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Effect of isogenic-alloplasmic cytoplasmic male sterility system on grain yield traits in pearl millet**Mahesh Pujar¹, M. Govindaraj^{*}, S. Gangaprasad¹ and A. Kanatti**

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Pearl millet is a nutri-cereal and is grown predominantly by subsistence farmers in semi-arid regions of India and Africa. Considering highly cross pollination nature and availability of cytoplasmic male sterility (CMS), pearl millet hybrids are becoming a dominant cultivar type in India. Present study aims to assess the effect of isonucleus-alloplasmic, A₁, A₄ and A₅ cytoplasmic male sterility system on agronomic performance of pearl millet hybrids. Five isogenic females each having 3 alloplasmic (A₁, A₄ and A₅) cytoplasm were crossed with 6 male-parents to generate 120 hybrids and were evaluated in two contrasting season in split-split-plot design (SSPD). The significant cytoplasm *per se* and restorer *per se* indicate the both contribution to most of the traits, however, greater magnitude of contribution arises from restorers (74% grain yield; 95% 1000-grain weight). The significant hybrids × environment shows the mandatory of multi location testing for yield traits while non-significant of CMS × environment interactions reveals the greater stability of CMS. Further, no significant mean yield differences exhibited in A₁, A₄ and A₅ hybrids (2.53-2.81 t ha⁻¹) indicates not any adverse effect of cytoplasm on grain yield and associated traits. Also, diverse genetic backgrounds used in this study exhibited significant contributions to grain yield and its component traits. These results imply the prospects for utilization of potential alternative cytoplasm (A₄ and A₅) to widen the cytoplasm base together with development of counterpart restorers to produce future high-yielding hybrids.