



SDI Review Form 1.6

PART 1:

Journal Name:	<u>American Journal of Experimental Agriculture</u>
Manuscript Number:	2013 AJEA 4380
Title of the Manuscript:	COMPARATIVE EFFECTS OF SOIL AMENDMENTS ON PHOSPHORUS USE AND AGRONOMIC EFFICIENCIES OF TWO MAIZE HYBRIDS IN ACIDIC SOILS OF MOLO COUNTY, KENYA
Type of the Article	Research paper

General guideline for Peer Review process is available in this link:

(<http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline>)

- This form has total 7 parts. Kindly note that you should use all the parts of this review form.



SDI Review Form 1.6

PART 2: 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)
<u>Compulsory</u> REVISION comments	The paper contain important findings that can be useful in addressing the global problem of low P in acid soils hence merits publication, However below are some issues to be addressed: 1. The abstract and the introduction have lots of grammatical mistakes and long ambiguous sentences which the Authors need to correct and summarize. In essence, the English of the paper needs to be improved. For instance, • A full stop missing in text row no. 17 after county. • Row no. 28 beginning with.....the split plots... to row no. 29 ending with MPR...The sentence is incomplete. How the split were plots an absolute control? Repeated in row no. 116-117. • Row no. 51 to 54, the sentence is too long.	Not really grammatical but may be typographical in most cases Inserted Changed for both sentences mentioned The split plots were control (0 kg P ha⁻¹), TSP (60 kg P ha⁻¹) and MPR (60 kg P ha⁻¹) Changed to: In high P fixing soils, such as the case for Molo County, the application of large amounts of inorganic fertilizer can quench the soils' P sorption capacity and avail the excess P in soil (Hue et al., 2001). The use



SDI Review Form 1.6

	• Row no. 63 to 64 up to Okalebo et al., 2006 is incomplete. • Row no. 83, what is a dearth of literature? etc. 2. Row 216, 310, 356. In all your Tables of means in the result section, you have not given the SE, Sed, for the treatments and CV for the experiments. These should be shown. Row 401, 405. Also in your bar graphs, you should show the standard error bars. You must find a way of showing variability so that the readers can judge whether there is significant difference between treatments. This is the standard way to present the results. 3. What was the % calcium carbonate in the lime that you used? You need to give this 4. Row 109. How did you decide on lime application rate used? You should apply lime to increase soil pH and neutralize Al,	of high fertilizer amounts is, however, impractical for the impoverished smallholder farmers in the area (Onwonga et al., 2008). The sentence is complete – Please read again It means scarcity - retain This is Ok but in the study the means were separated using the Least Significant differences (Lsd at $P < 0.05$) For the graphs the error bars have been inserted The liming material used was CaCO_3. The Ca content is 40% The lime requirement was based on a study by Kamprath (1970) and Yamoah (1996), who found that 2.0 t ha^{-1} of lime, is
--	--	--



SDI Review Form 1.6

	so you must base your application on some method. Al saturation is one of them; Why did you choose on 3t/ha lime rate, yet higher lime rates is better as it's known to have longer residual effects than lower rates. Did you calculate the lime requirement for these soils? How? You need to show this. 5. Row 120. You should describe with details all the practices. For instance, how did you apply lime? What equipment where used to incorporate, CAN was applied as top dress but after how long? 6. Row 106. The experimental design for experiment 1 was a 2*4 factorial arrangement in RCBD and not a 2*3. The factors were: L, MPR, FYM and Hybrids each at 2 levels. The 8 treatments were: L, MPR,FYM,C, L+MPR, L+FYM, MPR+FYM+ L+MPR+FYM. 7. You need to state the statistical model that was fitted for the analysis that you did for the factorial, split plot and correlation. How was correlation measured? Give more details here. (Row 194-196).	required to neutralize 1 cmol kg⁻¹ of Al^{3t} in the exchange complex. Onwonga et al. (2008) used the same lime rates based on this assumption and was found to work for the Molo soils. Lime was broadcasted and manure placed in the planting holes and thoroughly mixed with soil before planting using a hand hoe. This is actually explained under agronomic practices. CAN was applied one month after planting (inserted) No change made - It was a 2*3. They were considered as separate experiments consisting of either H513 or H614 ANOVA using the general linear model Spearman's correlation analysis was to determine the relationship between the measured variables Turkey mean separation procedure was applied on Table 3 (line 218) whereas
--	---	--



SDI Review Form 1.6

	8. Row 218,313,360. You need to be clear on you table of means because you separated means using both t-test and Tukeys test so you need to state which test the letters were based on. ✚ It is not accurate to use paired t-test in your case because its only used when measurements are taken from the same experimental unit hence you cannot compare grain yield and available P means using paired t-test because their measurements were from different experimental units. The correct one is unpaired t-test (two independent experimental units) but you need to choose on Tukeys test or t-test. 9. You need to define P use efficiency and Relative agronomic efficiency in the introduction or in the methodology since these can be very controversial terms. 10. State the plot sizes in these 2 experiments?	paired t –tests were applicable for tables (4 and 5 i.e. lines 313 and 360). Means in a column followed by the same letter are not significantly different at $P < 0.05$ using the Tukey means separation procedure. Similar parameters in the 2 different experiments were being compared. The t tests were used This is not the position because measurements were made on the same experimental units. Remember there were two experiments with maize hybrid 614 and 513 as test crops, running side by side. In this case the unpaired t-test would have been suitable for use in Table 3 above but Turkeys mean separation procedure was found suitable.. The definitions have been given in the subtopic 2.6 Calculation procedures and statistical analysis 3.75 cm x 4.8 cm (inserted)
--	--	---



SDI Review Form 1.6

	11. Row 176-186. State whose procedures you used to calculate PUE, RAE 12. Row 40. Climate change is not the focus of this paper hence should be removed from key words in the abstract. 13. The statement in the abstract (Row no. 27-28), that the two hybrids were the main plots in the 2 experiments is not accurate because in a factorial arrangement, we don't normally have the main plots. It's only in split plot where we randomize first in the main and then in the subplots. 14. Row 90: you should be more specific on geographic coordinates, including seconds	Fageria et al 1977 and Chien et al 1990, respectively (and inserted)(To retain The use of H513 is considered an adaptation strategy to the climate change experienced in the area- this was a key consideration in the study The statement is in reference to the 3rd experiment used to determine the RAE of MPR. The design was a RCBD with a split plot arrangement. That was the available measurements as reported in literature
--	--	---



SDI Review Form 1.6

Minor REVISION comments	1. Row 68 to 69, state the site where Gudu and Kisinyo limed just like you have stated KARI in Molo county 2. Row 192: Probability should be small 'p' since you have used capital P to denote phosphorus	Uasin Gishu county- this has been indicated in the manuscript Changed to italics
Optional/General comments	1. In acid soils Al toxicity often coexist with low P and the two are globally accepted as the major constraints to plant growth in these soils hence you need to introduce Al toxicity alongside low available P since your work was done in acid soils . Moisture stress is a problem too but it's not related to soil acidity and is an independent crop production constraint. Based on the title of the paper you need to remove the last paragraph in the introduction about climate change. It's irrelevant and doesn't add value to this paper. 2. H513 was generally bred for medium altitude areas (≤ 1700 masl). Why would you encourage farmers to grow it in the high altitude areas like Molo (Alt 2500	Has now been mentioned in the introduction If we remove it there would have been no basis for using H513. The higher rainfall in relation to high altitude and low temperatures led to longer maize growth cycles. Due to climate



SDI Review Form 1.6

	masl)? 3. Row 120: Was 2 weeks adequate for lime to react with the soil as required? Normally 4 weeks is adequate unless the moisture content in the soil is high enough to speed up the reaction. You need to explain this. 4. Row 94,95. It would be better if you stated the average rainfall of the site used; for instance the last ten years and not just for the two years of the experiments.	change, the rainfall is decreasing and temperature rising. This justifies the planting of H513 which has a shorter growing cycle. The moisture content was high- Has been explained in the manuscript This has now been addressed by indicating the mean annual rainfall for the area
--	--	--