



ज्वार समाचार Jowar Samachar



Quarterly newsletter on sorghum from NRCS/ICAR, India

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Annual Group Meeting 2005

Dr. Gautam S Kalloo, DDG (CS&H), ICAR inaugurated the 35th Annual Sorghum Group Meeting organized by Acharya NG Ranga Agril. University (ANGRAU) and



Dr. Gautam Kalloo, DDG (CS & H), delivering the keynote address

National Research Centre for Sorghum (NRCS). He stated that there is a need to promote the consumption of sorghum, a staple nutritious cereal, among the people. Use of sorghum as fodder and industrial uses should also be given more importance. Echoing these sentiments, Dr. IV Subba Rao former VC of ANGRAU said that the sweet sorghum as a source of bio-ethanol, bio-diesel, and potable alcohol needs to be promoted. He felt that the research should also be more focused in these areas. Dr. NGP Rao, former Chairman of the ASRB felt that sorghum is the most profitable cropping system to get higher economic returns to the dryland farmers.

The Project Coordinator highlighted the steps taken to increase competitiveness, value-addition and alternate uses of sorghum. He stressed the need for higher collaboration between public and private sector to realize the set targets. Policy development and promotional activities undertaken by NRCS/ICAR were also highlighted. A copy of the full proceedings is available at NRCS or at <http://www.nrcsorghum.res.in>

High protein grain sorghum landrace

A high protein (14.34%) grain sorghum landrace (Accession No. MASC-5/2002) was collected from Bundelkhand region of UP. It is cultivated in Hamirpur district and locally known as *pola*. It is grown by some farmers for home consumption only. The seeds are bold (3.31g/100 seed), dimpled, light brown in colour, and contain high protein but low tannin (2.09mg/grain). Since, most of the released varieties of sorghum have

protein ranging from 9 to 12%, utilization of this high protein material in breeding programme may be useful for improvement of protein content in grain sorghum varieties.

A scented sorghum landrace (Accession No. MASC-1/2002) possessing basmati rice like aroma was also identified from Bundelkhand. This was collected from Sarila village of Hamirpur

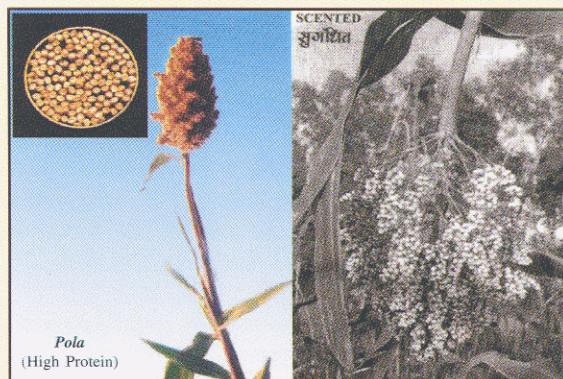
district of UP. The earheads are recurved, awny, deciduous. It belongs to *durra* race. The seeds emit mild aroma like basmati rice. The seeds are dimpled, bold (3.55g/100seeds) and are with soft endosperm (hardness-8.63kg/seed., OSK 201 grain hardness tester type E). The seeds possess high protein content (11.4%) which is almost equal to wheat.

The nutritional quality of protein of this sorghum seeds is also rated to be good as indicated by the lysine content (1.6 mg/16 mg N), chemical score (22.72) and protein quality index for adults (73). This local type can be utilized in the breeding programme for transfer of aroma into a good agronomic background.

VS Singh and Mukesh Mohan
CSAUA&T, Mauranipur

First report on Sorghum bicolor ssp. bicolor race guinea subrace conspicuum

In the sorghum collections of 6201 accessions that originated in India, *durra* race was observed in 3575 (58% of total) accessions followed by *guinea* race with 773 accessions (12%). The *guinea* is the important sorghum race next to *durra* for sorghum improvement. It is a West-African race, and is dominant in Savannah sorghum belt. Some cultivars are remarkably tolerant to flooding. The morphological affinities and distribution indicate that the race *guinea* was probably derived from selection among wild members of the variety *arundinaceum*. The *guinea* race is further divided into three sub-races based on seed size. They are, *margaritifera* (small seeds), *guinea* (medium seeds), and *conspicuum* (larger seeds). The spikelets of the guineas are derived and specialized and there is nothing resembling them in the wild forms. The long glumes and the open panicles are considered primitive, but otherwise the *guineas*

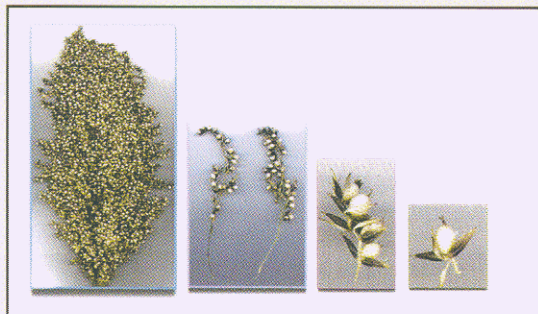


National Research Centre for Sorghum (NRCS)

Rajendranagar, Hyderabad, A.P., India. website : <http://www.nrcsorghum.res.in>

has evidently been considerable selection for good weathering and storage qualities.

Seeds of guinea accessions are often hard and corneous, keep their colours well, and are resistant to insect damage under traditional storage conditions. The open pendulous panicles and gaping glumes probably help reduce mould damage under



wet conditions. Grain is flat dorso-ventrally, sublenticular in outline, twisting 90 degrees at maturity between gaping involute glumes that are nearly as long, or longer than the grain. *Conspicuum* is the sub-race of guinea, and was reportedly

S.No.	Conspicuum characters	Snowden (1936)	Elangovan
1.	Plant height	3-4.5m	2.5-3.5m
2.	Leaves	15-21	10-14
3.	Blades length (leaf length)	1m long	72-92 cm
4.	Blades wide (leaf width)	10cm	5-9 cm
5.	Panicle	Oblong to elliptic	Elliptic
6.	Panicle length	20-55 cm	40-47 cm
7.	Panicle width	8-20 cm	5-7 cm
8.	Panicle compactness	Loose and open, Loose-necked	Loose
9.	Glumes	Equal	Equal
10.	Grains	Widely-gaping,	Widely-gaping
11.	Grain shape	Flattened	Flattened
12.	Grain colour	White, yellow or red	

found in South Zambia, North Zimbabwe and now from Bundelkhand (UP). This sub-race was collected for the first time in India during the exploration undertaken by NRCS in Ganga basin and Bundelkhand. The characteristic features of the *conspicuum* sorghum IC 333435 are presented in the table. The material is having the important characteristics of reduced mould damage due to the gaping glumes and is being used in sorghum improvement programme of NRCS. Seeds are deposited in National genebank (NGB) at New Delhi.

M. Elangovan
NRCS, Hyderabad

New cultivars identified for release

CSH 21 (SPH 1342)

Mahendra seeds bred this hybrid for kharif sorghum growing areas. The pedigree of the hybrid is MLSA 848 X MLR 34. It is a tan plant, 190-200 cm high, dull green midrib, semi-compact spindle shape panicle, and medium round cream colour seed. It is recommended for cultivation in zone II of India.

CSH 23 (SPH 1290)

This kharif sorghum hybrid is bred at NRCS. The pedigree of the hybrid is MS 7A x RS 627. It is a tan plant, tall (180 cm), has dull green midrib, medium bold or white seed, and matures early (103 days) to avoid terminal drought. It is recommended for cultivation in Maharashtra, Karnataka, AP, MP, Rajasthan, UP and Gujarat states of India (zone II and III)

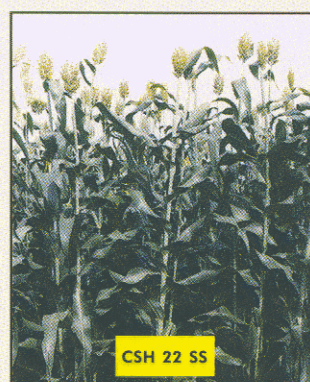


CSH 20 MF (UPMCH 1101)

It is multi-cut forage sorghum hybrid bred at Pantnagar. The pedigree of the hybrid is 2219 A x UPMC 503. The plant type is tan, has dark green heavy foliage with green midrib, medium thick juicy stem, and resistant to foliar diseases. It is recommended for cultivation in all zones of India.

CSV 18 (SPV 1595)

This rabi variety is a selection from the cross CR 4 x IS 18370 and bred at Parbhani for cultivation under irrigation and named as *Parbhani Jyothi*. It is tall (227 cm), has thin stem, with non-senescence habit, dull midrib, and tolerance to aphid and lodging. It is recommended for cultivation for irrigated rabi.



CSH 22 SS (NSSH 104)

This sweet sorghum hybrid is bred at NRCS with the pedigree of ICSA 38 x SSV 84. It has yellowish green stem with one visible long notch at bud initiation site. The cane and juice yields are good. It is moderately tolerant to shoot fly. It is recommended for cultivation in all zones of India during kharif and summer seasons.

CSV 19 SS (RSSV 9)

Rahuri has developed this sweet sorghum variety with the pedigree of RSSV 2 x SPV 462 and named as RSSV 9. The plant colour is tan with purple coleoptiles, has dull green midrib, pearly white medium seed, high green cane yield, juice yield. It is tolerant to shootfly. It is recommended for cultivation in Maharashtra, Karnataka, Andhra Pradesh, Madhya Pradesh, and Southern Gujarat (Zone II) of India.

Note: All cultivars listed are approved by central sub-committee on crop standards, notification and release of varieties. Notification awaited.

Compiled by KV Raghavendra Rao and M Elangovan
NRCS, Hyderabad

16-earhead sorghum plant



The plant of sorghum grown in the backyard of Sri. A. Umapathi, resident of Chinchod village, Farooq mandal, Mahaboobnagar district, Andhra Pradesh, has produced 16 grain bearing earheads from a single plant. The plant, was over 17 feet height, had 16 branches (nodal tillers) and each branch produced one earhead. The earheads produced from main and nodal tiller are planted separately at NRCS for further

evaluation.

Chari Appaji and M Elangovan
NRCS, Hyderabad

Novel technique to induce flowering in sorghum x sugarcane hybrids

NRCS received 10 plants of the inter-generic hybrid *Sorghum bicolor* X *Saccharum officinarum* (ICSA 56 x IJ 76-316) (2n = 124) from the SBI, Coimbatore. Various experiments were conducted involving treatment with plant hormones, and chemicals to induce flowering. Normally, sugarcane and its hybrids flower at Coimbatore climatic conditions. Considering this specificity of climate the photo-periodic and hormonal treatments were given to induce flowering at this centre. Three plants of the hybrid that received these treatments produced panicles. The treatments have lengthened nodes and made the plants tall with more number of leaves. By this technique the plants attained more than three times the normal height (3 m tall) and started flowering. The control (1 m tall) plants did not flower. The flowering hybrids were used for back-crossing with sorghum.



SV Rao,
NRCS, Hyderabad

Germplasm registered at NBGR

INGR No. 04094 (Indian Germplasm Registration Number) has been obtained for the CMS line 1409 A&B (IC 432861) developed at MPKV, Rahuri with the parentage of 104B x ICSB 36209. It is thermo-insensitive, high yield and has long peduncle.

JV Patil
MPKV, Rahuri

Ethanol from millets encouraged - MITCON seminar

A seminar was organized by MITCON Consultancy Services, Pune regarding the manufacture of ethanol from cereal grains especially from kharif sorghum at Hotel Pride, Pune on 15th June 2005. About 30 participants representing distilleries, chemical industries, NABARD, NGO's, SAUs, and ICAR attended the meeting. The main objective of the seminar was to discuss techno-economic feasibility of manufacture of ethanol from cereal grains (sorghum, pearl millet and maize) prepared by M/s MITCON Consultancy Services for DSIR, DST, Govt. of India, New Delhi and to make suitable recommendations to the Government. The meeting recommended the following:

1. The Government of India may enact a law that only grain-based alcohol be used for potable purposes, while molasses-based alcohol should be reserved for Industrial and fuel blending. (required in WTO regime).
2. Phased permission may be given to start grain based distilleries (about 6 nos) in Amaravati, Beed, Jalgaon, Solapur, Latur, etc., in Maharashtra.
3. NRCS should help planning to produce large quantity of Kharif sorghum grains as and when indents come from alcohol industry.
4. Existing sorghum HYVs should be evaluated for higher starch, fermentation efficiency and alcohol yield and to develop authentic database that can be kept updated constantly.

SS Rao,
NRCS, Hyderabad

Doreen Mashler Award

The "Doreen Mashler Award" from ICRISAT for 2004 was conferred to the team consisting of Drs Belum V Subba Reddy, ICRISAT, N Seetharama, Director, NRCS, ST Boriker, MAU, Parbhani and P Satish Kumar, M/s. Prabhath Agri-Biotech (P) Ltd, Hyderabad, in recognition of their valued contribution to global sorghum research. This was awarded by His Excellency Mr. Yasukuni Enoki, the Ambassador of Japan in India, during the celebrations of the ICRISAT Annual day.



Demonstration of the community drier to overcome mould and weathering problems

The grain quality deteriorates when it gets drenched in rain during the period between physiological maturity and normal harvesting. Harvesting the panicles at physiological maturity and artificial drying to 12-15 % moisture will reduce the grain deterioration. The demonstration of the community drier was held at Parbhani under the NATP project "Total grain quality management of kharif sorghum" (RNPS 23). Dr CD Mayee, Agril. Comm., New Delhi was the chief guest and Drs VM Pawar, VC, MAU, N Seetharama, Director NRCS, PR More, DoR, MAU, B Venkateswarlu, CRIDA, MB Misal, Soni and PB Solunke, MAU and about 300 farmers from Maharashtra, Karnataka and AP attended the demo. Farmers envisaged interest in having a similar drier in their districts. The VC emphasized the need for installing driers, at least one in each district. The message of harvesting at physiological maturity and drying to prevent grain moulds during monsoon was effectively conveyed. Drs. S Audilakshmi, S Indira and C Aruna from NRCS, organized this event in association with the project associates from different SAUs.

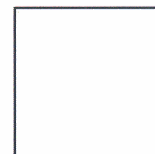


Demonstration of the community drier to improve the grain quality of kharif sorghum to the farmers. Also seen in the picture are Dr. C D Mayee, Agriculture Commissioner, New Delhi (on right side) and Director, NRCS (second from left)

S. Audilakshmi,
NRCS, Hyderabad



Printed Matter



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