seen. Recipe development is another requisite for increasing consumption.

There are many ways to achieve the objectives discussed during the day but the move shall be step by step. He said there are different people sitting here from farmers to agricultural scientists, members of the Kisan Aayog, organizations and the University and each has a function to do for achieving the common goal. If the farmer has to grow the crop, it is the University and the organization that has to inculcate the technology and research part and coordinate with each other for marketing and seed production involving the government. With different roles for each one to play but the University and VAAGDHARA's role would be to coordinate and see how the things could be taken ahead.

Closing Remarks

In the closing remarks at the end of the day's activities, Dr. Amit Trivedi, the Zonal Director of MPUAT, reiterated the major issues, suggestions, and challenges encountered throughout the various stages of the food system. He emphasized the significance of continued dialogue, the implementation of new technology and equipment, technological advancements, a robust seed chain, and the importance of maintaining a balance between the demand and supply of millets. Furthermore, concerns were raised regarding the following food security challenges:

- Degradation of soil health
- Invasive weeds
- Inefficient management framework
- Procurement shortcomings
- Climate change impacts
- Disruptions in the supply chain due to global instability

All the dignitaries were facilitated and the vote of thanks forwarded to all the guests, participants and experts by Mr. P.L Patel from VAAGDHARA was the closing juncture of the event.

Key Recommendations:

1. **Engagement with the Government for subsidy and MSP for millets:** Farmers growing millets need financial support similar to those growing cereal crops. Providing subsidies for organic millet farming, like those given for chemical fertilizers, and implementing Minimum Support Prices (MSP) for millets can be done through state advocacy. These measures are feasible and effective ways to support millet-growing farmers.
2. **Include millets in government schemes like ICDS:** Currently, millets lack a well-established market, discouraging farmers from increasing production. To address this, inclusion of millets into government schemes can ensure its procurement through programs like mid-day meals, anganwadi centers, and public distribution systems (PDS). Assured government procurement at the local level can address processing and marketing issues. This can be achieved by including millets in government schemes and providing support for local procurement.
3. **Establish market linkages:** Seed fairs, food festivals, community-managed seed systems, and local procurement could be effective ways to create markets for farmers and FPOs. Government schemes supporting production, procurement, and processing through subsidies can encourage increased production, eventually which will attract businesses and agro-processing units, helping farmers fetch fair prices for their produce.

4. **Involve farmers in the entire production-consumption cycle:** Involving farmers in the entire cycle, including procurement, processing, marketing, and distribution, will ensure their active participation and benefits to the overall food system.
5. **Promote community-managed seed systems for seed distribution:** Distribution of seeds through community-managed seed systems allows for seed multiplication and can increase seed production by over 50%. Farmers possess traditional indigenous knowledge of seed production and conservation, making this approach highly effective.
6. **Provide training and accessible experts for complex processing methods:** Easy access to trained experts in nearby locations would be advantageous for farmers, enabling them to handle initial processing and procurement stages effectively.
7. **Foster technological development for efficient processing units and machinery:** Technological advancements in machinery and processing units can address challenges faced during processing. The development of machines capable of processing multiple millet varieties is required to support farmers.
8. **Raise awareness through social media and influencers:** Successful branding and promotion of other food products, utilizing social media and influencers can create awareness, brand millets as a superfood, and enhance both production and consumption.
9. **Organize regular food festivals to promote millets:** Hosting food festivals regularly is an effective way to promote millets. By increasing awareness among children and youth, millets can become a more prominent part of the food basket.
10. **Encourage farmers to take initiative in increasing production:** Empowering farmers to take initiative in increasing millet production can address minor challenges such as initial cleaning, grading, and procurement. The farmers practicing Swaraj (self-reliance) and their indigenous solutions will contribute to their overall success.

Glimpses





ANNEXURE



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"Mainstreaming Minor Millets into Food System"

Food System Dialogue | June 07, 2023

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Maharana Pratap University of Agriculture and Technology, Udaipur

S. No.	Particulars	Time	Facilitator and Speakers
1	Registration	09:00 AM – 10:00 AM	
Inaugural Session			
2	Welcome (<i>Lamp Lighting and MPUAT Kulgeet</i>) and Introduction	10:00 AM – 10:10 AM	Dr. Sudeep Sharma, Senior Programme Lead, VAAGDHARA
3	Inaugural address and Context Setting	10:10 AM – 10:20 AM	Shri Jayesh Joshi, Secretary and CEO, VAAGDHARA
4	Why Food System Dialogue?	10:20 AM – 10:30 AM	Mr. Anshuman Das, Program Manager, Welthungerhilfe (<i>Online</i>)
5	Key approaches to strengthen Food System	10:30 AM – 10:40 AM	Dr. Arvind Verma, Director Research, MPUAT
6	National perspective for promotion of minor millets	10:40 AM – 10:50 AM	Dr. S.K. Sharma, ADG (HRM), ICAR, New Delhi
7	Keynote Address	10:50 AM – 11:10 AM	Dr. Ajeet Kumar Karnatak, Hon'ble Vice Chancellor, MPUAT
High Tea and Exhibition Visit - 20 mins			
8	a) Scaling up production and diversity of minor millets in the State. This session is intended to address local seed availability through community operated seed trials & banks, and will cover the following issues: <ul style="list-style-type: none">- Existing situation of minor millets diversity.- Report, Conserve, and Maintenance for promotion of minor millets.- Tactics and technology to increase production of minor millets.- Existing and improved agro-practices for minor millets.	11:30 AM – 12:30 PM 10 mins each to all the panelists and open discussion	Moderator Shri S.R. Maloo, Former Director Research and BoM Member of MPUAT, Udaipur Panelists 1) Dr. M. Elangovan , Principal Scientist, - ICAR, Indian Institute of Millets Research, Hyderabad 2) Dr. Hemlata Sharma , HoD, Department of Plant Breeding and Genetics, MPUAT, Udaipur 3) Dr. Dilip Singh , Dean – BN College of Agriculture, Udaipur (<i>Research perspective</i>)



9	<p>b) Streamlining approaches for processing minor millets by community-led approaches.</p> <p>The session will highlight various community owned approaches for processing of minor millets in various states and will include the following areas:</p> <ul style="list-style-type: none"> - Existing system / procedures of processing of different minor millets crops. - Applicability for processing through community owned approaches - Research and innovation on small scale machineries 	12:30 PM – 01:30 PM 10 mins each to all the panellists and open discussion	<p>4) Shri Mansingh Ninama, Mangarh agro producer company Ltd., Banswara (<i>Community perspective</i>)</p> <p>5) Shri Trinath Taraputia, Revitalizing Rainfed Area Network, Odisha (<i>Odisha Millet Mission</i>) - <i>Online</i></p> <p>Moderator Shri M.N. Dinesha Kumar, Managing Director, Earth 360 Eco Ventures, Andhra Pradesh</p> <p>Panellists 1) Shri Shashank Guwalani, Bhoongaadi Organic Farmer Producer Company Ltd., Chhattisgarh (<i>Community perspective</i>) - <i>Online</i></p> <p>2) Shri Bhuralal Patidar, Additional Director, Agriculture Department, Udaipur</p> <p>3) Mr. Ramveer Singh, Program Manager, National Institute of Women Child and Youth Development, Jabalpur</p> <p>4) Ms. Rekha Pendram, Chairman, Karanjya Millets Farmer Producer Company limited, Dindori (M.P.)</p>
Lunch 45 Mins			
10	<p>c) Approaches to enhance consumption of minor millets</p> <p>The session will focus on nutrition perspective of minor millets and experiences of different states on its utilization:</p> <ul style="list-style-type: none"> - Existing challenges for increasing consumption of minor millets. - Innovative and cost-effective measures and 	02:15 PM – 03:15 PM 10 mins each to all the panellists and open discussion	<p>Moderator Dr. O.P. Khedar, Sr. Consultant, Directorate of Millets Development, Jaipur - Rajasthan and Member – Kisan Aayog, Rajasthan</p> <p>Panellists 1. Shri Sanjay Patil, Chief Thematic Programme Executive, BAIF Development Research Foundation (<i>Other states perspective</i>) - <i>Online</i></p> <p>2. Shri Anil Uppalapati, WASSAN, Hyderabad – <i>Online</i></p>



	<p><i>approaches to enhance acceptability and consumption/utilization of minor millets.</i></p> <ul style="list-style-type: none"> - <i>Inclusion of millets in safety net schemes- PDS, ICDS, Mid-day meal</i> 		<p>3. Shri Sanjeev Kumar Sharma, Kheti Virasat Mission, Punjab</p> <p>4. Dr. Sarla Lakhawat, HoD, Department of Food Science & Nutrition, MPUAT, (Nutrition perspective)</p>
Tea Break 15 mins			
11	<p>d) Strengthening local markets and small enterprises for promotion of minor millets.</p> <p>This session will emphasize on agriculture marketing platforms and experiences of entrepreneurs. Following areas will be covered in the session:</p> <ul style="list-style-type: none"> - <i>Cost effective, profitable measures to support minor millets.</i> - <i>Policies to strengthen market system in context to MSME, SHGs, Youths etc.</i> - <i>Challenges for promoting minor millets enterprises.</i> 	<p>03:30 PM – 04:30 PM</p> <p>10 mins each to all the panellists and open discussion</p>	<p>Moderator</p> <p>Shri B.M. Dixit, Former Additional Director, Agriculture Department and Former MD, Rajasthan State Seeds Corporation Ltd., Jaipur.</p> <p>Panellists</p> <ol style="list-style-type: none"> Dr. Latika Sharma, HoD, Department of Agriculture Economics, MPUAT, Udaipur Shri Sanjeev K. Pandya, Deputy Director, Agri-Marketing, Udaipur (<i>Policy perspective</i>) Shri Rohit Jain, Founder - Banyan Roots, Udaipur Shri Gurmukh Singh, Kheti Virasat Mission, Punjab
12	Key takeaways from all the sessions and commonly agreed strategies to promote minor millets.	04:30 PM – 04:45 PM	Shri Deepak Sharma , Agriculture Expert supported by Dr. Pramod Rokadia and Dr. Sudeep Sharma
13	Open Discussion	04: 45 PM – 05:00 PM	
14	Closing Remarks	05: 00 PM – 05:10 PM	Dr. Amit Trivedi , Zonal Director Research, MPUAT - Udaipur
15	Vote of Thanks	05:10 PM – 05:15 PM	Shri P.L. Patel, VAAGDHARA