

***Some promising heterotic cross combinations for grain yield and the yield contributing traits in post rainy sorghum***

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•The improvement in grain sorghum in the past was mainly based on selection in the locally adopted types and hybrid population. However, during recent years, **hybrid vigour** and selection of parents based on **combining ability** have opened up a new approach in the crop improvement.

•**Exploitation of heterosis** on commercial scale and the systematic varietal improvement through hybridization are the main tools to increase the sorghum production.

•**Stephens and Holland (1954)** reported for the first time, the use of cytoplasmic genetic male sterility for developing hybrids of sorghum.

•The availability of cytoplasmic genetic male sterility has put the sorghum hybrids on commercial footing. As a result, a series of hybrids from **CSH-1 to CSH-35** and varieties from **CSV-1 to CSV-30** have been released at national level under All India Co-ordinated Sorghum Improvement Project in India (AICSIP).

•The *kharif* sorghum gives better yield but the **quality of *rabi* sorghum is superior** due to which its market price is also high. Unlike *kharif* sorghum, in *rabi* season, because of dry climate, the possibility of occurrence of grain mould is rare which made post rainy sorghum remunerative and important .

•*Rabi* sorghum is **important** as food and fodder security in vast **rainfed areas**.

•Therefore, intensive breeding efforts are going on at all centers to develop **post rainy sorghum hybrids**.

• *Rabi* sorghum is grown mainly in the states of **Maharashtra, Karnataka and Andhra Pradesh** with average productivity of 779 kg/ha

## ***Material and Methods***

❖ The experimental material comprised of **three lines** viz., AKRMS-80-1A, AKRMS-68-1A and AKRMS-66-2A and **eighteen testers** viz., Rb-413-1, AKSV-178 R, (13Rx104Bx36074-30-3-1), Rb-304-4-1, ICS-93-2-1, Rb local-5, G-45-3-1-1, Rb-400, Rb local 6-3, AKSV-257R, Rb local 6-4, (AKR-73xSPV-504), AKRb-325, Rabi local 5-6, AKSV-219R, (275 x 104 x 1204 x Ringni x 18551 x 89022 36-2-1-1), Rb local 3 and Rb-369-1.

❖ These twenty-one genotypes were crossed **in line x tester fashion** to produce **54 hybrids**.

❖ Twenty-one parents and their resulting 54 hybrids along with one **standard check CSH-19R** were sown at Sorghum Research Unit, Dr. P.D.K.V. Akola, during **rabi 2013-14** in randomized block design with three replications.

❖ The **observations** were recorded on **eight quantitative traits** i.e. plant height (cm), panicle length (cm), panicle breadth (cm), number of primaries per panicle, number of grains per panicle, 1000 seed weight (g), grain yield per plant (g) and fodder yield per plant (g).

❖ The statistical analysis was done using **line x tester analysis**.

❖ **Standard heterosis** was calculated using the standard check CSH-19 R.

<b>Sr. No.</b>	<b>Crosses</b>	<b>Mean performance for grain yield/ plant (g)</b>	<b>Standard heterosis for grain yield</b>	<b>Significant desirable Standard heterosis for other characters.</b>	<b>Remarks</b>
1	AKRMS-68-1A x AKSV-219R	71.39	30.11**	1000 seed weight (g)	
2	AKRMS-66-2A x Rb local 3	70.35	28.22**	Number of grains per panicle	
<b>3</b>	AKRMS-80-1A x Rb-369-1	70.21	27.95**	Number of grains per panicle <b>Fodder</b> weight per plant (g)	<b>Dual purpose hybrid</b>
4	AKRMS-80-1A x Rb-400	69.62	26.89**	<b>Fodder</b> weight per plant (g)	
<b>5</b>	AKRMS-66-2A x Rb-413-1	69.40	26.48**	Days to <b>maturity</b> , Number of grains per panicle Fodder weight per plant (g)	<b>Early maturing Dual purpose hybrid</b>
6	AKRMS-66-2A x AKSV-219R	68.65	25.12**	Number of grains per panicle	
<b>7</b>	AKRMS-68-1A X Rb-304-4-1	68.09	24.09**	<b>Fodder</b> weight per plant (g)	<b>Dual purpose hybrid</b>
8	AKRMS-80-1A X G-45-3-1-1	67.39	22.82**	--	
9	AKRMS-66-2A X ( 275 x 104 x 1201 x Ringini x18551 x 89022 36-2-1-1)	67.14	22.36**	---	
10	AKRMS-80-1A X AKRb-325	66.54	21.27**	Number of grains per panicle	
11	AKRMS-66-2A X Rb local 6-4	66.26	20.76*	---	
12	AKRMS-68-1A X Rb local 6-3	65.86	20.03*	Number of grains per panicle	
13	AKRMS-66-2A X G-45-3-1-1	65.59	19.53*	---	
14	AKRMS-80-1A X Rb local 6-4	65.57	19.49*	Number of grains per panicle	
15	AKRMS-66-2A X Rb-400	64.92	18.31*	Panicle length (cm)	
<b>16</b>	AKRMS-80-1A X AKSV-257R	64.47	17.50*	<b>Fodder</b> weight per plant (g)	<b>Dual purpose hybrid</b>
<b>17</b>	AKRMS-80-1A X Rb local 3	63.53	15.78*	<b>Fodder</b> weight per plant (g)	<b>Dual purpose hybrid</b>



Thank You