Policy Perspectives for Mainstreaming Small Millets

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Introduction

- India is basically an agrarian society – agriculture dependent
- It 55% of India's population – 1/5th of total GDP
- Either subsistence for family --- emerging business --- **Still very low income to farmers**

Understanding the crisis of income security to farmers

- ➢ Ever increasing costs of cultivation due to externalization of inputs specially seeds and pesticides and increasing labor costs
- ➢ Increasing tenancy and tenancy costs…
- ➢ Dependency on traders and dealers for credit
- ➢ Increasing ecological costs due to high chemical use
- ➢ Decreasing margins to farmers-reducing incomes

Problems

- The agriculture prices are not fixed taking into livelihood needs of the farmers.
- Population is increasing in a rapid rate
- Changing climatic scenario
- Need to ensure food & nutritional security
- Decreasing arable land and water resources
- Increase and sharp fluctuations in cost of living

In the scenario…
Millets will be “harbingers of ever green revolution”….

- Since they are Versatile: highly adaptable- Climate change compliance
- Can withstand vagaries of weather and produce high biomass
- They are C4 crops – have higher efficiency in absorbing and utilizing CO2
- Hybrids yield 30-50% more than varieties
- In India, millets are grown on about 15 million ha with annual production of 17 million tons and contribute 10 % to the country’s food grain basket.

Sorghum
(*Sorghum bicolor*)

Pearl Millet
(*Pennisetum glaucum*)

FINGER MILLET
(*Eleusinecoracana*)

FOXTAIL MILLET
(Setariaitalica)

KODO MILLET
(PaspalumScrobiculatum)

LITTLE MILLET
(Panicumsumatrense)

PROSO MILLET
(Panicummiliaceum)

BARNYARD MILLET
(Echinochloafrumentacea)

Role of millets

- Bring back the nutritious cereals (millets) into the main stream business
- Significant role to play in climate change also as a crop which is drought tolerant
- Food, feed, fodder, fuel, nutritional and livelihood security
- Millets will play significant role in doubling the farmers' income by 2021-22 particularly in the dry land areas

Small Millets

- Small millets include kodo millet, little millet, foxtail millet , proso millet, and barnyard millet .
- All the small millets are nutritionally superior which make them “Nutri-Cereals”.
- Introduction of Small millets in diets can addressdiabetes, heart problems, constipation, other stomach disorders and obesity.
- Small millets are climate smart crops and can be grown in the most marginal area and can adapt to a wide range of growing environments.
- Small millets can also be source of nutrition rich fodder for cattle

All India production, area and yield of millets TE 2014-15

	Jowar	Bajra	Ragi	Small Millets	Total
Area('000 Hectares)	6161.4	7318.0	1208.1	589.6	15277.0
Production ('000 Tonnes)	5445.3	9184.2	2060.9	385.9	17076.3
Yield (Kg./Hectare)	883.8	1255.0	1706.0	654.5	1117.8

CAGR of APY of millet crops in India from 2010-11 to 2014-15

	Jowar			Bajra			Ragi			Small Millets			Total		
Year	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
2010-11	7382	7003	949	9612	10370	1079	1286	2194	1705	800	442	553	19080	20009	1048.7
2011-12	6245	5979	957	8777	10276	1171	1176	1929	1641	799	452	565	16996	18636	1096.5
2012-13	6214	5282	850	7297	8742	1198	1131	1574	1392	754	436	578	15397	16034	1041.3
2013-14	5793	5542	957	7811	9250	1184	1194	1983	1661	682	430	630	15480	17205	1111.4
2014-15	6161	5445	884	7318	9184	1255	1208	2061	1706	590	386	655	15277	17076	1117.8
CAGR %	-4.4	-5.8***	-1.4	-6***	-3.5	3.10**	-1.1	-1	0.1	-7.7**	-3.2**	4.5*	-5.4**	-4	1.4

Source: Directorate of Economics and Statistics, GOI.

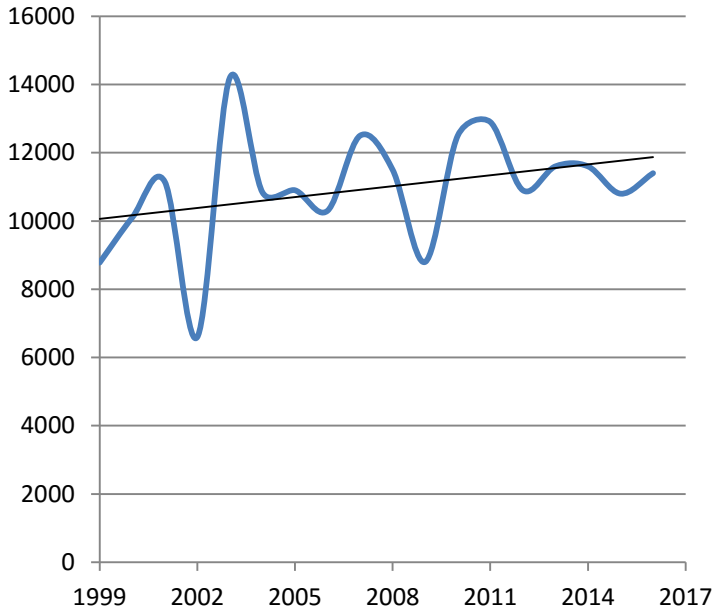
- In India total area under the millets crops declined with CAGR of 5.4% annually from 2010-11 to 2014-15 and
- The production of total millets also declined @ 4 % annually.
- Since the annual decline in the production was less than that of area under crops, the productivity of the millets witnessed slight increase in the last five years with CAGR value of 1.2 %.

Nutritive value of millets vis-a-vis other cereals (per 100g @ 12% moisture)

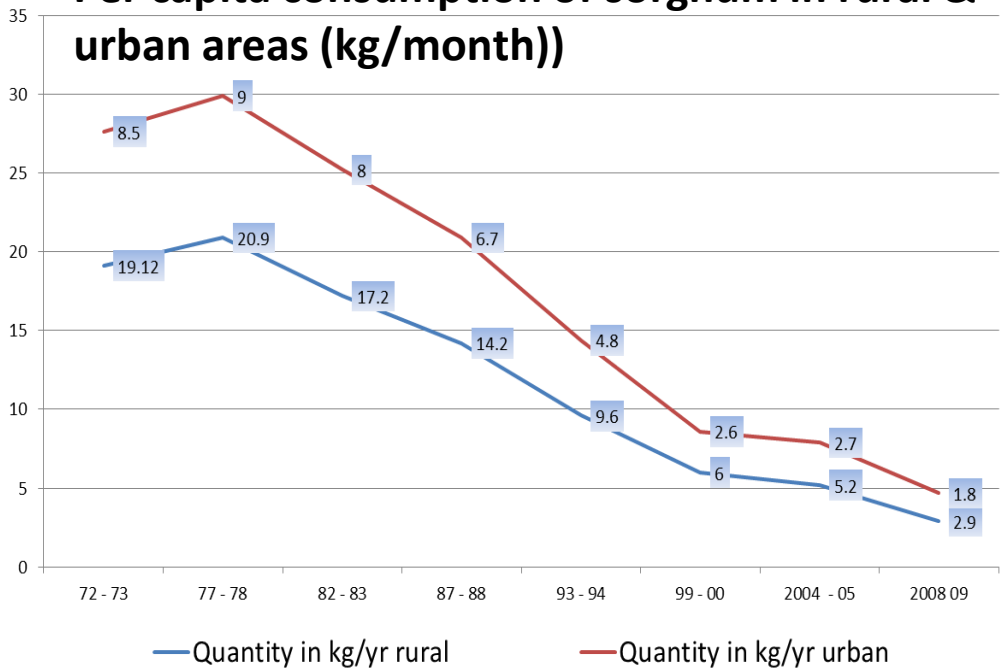
Grain (Millet /Cereal)	Carbo-hydrates (g)	Protein (g)	Fat (g)	Energy (Kcal)	Dietary fibre (g)	Ca (mg)	P (mg)	Mg (mg)	Zn (mg)	Fe (mg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Folic acid (µg)
Sorghum	67.7	09.9	1.73	334	10.2	27.6	274	133	1.9	3.9	0.35	0.14	2.1	39.4
Pearl Millet	61.8	10.9	5.43	347	11.5	27.4	289	124	2.7	6.4	0.25	0.20	0.9	36.1
Finger millet	66.8	07.2	1.92	320	11.2	364.0	210	146	2.5	4.6	0.37	0.17	1.3	34.7
Kodo millet	66.2	08.9	2.55	331	06.4	15.3	101	122	1.6	2.3	0.29	0.20	1.5	39.5
Proso millet*	70.4	12.5	1.10	341	-	14.0	206	153	1.4	0.8	0.41	0.28	4.5	-
Foxtail millet*	60.1	12.3	4.30	331	-	31.0	188	81	2.4	2.8	0.59	0.11	3.2	15.0
Little millet	65.5	10.1	3.89	346	7.7	16.1	130	91	1.8	1.2	0.26	0.05	1.3	36.2
Barnyard millet*	65.5	06.2	2.20	307	-	20.0	280	82	3.0	5.0	0.33	0.10	4.2	-
Wheat	64.7	10.6	1.47	321	11.2	39.4	315	125	2.8	3.9	0.46	0.15	2.7	30.1
Rice	78.2	07.9	0.52	356	02.8	07.5	96	19	1.2	0.6	0.05	0.05	1.7	9.32
Quinoa	53.6	13.1	5.50	328	14.7	198.0	212	119	3.3	7.5	0.83	0.22	1.7	173
Oats#	66.3	16.9	5.94	389	11.0	54.0	429	177	4.0	5.0	0.76	0.13	0.9	56

Domestic consumption of millets

Domestic Consumption



Per capita consumption of sorghum in rural & urban areas (kg/month))



- The compound annual growth rate of domestic consumption of millets in India was only 1.1 %.
- The average annual growth of the millets consumption in India from 1999 to 2016 was 4.56 %.

Reasons for Decline in Consumption of “Nutri-Cereals”

1. Easy availability of fine cereals like rice and wheat at a cheaper price to that of nutritious cereals under Public Distribution System (PDS).
2. Rapid urbanization.
3. Nutritious cereals are socially less valued which necessitated the decline in their consumption on rising of capita income.
4. Tedious and time consuming preparation of Nutri-cereals foods.
5. Preference to cash payment by labourers in lieu of taking food grain for work performed.
6. Change in food habit particularly - preference to fast food by younger generation.

Strengths of Indian Millets

- ✓ The total millets production in India was 17076 thousand tonnes in 2014-15, which was 0.75 per cent less than the previous year i. e., 2013-14 despite 1.30 per cent fall in the total millets area in country.
- ✓ High yield potential of hybrid Bajra & Jowar and HYVs of Ragi.
- ✓ Three fold increase in yield (283%) by adoption of hybrid and lesser options for arid areas (Rajasthan, Gujarat and Haryana) attributed to lowest decline of area (23%) under Bajra.
- ✓ Yield stagnation below 500 kg up to 10^{th} plan attributed to largest decline (85%) of area under minor millets.
- ✓ Area from millets largely diverted to high value crops soybean, maize, cotton and sugarcane.
- ✓ Responsive under low and high input management.

Weaknesses of Indian Millets

- ✓ Limited use of inputs due to high risk under rainfed farming & poor resource base of farmers.
- ✓ Non-availability of HYVs, quality seeds of small millets.
- ✓ Fast changing food habits, easy access of consumer to rice and wheat through PDS.
- ✓ Lack of assured procurement and non-supply of millets under PDS.
- ✓ Non availability of ready to eat food products and lack of awareness about the health benefits.
- ✓ Lack of dedicated millet processing unlike rice.

Potential & Prospects of Millets

- Availability of large number of hybrids hybrid of jowar (>20) and bajra (>60) and HVYs of ragi (>20) during last 15 years.
- **Jowar:** Yield of 6,500 Kg/ha in Guntur (A.P.) over an area of 2,000 ha during Rabi 2005-06 as against NAY 949 Kg/ha.
- **Bajra:** Yield of 2040 Kg/ha of bajra over an area of 5.77 Lakh ha in Haryana during 2011-12. Recorded maximum yield of 5,500 Kg/ha in Punjab and 5,000 Kg/ha yield in U.P. after potato with hybrids.
- **Ragi**: Yield of 2783 Kg/ha in TN over an area of 1.07 Lakh ha and yield of 3520 Kg/ha in Chittor (AP) under INSIMP as against NAY 1580 Kg/ha.

Potential & Prospects of Millets

English	Kodo Millet
Bengali	Kodo
Gujarati	Kodra
Hindi	Kodon
Kannada	Harka
Marathi	Kodra
Oriya	Kodua
Punjabi	Kodra
Tamil	Varagu
Telugu	Arikelu, Arika

Highest yield of 3661 Kg/ha in TN and 1333 Kg/ha in Chhattisgarh under FLD as against NAY 646 Kg/ha (XI Plan)

English	Italian Millet/ Foxtail Millet
Bengali	Kaon
Gujarati	Kang
Hindi	Kakum
Kannada	Navane
Marathi	Kang, Rala
Oriya	Kanghu, Kangam, Kora
Punjabi	Kangni
Tamil	Tenai
Telugu	Korra

Yield of 2375 Kg/ha in Karnataka under FLD

English	Little Millet
Bengali	Sama
Gujarati	Gajro; Kuri
Hindi	Kutki, Shavan
Kannada	Same, Save
Marathi	Sava, Halvi, vari
Oriya	Suan
Punjabi	Swank
Tamil	Samai
Telugu	Samalu

Yield of 1908 Kg/ha in TN and 1703 Kg/ha in M.P. under FLD.

English	Barnyard Millet
Bengali	Shyama
Gujarati	....
Hindi	Sanwa
Kannada	Oodalu
Marathi	...
Oriya	Khira
Punjabi	Swank
Tamil	Kuthiraivolly
Telugu	Udalu, Kodisama

Yield of 1592 Kg/ha in Uttrakhand under FLD.

Review of Development Programmes in Past

- Integrated Cereals Development Programme (ICDP) subsumed under MMA from 2000-01 had limited provision only for demonstration and minikit component.

- Enhanced support for demonstration of improved PoP, seed minikits, SRR, Micro-nutrients, soil ameliorants and farmers training under MMA.

New initiative-INSIMP

- National Brainstorming on millets in November, 2010 at Hyderabad (DAC –ICAR).

- Announcement of Rs.300 Crores under RKVY for ‘Nutri-cereals’ in budget of 2011-12.

- A new scheme “Initiative for Nutritional Security through Intensive Millets Promotion (INSIMP)” was launched in March, 2011.

- The scheme has a unique features to support improved technologies for production, post-harvest and awareness among the consumers.

New initiative-INSIMP

- Large size cluster (200-1000 ha) demonstration involving all categories of farmers – Free input up to 2 ha per farmers + seed minikits + training+ support services.

- Incentive for certified seed production of hybrids and HYVs.

- Creation of institutional infrastructure for value addition – CoEs each for sorghum, pearl millet and small millets.

- Support for processing & awareness campaign.

Impacts of INSIMP

- Large area coverage under improved PoP:

Year	Target	Achievement
2011-12	6.87 lakh/ha	7.73 lakh/ha
2012-13	7.73 lakh/ha	7.69 lakh/ha
2013-14	4.11 lakh/ha	3.33 lakh/ha

- Demonstration includes large area of small millets.

- Area increase under sorghum in AP and Tamil Nadu, finger millet in Jharkhand, Maharashtra and Tamil Nadu and small millets in AP, Karnataka and Maharashtra.

- Larger yield gains have been recorded under Small millets in UP (33%), Karnataka(28%), Tamil Nadu(13%) and Uttarakhand (3%).

NFSM- National Food Security Mission

INSIMP is being continued as NFSM during 12th Five Year Plan (2012-17) with new targets of additional production of food grains of **25 million tons** of food grains comprising of **3 million tons of coarse cereals** by the end of 12th Five Year Plan.

It has Five components

- NFSM- Rice
- NFSM-Wheat
- NFSM-Pulses
- NFSM-Coarse cereals and
- NFSM-Commercial Crops.

Out of five components NFSM-Coarse Cereals -covered 182 districts covering 27 states

Action plan for implementation of NFSM-coarse cereals during 2016-17

- Demonstration of improved practices and intercropping; and
- Distribution of certified seeds including hybrids and high yielding varieties (HYVs).
- The total fund has to be shared 60:40 basis between central and state govt.

Sl. No	State	Total fund allocated under NFSM (in Rs. Lakh)	Amount allocated under NFSM-CC (in Rs. Lakh)	Number of districts
1	Andhra Pradesh	11853.92	550.01	6
2	Telangana	6584.80	863.00	6
3	Tamil Nadu	8368.10	866.00	10
4	Uttarakhand	2428.00	228.00	13
5	Rajasthan	34480.50	6339.00	12

Other initiatives under NFSM

1. Value Chain integration of small producers

- Majority of the farmers face difficulties in managing high risk involved due to weather aberrations, uneven access to technologies, unreliable input supplies, erratic power supply, inadequate marketing arrangements etc.

- Forming and strengthening of Farmer Producer Organizations (FPOs) is likely to mitigate at least some of the risks and constraints faced by the farmers.

- The formation of FPOs may offer a collective strength for seed production and seed procurement, access to credit and improved technologies, reduce transaction costs, facilitate value addition and enter into partnerships with private entities on more equitable terms.

- SFAC has already demonstrated the benefits of aggregating farmers into FPOs during the XI Plan.

2. Marketing support for pulses and millets

- For promoting the production of pulses and millets, it is proposed that marketing support would be provided to growers in form of insurance cover, millet processing unit to individual/communities etc.

- Dal mill and millet processing unit to individual/communities, incentives to processing agencies etc. Assistance will be limited to 50% of the cost of the items. Funds will be allocated to SFAC and similar organizations at Centre/State levels against specific proposals approved by NFSMEC.

3. Exposure visit to International Organizations

- In order to enrich the knowledge base of the technical personnel involved in the Mission, exposure visit/training of technical officers/staff at international organizations like IRRI, CYMMIT, ICRISAT, AVRDC, ICARDA or any other research organization in crop production technologies etc. would be organized.

- A sum of Rs.3 crores will be provided for the entire Plan period.

- NFSMEC would approve the proposal of exposure visits /trainings

Inclusion of millets under Mid-day-Meal (MDM)

- Ministry of HRD provides support for supply of 100 gm/child for primary (1-5th std.) and 150 gm/child food grain for post-primary (6-8th std.)+ Rs. 4.25/- per child (veg./spice/cooking). Millets have been included under MDM by HRD Ministry. States were persuaded by DAC.

- Millet based MDM was launched on pilot scale basis from 26th January, 2013 in Mahabubnagar (AP), Kolar (Karnataka) and Rural Pune (Maharashtra).

- Inclusion of 7 more districts in Karnataka during 2013-14.

- Launching of Millet based supplements in Ariylaur and Perambalur districts of TN during 2013-14.

Price and policy support

- Major millets like jowar, bajra and ragi are covered under MSP.
- MSP fixed for bajra , ragi and jowar in 2016-17 indicates an increase of 13%, 8% and 15 % respectively over 2012-13.
- There is provision for MSP for the small millets.

- State Governments and their agencies should procure small millets to extend the benefit of MSP to the farmers.
- The difference between the economic cost of millets and amount realized from distribution/sale of the stock is reimbursed to the State Govts. as a subsidy by the Ministry of Food, Consumer Affairs and Public Distribution.

Other Initiatives taken by Government

- Decided to include coarse cereals including INSIMP under NFSM during 12th plan, already approved.

- Launched a pilot scheme on Nutri –Farms with an allocation of Rs. 200 crore high 100 malnutrition burden districts of 9 States during 2013-14 Assam, Bihar, Chhattisgarh, Jharkhand, MP, Orissa, Rajasthan, UP and Uttarakhand for promotion of micro nutrient rich cultivars of cereals including pearl millets, finger millet and vegetables.

- The scheme also provides assistance for production and development of supply chain through SFAC.

Implementation of Millets Mission in Tamil Nadu under NADP

- Government of Tamil Nadu implemented Millets Mission under NADP during 2014-15 with a project cost of Rs. 415.74 lakhs

- Sensitize, motivate and retain farmers in cultivation of millets in the state.

❖ The various components proposed under the project are

✓ Organizing Frontline Demonstration in Millet Cultivation in an area of 11,500 Ha in the millet growing districts

✓ Distribution of Mini kits including liquid bio-fertilisers, micro-nutrients, fungicides, pesticides etc.

✓ Training to Farmers, and

✓ Publicity and other Contingencies.

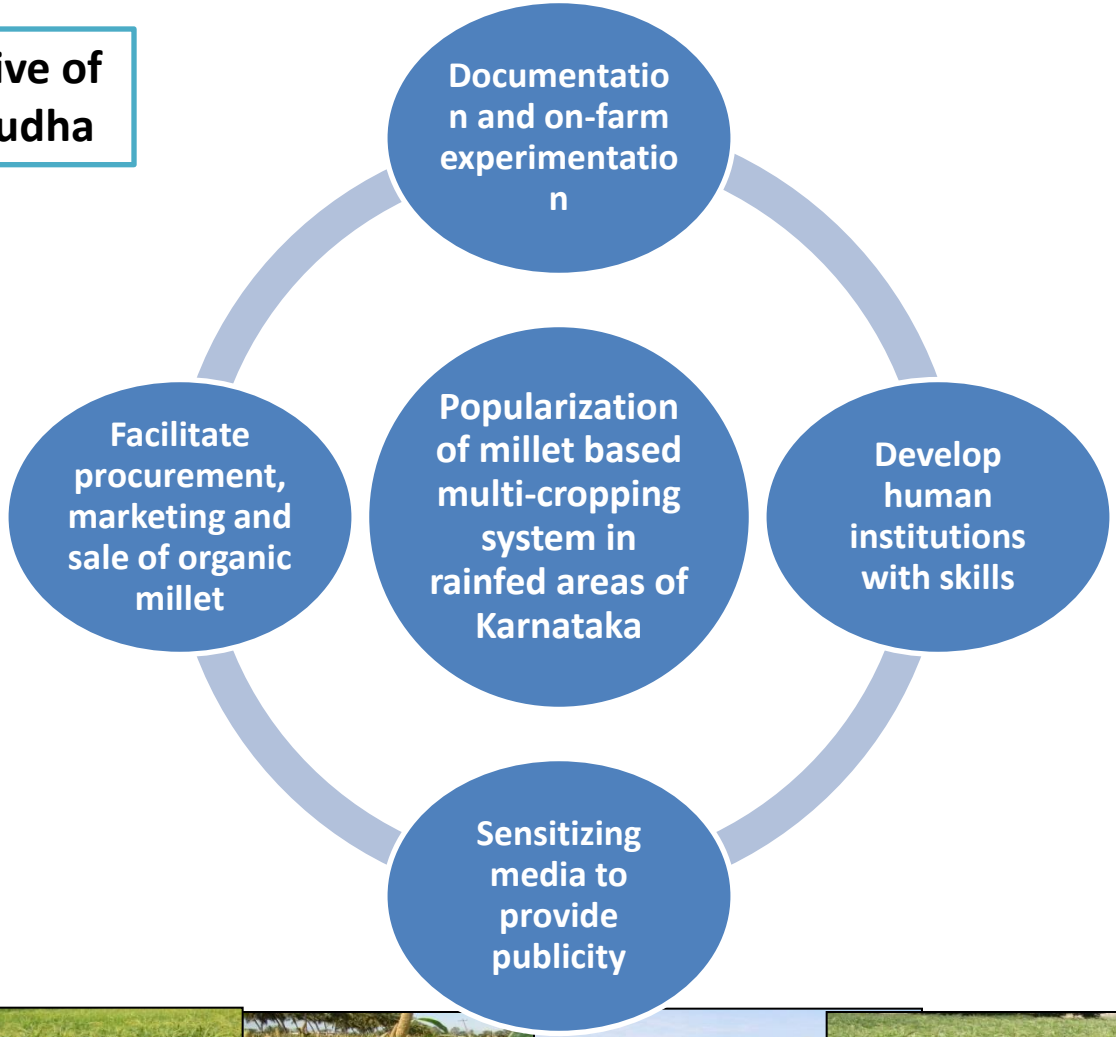
Implementation of Millets Mission in Tamil Nadu under NADP

- The benefits from the proposed project as formulated in the guidelines, were

✓ Increase in the existing area under Millets.
✓ Increase in production.
✓ Enhancement of adoption level and reduction of yield gap.
✓ Dissemination of technology among the millets cultivators.
✓ Enhanced awareness and adoption of post-harvest technology.
✓ Increased level of adoption of value addition practices and there by income.
✓ Generate consumer demand for millet based food products.
✓ Encourage the farmers to become an entrepreneur

Millet promotional activities in Karnataka

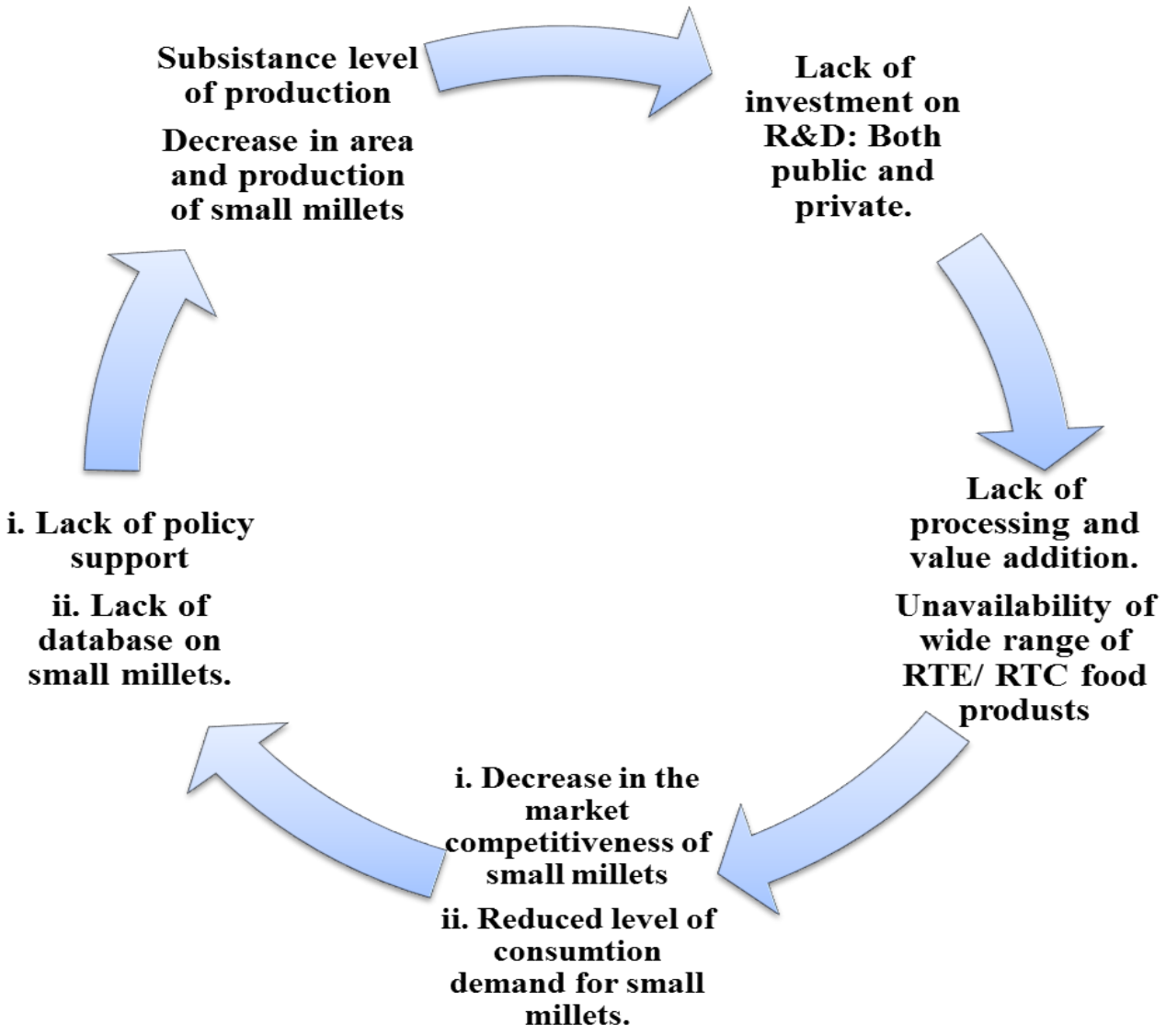
Sahaja Initiative of Sahaja Samrudha



Strategies for mainstreaming of Millets

- The decreasing trend of fall of area and production of the crop can both be addressed through the both demand creation and supply enhancement.
- the consumption demand for the millets has to be enhanced through various demand creation measures.
- Value chain model is needed with emphasis on value addition and development of value added products from millets.

Vicious cycle of production of small millets in India



STRATEGIES

Supply Side factors	• Development and distribution of HYVs and hybrids of millets among the farmers. • Improved agronomic practices and other technical assistance
Demand side factors	• Creation of awareness about the nutritional benefits of the millets products among the consumers • A value chain model is needed with emphasis on value addition and development of value added products from millets.
Price factors	• Major millets like jowar, bajra and ragi are only covered under the Minimum Support Scheme (MSP) of Government of India. • Include minor millets also to the MSP
Policy factors	• Introduction of the millets products in the public distribution system (PDS) • Mid-day meal scheme will also create a substantial demand for these products
others	• Improvement of export competitiveness of Indian Millets • Promotion of Farmers Producers Organization (FPO) • Creating farm gate processing and warehouse facilities

Demand creation for millets products: Value addition

- Cultivation and consumption decreased significantly in the due to lack of farm level processing facilities and the associated drudgery in cooking of millets.
- Proper value addition measures can be taken up at farm level to overcome these problems which will boost the millets cultivation nationwide
- ICAR-IIMR has taken the leadership role in this direction by developing and commercializing a variety of value added millets products namely Jowar Atta, Jowar rich Multigrain Atta, Jowar Pasta, Instant Pongal Mix, Jowar Vermicelli and so on.
- IIMR has assessed the impact of value chain model in reviving the demands for millets in the long term.

Supply side factors for Millets revival

- Creation of awareness among the cultivators about the various positive aspects of the millets cultivation.
- Development and distribution of high yielding varieties (HYVs) and hybrids of millets among the farmers.
- Seed village concept should be promoted in order to maintain steady supply of location specific quality millets seeds at a minimum cost.
- A proper systematic channel for timely distribution of improved agronomic practices and other technical assistance.
- A remunerative price for the farm produce should be assured to the farmers through proper buy-back arrangements.
- Farmers should be covered under insurance schemes to avoid any loss due to crop failure and other natural calamities.

GST and Millets

- ✓ All the grains including the millets (Grain Sorghum, Bajra and Ragi specified in the list) have been exempted from taxation under GST.
- ✓ The small millets grains should also be separately mentioned in the exempted list of GST along with other grains to give them a prominence among the consumers.
- ✓ The tax exemption does not include "those put up in unit container and bearing a registered brand name".
- ✓ Cereal flours in unit container under a registered brand name are kept under 5% GST category.
- ✓ Cereal grains otherwise worked (for example, hulled, rolled, flaked, pearled, sliced or kibbled) are under 5% GST category.

GST and Millets

- Most of the entrepreneurs put the millets in unit container under registered brand names.
- This would attract a 5% tax under GST, which will significantly affect the consumers who are now looking for millets.
- Except for jowar, bajra and ragi, other millets require hulling before they can be consumed.
- Inclusion of hulled grains (which will include all the small millets) under 5% tax slab of GST will negatively impact both the producers and consumers.
- Ragi malt, which is widely popular among the consumers will attract hopping 18% tax under GST.

Improvement of export competitiveness of Indian Millets

- Release of pest and disease resistant varieties could effectively solve this problem.
- Co-operative or collective cultivation of the millets
- Value addition to the sorghum and other millets products is the most effective way to improve the export competitiveness.
- Infrastructure development particularly the road transport and store houses should be done on priority basis.
- Providing incentives to millets growers, processing and value addition enterprises.
- Provide tax benefits to value added millet products to generate demand and area expansion.

Creating farm gate processing and warehouse facilities

- Associated drudgery in processing and cooking of millets has caused decline in consumption of millets.
- Creation of farm gate level processing unit will boost the consumption of “Nutri-cereals” at the points of production.
- Creation of farm gate processing will open up new employment opportunities for the rural youth.
- Warehouse facilities will support processing at production clusters
- Millets can be processed as per market demand because market for millets is characterized by fairly stable demand throughout the year, and widely fluctuating supply and variable prices.

Integrated farming systems approach

- Farming systems in India is preoccupied with monoculture i.e., one crop at time.
- This leads to large crop failures in the dryland conditions where there is no provision for irrigations.
- In these conditions promotion of integrated farming systems approach and intercropping with millets will lead to revival of millets scenario in the country.

Conclusions

- Inclusive policy measures for millets development is important for mainstreaming the millets.
- Creation of demand for millets and millets value added products will boost the production and consumption scenario of millets in India which will have a long term impact on the sector.
- Secondly, bridging the existing yield gaps in the millets producing states will boost the production scenario of these crops with available technologies.










Conclusions

- Thirdly, formulation of policy measures exclusively for millets (including the small and minor millets).
- These policy measures should include inclusion of millets in Mead Day Meal Schemes, inclusion of all millets under MSP, proper procurement of millets and distribution through Public Distribution System (PDS).
- The policies formulated for the purpose of developing the millets sector in the country should aim at short run profit as well as long run sustainability.

Reinventing of Sorghum and millets as health & convenient food is in offing!

Thank You

Ensuring Legitimate Place For Millets in Global Food Basket

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