

Progress Report AICRP ON SORGHUM *Khharif 2016*

(47th AGM AT UAS, GKVK Bangalore)
22-24 APRIL, 2017



FORAGE AND MILLET SECTION
Department of Plant Breeding & Genetics
Punjab Agricultural University, Ludhiana

Centre: PAU, Ludhiana

1. Name of the officer - Incharge (AICRP- Sorghum):	Dr U S Tiwana
2. Associated Scientists (AICRP- Sorghum) and their discipline:	1. Dr Devinder Pal Singh 2. Dr Ravinder Kumar 3. Dr Harpreet Kaur
2. Associated Scientists from state project:	1. Dr R S Sohu 2. Mr Sukhpreet Singh 3. Dr Ashlesh Singla 4. Dr Meenakshi Goyal
3. Annual budget:	Rs. 23,07,000/-
4. Any other financial support:	Nil

Staff changes during the year

Retired	-
Transferred	-
New recruits	-

Major thrust at the centre

1. Development of high yielding, low HCN content forage sorghum and sweet sorghum varieties/hybrids.
2. Development of stay green composite varieties with inbuilt resistance to shoot fly and leaf diseases.
3. To study the fertilizer requirement of sorghum in different cropping systems.
4. Integrated insect-pest and disease management in forage sorghum.
5. Biochemical characterization of forage sorghum for nutritional and anti-nutritional components.
6. Value addition to sorghum stover (dry fodder).
7. Transfer of new varieties/hybrids and their production and protection technologies among the extension specialists and farmers.

Seasonal information

Variable	Kharif (2016)	Rabi
Rainfall	421.3 mm (April 1 to October 31)	-
Area covered	2.67 lakh ha (fodder sorghum)	-
Total production	144.5 lakh ton (green fodder)	-

Trials conducted

Discipline	No. of AICRP-sorghum trials allocated	No. of station trials	No. of trials successfully conducted	Shortfall
Plant Breeding	9	5	14	-
Agronomy	3	-	3	-
Entomology	7	1	8	-
Plant Pathology	3	2	5	-
Total	22	8	30	-

Major achievements during 2016-17

Discipline: Plant Breeding (Forage Sorghum)

Sl. No	Target	Achievement	Shortfall
1	IVHT (SC)	CSV 30F (CHECK) = 756.3 q/ha RSSH 18 = 729.6 q/ha AKSV 407 = 700.6 q/ha (CD = 117.1)	-
2	AVHT (SC)	CSV 30F (CHECK) = 705.3 q/ha DFSH 109 = 693.3 q/ha UTFS 87 = 693.3 q/ha (CD = 124.6)	-
3	IAVHT (MC)	TNFS 0952 = 1181.5 q/ha Sitara = 1105.9 q/ha SM 2252-71 = 1098.7 q/ha (CD = 157.8)	-
4.	Seed Yield Trial	MF 2013 = 1234 q/ha SSG 59-3 (check) = 1193 q/ha (CD = 417.1)	-

Major achievements during 2016-17

Discipline: Plant Breeding (Sweet Sorghum)

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Sl. No	Target	Achievement	Shortfall
5	IAVHT (SS)	IIMRSSH 2 = 1757 l/ha IIMRSSV 4 = 1642 l/ha ICSSH 58 = 1637 l/ha CD = 510.0	-
6	High biomass trial	RSSH 50 = 66.0 t/ha IIMRHBM 10 = 65.6 t/ha IIMRHBM 1 = 63.7 t/ha CD = 9.55	-



Major achievements during 2016-17

Discipline: Plant Breeding (Station Forage Sorghum trials)



Sl. No	Target	No. of test entries	Checks	Superior entries
1	Evaluation of promising hybrids with better forage yield and quality over the locations	8	CSH20MF & CSH 24MF (NC),SSG 59-3 (ZC) and PSC 4 (LC)	PSC 10, PSC 15
2	Evaluation of new hybrids for forage yield and quality having resistance to insect pests and diseases	11	PSC 4	PSC 21, PSC 22
3	Evaluation of new hybrids for forage yield and quality having resistance to insect pests and diseases	10	PSC 4	SSG S 69 (Comparable)
4.	Evaluation of single cut private company hybrids for fodder yield and quality	4	SL 44 & PSC 4	Sugar graze
5.	Evaluation of sweet sorghum varieties/hybrids for ethanol production	5	-	CSV 24SS, CSH22SS

Major achievements during 2016-17

Discipline: Germplasm

Sl. No	Target	Achievement	Shortfall
1.	Maintenance of A/B pairs	35	-
2.	No. of restorer lines	72	-
3.	Germplasm maintained	110 sorghum lines 16 Sweet sorghum lines 230 segregating material received from IIMR	-
3	New hybrids evaluated	37	-
4	New crosses attempted	37	-
5	Inter-institutional hybrids developed	5	

S. No	Target	Achievement	Shortfall
Coordinated trials			
1	IAVHT MC	SPH 1838	
2	AVHT SC	SPV 2388, CSV 30F	
3	IVHT SC	SPV 2443, SPV 2450, SPV 2452	
4	IAVHT SS	SPH 1861, SPV 2458, SPV 2462	
5	AICSIP SPN	PVK 1015, PVK 902SS, RSSV 350, RSSV397, SPV 2250, SPV 2374, SPV 2389	

Major achievements during 2016-17

Discipline: Entomology

1	Trial-6 Validation of IPM Module	T1: Seed Treatment with Thiamethoxam 30 FS against shootfly and 1.5 times higher seed rate (seed treatment with Thiamethoxam @ 10ml per kg seed proved effective) T2: (Seed treatment with Thiamethoxam 30 FS followed by Spray of Ekalux @ 650 ml per acre proved effective)	-
	Station trial		
2	Trial-1 Seed treatment	Seed treatment with thiamethoxam 30 FS @ 10 ml per kg seed proved very effective	

Major achievements during 2016-17

Discipline: Plant Pathology

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S. No	Target	Achievement	Shortfall
Coordinated trials			
Evaluation of sorghum germplasm for their resistance to foliar diseases:		Grey leaf spot incidence	Nil
1.	IAVHT MC	Tolerant Entries SPH1768, SPH1809, SPH1840, SPH1844, CSH24MF, SSG59-3	
2.	AVHT SC	SPH1752	
3.	IVHT SC	CSV21F, SPV2451	

Discipline: Plant Pathology (Station trials)

S. No	Target	Achievement	Shortfall
1.	Disease scenario in Sorghum under Punjab Conditions	Cercospora leaf spot : Aug – Oct (49.95%) Anthraco nose: Aug -Oct (46.25%) Zonate leaf spot: Sept-Oct (17.67%)	Nil
2.	Integrated management of foliar diseases of forage sorghum	Seed treatment with carbendazim @ 2g/kg seed + one spray each with neem bio-pesticide (Achook) @ 3% and propiconazole @ 1g/lt showed minimum disease severity (41.1%) with increase in GFY (474 q/ha) .	Nil

Major achievements during 2016-17

Discipline: Agronomy

S. No.	Target	Achievement	Shortfall
Coordinated trials			
1	6K: Effect of production inputs on the fodder yield and quality of single-cut forage sorghum	Input Constraints 1.FPP - Fertilizer (proved effective) 2.FPP- Plant protection 3.FPP - Weed control	-
2.	1 KE: Response of pre-released sorghum genotypes to different fertilizer levels (Forage Sorghum SC)	Entries 1. SPH 1752= 5893 q/ha 2. SPH 1797= 5263 q/ha 3. SPV 2317= 5207 q/ha N-level = 100% RDN	-

Major achievements during 2016-17

Discipline: Agronomy

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S. No.	Target	Achievement	Shortfall
3.	1 KF : Response of pre-released sorghum genotypes to different fertilizer levels (Forage Sorghum MC)	Entries 1. SSG 59-3= 403.7 q/ha 2. SPH1760=360.5q/ha 3. CSH 20MF= 356.9 q/ha N Levels 125% RDN	-

Publications from AICRP-Sorghum centre

Formal	Number
Journal Papers (International)	As 1st author: -
	As co-author: -
Journal Papers (National)	As 1st author: 2
	As co-author: 1
Review papers	As 1st author: -
	As co-author: -
Posters	-
Popular	
Popular articles	5
Field days organized/attended	2

Other activities rendered by all scientists

Sl. No	Activities	Number	% time spent
1	Trainings organized by centre	Nil	-
2	Trainings attended by scientists	Nil	-
3	Guiding students	6	15
4	Institutional activities	15	20
5	Recognitions	2	-

Major activities/objectives for 2017-18

Discipline	Major activities envisaged
Plant Breeding	<ul style="list-style-type: none">• Development of high forage yielding nutritious sorghum varieties/hybrids having low anti-quality components• Development of shoot-fly resistant derivatives• Germplasm enhancement• Development of stay green composite varieties
Agronomy	<ul style="list-style-type: none">• To work out the agronomic practices of new forage sorghum hybrids/varieties.• To work out the major input constraints in forage sorghum• To work out the seed production practices of forage sorghum

Major activities/objectives for 2017-18

Discipline	Major activities envisaged
Entomology	<ul style="list-style-type: none">• Integrated management of shoot fly, stem borer and grass hopper in forage sorghum.
Biochemistry	<ul style="list-style-type: none">• Biochemical analyses of forage sorghum for nutritional and anti-nutritional quality.• Improvement of dry fodder of forage sorghum for higher nutritional quality.



THANKS FOR KIND ATTENTION