Policy Issues Related NUS crops and custodian farmers

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Value chain in Sorghum/Millets

DSR led consortium

Partners: ITC ABD, NIN & ANGRAU

Farmer

Community / SHG / KVK
(Procurement)

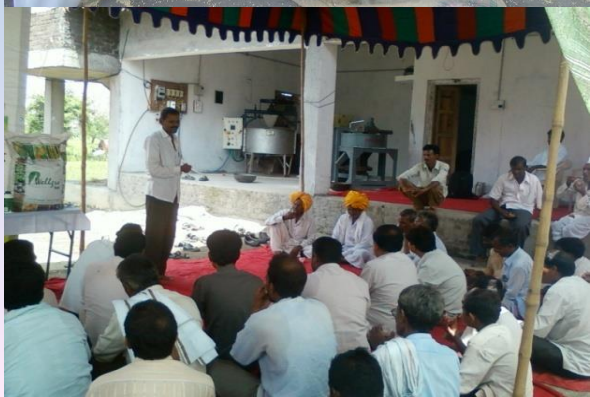
Consumers

Processing

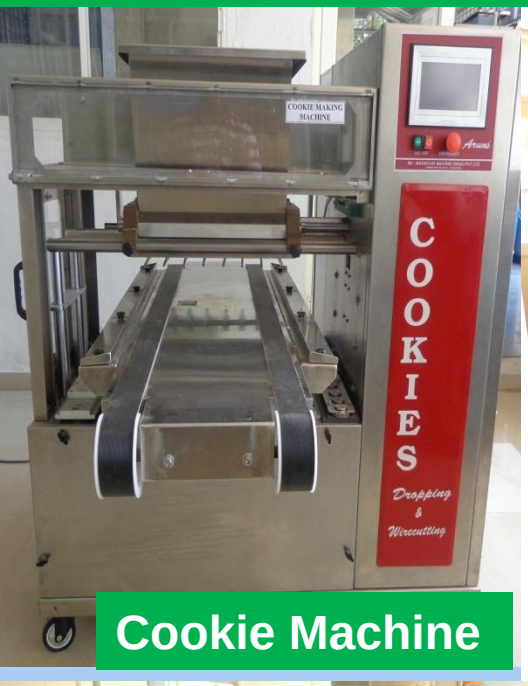
R&D, Nutritional Evaluation, Quality Check

Obj.1: Market-driven Sorghum production

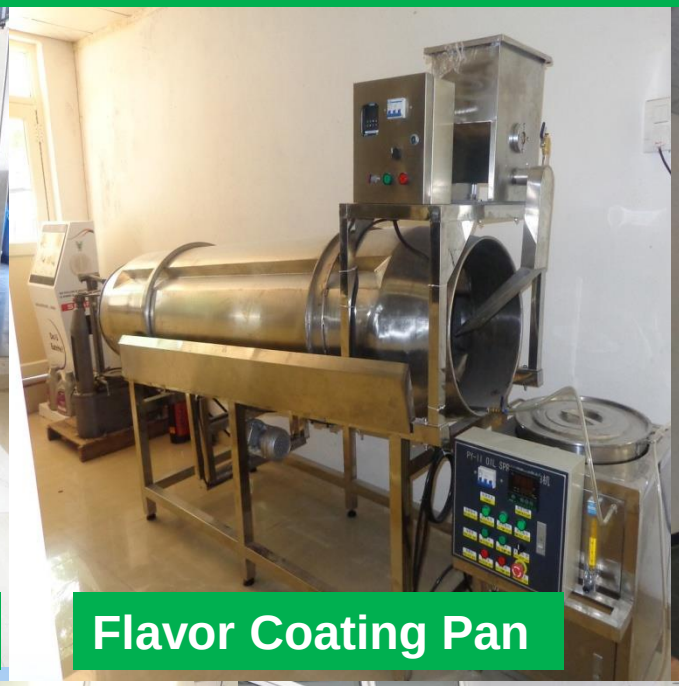
- 1500 beneficiary farmers were technologically backstopped with DSR developed 10 product specific sorghum cultivars in 2 seasons in 3000 acres for four years
- **Beneficiary farmers were provided** Buy-back assurance **by ITC (ABD) under market assured *e-choupal* model in PPP mode**
- **On-farm** technological backstopping **resulted income increase by five times in kharif & doubled rabi season respectively (4 years average over baseline)**
- Beneficiary farmers linked up with other actors **in the value chain**
  - **ITC - ABD has provided procurement, bulking , assembling and linking farmers with other actors of value chain-** backward integration model
  - **Farm level value addition –** flaking at farm gate **-10 times value addition -other farmers are motivated & neighboring villages/farmers followed the suit**
- Achieved in bringing change in mindset of sorghum farmers by giving commercial colour to sorghum cultivation

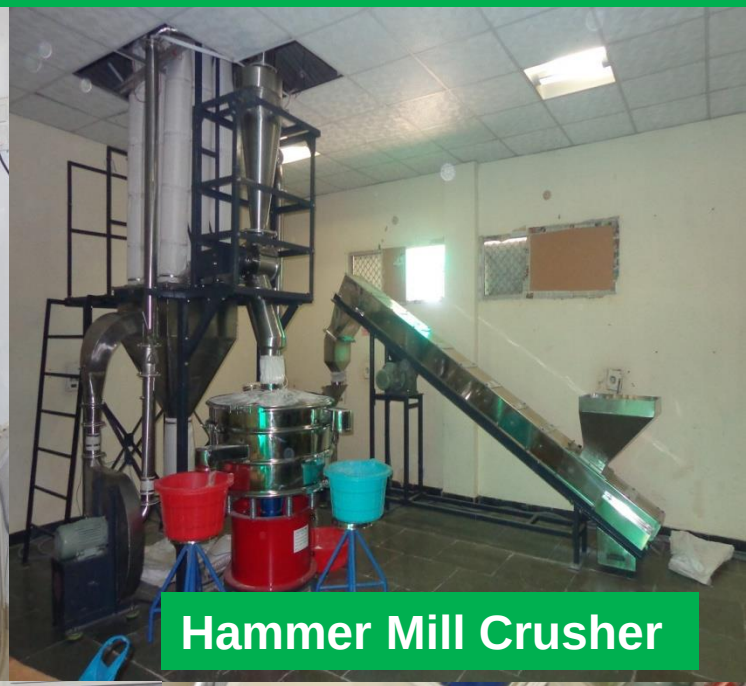


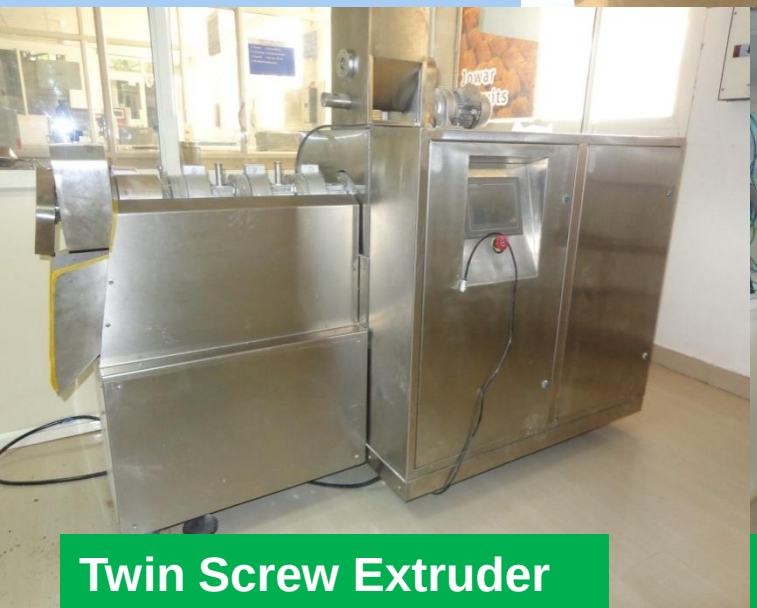
Upscaling of Processing machinery for sorghum/millets

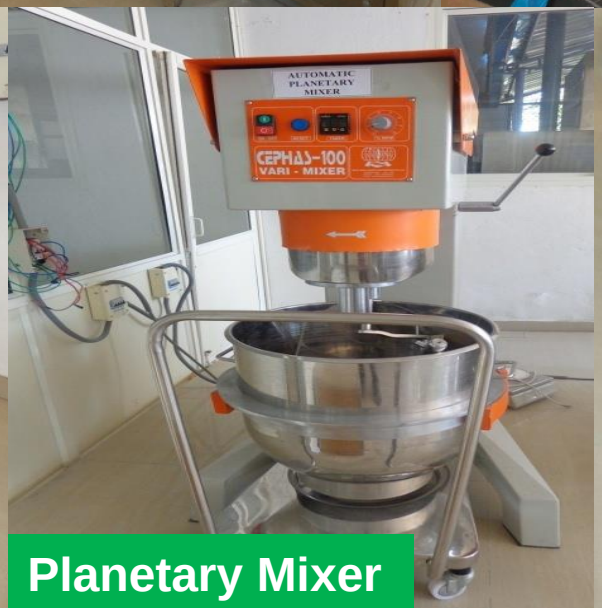


Cookie Machine

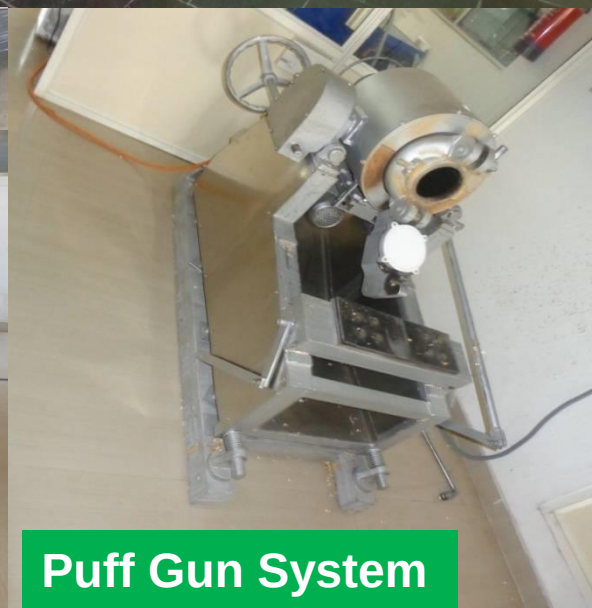

Flavor Coating Pan


Hammer Mill Crusher


Twin Screw Extruder



Planetary Mixer


Puff Gun System

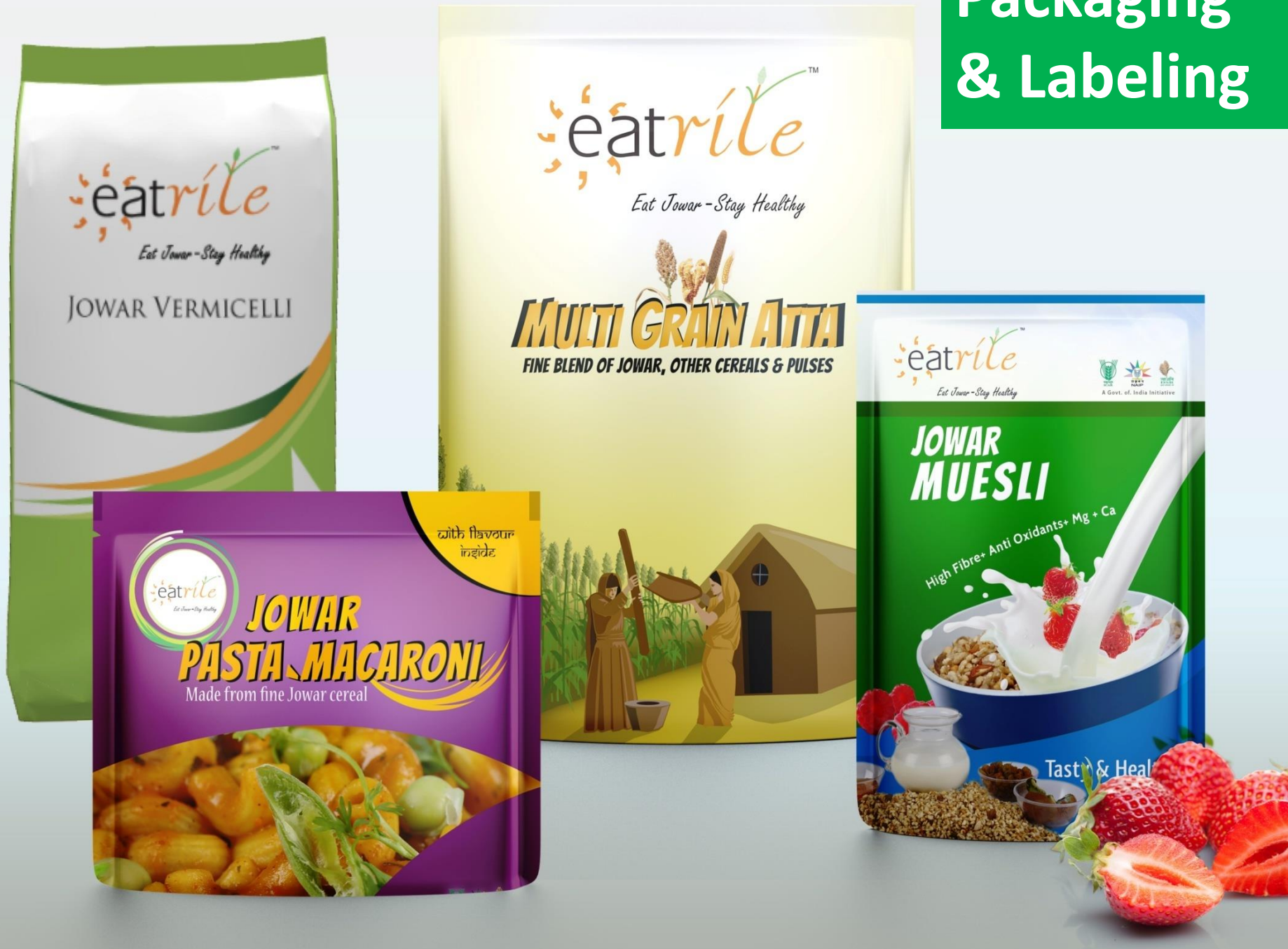
Eatrite Products commercialized

1. Sorghum Rich Multigrain Atta
2. Sorghum Suji (upma)
3. Sorghum Khichdi rawa
4. Sorghum Idli rawa
5. Sorghum vermicelli
6. Sorghum pasta
7. Sorghum Atta
8. Sorghum flakes
9. Sorghum Biscuits

eatrite™

Eat Jowar - Stay Healthy

Packaging & Labeling



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किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद
Agrisearch with a human touch

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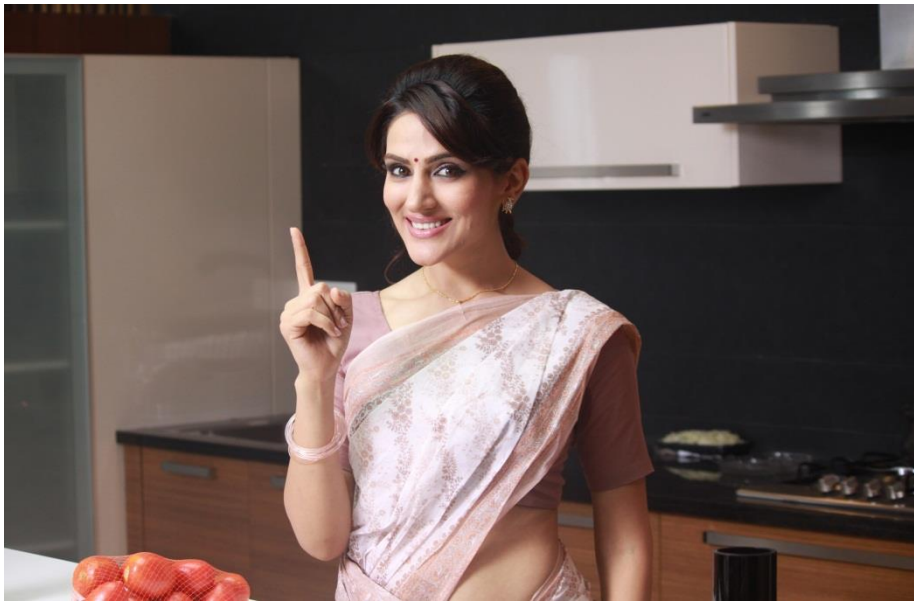
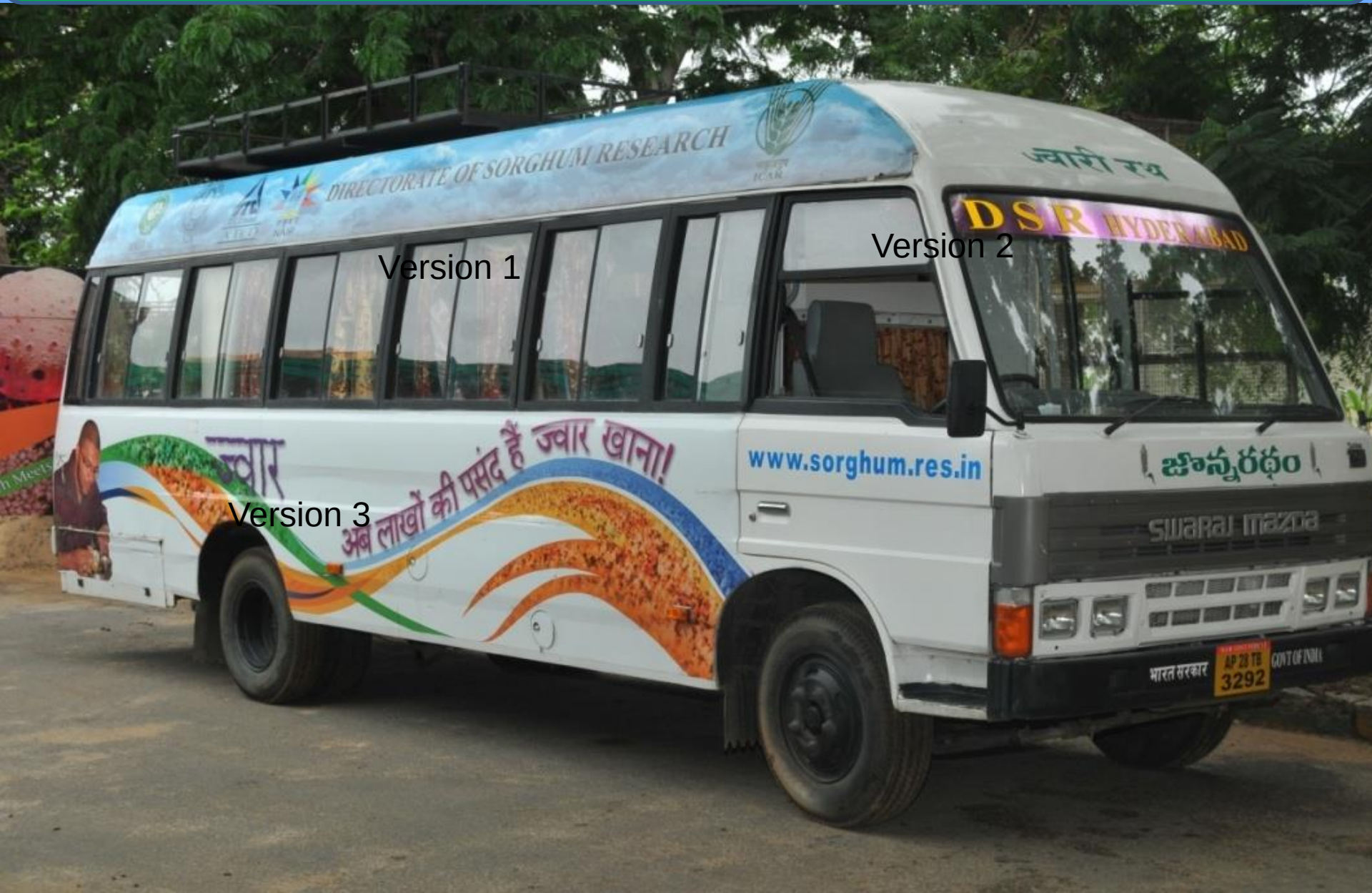
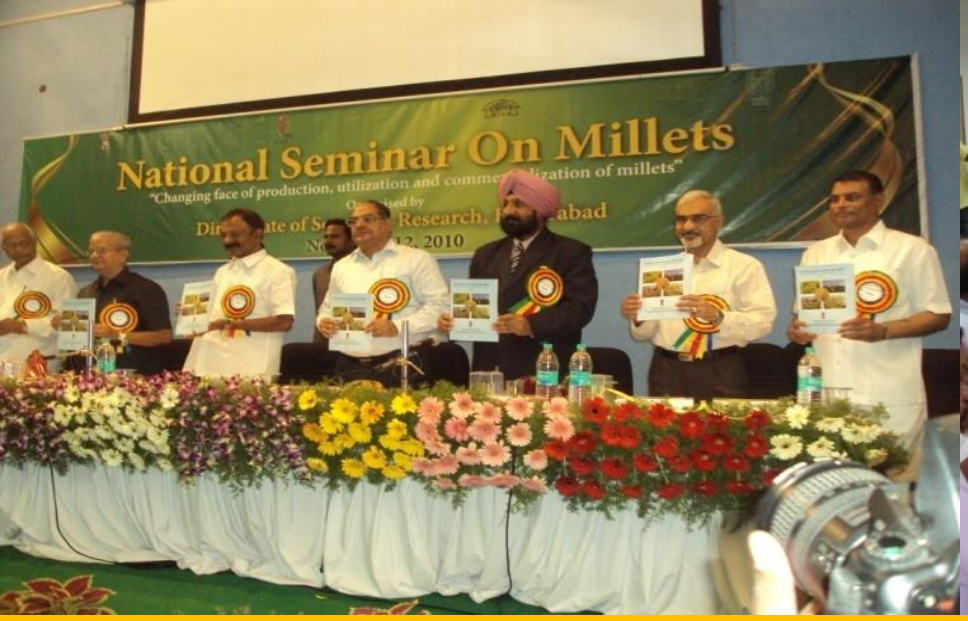
Eat Jowar - Stay Healthy



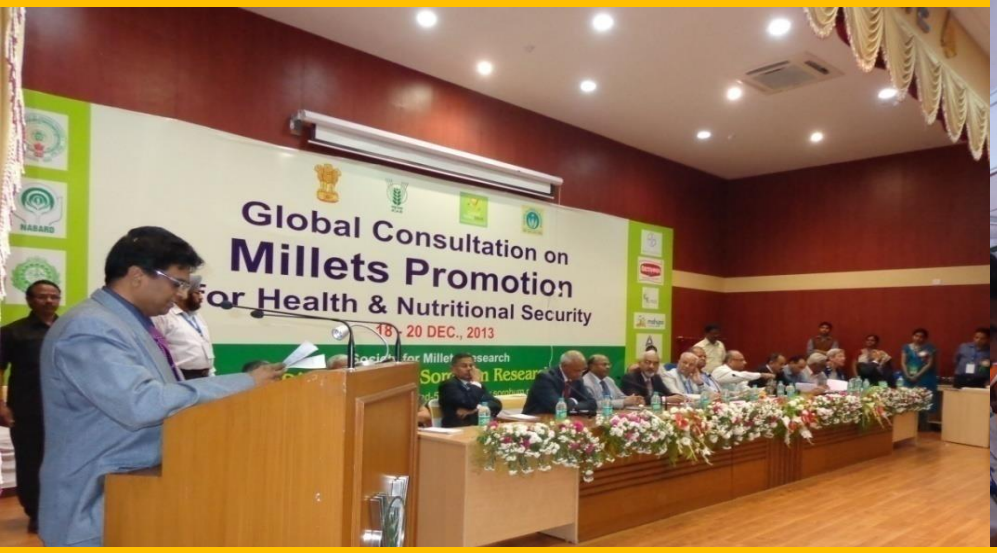
Directorate of Sorghum Research Brand

Jowar Rath- Fabricated mobile exhibition van



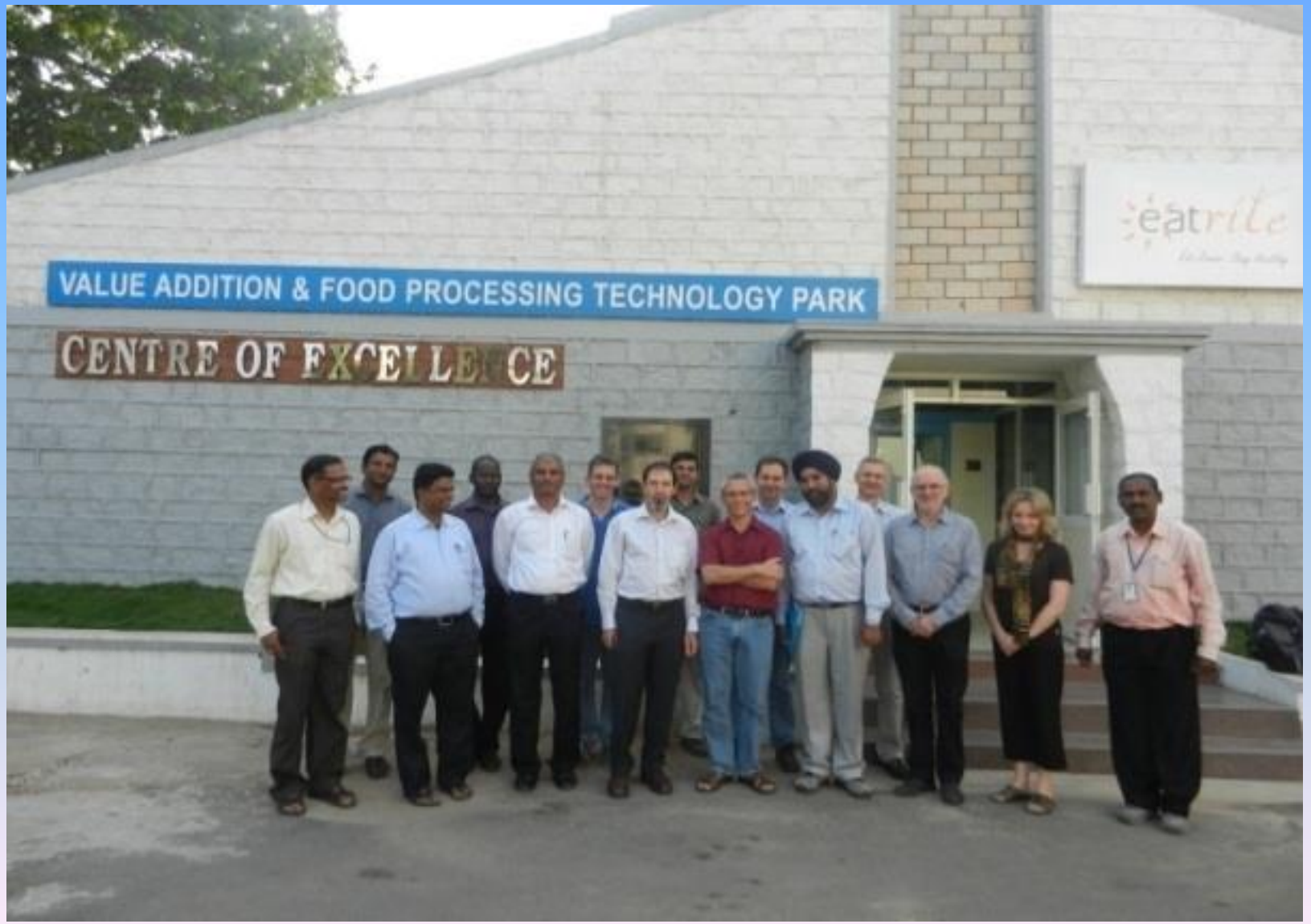


National Brainstorming Session, November, 2010



Global Consultation on Millets, 18-21 December 2013

Centre of excellence on sorghum



What are NUS

Agricultural species that are not among the major staple crops often come under the heading of ‘neglected and underutilized species’ (NUS) and are sometimes called ‘orphan’ crops.

NUTRIENT COMPOSITION OF MILLETS VS FINE CEREALS

(All values for 1000 gms)

Food rains	Nutrients per kilogram									
	Protein (gms)	Minerals (gms)	Fibre (gms)	Calcium (mg)	Phos-phorous (mg)	Iron (mg)	Carotene (µg)	Thiamine (mg)	Riboflavin (mg)	Folic acid (µg)
Sorghum	104	16	16	250	2200	41	470	3.7	1.3	200
Pearl millet	116	23	12	420	2960	80	1320	3.3	2.5	455
Italian millet	123	33	80	310	2900	28	320	4.7	2	150
Finger millet	73	27	36	3440	2830	39	420	4.2	1.9	183
Little millet	125	19	22	140	2060	8	0	2	1.8	-
Kodo millet	77	15	76	170	2200	93	0	3	0.9	90
Rice*	64	7	2	90	1430	10	-	2.1	0.5	110
Wheat (whole)**	118	15	12	410	3060	53	640	4.5	1.7	366

Source: Nutritive value of Indian foods (1996), National Institute of Nutrition, ICMR, Hyderabad.

*Rice - parboiled and milled.

All India production, area and yield of millets
TE 2013

	Area ('000 hectare)	Production ('000 Tonnes)	Yield (Kg/Hectare)
Sorghum	6614	6097	920
Bajra	8562	9796	1149
Ragi	1197	1899	1581
Small Millets	784	443	565
Total	17157	18235	1054

Policy issues related to millets

Strengths

- Increase in production by 47 Lakh tonnes despite decline of > 50% area (193 Lakhs ha).
- 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 10th 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

- 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

English : Great Millet/ Sorghum

Bengali	: Jowar
Gujarati	: Jowari, Juar
Hindi	: Jowari, Juar
Kannada	: Jola
Marathi	: Jowari, Jondhala
Oriya	: Juara
Punjabi	: Jowar
Tamil	: Cholam
Telugu	: Jonna

English : Spiked Millet/ Pearl Millet

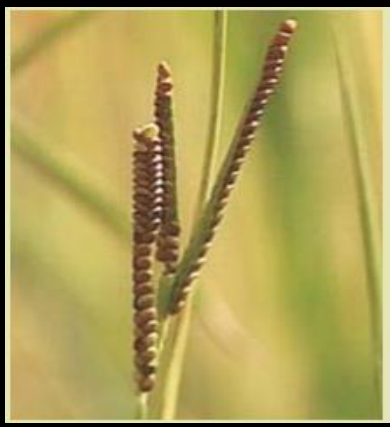
Bengali	: Bajra
Gujarati	: Bajri
Hindi	: Bajra
Kannada	: Sajje
Marathi	: Bajri
Oriya	: Bajra
Punjabi	: Bajra
Tamil	: Kambu
Telugu	: Sajja

English : Finger Millet

Bengali	: Marwa
Gujarati	: Nagli, Bavto
Hindi	: Ragi, Mandika, Marwah
Kannada	: Ragi
Marathi	: Nagli, Nachni
Oriya	: Mandia
Punjabi	: Mandhuka, Mandhal
Tamil	: Keppai, Ragi, Kelvaragu
Telugu	: Ragi Chodi

- 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.

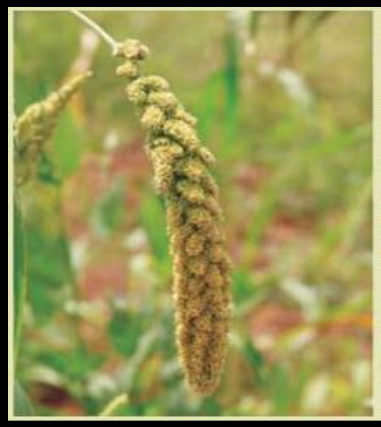
Potential and Prospects of Millets contd…



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.

Development programmes-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.

INSIMP- contd..

- 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.

Impact 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%).

INSIMP - contd..

- In order to meet the requirement of Refinement/ retrofitting, demonstration and capacity building of entrepreneurs on post-harvest technologies and market linkages between producers and processors, three Centre of Excellence (CoE) have been set up.

- More than 300 PHT units comprising of pre-processing machine (cleaner-cum-destonner-cum grader & dehuller and processing machines rawa/flour/flacking/popping) installed in the States of AP (70), Gujarat (16), Karnataka (125), MP (12), Maharashtra(38), TN(25) and UP(31).

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.

Price and policy support

- Major millets like jowar, bajra and ragi are covered under MSP.
- MSP fixed for 2013-14 for bajra , ragi and jowar indicates an increase of 42%, 55% and 67 % respectively over 2010-11.
- Millets may be procured by the State Governments and their agencies primarily to extend the benefit of MSP to the farmers. After retaining the stock required for consumption under TPDS, the balance stock as disposed off by FCI through open tender.
- 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.

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.

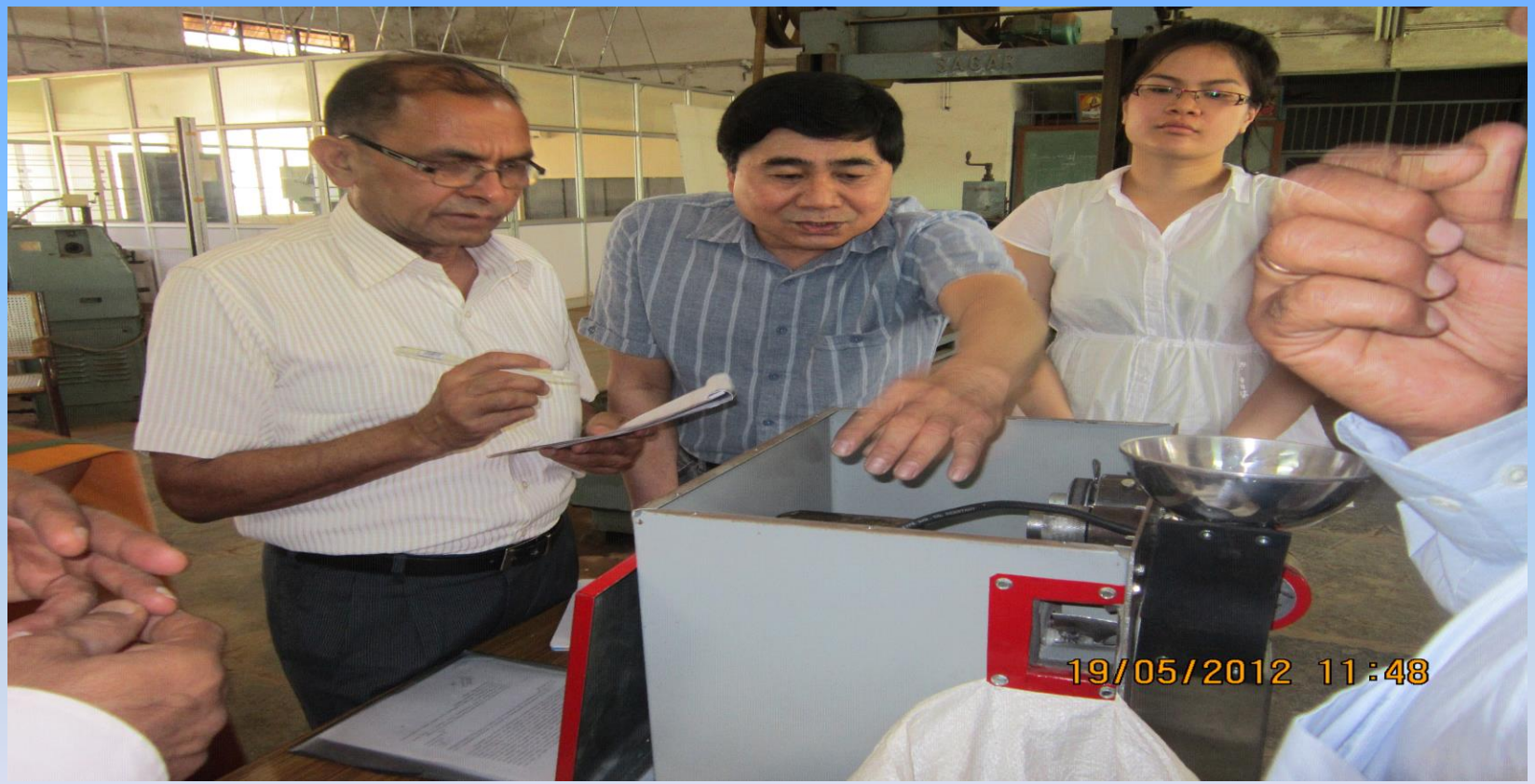
- Launching of Millet based supplements in Ariylaur and Perambalur districts of TN during 2013-14.

INSIMP- Contd……

Massive campaigns comprising of the following have created awareness and demand for millets:

- Food festivals/millets melas/exhibitions.
- Road shows/hoardings/writing on buses/walls.
- Use of jingles/VCDs.
- Publications about recipes in regional languages.
- Attractive pamphlets on food products made out of millets.

Millets de-husking machine being developed at UAS, Dharwad



100% efficacy of dehulling of little millets

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NFSM- National Food Security Mission

INSIMP is subsumed under 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.

NFSM contd..

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

NFSM contd..

Summary of Interventions and Pattern of Assistance in Coarse Cereals

S. No.	Name of Interventions	Pattern of Assistance
1.	**Demonstration**	
1.1	Demonstration on Improved Package (Cluster Demonstrations)	Rs.5000 per ha
2.	**Seed Distribution**	
	Hybrids of Coarse Cereals)	Rs. 50/- per kg or 50% of the cost whichever is less
	High yielding Varieties of Coarse Cereals	Rs. 15/- per kg or 50% of the cost whichever is less
6.	**Local initiatives**	Funding will be on Project basis, up to 5% of the total allocation to the State.
7.	**Project Management Teams at State and District level**	

Districts covered under NFSM-Coarse Cereals (182)

	State	No of Districts covered
1.	Andhra Pradesh	5
2.	Arunachal Pradesh	7
3.	Assam	4
4.	Bihar	11
5.	Chhattisgarh	5
6.	Gujarat	8
7.	Haryana	5
8.	Himachal Pradesh	5
9.	Jammu & Kashmir	7
10.	Jharkhand	11
11.	Karnataka	11
12.	Kerala	1
13.	Madhya Pradesh	16
14.	Maharashtra	8
16.	Meghalaya	3
17.	Mizoram	4
18.	Nagaland	4
19.	Odisha	6
20.	Punjab	3
21	Rajasthan	12
22	Sikkim	2
23	Tamil Nadu	10
24	Tripura	2
25	Uttar pradesh	20
26	Uttarakhand	4
27	West bengal	3
28	Telangana	6
	Total	182

COST NORM FOR CLUSTER DEMONSTRATION & OTHER INTERVENTIONS

Particulars	Rice	Wheat	Pulses	Coarse Cereals
A. Demonstration (Rs/ha)				
1. Individual Crop*	7500	7500	7500	5000
2. Cropping Based Approach	12500	12500	12500	-
B. Seed Distribution** (Rs/ Kg)				
1. High Yielding Varieties	10	10	25	15
2. Hybrid (Rice & Coarse Cereals)	50	-	-	50
C. Plant Protection (Rs /ha)				
1. PP Chemicals & Bio-pesticides	500	500	500	500
2. Weedicides	500	500	500	500
D. Micro-nutrient & Soil Ameliorants (Rs / ha)				
1. Gypsum /phospho-gypsum/ bentonite sulphur	-	750	750	-
2. Micronutrients	500	500	500	500
3. Bio-fertilizers (Rhizobium/ PSB)	-	-	100	-
4. Lime / liming materials	1000	-	1000	-
E. Local initiatives	5%	5%	5%	5%

*Cost norms for Field Day, distribution of publicity material and visit of scientists/GOI and state officials @Rs. 250, Rs. 250 and Rs. 300, respectively

**20% of State's Seed distribution of Hybrid/HYV to Central Seed Agencies like NSC/SFCI

Reimbursement of subsidy for distribution of Hybrid/HYV seeds s will be made directly to agencies by the Ministry

Other initiatives under NFSM

Value Chain integration of small producers:

- Majority of the farmers are small producers who face difficulties in managing high risk involved in farming mainly 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,
  - tap high value markets 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.

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,

- 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.

Component wise financial provision for FPOs

S. No.	Component	Cost (Rs. In Lakhs)	Remarks
1.	Mobilization of farmers into registered producer organizations of around 1000 members each, with inputs of training and capacity building and training (as per model FPO Process Guidelines of DAC)	40.75	Standard costing norms and methodology prescribed by DAC in the model FPO Process Guidelines will be followed by State/Central agencies taking up activities under this component.
2.	Establishment of mini dal mills by farmers, farmer groups or registered FPOs (@Rs. 10.00 lakhs, or 30% of the total cost, whichever is lower, as one time support)	10	This provision will be used for encouraging local level processing and value addition of pulses and millets by FPOs, SHGsand individual farmers willing to invest in value addition facilities near the farm level.
3.	Support for branding and marketing of milled pulses or millets (available only to registered FPOs @ Rs.5.00 lakh per FPO, for one time support only)	5	This will provide support to registered FPOs which invest in value addition facilities to undertake direct branding and marketing of pulses and millets for higher realization.
4.	Marketing support to un-registered farmer groups, SHGs, SHG federation etc. for local marketing of pulses and millets (@Rs.2.00 lakh per group of 15 farmers, for one time support only)	2	This provision will enable unregistered farmer groups, SHGs of women and others who wish to collaborate informally for direct marketing pulses in local haats, townships and region.
5.	Support to registered FPOs to set up and equip procurement centres to grade and process pulses and millets (@Rs.5.00 lakh per FPO for one time support only	5	NFSM will encourage FPOs to increasingly undertake procurement operations under MSP on behalf of State and Central procurement agencies, for which this window will offer one-time assistance to set up critical infrastructure for undertaking MSP operations.

Exposure visit to International Organizations

1. 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.
2. A sum of Rs.3 crores will be provided for the entire Plan period.
3. NFSMEC would approve the proposal of exposure visits /trainings.

International Interest

- USAID has shown interest in investment on development of technologies for value added product both for human and livestock; improved milling and marketing etc. through innovative prizes and awards.

Way forward

1. **Change the perceptions** of NUS as unimportant ‘poor man’s food’.y forward
2. **Develop capacity** in researching, teaching, policymaking, trading and farming NUS.
3. **Undertake more research** on NUS, particularly with regard to their adaptive qualities and the links between NUS and nutrition and livelihoods.
4. Set up **global on-farm NUS conservation** programmes.
5. Involve the **full range of stakeholders** in participatory partnerships to promote and conserve NUS, particularly farmer and women’s organizations.
6. Find innovative ways to upgrade NUS market chains and to **develop and market value-added products.**
7. Put in place legal frameworks, policies and financial incentives to promote NUS and **encourage agricultural diversification.**
8. **Encourage collaboration** in researching, promoting, conserving and sustainably using NUS, and coordinate activities and multi stakeholder platforms across sectors.


THANK
YOU