

1 **Table S1.** ANOVA (mean squares) for 18 characters in 7 × 7 half diallel cross of okra in rainy season, 2022

Source of variation	DF	Number of primary branches	Number of nodes/ main stem	Internodal length	Plant height	Days to first flowering	Days to 50% flowering	Node to first flowering	Days to first harvest	Fruit length
Replications	2	0.147 *	0.21	0.119	119.78	0.134	2.624	0.366 *	10.646	0.049
Treatments	27	1.269 **	65.777 **	8.062 **	557.786 **	29.386 **	28.253 **	1.552 **	32.217 **	10.161 **
Parents	6	0.257 **	24.411 **	13.687 **	68.806	44.957 **	44.955 **	2.254 **	51.418 **	1.94
Hybrids	20	1.628 **	63.298 **	4.362 **	724.851 **	14.962 **	13.745 *	1.365 **	16.522	11.875 **
Parent vs. Hybrids	1	0.161 *	363.552 **	48.313 **	150.352	224.438 **	218.197 **	1.084 **	230.901 **	25.197 **
Error	54	0.031	3.55	0.225	66.449	5.15	6.734	0.112	15.003	0.861

2 *, ** Significant at 0.05 and 0.01 level of probability, respectively.

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6 **Table S2.** ANOVA (mean squares) for 18 characters in 7 × 7 half diallel cross of okra in rainy season, 2022

Source of variation	DF	Fruit diameter	Number of ridges per fruit	Fruit weight	Number of fruits	Number of seeds per fruit	1000 weed weight	Fruit yield per plant	YVMV PDI at 90 DAS	OELCV PDI at 90 DAS
Replicates	2	0.04	0.08	5.209 *	3.061	22.102	5.337	380.321	1.974	1.34
Treatments	27	0.068 **	0.021	20.494 **	55.971 **	366.931 **	246.130 **	28694.2 **	481.554 **	458.854 **
Parents	6	0.057 **	0.028	24.411 **	49.612 **	89.306 **	124.605 **	7526.22 **	64.228 **	45.196 **
Hybrids	20	0.074 **	0.019	18.893 **	56.056 **	458.925 **	291.792 **	36123.68**	614.238 **	561.489 **
Parent vs. Hybrids	1	0.025	0.006	29.019 **	92.420 **	192.806 **	62.024	7112.43**	331.823 **	888.114 **
Error	54	0.015	0.089	1.288	2.122	25.879	25.674	558.116	2.068	0.771

7 *, ** Significant at 0.05 and 0.01 level of probability, respectively.

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Table S3. ANOVA (mean squares) for 18 characters in 7x7 half diallel cross of okra in spring summer season, 2023

Source of variation	DF	Number of primary branches	Number of nodes/ main stem	Internodal length	Plant height	Days to first flowering	Days to 50% flowering	Node to first flowering	Days to first harvest	Fruit length
Replication	2	0.02	0.052	0.015	76.492	12.409	16.753	0.007	10.727	0.033
Treatments	27	1.098 **	50.789 **	6.597 **	407.841 **	20.870 **	21.293 **	0.969 **	21.967 *	13.504 **
Parents	6	0.068	19.217 **	9.453 **	50.472	23.097 *	31.864 **	0.756 **	36.964 *	2.531
Hybrids	20	1.313 **	49.470 **	4.354 **	522.127 **	7.755	6.463	1.076 **	7.447	15.984 **
Parent vs. Hybrids	1	2.981 **	266.585 **	34.329 **	266.338 *	269.825 **	254.466 **	0.093	222.385 **	29.733 **
Error	54	0.049	1.662	0.275	43.142	8.465	6.173	0.136	12.094	1.214

*, ** Significant at 0.05 and 0.01 level of probability, respectively

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Table S4. ANOVA (mean squares) for 18 characters in 7 × 7 half diallel cross of okra in *spring-summer* season, 2023

Source of variation	DF	Fruit diameter	Number of ridges / fruit	Fruit weight	Number of fruits	Number of seeds per fruit	1000 weed weight	Fruit yield per plant	YVMV PDI at 90 DAS	OELCV PDI at 90 DAS
Replication	2	0.003	0.039	0.768	5.598	69.461 *	21.422	159.095	0.687	1.735
Treatments	27	0.096 **	0.012	11.017 **	58.996 **	329.824 **	257.462 **	22906.89 **	331.014 **	508.618 **
Parents	6	0.082 **	0.017	6.109 **	51.455 **	53.820 *	135.856 **	6194.298 **	48.081 **	72.222 **
Hybrids	20	0.104 **	0.011	13.016 **	62.658 **	417.093 **	298.398 **	28210.30 **	422.483 **	620.997 **
Parent vs. Hybrids	1	0.008	0.001	0.479	31.010 **	240.475 **	168.364 **	17114.15 **	199.236 **	879.425 **
Error	54	0.019	0.123	1.078	3.186	19.657	21.421	515.683	2.179	1.179

*, ** Significant at 0.05 and 0.01 level of probability, respectively.

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37 **Table S5.** ANOVA (mean squares) for 18 characters in 7 × 7 half diallel cross of okra (pooled)

Source of variation	DF	Number of primary branches	Number of nodes/main stem	Internodal length	Plant height	Days to first flowering	Days to 50% flowering	Node to first flowering	Days to first harvest	Fruit length
Environments	1	2.936 **	50.908 **	0.856	798.534 **	84.093 **	101.246 **	0.334	145.285 **	10.630 **
Blocks within environments	4	0.039	0.144	0.213	42.692	10.096	10.335	0.021	5.369	0.273
Treatments	27	2.228 **	115.442 **	14.568 **	942.073 **	46.540 **	47.297 **	2.279 **	51.707 **	22.548 **
Parents	6	0.211 **	43.357 **	22.922 **	114.356 *	62.330 **	72.824 **	2.602 **	83.883 **	4.086 **
Hybrids	20	2.831 **	111.518 **	8.689 **	1217.069 **	19.469 **	18.414 **	2.282 **	21.969 *	26.474 **
Parents vs. Hybrids	1	2.265 **	626.452 **	82.014 **	408.474 **	493.218 **	471.811 **	0.27	453.398 **	54.793 **
Treatment × Environments	27	0.138 **	1.141	0.094	23.619	3.706	2.239	0.241 *	2.502	1.118
Parent × Environments	6	0.111 *	0.272	0.218	4.913	5.718	3.982	0.407 **	4.535	0.389
Hybrids × Environments	20	0.109 **	1.271	0.032	30	3.235	1.792	0.158	2.015	1.388
Parent vs. Hybrids × Environments	1	0.878 **	3.758	0.593	8.231	1.044	0.703	0.904 **	0.041	0.096
Error	108	0.045	1.8	0.272	43.12	7.457	6.469	0.13	11.68	1.333

38 *, ** Significant at 0.05 and 0.01 level of probability, respectively.

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55 **Table S6.** ANOVA (mean squares) for 18 characters in 7 × 7 half diallel cross of okra (pooled)

Source of variation	DF	Fruit diameter	Number of ridges per fruit	Fruit weight	Number of fruits	Number of seeds per fruit	1000 weed weight	Fruit yield per plant	YVMV PDI at 90 DAS	OELCV PDI at 90 DAS
Environments	1	0.152 **	0.019	34.345 **	105.118 **	439.248 **	528.382 **	95333.360 **	155.213 **	76.383 **
Blocks within environments	4	0.005	0.034	0.458	4.799	41.905	10.833	1123.581	0.459	2.918
Treatments	27	0.144 **	0.023	28.665 **	104.519 **	617.807 **	433.209 **	47517.540 **	798.330 **	963.558 **
Parents	6	0.133 **	0.017	23.619 **	97.136 **	133.997 **	256.918 **	11734.700 **	107.137 **	115.238 **
Hybrids	20	0.152 **	0.025	31.061 **	106.198 **	772.244 **	496.900 **	59470.980 **	1019.474 **	1177.863 **
Parents vs. Hybrids	1	0.031	0.007	11.024 **	115.250 **	431.920 **	217.147 **	23145.840 **	522.609 **	1767.378 **
Treatment × Environments	27	0.021	0.01	2.851 **	10.465 **	78.955 **	70.340 **	4083.411 **	14.228 **	3.893 **
Parent × Environments	6	0.007	0.028	6.914 **	3.963	9.127	3.541	1985.479 *	5.172 **	2.159
Hybrids × Environments	20	0.026	0.005	0.85	12.530 **	103.786 **	93.243 **	4862.936 **	17.236 **	4.608 **
Parent vs. Hybrids × Environments	1	0.003	0.001	18.484 **	8.18	1.318	13.063	1080.526	8.404 **	0.01
Error	108	0.018	0.143	1.313	3.438	19.789	19.635	819.126	1.152	1.275

*, ** Significant at 0.05 and 0.01 level of probability, respectively.

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