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Journal Name:	<u>British Journal of Applied Science & Technology</u>
Manuscript Number:	Ms_BJAST_26986
Title of the Manuscript:	Comparison of Some Extraction Methods for Estimating Available Mn to Maize (Zea mays L.) in Acid Soils of Agro-Climatic Conditions of Southeastern Nigeria
Type of the 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	Coca-Cola.....caution when using this trademark in the manuscript is recommended to summarize the contents of the manuscript, it is too long. ABSTRACT Twenty surface (0-20 cm) soil samples were used to evaluate status of soil Mn using five extraction procedures (Coca-cola, 0.05M EDTA, 0.01M HCl, 0.05M EDTA + 1N NH₄OAC and 1N NH₄OAC methods). At the greenhouse study, hydrated Mn sulphate was applied in solution, at five levels (0, 4, 8, 12 and 16 kg ha⁻¹) in CRD while in the field studies, Mn sulphate was applied to the soils during the first year experiment only, at seventh levels (0, 2, 4, 6, 8, 8, 10 and 12 kg ha⁻¹) in RCBD. Both studies were replicated four times. The results shows that Coca-cola method extracted the highest amount of the Mn (5.61 mgkg⁻¹) while, NH₄OAC extracted the least amount of Mn (1.49 mgkg⁻¹) with an overall average of 3.78 mg	Thanks for your scientific and constructive criticism of the article. I have affected the corrections as directed and have learnt from the revision. The topic has been revised as directed. The abstract and the conclusion have been revised accordingly. The contents of the manuscript has been recast and summarized also to sustain the aim of the study.



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	Mn kg⁻¹. Levels of Mn significantly ($P < 0.05$) increased maize plant height, dry matter production, concentration and uptake in maize plants. Coca-Cola method correlated positively with dry matter yield ($r = 0.875^{**}$) and Mn uptake ($r = 0.883^{**}$). 0.01M HCl method correlated negatively with dry matter yield ($r = -0.657^{*}$) and positive correlation with Mn uptake ($r = 0.687^{*}$). The 0.05M EDTA-extractable Mn had significant negative correlation with Mn concentration ($r = -0.509^{*}$), while 0.05M EDTA+1N NH₄OAc-extractable Mn had negative correlation with dry matter yield ($r = -0.586^{*}$) but correlated positively with uptake ($r = 0.546^{*}$). The critical limits were 2.82, 4.65, 5.85, 3.10 and 2.46 mg Mn kg⁻¹ for Coca-Cola, 0.01M HCl, 0.05M EDTA, 0.05M EDTA+1N NH₄OAc and 1N NH₄OAc, respectively. The results also showed that among the five extractants examined, the highest regression coefficients ($r^2 = 0.825$), ($r^2 = 0.764$) and ($r^2 = 0.633$) at ($P < 0.01$) were found between Coca-Cola and HCl, HCl and EDTA+NH₄OAc and, EDTA and EDTA+NH₄OAc-extractable Mn for Mn uptake, respectively. Accordingly, the study indicates that, the comparative extraction capacity of these extractants followed the order: Coca-cola > 0.1N HCl > 0.05M	
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	EDTA> 0.05M EDTA+1N NH₄OAc> 1N—NH₄OAc. Thus, Coca-Cola, followed by 0.01M HCl extractants is highly recommended and for the determination of available Manganese to maize for acid soils of southeastern Nigeria. Similarly, the results obtained based on the two year field studies, suggests that, the recommended rates of Mn required for maximum maize grain yield production in acid soils of southeastern Nigeria, are 9.0 and 9.5 kg/ha during the first and second cropping seasons, respectively. CONCLUSIONS This study demonstrated that, the soils were general sandy loams in texture, moderately to strongly acidic, low in organic matter content with low to medium contents of exchangeable bases. Available manganese was marginally supplied in soils however; deficiencies are likely to occur due to intensive cultivation of improved and high yielding crops varieties which may lead to nutrient mining. The results obtained in this study shows that the Coca-cola method extracted the highest amount of the Mn (5.61 mg/kg) while, 1N NH₄OAC extracted the least amount of Mn (1.49 mg/kg) with an average of 3.78 mg Mn/kg. Levels of Mn applied to	
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	the soils significantly ($P < 0.05$) increased maize plant height, dry matter production, concentration and uptake in maize plants . The optimum rate of applied Mn that promoted Mn uptake in maize shoots was established at 8 kg Mn ha⁻¹. The critical limits of Mn in soil that produced responses for maize plants were determined to be; 2.82, 4.65, 4.45 5.85, 3.10 and 2.46 mg Coca-Cola, 0.01M HCl, 0.05M EDTA, 0.05M EDTA+1N NH₄OAc and 1N NH₄OAc extractable Mn kg⁻¹ soil, respectively.	
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<u>Minor</u> REVISION comments	Comparison of Some Extraction Methods for Estimating Available Mn to Maize (<i>Zea mays</i> L.) in Acid Soils of Agro-Climatic Conditions of Southeastern Nigeria <i>Zea mays</i> L.....in <i>italic</i> please Introduction please condense focused on the central idea on methods Ca+2, Mg+2, K+ and Na+.....to indicate oxidation states of the elements or ions, the first number and then the sign, eg 2+ Table 4 please include the error in the determinations	
<u>Optional/General</u> comments	Good work is presented, however the authors have to summarize the introduction and conclusions, and all the text in general. It must be more rigorous in the treatment of analytical data, especially in the comparison between the methods	