Centre:AICRP on Sorghum,Bapatla

1. Name of the officer - In charge (AICRP- Sorghum):	Dr.Y.Radha krishna Principal Scientist (Agro.)&Head
2. Associated Scientists (AICRP-Sorghum) and their discipline:	1. Dr.B.Vijaya lakshmi Scientist (PB)
2. Associated Scientists from state project:	Dr.C.V.Rama Rao, Principal Scientist (Ento) Rice Research Unit,Bapatla.
3. Annual budget:	Rs.8,00,000
4. Any other financial support:	1,38,000.00 from ANGRAU

Major thrust at the centre

1. Development of sorghum hybrids/Varieties with resistance to pests and diseases suitable under rice fallow situation

2. Development of Agro techniques for rice fallow sorghum

Be very brief

Seasonal information

	Kharif	Rabi
Rainfall	839.4 (Bapatla centre) 518.2 (Guntur Dt.)	150.6 (Bapatla centre) 104.5 (Guntur Dist.)
Area covered	65ha	14041 ha
Total production	214 mt	82139 mt

- A total of 990 mm rainfall with11 % deficit against normal rainfall of 1100 mm rainfall
- 54 rainy days was obtained
- The maximum rainfall was in the month of August with 301.3
- The highest rain (141.7 mm) was observed in the 37 week (10-16 Sep) when the crop was in flowering stage

Trials conducted

Discipline	No. of AICRP-sorghum trials allocated	No. of station trials	No. of trials successfully conducted	Shortfall
Plant Breeding	5 (Kharif)	--	2	Due to lack of upland area during kharif season
	3 (Rabi)	--	3	Drying and threshing is under progress
Agronomy	3	--	3	

Major achievements during 2015-16

Discipline: Plant Breeding

S. N	Target	Achievement	Shortfall
	Development of sorghum hybrids/Varieties with resistance to pests and diseases suitable under rice fallow situation	**IHT-GS**: Seventeen entries were evaluated in RBD with three replications during *Kharif* 2015 . None of the entries were found significantly superior over the best check CSH 14 (3721 kgs/ha) however SPH 1820 (4137 ks/ha) numerically excelled the best check CSH 14 in terms of grain yield ❖**AHT-GS:** Out of 15 entries tested, the entry SPH 1777 (4983 kg/ha) was numerically out yield over best check CSH 30 (4556 kg/ha) in terms of grain yield	**Nil**

Evaluation of Initial hybrid trial – grain sorghum , kharif -15

S.No.	Entry	DFF	Plant height (cm)	100 grain wt. (gm)	Lodging %	Fodder yield (kgs/ha)	Yield kgs/ha
1	SPH 1810	68	303	2.21	0	12826	2399
2	SPH 1811	72	246	2.37	0	16406	2996
3	SPH 1812	64	208	2.26	0	7713	2816
4	SPH 1813	61	256	2.12	70	13169	2332
5	SPH 1814	63	260	2.38	80	11411	2542
6	SPH 1815	66	253	3.01	0	15177	2965
7	SPH 1816	65	235	2.48	0	9489	3202
8	SPH 1817	69	217	2.72	0	13939	2902
9	SPH 1818	61	255	1.92	0	12346	3041
10	SPH 1819	71	250	2.43	0	13298	2751
11	SPH 1820	60	237	2.45	0	8456	4137
12	SPH 1821	67	311	2.46	80	15013	2677
13	CSH 14	64	244	2.69	0	9978	3721
14	CSH 16	64	242	2.70	0	9567	2291
15	CSH 23	59	239	2.69	0	15322	2379
16	CSH 25	73	255	2.44	0	14513	3273
17	CSH 30	59	248	2.58	0	9880	3373
	G M						2929
	CV(%)						16.21
	CD						790

Evaluation of Advanced hybrid trial – grain sorghum, kharif 2015

S.No.	Entry	DFF	Plant height	100 grain wt.	Lodging %	Fodder yield (kgs/ha)	Yield kgs/ha
1	SPH 1773	61	206	2.43	0	10088	4098
2	SPH 1775	62	231	2.54	0	11650	2951
3	SPH 1776	72	263	2.84	0	15201	2994
4	SPH 1777	61	235	3.15	0	9712	4983
5	SPH 1778	63	273	2.91	0	11766	2943
6	SPH 1779	69	238	2.70	0	12961	2414
7	SPH 1781	64	217	2.56	0	11801	4194
8	SPH 1787	61	236	2.90	0	13130	3433
9	SPH 1789	60	258	2.83	0	15869	3674
10	SPH 1791	61	244	2.22	0	13255	3122
11	CSH 14	63	222	2.82	0	6776	2816
12	CSH 16	60	232	2.68	0	5914	2095
13	CSH 23	62	248	3.21	0	13055	3226
14	CSH 25	74	257	2.40	0	13306	2355
15	CSH 30	57	245	2.52	0	8901	4556
	G M						3324
	CV(%)						13.75
	CD(5%)						764

Major achievements during 2015-16

Discipline: Germplasm

Sl. No	Target	Achievement	Shortfall
1	Collection, evaluation, maintenance and characterization of sorghum germplasm	❖A total of 142 germplasm lines collected *viz.*, 98 lines from IIMR, 20 from ICRISAT , 24 from RARS, Nandhyal were sown during *Rabi* 2015-16 ❖ 122 lines were evaluated for days to fifty % flowering, plant height, panicle length, 100 grain weight and yield per plant and fodder yield.	Nil

Germplasm evaluation

S.N	Trait	Min.	Max.
1	Days to fifty % flowering	45 (GP (W) 2394-1)	85 (ICSR -40)
2	Plant height (cm)	69 (PVK 801)	216.2 (YSC 1860)
3	Panicle length (cm)	6.8 (P1195682)	29.44 (R 29)
4	Panicle weight (gm)	2.7 (EP -75)	88.4 (EP- 130)
5	100 grain weight (gm)	1.36(EC 582508)	4.62 (4-1-7-3)
6	Yield per plant (gm)	2.4 (EP 19)	60.37 (HPT 8)
7	Fodder weight (gm)	6 (EG – 28)	90 (EP -60)

No. of crosses made: 34 crosses were made by involving 8A lines and 12 R lines during *Rabi* 2015-2016

S.No.	Pedigree	S.No.	Pedigree
1	ICSA 467A/R -49	18	AKMS 27A/HPT – 8
2	ICSA 38A/R – 91014	19	AKMS 28A/R- 89035
3	AKMS 296A/R – 91014	20	AKMS 28A/R 91012
4	AKMS 104A/RMHPT – 18	21	2077A/R- 91019
5	AKMS 104A/ICSR 172	22	2077A/R- 91012
6	AKMS 104A/HPT – 8	23	2077A/R- 172
7	AKMS 104A/R 91011	24	2077A/R- 627
8	AKMS 104A/R 91012	25	2077A/HPT -8
9	AKMS 27A /R- 49	26	2077A/R- 89035
10	AKMS 27A/R – 91014	27	2077A/ R- 75
11	AKMS 27A/R – 91011	28	2077A/R- 49
12	AKMS 27A/R- 20	29	2077A/R- 91012
13	AKMS 27A/RS -627	30	2077A/R- 20
14	AKMS 27A/R- 29	31	2077A/R- 91012
15	AKMS 27A/R- 91012	32	2077A/IS – 13205
16	AKMS 27A/R- 172	33	2219A/R- 75
17	AKMS27A/RMHPT – 18	34	2219A/R- 91014

8 F2 crosses obtained from ICRISAT were evaluated during Rabi 2015-16		
S.No.	**Pedigree**	**No. of SPS made**
1	ICSB 355 x ICSB 363	6
2	ICSB 363 x SGMR-13-1	9
3	ICSB 400 x IS 21512	5
4	IS 20956 x SGMR-13-1	3
5	IS 21425 x SGMR-12-3	3
6	IS 21425 x SGMR-13-1	16
7	[(M 35-1-19 x (M 35-1xSPV 1359)-5-2-1-1)-1-2-1-1] x ICSR 89058	7
8	[(M 35-1-19 x (M 35-1xSPV 1359)-5-2-1-1)-5-2-3-1] x ICSR 89058	4
	Total	53

Rabi Preliminary Hybrid Nursery (RPHN):

Two hundred and thirty two experimental hybrids obtained from ICRISAT were evaluated for fertility % during Rabi 2016. Out of which, ninety seven hybrids were recorded > 80 % fertility with high yield potential.

Major achievements during 2015-16

Discipline: Agronomy

SN	Target	Achievement	Shortfall
1	Response of sorghum hybrids to different levels of nitrogen under zero tillage subsequent to paddy	**The grain yield (6.88 t/ha) recorded with 120 N kg /ha was found to be on par with 160 N (7.21 t/ha)and 200 N (7.43 t/ha)**	**Nil**
2	Evaluation of hybrids at different dates of sowing under zero tillage in rice fallows	**The crop sown on 14.12.2015 and 28.12.2015 recorded the mean grain yield of 6.86 t/ha and 6.61 t/ha with two irrigations only where as the crop sown on 5.1.2016 recorded the grain yield of 6.46 t/ha with three irrigations**	**Nil**
3	Assessing different cropping systems in rice fallows under zero tillage in farmers fields	**The benefit cost ratio of maize (2.00:1) ,Jowar (1.95:1), Blackgram (3.47:1) and greengram (2.79:1)**	**Nil**

Effect of nitrogen levels on plant height, grain and stover yields of sorghum hybrids in rice -fallows

Treatment	Plant height at harvest (cm)	Grain yield (t/ha)	Stover yield (t/ha)
Nitrogen levels(kg/ha)			
80	160	5.73	7.23
120	164	6.88	8.66
160	167	7.21	9.32
200	171	7.43	9.78
CD (P=0.05)	10.6	0.68	0.87
CV (%)	5.4	8.50	8.43
Genotypes			
Mahalaxmi 296	152	6.30	8.09
CSH 14	164	6.78	8.70
CSH 16	179	6.91	8.83
CSH 25	166	7.26	9.37
CD (P=0.05)	10.6	0.68	0.87
CV (%)	5.4	8.50	8.43

Effect of sowing dates on plant height, grain and stover yields of sorghum hybrids

Genotypes	Dates of sowing								
	14-12-2015			28-12-2015			05-01-2016		
	Plant height (cm)	Grain yield (t/ha)	Stover Yield (t/ha)	Plant height (cm)	Grain yield (t/ha)	Stover Yield (t/ha)	Plant height (cm)	Grain yield (t/ha)	Stover Yield (t/ha)
Mahalaxmi 296	160	6.52	7.96	157	6.22	7.86	155	5.92	7.40
CSH 14	168	6.75	8.50	171	6.48	8.62	165	6.54	8.23
CSH 16	185	6.92	8.77	183	6.75	8.92	180	6.48	8.50
CSH 25	170	7.25	9.50	168	7.00	9.30	165	6.92	8.80
Mean	170	6.86	8.68	170	6.61	8.67	166	6.46	8.23

Economics of different crops grown in rice fallows

S. No	Particulars	Cost of cultivation (Rs/ha)			
		Maize	Jowar	Blackgram	Greengram
1	Cost of seed	5750	1690	7500	2625
2	Sowing charges	3500	3750	375	375
3	Cost of herbicides and its application	2625	2250	1250	1250
4	Cost of fertilizers and its application	18375	10750	1625	1625
5	Cost of pesticides and its application	4500	3250	12500	3500
6	Cost of irrigation	10000	5000	2500	2500
7	Cost of harvesting	7000	6250	10000	8750
8	Cost of heaping, threshing, bagging and transport	9700	8725	7500	6250
9	Total cost of cultivation (Rs /ha)	61450	41665	43250	26875
10	Mean yield (q/ha)	95	62.5	12.5	12.5
11	Price (Rs/q)	1300	1300	12000	6000
12	Gross returns (Rs/ha)	123500	81250	150000	75000
13	Net returns (Rs/ha)	62050	39585	106750	48125
14	Benefit cost ratio	2.00:1	1.95:1	3.47:1	2.79:1

Major achievements during 2015-16

Discipline: Extension including FLDs

Sl. No	Target	Achievement	Shortfall
1	50 FLDs	Conducted 50 FLDs at Tenali sub division	Nil

S.No.	Name of the hybrid	Date of sowing	IT	FP	%
1	CSH 14 Vs. Mahalakshmi/Mahyco	Second fortnight of Dec. to first week of Jan.	6833	6098	12.05
2	CSH 16 Vs. Mahalakshmi		6999	6301	11.07
3	CSH 25 Vs. Mahalakshmi		7293	6375	16.96

Constraints

Sl No	Constraint	Suggestions
1	Lack of infrastructure facilities	Budget may be provided under NRC component

Publications from AICRP-Sorghum centre

Formal	Number
Journal Papers (International)	As 1st author: Nil
	As co-author: Nil
Journal Papers (National)	As 1st author: Nil
	As co-author: Nil
Review papers	As 1st author: Nil
	As co-author: Nil
Posters	Nil

Publications from AICRP-Sorghum centre

Formal	Number
Popular	
Popular articles	Written one booklet on **Vari maganullo jonna saguku melakuvalu**
Field days organized/attended	❑Conducted field day as part of front line demonstration programme at Kuchchlapadu village of Vemuru mandal, Guntur District on 7.4.2016. ❑ Dr.Y.Radha Krishna P.S & Head participated in germplasm field day on 07.01.2016 at IIMR. ❑ Attended national seminar on Conjunctive use of ground water and surface water in A.P at Vijayawada on 11.3.2016 ❑Dr.B.Vijaya lakshmi, participated in millets fest 2016 organized by ANGRAU from 12th and 14th March,2016 at Mahima Gardens, Brodipet, Guntur

Other activities rendered by all scientists

Sl. No	Activities	Number	% time spent
1	Trainings organized by centre	Nil	
2	Trainings attended by scientists	Ni	
3	Guiding students	2 as member of chairman committee	
4	Institutional activities	Nil	
5	Recognitions	Nil	

Major activities/objectives for 2016-17

Discipline	Major activities envisaged
Plant Breeding	1.Screening of germplasm for grain mould, stem borer and shoot fly resistance during kharif 2. Development of high yielding grain sorghum hybrids/varieties with pest and diseases resistance suitable under rice fallow situation 3. Evaluation of coordinated trials
Agronomy	1.Effect of nitrogen levels on sorghum hybrids in rice -fallows 2.Demonstration of sorghum planter in farmers fields in rice fallows 3.Screening of sorghum germplasm for salinity tolerance

Monitoring of FLDs at Vemuru mandal on 22.2.2016

Farmers' Field Day was organized at Kuchchlapadu (Village), Vemuruul (Mandal), Guntur (Dist.) on 7-04-2016

THANK YOU