

Review Form 1.6

Journal Name:	International Journal of Plant & Soil Science
Manuscript Number:	Ms_IJPSS_90902
Title of the Manuscript:	Combining Ability and Heterosis of Quality Protein Maize Hybrids for Yield, Qualitative and Quantitative Traits under Heat stress in Different Environments
Type of the Article	Original Research Article

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound. To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	<p>-Heat stress (HS) have evidently become major yield reducing factors for maize (<i>Zea mays</i> L.) in tropical and sub-tropical regions. The variances for GCA and SCA of variance were found significant for most of the characters.</p> <p>-However, relative magnitude of variances indicated both additive and non-additive gene action for the expression of these traits were more prominent for all the characters studied.</p> <p>-GCA and SCA effects both showed significant interaction with environment for all the traits. Parents NBPGR-36548 (P₄), VL-153237 (P₅) and BHU QPM-2 (P₂) were found to be good general combiners for grain yield per plant, chlorophyll content, oil content and starch content. Indicating that they could be good parental lines in hybridization programs.</p> <p>-The range of heterosis expressed by different crosses was from 0.71 % (P₂ X P₆) to 45.11 % (P₅ X P₆) in E₁, from 0.42 % (P₁ X P₇) to 5.69 % (P₁ X P₈) in E₂ and 18.92% (P₄ X P₈) in E₃. The better performing five crosses P₅ X P₇, P₅ X P₆, P₄ X P₈, P₅ X P₉ and P₄ X P₅.</p> <p>-Crosses between good x average, average x average and good x good shows greater economic heterosis and exhibited high SCA effects for yield under HS.</p> <p>-These best hybrids didn't show any symptoms of leaf firing, tassel blast, root lodging and no severe loss of yield in the present investigation. These crosses also need to be evaluated further multilocation in large scale</p>	
Minor REVISION comments	<p>-Crop suffering from heat stress and drought stress maize varieties that produced the highest metabolites are not usually high yielding varieties</p> <p>-The lower yields of QPM versus non-QPM varieties, as well as the susceptibility of QPM varieties to stresses, such as ear rot, heat stress, resulting in less tryptophan and lysine produced per unit area of land have been the focus of researchers over a number of years.</p> <p>-Quality Protein Maize has the accountability to at benchmark which contain 4.1% lysine and 1% tryptophan which is more higher than normal maize which accounts 2.7% of lysine and 0.6 % of tryptophan.</p> <p>-Above optimum temperature (37.3°C) affects maize morphological, physiological, biochemical and molecular traits, which ultimately leads to poor growth and yields. On the other hand increase the air temperature in field conditions usually induce higher vapour pressure deficit, enhancing the demand for soil water and effect of water deficit (Mittler 2008), which in turn can rise canopy temperature.</p>	
Optional/General comments	<p>-The study of the effects of combining ability, both general combining ability (GCA) and specific combining ability (SCA), are important indicators of potential value for assessing inbred lines in hybrid combinations as a step to develop hybrid varieties in maize (Abdel-moneam <i>et al.</i>, 2014).</p> <p>-The ratio of SCA and GCA is a good indicator for the predominance of non-additive effect in the expression of quantitative characters if it is found greater than one (Dodia and Joshi, 2003).</p> <p>-The present study was undertaken to study the combining ability among the parental lines and heterosis among the newly generated cross combinations using 10 x 10 half diallel mating design</p>	

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PART 2:

	Reviewer's comment	Author's comment <i>(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
Are there ethical issues in this manuscript?	<i>(If yes, Kindly please write down the ethical issues here in details)</i>	

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