



Technical Session – Market opportunities for NUS crops: Status and outlook-

Government efforts to promote NUS crops

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Common names of millets in India



**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



**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

Common names of millets in India



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



English : Kodo Millet

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



**English : Common Millet/
Proso Millet/**

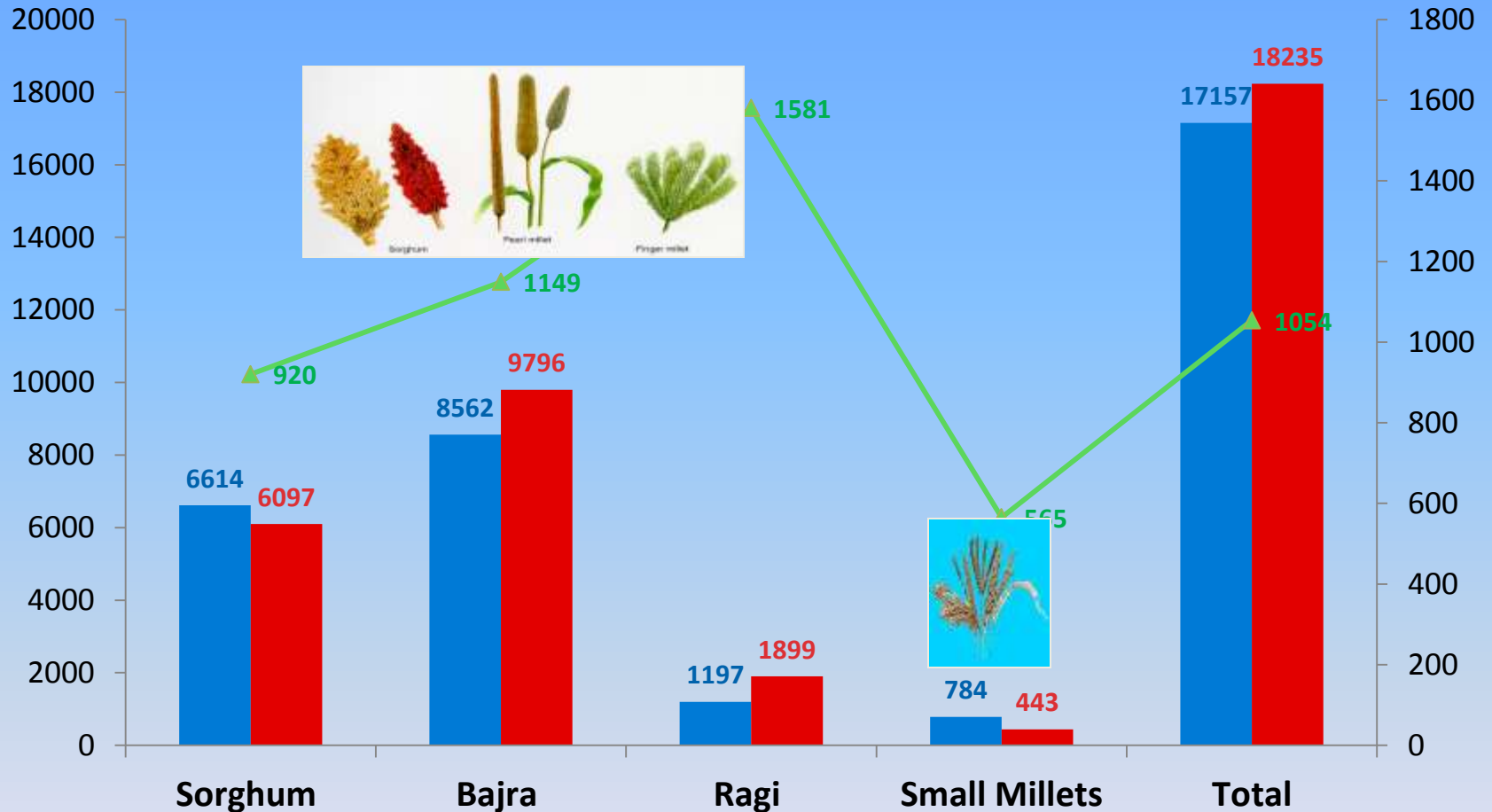
Bengali : Cheena
Gujarati : Cheno
Hindi : Chena; Barri
Kannada : Baragu
Marathi : Vari
Oriya : China Bachari bagmu
Punjabi : Cheena
Tamil : Pani varagu
Telugu : Variga



English : Barnyard Millet

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

All India production, area and yield of millets TE 2013

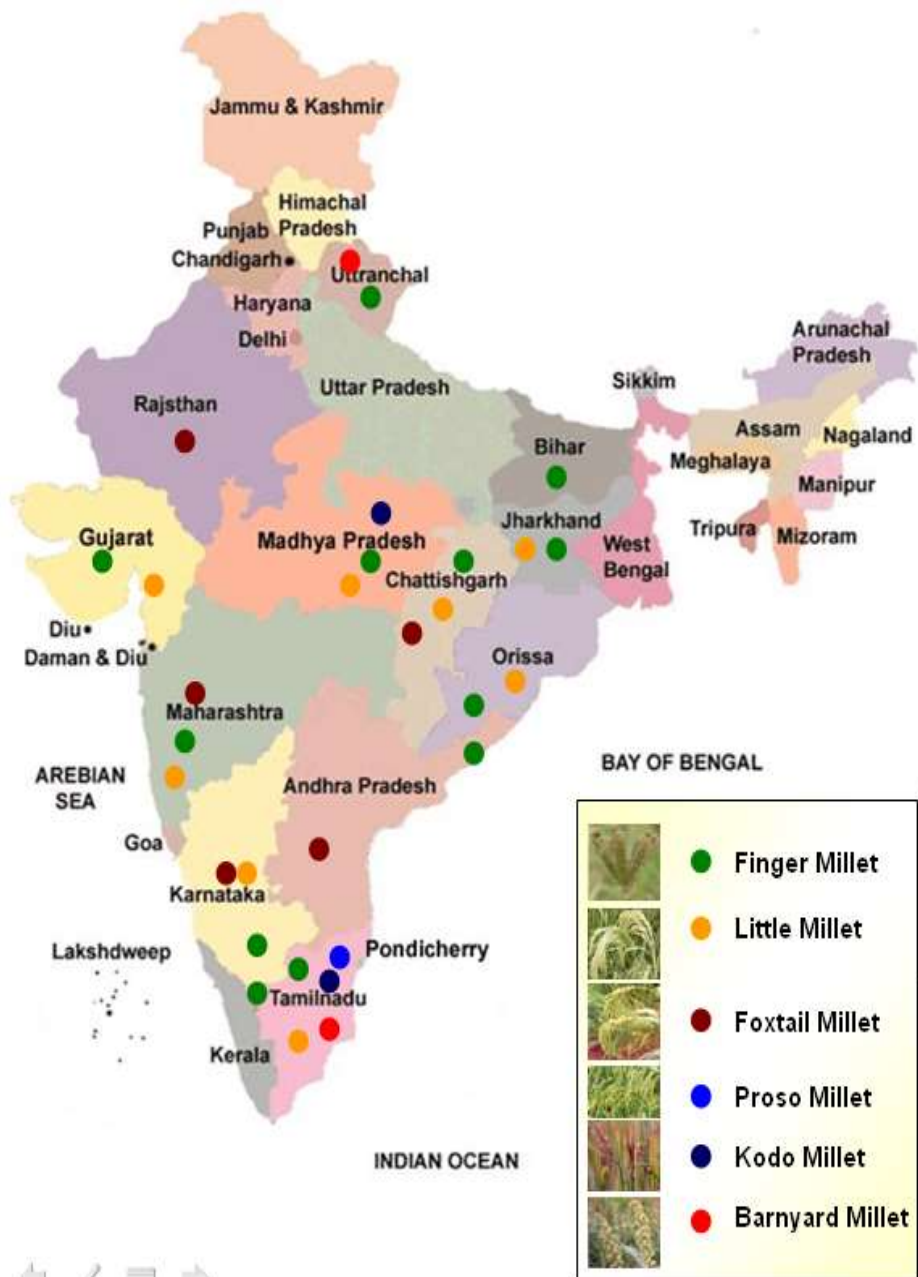


■ Area ('000 hectare)

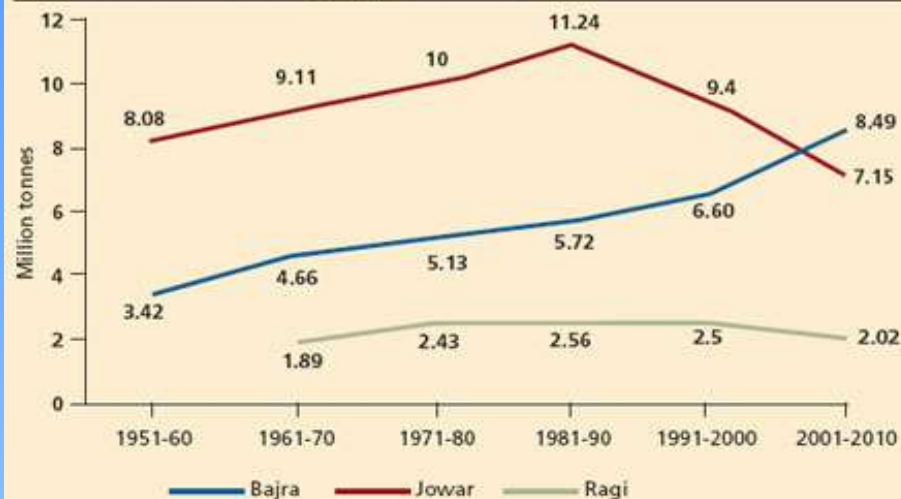
■ Production ('000 Tonnes)

▲ Yield (Kg/Hectare)

Distribution of Small Millets in India

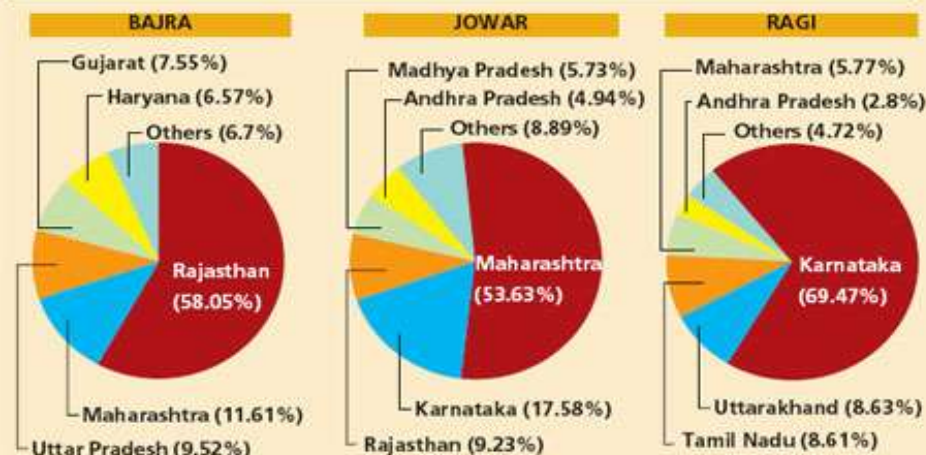


Nationwide average production



Source: Ministry of Agriculture

Major millet producing states in India (2009-10)



Source: Ministry of Agriculture

Area under millets



*2010-11 advance estimates; ** 2008-09 provisional figure, # hectares

Uniqueness of Millets



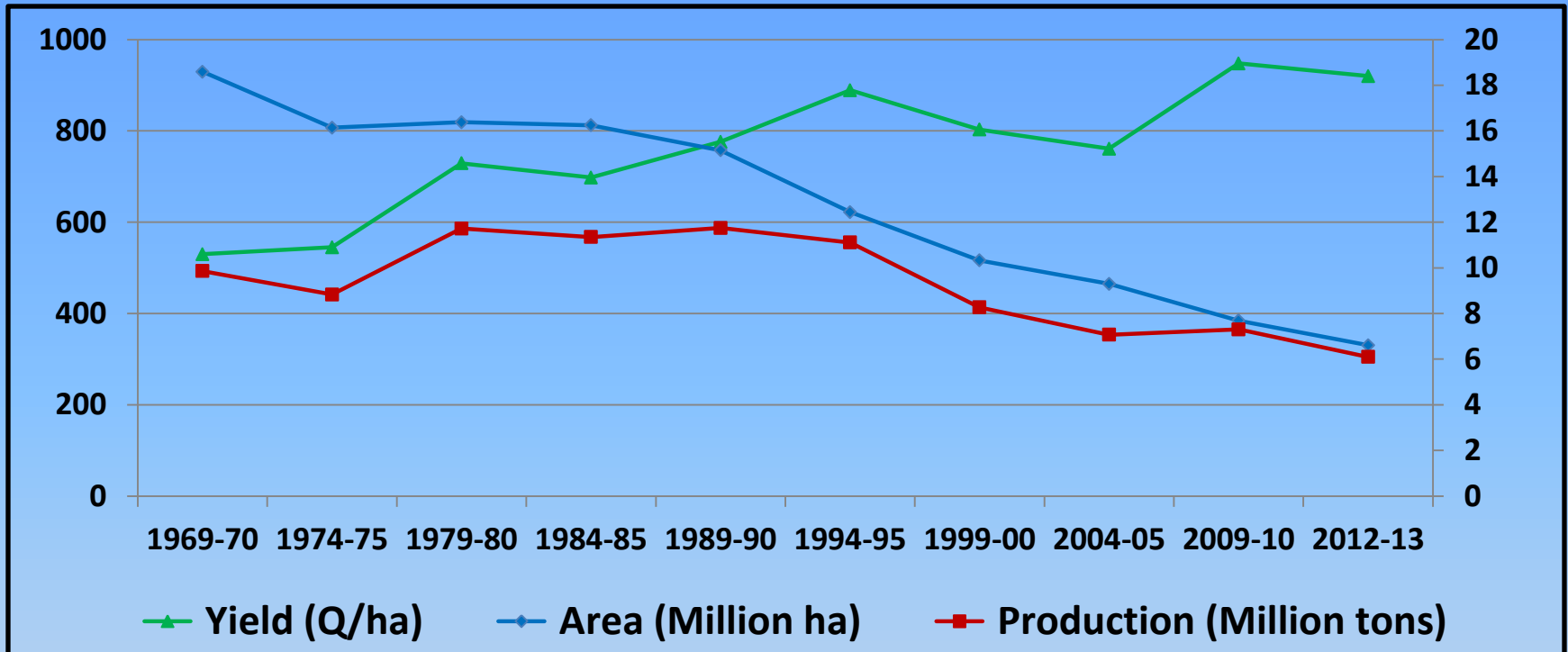
Proso Millet
(*Panicum miliaceum*)



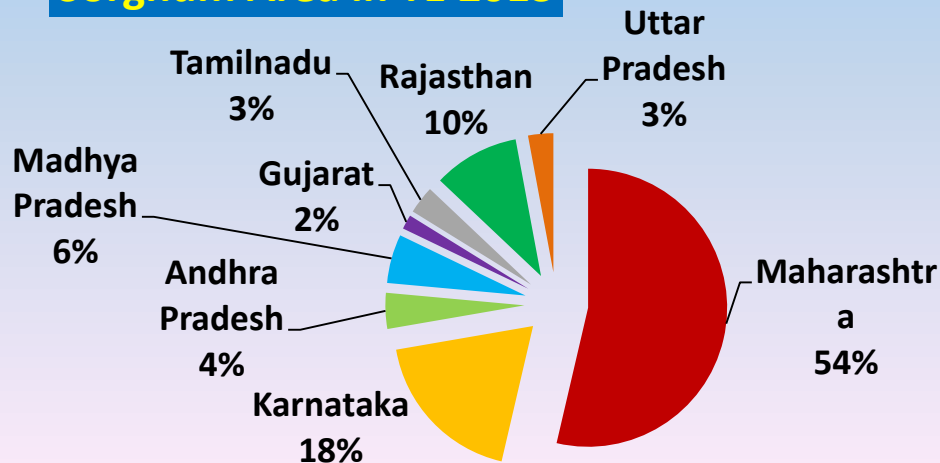
Little Millet
(*Panicum sumatrense*)

- + Staple food for many centuries in the semi-arid tropics
- + Suitable for dry lands with low rainfall
- + Require less water, mature early and cultivated in water scarce conditions
- + **Highly Resilient** to different ecological conditions- climate change
- + Unique nutritional properties -“**Nutri-cereals**”
- + Promising crops for Food & Nutritional security

All India trends in Area, Production and Yield of Sorghum : TE 1969-70 to TE 2012-13



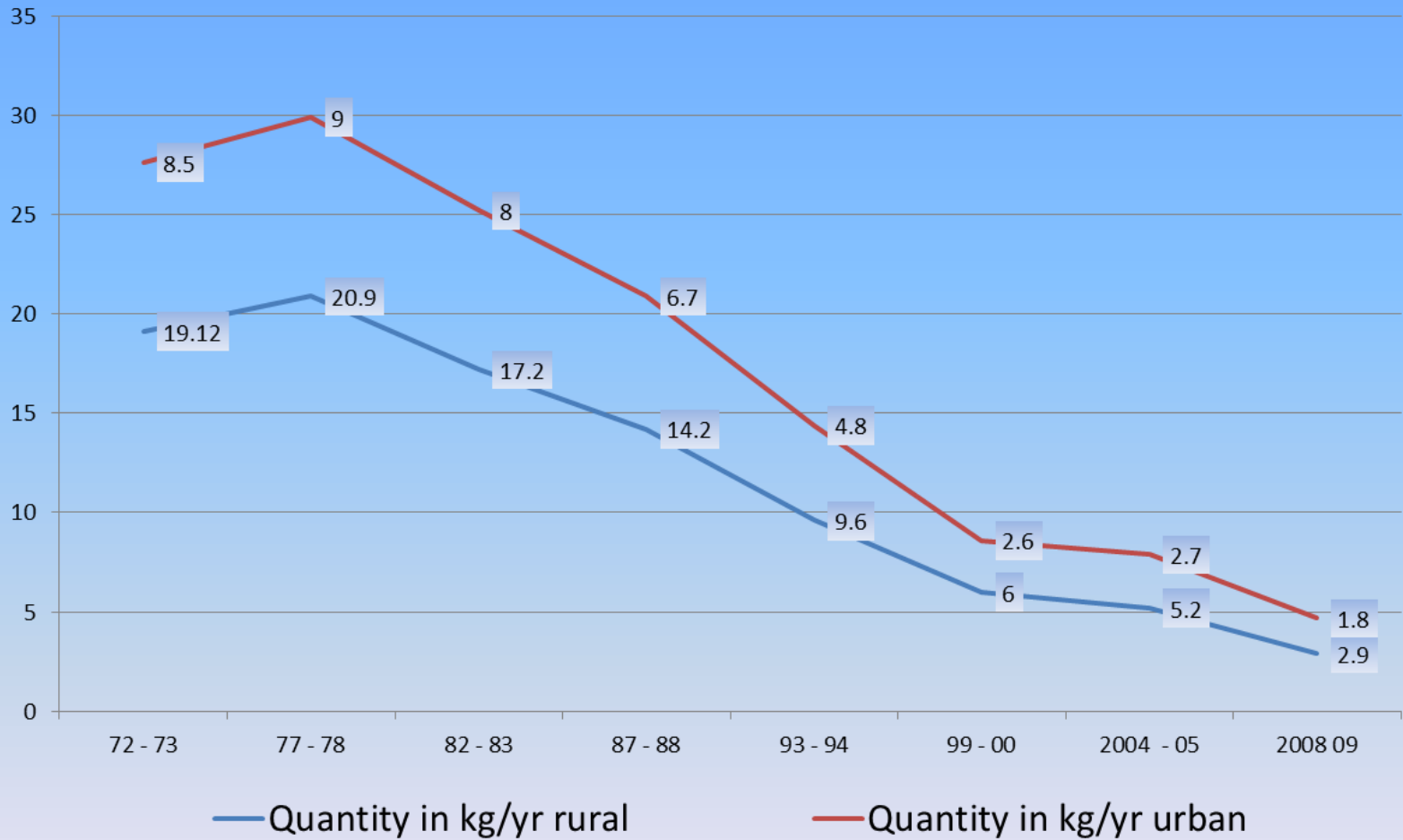
Sorghum Area in TE 2013



Change (%) in 2012-13 over 1970-71

Items	KHARIF	RABI
Area	-78	-41
Production	-51	+7
Productivity	+120	+82

PER CAPITA CONSUMPTION OF SORGHUM IN RURAL & URBAN AREAS (KG/MONTH)



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	<u>420</u>	2960	<u>80</u>	<u>1320</u>	3.3	2.5	<u>455</u>
Italian millet	123	33	<u>80</u>	310	2900	28	320	4.7	2	150
Finger millet	73	27	36	<u>3440</u>	2830	39	420	4.2	1.9	183
Little millet	125	19	22	140	2060	8	0	2	1.8	-
Kodo millet	77	15	<u>76</u>	170	2200	<u>93</u>	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.

GAPS IN MILLET PRODUCTION, UTILIZATION & MARKETING

- **Inconvenience** -Drudgeries in processing methods-consumption patterns
- **Lack of processing technologies and equipment**
- **Unexploited Nutritional merits of millets**
- **Inconsistent quantity and quality** -Safety and quality assurance
- **Low marketed surplus**- due to low remuneration to the farmers~ supply chain issues
- **Neglected policy front**- lack of both input subsidies (fertilizer, electricity and irrigation) & output price incentives -PDS supply of fine grains at reasonable cost
- **Changes in income, consumers tastes and preferences & urbanization**

Value chain in Sorghum/Millet

IIMR led consortium

Partners: ITC ABD, NIN & (Formerly ANGRAU)



Farmer



Community / SHG / KVK
(Procurement)



R&D, Nutritional Evaluation, Quality Check

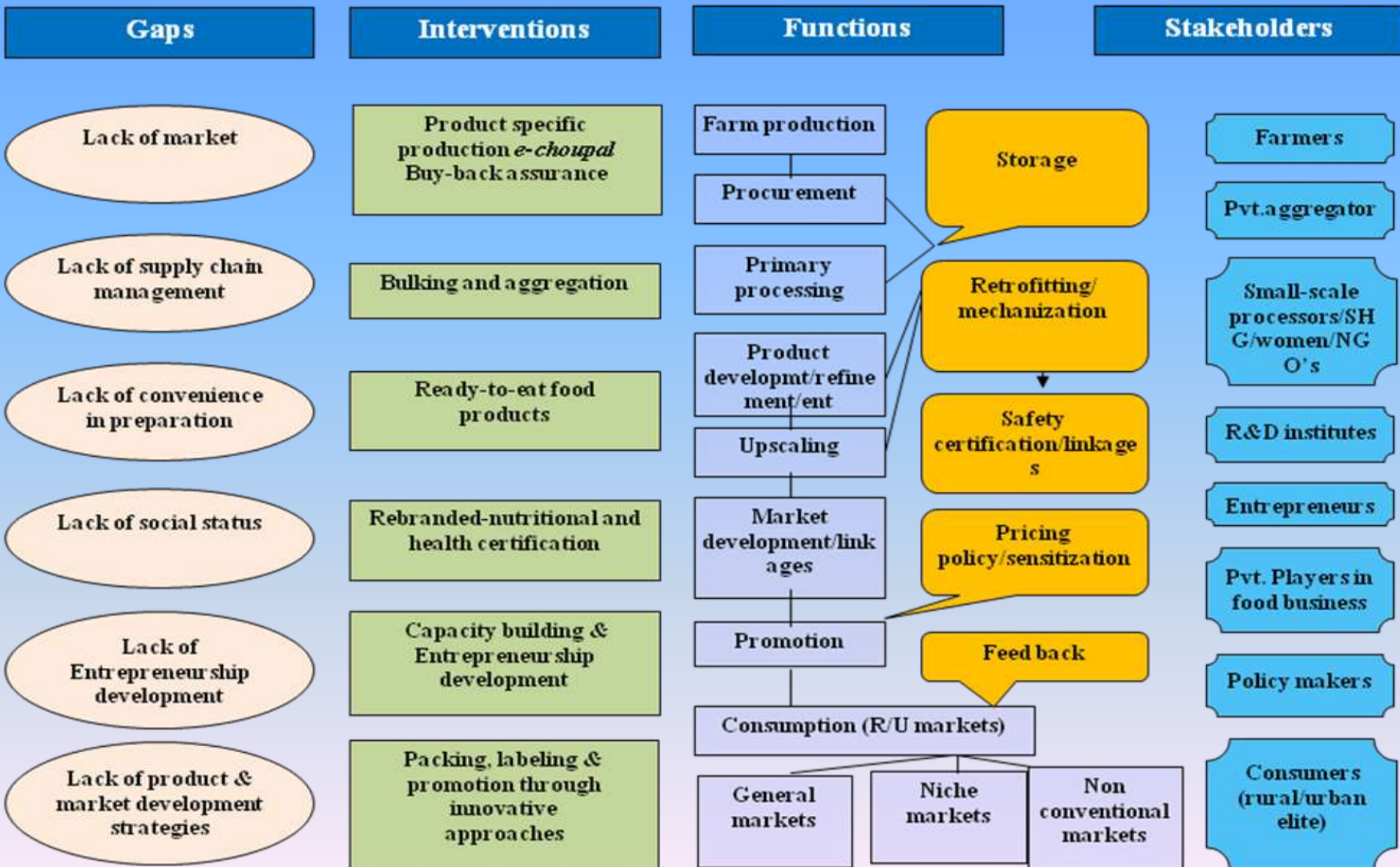


Processing

Consumers



Millets Value Chain



Sub project objectives

1. To enable **market-driven millets production for specific end-uses**, procurement and primary processing for continuous supply-chain management.
2. **Fine-tuning of the technologies** for development of millet food products and upscaling.
3. Testing for **nutritional evaluation** and safety of selected millet foods.
4. Assessing consumer acceptability, price and market strategies, and social and **policy imperatives**.
5. Developing **entrepreneurship** and appropriate strategies to promote and **popularize millets for commercialization** through value-addition and branding as health foods.



Features of value chain on millets/sorghum



Funded by National Agricultural Innovation Project (NAIP)

- End to end solutions- production to consumption approach
- Pilot scale using the new integrated Value chain approach
- PPP based consortium- Public institutions: NIN, SAU's & Private sector partner ITC
- Backward integration & forward integration ably supported by of ITC (ABD)
- IIMR has been identified as CENTRE OF EXCELLENCE WITH FUNDING SUPPORT BY THE DAC, GoI

Sub-project

Interventions & Achievements

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**



Farm level Training and demonstrations

Orientation workshop Borisawant



Popularization - Choupal Haat at Ambulga



Obj.2: Development of sorghum/millet food products and upscaling

- Diversification of processing technologies ~ flaking, extrusion, baking, popping, parboiling, semolina, & blending of flours
- Developed/fine-tuned/standardized 30 convenient sorghum/millet based products technologies
- Shelf life enhancement by 6 months through diversified processing like extrusion and flaking attained
- 30 processing machineries retrofitted and standardized optimizing conditions for making suitable for sorghum/millet including primary processing
- Of developed products, 3 products i.e multigrain atta, suji & cookies were upscaled
- Resolved drudgeries in processing, cooking and shelf life
- Established Centre of Excellence on sorghum processing lab catering research, production for business, training and quality control functions are being undertaken



Sorghum processing methods have been initiated under NAIP as a means of value addition

Primary Processing

- Destoning and grading
- Dehulling
- Milling
- Flaking
- Baking (Biscuits preparation)

Limitations of the Sorghum based product manufacturing

- Inconsistent availability of sorghum grain in quantity and quality
- Lack of knowledge processing interventions
- Inadequate promotional awareness on health aspects

Processing Machineries



Grading machine



Roasting & flaking machine



Dehuller



Semolina machine



Extruder

Upscaling of Processing machinery for sorghum/milletts



Multigrain Atta, / Rava





Upscaling

Sorghum Biscuits (500 -1000 kg/day)



Obj. 3: Nutritional evaluation and safety of selected millet foods (NIN)

- Established nutritional superiority of sorghum food products over other cereals & organoleptic evaluation of 17 sorghum recipes
- Clinical trials by NIN indicated that there is reduction in glycosylated haemoglobin levels among the diabetic patients from 7.9 to 7.2 due to replacement of 50% sorghum diet
- GI & GL of sorghum processed foods found to be lower than wheat and other cereals
- The anthropometric and biochemical indices have not altered significantly due to switch over to sorghum diet among the school children –clinical trials conducted for 8 months
- HACCP compliance established –entire value chain process



Obj. 4: Assessing consumer acceptability, price and market strategies, and policy imperatives

- Consumer acceptability studies - **Commodity India** (independent agency) & identified **9 sorghum products** - high market potential - targeted for commercialization
- **Pricing of products** determined & feasibility analysis established product-wise
- **Centre of Excellence (CoE) on sorghum processing set up in IIMR**



Entrepreneurship Development (IIMR-ITC-PJTSAU-NIN)

1. Trainings
2. Capacity building measures
3. Demonstrations
4. Hands on experience
5. Entered MoU for technology
6. Licensing

Clientele:

Rural women- 2000

Urban entrepreneurs-300

SHG's -3000

Farmers-5000

Number of trainings:

- INSIMP -16 trainings for 1000 stake holders from AP, Karnataka, Tamilnadu and Maharashtra
- paid training programmes
- Exposure visits >1000 nos

Topics:

- Primary food processing
- Secondary food processing
- Retrofitting of machinery
- Handling on operations
- Recipe making
- Packing & Nutritional labelling
- Marketing & Creation of awareness
- Trouble shooting

Locations:

In house at IIMR

Other locations

Parbhani,
Adilabad, Mahabubnagar,
Solapur & Nanded
other locations



Entrepreneurship Development

Branding, Packaging
& marketing



Primary Processing



Secondary Processing



Post Harvest Training at IIMR



Demonstration in Centre of Excellence (CoE)



Women empowerment

- **Trained 2000 women** on sorghum processing and marketing
- **Currently 50 women are engaged** in sorghum processing across the country
- **MoU with 4 women entrepreneurs**
- **The processing of sorghum/millets and requires less capital investment**
- **Increasing demand of convenient and health foods, women were effectively exploiting the advantage to target sorghum among health conscious urban population.**



Commercialization Interventions

- 9 Sorghum product technologies commercialized on pilot scale through DSR's brand 'EATRITE' while 4 products - brand ANGRAU foods
- 15 MoUs including multinational M/s Britannia were made under different business plans
- Currently marketed through Heritage fresh retail chain & Choupal Fresh- ITC in Hyderabad~ unorganized retail sector
- Nutritional Labeling of Eatrite products for highlighting the nutritional benefits vis-à-vis over existing products.
- Roping of small / medium scale entrepreneurs vis-à-vis large players of food industry in different channels
- Horizontal expansion of Eatrite Products- New Delhi - NAFED Bazaars; Bangalore - Kottaram Group
- **Thus , convenience RTE/RTC options are provided to consumers among sorghum foods**

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



Jowar rich multigrain atta



Multigrain Roti

1000 gms SKU
Shelf life 3 months



Jowar Flakes

500 gms SKU

Shelf life 4 months



Jowar cookies



100gms SKU



Jowar rava (suji)

500gms SKU

Three variants
Jowar idly rava
Jowar upma rava
Jowar khichidi rava



Jowar pasta

80gms SKU



Jowar Vermicelli



200 gms SKU



Sorghum recipes

Sorghum instant pongal



Sorghum chivda

Sorghum Muesli



Products in pipeline

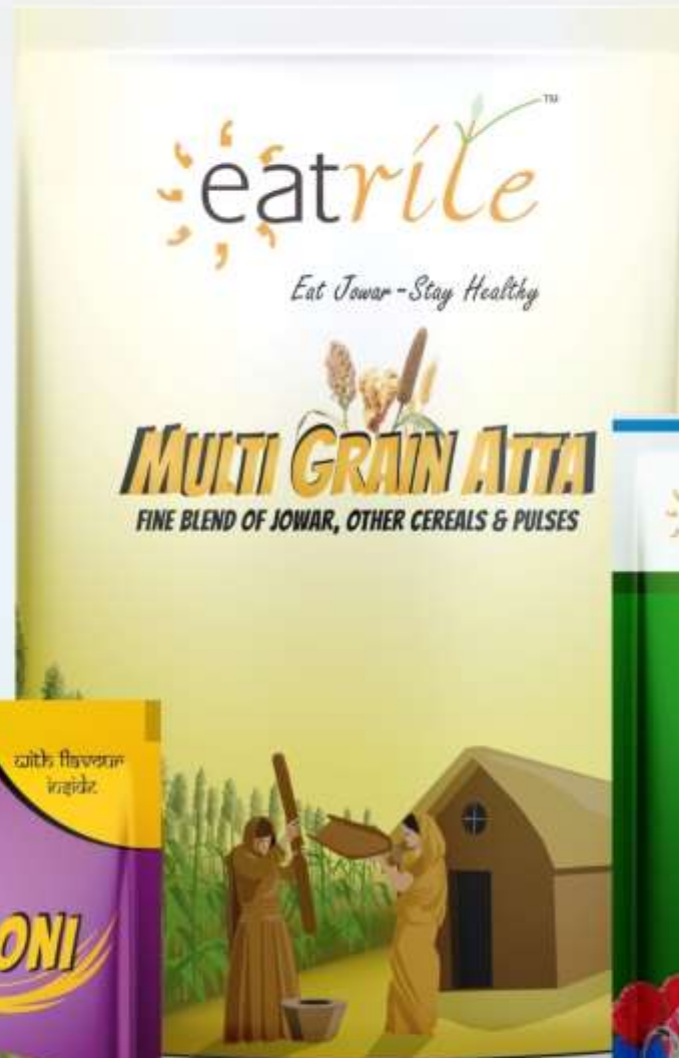


Puffs from sorghum

**Sorghum extruded
product**



Packaging & Labeling



Eatrite products on shelf



MoU signed between IIMR and Britannia



Promotional campaigning

- **Outsourced agency** to promote sorghum/milletts
- Created awareness on Nutritional merits and health benefits on sorghum/milletts to both urban and rural consumers
- **360 degree communication** –ATL and BTL communications adopted aggressively
- Specially **fabricated exhibition van** –jowar rath was used to carry the message
- New age Media. **Massive awareness** is created on sorghum as health and nutria food in Hyderabad - imparting **awareness to across 400000 consumers**
- **Rural consumer drive** was undertaken by ITC rural choupal haats to sensitize the convenience and nutritional aspects of the outputs from the sub-project
- Distributed literature and **employed TV, print media**
- More than 200 Roadshows, in mall promotions, nutritional campaigns
- **Showcased our technologies in important national and international events**

Jowar Rath- Fabricated mobile exhibition van



eatrite™

Eat Jowar - Stay Healthy



**Directorate of Sorghum Research
Brand**

OUTDOOR HOARDINGS



Exhibitions, Trade Fairs & Road Shows



Medians



AWARENESS THROUGH PUBLIC TRANSPORT



ITC arm, ICAR bid to promote sorghum consumption

Offer comprehensive solution to farmers — from sowing, to production and marketing

K.V. Ramanaiah
 (Hyderabad, Aug 24)
 A small but interesting experiment is being conducted in two districts of Andhra Pradesh and Maharashtra to introduce sorghum and other millets to urban consumers.

A corporate has joined hands with the Indian Council of Agricultural Research (ICAR) and some other public institutions to promote the consumption of nutrient-rich sorghum.

In order to promote urban consumption, the researchers partners have begun marketing 'Jai Jai Sorghum' that could help tackle diabetes and obesity. And to attract farmers, they are offering seeds that could give them better yields, besides a 'backpack effect'.

The two-year-old project, which is midway through implementation, is being taken up by ITC through its agri-business arm and the National Research Centre for Sorghum (NRCS), Hyderabad. The National Institute of Nutrition (NIN) and the Institute of Food and Agricultural Sciences (IFAS), Hyderabad, are also roped in to promote the project.

The ITC's \$80 million arm is using the \$-funded arm as a communication platform for stakeholders in the project, which is being taken up under the National Agriculture Innovation Programme of ICAR.

personal from different quarters. Farmers need it as a comprehensive solution, right from sowing to production, that, to reach out to the market. Creation of demand is also very important," Mr S. Dasgupta, Chief Executive Officer of ITC's Agri Business Division, told Business Line.

"For now, we are focusing on the rural markets. We are not looking to reach in the urban areas," he said.

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implications

"We are not looking at a one-off experiment. We are trying to evolve a sustainable model that helps the farmers and other stakeholders work as a long-term model, that could work for other millets as well. It should be viable for all stakeholders," Mr S. Dasgupta said.

"The area under sorghum, especially khatu sorghum, has come down drastically to 2 million hectares from 12 to 16 lakh years ago. However, cultivation continues to be prime source of direct food,

used mainly as a feed," said Mr S. Dasgupta, Principal Scientist at the Directorate of Sorghum Research.

handholding

"In order to get the confidence of the consumers, ICR has launched Jai Jai Sorghum and entered into an agreement with Maharashtra Foods to market the produce in the state capital. "We are going to market sorghum under various guises as well," Mr S. Dasgupta said.

గురువారం సెప్టెంబర్ 18, 2010

To
 The *Business Line*
 70, High Street, Bangalore

రుచుల్లో మిస్సయ్యో జరిన్ను

అన్ని రుచుల్లోనూ పోటీకొల్పే పోషక విలువలను కలిపించి, అన్నింటికంటే ఎక్కువ పోషకాన్ని అందించే రుచుల్లో మిస్సయ్యో జరిన్ను. జరిన్ను చేయడం అనేది చాలా సులువైన పని. ఇది ఎవరికైనా ఉపయోగపడేలా చేయడం చాలా సులువైన పని. ఇది ఎవరికైనా ఉపయోగపడేలా చేయడం చాలా సులువైన పని. ఇది ఎవరికైనా ఉపయోగపడేలా చేయడం చాలా సులువైన పని.



జరిన్ను

జరిన్ను చేయడం చాలా సులువైన పని. ఇది ఎవరికైనా ఉపయోగపడేలా చేయడం చాలా సులువైన పని. ఇది ఎవరికైనా ఉపయోగపడేలా చేయడం చాలా సులువైన పని. ఇది ఎవరికైనా ఉపయోగపడేలా చేయడం చాలా సులువైన పని.

పిల్లలకు తీపి లడ్లు

పిల్లలకు తీపి లడ్లు చేయడం చాలా సులువైన పని. ఇది ఎవరికైనా ఉపయోగపడేలా చేయడం చాలా సులువైన పని. ఇది ఎవరికైనా ఉపయోగపడేలా చేయడం చాలా సులువైన పని. ఇది ఎవరికైనా ఉపయోగపడేలా చేయడం చాలా సులువైన పని.

వేపి వేపి గాడియ

వేపి వేపి గాడియ చేయడం చాలా సులువైన పని. ఇది ఎవరికైనా ఉపయోగపడేలా చేయడం చాలా సులువైన పని. ఇది ఎవరికైనా ఉపయోగపడేలా చేయడం చాలా సులువైన పని. ఇది ఎవరికైనా ఉపయోగపడేలా చేయడం చాలా సులువైన పని.

చిన్ను చేసేం

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Jowar just got tastier

Dr B. DAYAKAR RAO

Who said jowar can't be a part of your diet unless you take a liking to the chewy jowar roti? With dietician, nutritionist and fitness enthusiasts vouching for the health benefits of the wonder grain, jowar is now available in many easy-to-use formulae, that can pack a punch into your meals in a jiffy.

The highly nutritious, non-glutinous jowar has high dietary fibre (that is missing in rice and maida) and it aids in digestion. That's not all, it's rich in vitamins and minerals — good news for your skin and hair! Apart from being an important source of nutraceuticals, including anti-oxidants such as cholesterol-lowering waxes, it is also a boon for diabetic patients as it digests slowly. To make the most of the nutrients available in jowar, pick up ready to use jowar products that can be added to your pasta, idli, and even cakes. Use jowar-based vermicelli for healthy breakfast treats or use jowar flakes to whip up *pheta* and *chudsa*.

Another interesting pick would be the jowar-based multi-grain, where jowar is blended with wheat. So all you wheat lovers can enjoy the health benefits of jowar without cribbing about missing the taste of wheat! Ever wondered why the *dosas* dished out in restaurants turn so crisp, while the one you make at home looks limp? Well, their secret is jowar. Mix a little jowar to your *dosa* batter and watch how your *dosas* transform. Mixing jowar to the batter, one can whip up lip-smacking *vadas*, *murukus*, *pakodas* and other snacks.

Dosa

INGREDIENTS
 100 gms blackgram dal
 300 gms fine *rawa* mixed with jowar
 1 tsp oil
 a pinch of baking powder
 salt to taste
 water as required

METHOD
 Soak blackgram dal overnight for eight hours, drain the water and grind into a fine batter. Add salt, baking powder and the jowar-*rawa* mix. Mix thoroughly. Allow it to ferment overnight. Add a teaspoon of oil on the pre-heated *rawa* and pour the batter on it. Spread the batter scoop into a fine round shape and fry till the *dosa* is crisp.

The writer is a nutritionist and scientist with National Research Centre for Sorghum



REINVENTING SORGHUM AS HEALTHY FOOD

National Research Centre for Sorghum comes out with 'Jai car foods'

Support and consultation are essential for such an initiative. However, the support in this regard is what the Hyderabad-based National Research Centre for Sorghum (NRCS) has been working with. The NRCS has been working with the National Institute of Nutrition (NIN), Hyderabad, and the Institute of Food and Agricultural Sciences (IFAS), Hyderabad, to promote the consumption of nutrient-rich sorghum. The NRCS has been working with the National Institute of Nutrition (NIN), Hyderabad, and the Institute of Food and Agricultural Sciences (IFAS), Hyderabad, to promote the consumption of nutrient-rich sorghum.

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Multigrain containing equal number of grains.



IN MALL PROMOTIONS



7.5 tons of Eatrite products supplied to Future Retail Limited (Big Bazaar)



Awards received by IIMR as a result of NAIP Intervention



South India Hospitality Award 2013

Best Innovator Award, FICCI 2014





National Brainstorming Session, November, 2010



Global Consultation on Millets, 18-21 December 2013

POLICY SENSITIZATION

- **Sensitized Policy makers** and other stakeholders through organizing National Seminar on Millets 2010.
- **INSIMP** a Rs 300 crore initiative by Government of India (DAC launched in 2011 and is still in operation in millet growing states

Offshoot of NAIP-MVC up to **500 processing clusters** set up so far in 8 states under INSIMP in MH, KA, and AP have launched supply of millet foods on pilot scale- **technology backed by IIMR**

- **Mainstreaming of millets in public funded welfare programmes**



Establishment of CoE on Sorghum an initiative under INSIMP by DAC

The Centre of Excellence (CoE) is now in full swing disseminating the technologies developed under NAIP to people from across the country



P K Basu, Secretary, Ministry of Agriculture, GoI Inaugurates Centre of Excellence for Sorghum value addition and Processing



Honble Minister visits to CoE



Outstanding Award from ICAR



A group of Foreign Visitors at CoE

Way forward

1. **Change the perceptions** of NUS as unimportant ‘poor man’s food’.
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. Involve the **full range of stakeholders** in participatory partnerships to promote and conserve NUS, particularly farmer and women’s organizations.
5. Find innovative ways to upgrade NUS market value chains and to **develop and market value-added products.**
6. Put in place legal frameworks, policies and financial incentives to promote NUS and **encourage agricultural diversification.**
7. **Encourage collaboration** in researching, promoting, conserving and sustainably using NUS, and coordinate activities and multi stakeholder platforms across sectors.

To include all the millets under IIMR



Partners in commercialization of Eatrite sorghum products

S. No.	Organization	Location	Purpose
1	M/s Future retail limited	Mumbai	Marketing
2	M/s Adroit foods	Bangalore	R & D
3	M/s Britannia Industries	Bangalore	R & D
4	M/s Hope Blessing pvt Limited	Delhi	Marketing
5	ITC (foods) Ltd,	Bangalore	licensing
6	M/s Heritage Fresh Ltd	Hyderabad	Marketing
7	M/s Bhagyanagar Foods	Hyderabad	Licensing
8	M/s Vegan Enterprises	Hyderabad	Licensing
9	M/s GUV Foods	Hyderabad	Licensing
10	M/s Kottaram Foods	Bangalore	Licensing
11	M/s Nova Traders	Hyderabad	Marketing
12	M/s Sri Venkateswara enterprises	Hyderabad	Marketing
13	M/s Chandurotis	Hyderabad	Marketing
14	M/s Matheses	Hyderabad	Technology licensing
15	M/s Madhav Kalyan Foods	Rajahmundry	Marketing

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

- 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.
- **Kodo millet:** Highest yield of 3661 Kg/ha in TN and 1333 Kg/ha in Chhattisgarh under FLD as against NAY 646 Kg/ha (XI Plan).
- **Italian millet:** Yield of 2375 Kg/ha in Karnataka under FLD.
- **Little millet:** Yield of 1908 Kg/ha in TN and 1703 Kg/ha in M.P. under FLD.
- **Barnyard millet:** 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.

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).

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

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 high100 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**.

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.

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	14.	Maharashtra	8
2.	Arunachal Pradesh	7	16.	Meghalaya	3
3.	Assam	4	17.	Mizoram	4
4.	Bihar	11	18.	Nagaland	4
5.	Chhattisgarh	5	19.	Odisha	6
6.	Gujarat	8	20.	Punjab	3
7.	Haryana	5	21.	Rajasthan	12
8.	Himachal Pradesh	5	22.	Sikkim	2
9.	Jammu & Kashmir	7	23.	Tamil Nadu	10
10.	Jharkhand	11	24.	Tripura	2
11.	Karnataka	11	25.	Uttar pradesh	20
12.	Kerala	1	26.	Uttarakhand	4
13.	Madhya Pradesh	16	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.

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.

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



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