



SDI Review Form 1.6

Journal Name:	American Journal of Experimental Agriculture
Manuscript Number:	2014_AJEA_9994
Title of the Manuscript:	GGE Biplot Analysis of Multi-Environment Yield Trials of durum wheat (<i>Triticum turgidum</i> Desf.) genotypes in North Western Ethiopia.
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.

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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	1. The biplots presented in this article has to be clarified: 1) The biplots have no scales on the axes so it is not possible to know whether they are drawn to scale or not, which is a key for valid interpretation. 2) The model that is used to generate the GGE biplot is not indicated, which makes it difficult to judge the validity of the interpretations. 2. The biplot in figure 1 only display sectors, which are not necessarily mega-environments. Mega- environments are geographic regions. For example, sectors 2 and 3 have the same location Gaint. Gaint may be regarded as a different ME from the other locations.	1. The comment is acceptable. Hence all the biplots were redrawn again with their Scales on the axes (you can see all the graphs). 2. The model I had used to generate the biplot is PC1=45.67% PC2=32.71% SUM= 78.38%. You can check on the any biplot of this manuscript. Besides to the above the model which I had used for combined analysis of variance was mixed Model. You can check on the ANOVA of combined analysis (table 3). 2. The biplot in fig 1 did not only display sectors but also it shows mega environments. Mega environment is not necessarily geographical regions. Because mega environment is being either a single environment or group of environments which have similar biophysical characteristics and clustered together. Hence in this biplot there are three mega environments. Remark. Environment= location + year Mega environment= Single environment or Mega environment= group of environments You can check on the book GGE Biplot Analysis A Graphical Tool for Breeders, Geneticists, and Agronomists (Yan and Kang,2003) on page 81. under the sub title " 5.3.1 MEGA-ENVIRONMENT INVESTIGATION "



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	3. Once it is determined that the target environments should be divided into ME, then genotype and test location evaluation should be conducted within ME rather than across ME. This has to be reflected in the analysis. 4. The statement that ideal genotypes should have the greatest PC1 scores is not always true. The correct statement should be: a genotype with the greatest projection on the average environment axis. 5. Regarding the interpretation of Figure 3: NOTE: this definition of an ideal genotype is to assign mean and instability the same weight, which may not be always appropriate. See Yan (2014): "Crop Variety Trials: Data Management and Analysis, Wiley & Sons. 6. The interpretation of discriminating power regarding Figure 4: the statement is true only for unscaled GGE biplot. What is the model that you have used to generate the biplots?	3. As of your comment, after identifying mega environment it is possible to evaluate genotypes and the testing location within mega environment While it is also possible to evaluate genotypes performance across mega environments that help us to identify the most stable genotypes across the existing mega environments and Identify the relation between genotypes and mega environments. You can check on the book GGE Biplot Analysis A Graphical Tool for Breeders, Geneticists, and Agronomists (Yan and Kang ,2003) on page 91. under the sub title “ 5.4 CULTIVAR EVALUATION FOR A GIVEN MEGA-ENVIRONMENT” No need of comment here. Because a genotype with the greatest projection on the average environment axis has also greatest PC₁ score. No need of comment here. Because I did not mention as I had given equal weight for mean performance and instability. Rather I had mentioned genotype which fell closest to the ideal genotype was identified as the most desirable genotype as compared to the rest of the tested genotypes. As Yan and Kang (2003) reported on the book “ GGE Biplot Analysis A Graphical Tool for Breeders, Geneticists, and Agronomists” on page 100. The comment is acceptable All the biplots are redrawing with the scales on the axes and You can check the interpretation of discriminating power by using the redrawing GGE biplot. The model that used to generate the biplot is PC1=45.67% PC2=32.71% SUM= 78.38%. You can check on the any biplot of this manuscript.
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<u>Minor</u> REVISION comments	See attached file. There are many broken words in the manuscript: “bi plot”, “where as”, etc. There are some grammar problems as well.	The comment is acceptable. Hence all the broken words and grammatical mistakes were corrected as of the comment given.
<u>Optional/General</u> comments	Many of the methods and statements were copied from Yan’s work. However, this is OK as soon as the original work is properly cited.	As you had already mentioned, all the original works were properly cited.