

OFFICIAL FEEDBACK FORM

DIALOGUE DATE	Friday, 16 July 2021 11:00 GMT +05:30
DIALOGUE TITLE	Dryland Food Systems In Telangana
CONVENED BY	1)Research and Innovation Circle of Hyderabad(RICH) (Govt.of Telangana) 2) International Crops Research Institute for the Semi Arid Tropics(ICRISAT)
DIALOGUE EVENT PAGE	https://summitdialogues.org/dialogue/31516/
DIALOGUE TYPE	Independent
GEOGRAPHICAL FOCUS	India

The outcomes from a Food Systems Summit Dialogue will be of use in developing the pathway to sustainable food systems within the locality in which they take place. They will be a valuable contribution to the national pathways and also of interest to the different workstreams preparing for the Summit: the Action Tracks, Scientific Groups and Champions as well as for other Dialogues.

1. PARTICIPATION

TOTAL NUMBER OF PARTICIPANTS

PARTICIPATION BY AGE RANGE

0 0-18 4 19-30 68 31-50 9 51-65 1 66-80 0 80+

PARTICIPATION BY GENDER

52 Male 30 Female Prefer not to say or Other

NUMBER OF PARTICIPANTS IN EACH SECTOR

20	Agriculture/crops		Education		Health care
	Fish and aquaculture		Communication	12	Nutrition
	Livestock	2	Food processing	15	National or local government
	Agro-forestry		Food retail, markets		Utilities
2	Environment and ecology		Food industry		Industrial
	Trade and commerce		Financial Services		Other

NUMBER OF PARTICIPANTS FROM EACH STAKEHOLDER GROUP

	Small/medium enterprise/artisan		Workers and trade union
2	Large national business		Member of Parliament
2	Multi-national corporation	1	Local authority
14	Small-scale farmer	2	Government and national institution
	Medium-scale farmer		Regional economic community
	Large-scale farmer	1	United Nations
1	Local Non-Governmental Organization		International financial institution
3	International Non-Governmental Organization		Private Foundation / Partnership / Alliance
	Indigenous People		Consumer group
3	Science and academia		Other

2. PRINCIPLES OF ENGAGEMENT

HOW DID YOU ORGANIZE THE DIALOGUE SO THAT THE PRINCIPLES WERE INCORPORATED, REINFORCED AND ENHANCED?

Incorporation: The Dryland Food Systems summit dialogue was organised to bring forth the underlying urgency in the transformation of food supply chains in the globe, India and the state of Telangana. In designing the dialogue, appropriate steps were taken to ensure all the principles of engagement were embedded across all conversations and preparations. By engaging diverse set of stakeholders including farmers, development agencies, government, agro-industries and start-ups the dialogue ensured that there was ample scope for building trust, complementing and respecting each other's activities and contributions while we combat the complexity of addressing dryland food system challenges. **Reinforcement:** One of the difficult parts of organising a multi stakeholder dialogue is to ensure that all parties feel appreciated and represented appropriately within the context of the whole dialogue, as well as the specific breakout sessions. There were two components to this dialogue- offline and online. In the offline component- the farmers interaction, the principles of being respectful to local cultures and contexts was reinforced. However, to bring the urgency and commitment to the dialogue within the context of a rural community was a challenge. We overcame the same by patiently walking with the farmers on every aspect of dryland farming. **Enhancement:** The online component brought together well-intentioned leaders with the potential to leverage their knowledge and experiences with a macroscopic context. That was an opportunity to enhance the qualities of trust and multi stakeholder inclusivity while recognising complexity and bringing out the urgency with which actions are needed in these troubling times. Though there remained the dangerous intellectual trap of reverting to complacency since it was easy for an event of such nature to pass off for a familiar one with predictable outcomes as the past. We are happy to report that all the delegates participated with high levels of enthusiasm befitting their decorated positions.

HOW DID YOUR DIALOGUE REFLECT SPECIFIC ASPECTS OF THE PRINCIPLES?

Specific aspects of the principles were reflected in the Dialogue in the following manner: **Act with urgency:** The delegates accommodated the Dialogue in their calendars immediately upon receiving invites, prioritising it above other engagements. Towards the end of the dialogue, calls to action were heeded by everyone and promises of action were made. **Commit to the Summit:** Dialogue and Post-dialogue engagement was clearly seen in how the delegates were mindful of the vision of the Food Systems Summit and the quality of the questions posed and answered. **Be respectful of local cultures and contexts:** The delegates were very appreciative of the video of women farmers created for setting context of Telangana-specific dryland food system challenges. The deliberations that followed took into account the cultural practices that determined the consumption patterns and supply chains at grassroot levels. **Recognize complexity:** The delegates were very patient throughout the process of the dialogue, both within the exclusive breakout sessions and plenary session. Everyone gave each other the necessary space and time to fully express and explore their subject matter since food systems are complex. **Embrace multi-stakeholder inclusivity, Complement the work of others and Build trust:** These principles were very visible in the overall approach of the delegates to the dialogue. Inclusivity was especially seen in the manner certain institutions provided sufficient space with the framing of their action plans for other institutions to step in and provide their best possible support to maximise efficiency. The post-dialogue engagements that were promised, laid foundation for building newer and clearer goals.

DO YOU HAVE ADVICE FOR OTHER DIALOGUE CONVENORS ABOUT APPRECIATING THE PRINCIPLES OF ENGAGEMENT?

When an individual (either on behalf of an institution or independently, as a Convenor) sets out to accomplish a vision, it is common to find oneself staring at the unbuilt bridge between hopeful abstractions (in the form of frameworks) and manifested reality at the ground level. Every opportunity for human interaction presents this situation to all the parties involved. The Principles of Engagement form a pragmatic, viable and powerful bridge that can support convenors in their endeavours. Apart from the pointers provided in the training webinars, it would behoove the convenors to stick as closely as possible to the Principles of Engagement in order to derive the maximum benefit from the dialogue. It is of utmost importance to recognise the complexity of the subject at hand, and to ensure actions taken as a Convenor subtly, yet firmly incorporate the Principles of Engagement at all stages of conducting the dialogue. There is sufficient reason to believe that the Principles of Engagement are applicable even in post-dialogue engagements since the commitment to the summit does not conclude with holding a successful dialogue. Every successful implementation of a Food Systems Dialogue can be seen as the fertile ground in which the seeds of intention, cooperation and trust have been sown. It then remains, as with any appropriate agricultural endeavour, to save soil and crops; provide appropriate care and nutrition to dryland farmers. The Principles of Engagement provide all these and more, in a structured manner.

3. METHOD

The outcomes of a Dialogue are influenced by the method that is used.

DID YOU USE THE SAME METHOD AS RECOMMENDED BY THE CONVENORS REFERENCE MANUAL?

Yes

No

4. DIALOGUE FOCUS & OUTCOMES

MAJOR FOCUS

Food systems are at the intersection of the challenges associated with malnutrition, human health, natural resource degradation, and climate change. As the world population is expected to touch 10 billion by 2050 countries are coming together to explore the complexities involved in food systems through many different lenses. While multi-front strategies are consistently being used from grassroot level to global level, it is pertinent to understand the importance of addressing dryland food system challenges from the household to the global level as drylands contribute more than half the food production in the world (crops and livestock and livestock products). Drylands are also home to the largest number of malnourished, and the poorest of the poor

Drylands cover approximately 40% of the world's area and over 90% of the populations living in these bioregions are from developing countries. Another way of looking at this is that around two billion people in the World depend on dryland agriculture for their food needs. Developing countries are economies that still survive on agriculture for the most part, although other industries do support them. In this regard, it is important to address the problems faced by these bioregions as a whole in order to secure reasonable amounts of nutrition for the populations living in dryland tropics. More than 65% of India is dryland. While this reason is enough to pay attention to dryland food systems, it is important to note that the majority of India's population is rural. The country is made up of more than 700 districts, with more than 664,000 villages that make up the 65% of the country's population living in rural India. The majority of India's farmers are small land-holders and have to reconcile with multiple realities that put them in a state of disadvantage as compared to farmers in countries where average farmer holds more than 25 hectares of land. The country's governments (State and Central) are taking many steps to expedite the execution of solutions that have so far been arrived at through reasonable research and deliberation.

Telangana, in addition to being the youngest state in the country, is also a dryland state. With more than 10,000 villages, Telangana's population is heavily dependent on rain-fed agriculture. With pressing people-level problems such as population growth, migration to cities and reverse-migration due to Covid-19, it is a matter of utmost urgency that we start looking at the dryland food systems in Telangana and arrive at interdisciplinary approaches to address the following challenges in an efficient manner:

- Irrigation Water supply: Telangana's farmers depend on rain-fed agriculture. In the absence of rainfall, it is important to strategize for other possible methods of irrigation. For example, there is a pressing need to revivify existing tanks and water harvesting structures and build new water harvesting structures.
- Genetic erosion: Increased loss of local crop varieties.
- Local seed systems: Seed systems are weak in preserving local seeds.
- Subsidies for locally cultivated seeds: Farmers purchase seeds every cropping season from the Government agencies at subsidised rates. There is a necessity for supporting local seed systems by extending subsidies to local seeds.
- Increase in pest population- Dryland crops are increasingly infested by pests and diseases. Mono-cropping has contributed to this surge.
- Lack of marketing infrastructure - Farmers need to be enabled to sell their produce in their own villages. Deferred sale could be made possible if warehouses and markets are established in each block/village.
- Loss of soil fertility, soil degradation, crop loss due to climate change(rainfall pattern has changed).
- Crops like cotton and soya have replaced millet, pulses(black gram, green gram) and oil seeds (safflower, Niger).
- Government subsidies doesn't reach the last mile..
- Less price realisation as the farmers sell their produce to local traders.
- Lack of investments with FPOs and dry land farmers groups for bulk marketing

ACTION TRACKS

- ✓ Action Track 1: Ensure access to safe and nutritious food for all
- ✓ Action Track 2: Shift to sustainable consumption patterns
- ✓ Action Track 3: Boost nature-positive production
- ✓ Action Track 4: Advance equitable livelihoods
- ✓ Action Track 5: Build resilience to vulnerabilities, shocks and stress

KEYWORDS

- Finance
- ✓ Innovation
- Human rights
- ✓ Women & Youth Empowerment
- ✓ Policy
- ✓ Data & Evidence
- ✓ Governance
- Trade-offs
- ✓ Environment and Climate

MAIN FINDINGS

Contributions of each stakeholder for the development dryland food systems were identified during the deliberations

1. Technology and Knowledge Exchange: India and Africa face common challenges – among others, low volumes at individual farm gates, long and often inefficient value chains and value webs, inadequate storage capacities (especially cold storage for cold chains of perishable products), absence of efficient, transparent, well-regulated markets. India has been pioneering in developing improved agricultural technologies and improved varieties of dryland crops. Under the South-south collaboration, institutes like ICRISAT have been playing a major role in exchanging technologies between two continents. Technology exchange should also happen amongst different States in India. Research institutions have been creating knowledge banks which could be integrated into a Global Knowledge Bank on Dryland Food Systems

2. Agri data exchange: The status of agricultural data in India and African countries prompt us to initiate steps to establish state, national and global level agri data exchanges. Data lakes could turn into digital public good for data driven policy making and enable an ecosystem with intelligence on cropping and commodity marketing. The Government of Telangana and the Centre for Fourth Industrial Revolutions (C4IR) of the World Economic forum is implementing the Artificial Intelligence for Agricultural Innovations (AI4AI) project through which an agricultural data lake is currently being created and more than 30 emerging technologies developed by Indian start-ups have been carefully vetted and shortlisted for piloting and large scale deployment. Identified start-ups will use the standardised agricultural data shared from the data lake. (http://www3.weforum.org/docs/WEF_Artificial_Intelligence_for_Agriculture_Innovation_2021.pdf)

3. Interdisciplinary development projects: Development project interventions, especially in nutrition amelioration does not sustain after the support period. Involvement of multiple stakeholders including research, industry, development agencies and start-ups, could lead to change in the cropping system and food consumption pattern, eventually contributing to better nutrition. It will also help in better implementation and sustainability. The state of Telangana has been implementing various nutrition amelioration programs, whose impacts are not sustainable. RICH has partnered with research organisations including the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), World Vegetable Centre, ICAR-National Research Centre for Meat (ICAR-NRCM); Development agencies including Nice Foundation(<https://nicefoundation.in/>), Grameen Mall Foundation(<https://www.facebook.com/Grameenmall/>) to develop and demonstrate sustainable and scalable nutrition amelioration protocol for the state of Telangana, which could be scaled across India.

4. Market linked production system: Market linked production system with end to end value system is essential to minimize wastage and increase value addition at the farm level instead of losing it to intermediaries. There has to be an anchor customer and anchor market, for whom the farmers produce. Database, crop monitoring and customised crop advisory reflects on the current crop conditions. ITC Limited- a leading Indian agro company is implementing a flagship platform called e-choupal(<https://www.itcportal.com/businesses/agri-business/e-choupal.aspx>), which acts as a solution integrator in various crop value chains, supporting new technologies to reach farmers.

5. Adaptive technologies: Increasing yield gaps and climate change are pushing researchers to develop high yielding and climate resilient crop varieties and hybrids. GMO technology is also facing regulatory hurdles in India. Hence, its necessary to look at alternative adaptive technologies. Smart Nanomolecule Induced Physiological Response(SNIPR) is an alternative technology developed by the RICH supported company-Biopriime Agri Solutions (<https://www.bioprimeagri.com/snipr/>) which developed biomolecules that modifies crop physiological responses. Adaptive crop varieties which are biofortified and suitable for India and Africa, could be potentially used to replace current varieties.

6. Grassroots level Knowledge: UNDP, India identifies grassroot innovations which could be potentially scaled across rural communities. While doing so, it has catalogued traditional ecological knowledge to develop community goals and policies. Grassroot innovations have great potential to solve hyperlocal cropping problems.

7. Policy Advocacy: Policy advocacy on use of emerging technologies is essential to address problems of dryland food systems. Policy advocacy should follow bottom-up approaches. The Government of Telangana and the International Finance Corporation (IFC) are joining hands to develop policies on agricultural data standardisation, ownership and sharing/utility. It is also planned to develop policies governing the use of government owned data by start-ups, industries and researchers.

8. Village seed banks and Seed Business Incubation: Making quality seed available at the farm gate will increase the chance of higher production by 15-20%. Research centres of the Indian Council of Agricultural Research(ICAR) has been working with rural communities in establishing rural seed systems. Agribusiness and Innovation Platform(AIP) of ICRISAT (<http://www.aipicrisat.org/>) has been promoting lead farmers and NGOs into seed entrepreneurs.

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KEYWORDS

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OUTCOMES FOR EACH DISCUSSION TOPIC - 1/8

1. Knowledge exchange: Creation of intercontinental knowledge exchange platform for India and Africa would help researchers and other stakeholders.

Peer-to-Peer learning: Projects and policies enabling peer-to-peer model of learning can be implemented between states and countries. States can implement technologies learnt from such models to reduce crop loss and reduce the total cost of production.

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OUTCOMES FOR EACH DISCUSSION TOPIC - 2/8

Mapping Food Consumption patterns: Mapping household food consumption patterns across all the states and continents, could help the research fraternity in framing food systems based research programs.

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OUTCOMES FOR EACH DISCUSSION TOPIC - 3/8

Technology integrators and affordable Emerging Technologies: Creation of an agri sandbox- a centralised hub, where the tools/technologies are available in the repository, innovative ways of farming are promoted and a diversified ecosystem is created. Farmers are unable to adopt accessible technology due to financial limitations. A subsidy approach if taken by the Government, can help. Conventional breeding technology coupled with emerging technology solutions could lead to development of better technologies for specific dryland farming challenges.

ACTION TRACKS

<input type="checkbox"/>	Action Track 1: Ensure access to safe and nutritious food for all
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KEYWORDS

<input type="checkbox"/>	Finance	<input checked="" type="checkbox"/>	Policy
<input checked="" type="checkbox"/>	Innovation	<input type="checkbox"/>	Data & Evidence
<input type="checkbox"/>	Human rights	<input type="checkbox"/>	Governance
<input type="checkbox"/>	Women & Youth Empowerment	<input type="checkbox"/>	Trade-offs
<input type="checkbox"/>		<input type="checkbox"/>	Environment and Climate

OUTCOMES FOR EACH DISCUSSION TOPIC - 4/8

Overarching policies: Agriculture is one of the highly regulated sectors in India and its policies require an overhaul.

- **Technology Regulation:** Absence of clear-cut standards, regulations and operating procedures from the government. For instance, Drone deployment for agricultural spraying and crop diagnosis is a challenge.
- **Access to Data:** Potential to increase value in dryland food systems requires better policies accounting connectivity and infrastructure to govern access to and use of digital technologies and related data in the agriculture sector. As data is key to digital innovations, governments may follow open data system as a means for promoting innovations which enable effective stakeholder decision making.
- **Hybrid Seeds:** Extent of use of hybrids in dryland regions is till low. Government and all the responsible stakeholders should work towards the goal of increased use of hybrids. As GM faces regulatory hurdles, alternative technologies like Gene-editing may be promoted to develop drought, insect and disease resistant hybrids.
- **Increased Funding for Dryland Research:** Increasing funding for dryland technology research and innovation can help in developing technologies for improving crop yields productivity.
- **Crop diversification** will significantly help in eradicating malnutrition as it increases consumption of diversified foods with enriched nutrients.

□ **National Forum for Dryland Food Systems** could be established in countries with large dryland areas to catalyze activities of all the dryland food system stakeholders. The forum could work with its respective Governments to develop and enforce policies for the betterment of dryland research and extension.

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KEYWORDS

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	Human rights	✓	Governance
	Women & Youth Empowerment		Trade-offs
			Environment and Climate

OUTCOMES FOR EACH DISCUSSION TOPIC - 5/8

Women centric development programs: Women produce around 60-80% of food. It is important to acknowledge the feminization of agriculture. Women's roles are diversified and inclusive in every step of the dryland food chain. We need to reduce women farmers' dependency on governments, and empower them to have entrepreneurial mindset and develop management capabilities within themselves.

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OUTCOMES FOR EACH DISCUSSION TOPIC - 6/8

Research-Industry Network: Start-ups need an industry partner who could help penetrate their technologies for large-scale adoption. A collaborative approach of bringing stakeholders together to implement data driven solutions and prepare a global action plan on research, technology, market and policy interventions is essential for improving dryland food systems. A Global Centre of Excellence in Biofortification could be established to develop research programs, to promote biofortified food, advocate policy amendments and contribute to nutrition security of the malnourished population.

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OUTCOMES FOR EACH DISCUSSION TOPIC - 7/8

Greater Insurance Cover: Under the uncertainties of climate in dryland regions, we should incorporate crop insurance. Only 6% of the cropped area in India is insured. Farmer friendly crop insurance products may be offered by the Government and private insurance companies to cover the risk of crop in dryland regions.

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OUTCOMES FOR EACH DISCUSSION TOPIC - 8/8

Integrated Marketing facility at Villages: Government and industries shall join hands to provide better marketing facilities to dryland farmers and conduct large scale awareness and PR campaigns on the available marketing and warehousing facilities and subsidy schemes.

ACTION TRACKS

<input type="checkbox"/>	Action Track 1: Ensure access to safe and nutritious food for all
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KEYWORDS

<input type="checkbox"/>	Finance	<input checked="" type="checkbox"/>	Policy
<input type="checkbox"/>	Innovation	<input type="checkbox"/>	Data & Evidence
<input type="checkbox"/>	Human rights	<input checked="" type="checkbox"/>	Governance
<input type="checkbox"/>	Women & Youth Empowerment	<input type="checkbox"/>	Trade-offs
<input type="checkbox"/>		<input type="checkbox"/>	Environment and Climate

AREAS OF DIVERGENCE

Deliberations were focussed towards identifying and developing new strategies for the improvement of dryland food systems. Different options were identified by the participants for specific research and farming activities.

1. Cropping: Monocropping and Multi-cropping

Research, Academia and the Department of Extension of the state and Central Governments suggest farmers do intensive monocropping of millets, oilseeds and pulses for better yields and economic returns. Mono cropping has brought better returns, by compromising nutrition. A millet farmer has to purchase pulses from fellow farmers or the local shops. In multiple cropping systems, dryland farmers sow pulses, oilseed and millets and use them for family consumption and sell the marketable surplus. Multi-cropping system not only helps in maintaining and improving the nutritional status of dryland farmers but also makes the dryland food systems, capable of supporting more people.

2. Policy advocacy-Single institution and Multistakeholder

Policy interventions are essential for increasing technology adoption and faster reach of government support. Policy advocacy has been done by each stakeholder individually (research, academia, industry, development agencies and industry associations), which gives minimal results. To bring in a big change, it is necessary for all the stakeholders to join hands and propose development schemes for dryland regions. Multi stakeholders could plan periodical and sustained policy efforts.

3. Breeding programs - Crop breeding and Nutrition breeding

Agricultural research institutes across the globe have been breeding crop varieties for high yield, pest and disease resistance and climate resilience. Increased crop production alone cannot ensure better income and health of dryland farmers. Research institutions may consider developing breeding programs not only for better crop production but also including nutrition traits.

4. Crop production- Cropping systems and Food systems

The concept of cropping system research is slowly shifting towards food systems research. Research institutes have started developing research programs focussed not only on crop yield but also on its suitability for making diverse traditional and modern foods. The ICMR-National Institute of Nutrition (ICMR-NIN) and the ICAR-National Academy of Agricultural Extension Management (NAARM) have mapped the traditional foods of drylands in the state of Telangana, and across other states in India. Findings of these studies could be used in developing food systems based research programs.

5. Research- Single discipline research and Multidisciplinary research

Research institutes conduct breeding programs for increased yield and resistance to biotic and abiotic stress, forgetting the aspect of marketability, nutrition etc., It is essential to breed crop cultivars which could be picked by seed and agro-processing companies. ICRISAT and Harvest Plus have developed Biofortified pearl millet varieties and hybrids, which have industry preferred traits like colour, yield and taste. Similarly, many national research institutes have been planning to breed nutrition rich red sorghum varieties. Such breeding programs may be developed involving food industries to provide details on the marketability traits; development agencies on farmers' acceptance; and nutrition research institutes on the micro and macro nutrient traits.

6. Technologies - GMO and Alternative research tools

As GMOs are facing regulatory hurdles in India researchers could use technologies like gene editing and plant associated microbes for trait modifications. Mutation breeding could be a potential technology for inducing variability to develop disease resistance and stress tolerant genotypes.

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	Women & Youth Empowerment	✓	Trade-offs
		✓	Environment and Climate

ATTACHMENTS AND RELEVANT LINKS

ATTACHMENTS

- <https://summitdialogues.org/wp-content/uploads/2021/07/Agenda-final-.pdf>

RELEVANT LINKS

- **Dryland Food Systems in Telangana | A UN Food Systems Summit Dialogue 2021**
<https://www.youtube.com/watch?v=OwJgGFUHgCM>

CORRECTIONS, ADJUSTMENTS, OR CHANGES

Title Pictures of the event

Date 23/07/2021

Pictures of Farmers meet and virtual event

ATTACHMENTS

- <https://summitdialogues.org/wp-content/uploads/2021/07/Farmers-meet-.png>
- <https://summitdialogues.org/wp-content/uploads/2021/07/Event-Screen-shot-.png>