



**SDI Review Form 1.6**

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| Journal Name:            | <a href="#">Asian Journal of Advances in Agricultural Research</a>                                                                                                    |
| Manuscript Number:       | Ms_AJAAR_35133                                                                                                                                                        |
| Title of the Manuscript: | Unfolding History of Local Guinea Sorghum Enhanced for Food Quality through Potassium Hydroxide and Bleach Test: Farmer Alternative to Climate Variability Resilience |
| Type of the Article      | Original Research Article                                                                                                                                             |

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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)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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| <b>Compulsory</b> REVISION comments | <p>In the introductory paragraph ensure millet, rice and corn have their scientific names included the first time they appear. Editorial work throughout the document for example; (1637912 t) and not (2533999t).</p> <p>Section 3.1 Field data<br/>Expound what it means to have false testa</p> <p>Section 2.2.2 Agronomic yield test<br/>The third last sentence "weeding was done when needed" should be made more specific so that the study is repeatable.</p> | <p>Introduction:Rice (2 811 049 t), maize (2 533 999 t) and millet (1 927 106 t). Sorghum stayed in the same position in 2015 with 1 527 456 t,</p> <p>Section 3.1. False testa means that if insect bites and weathering attach grains after its maturity is completed, the KOH: Bleach (solution) test shows some testa presence spots on the grain that is confused with testa manifestation when grain is treated with the KOH: Bleach solution. This is why it is said false testa.</p> <p>Section 2.2.2 Agronomic data:<br/>Weeding was done three times: The first was done on 2 July during thinning time; the second was on 30 July and the third was on 15 September during ridging time.</p> |
| <b>Minor</b> REVISION comments      | <p>Section 2.2.1 Field screening<br/>The experiment was conducted during 1986-1987, 1987-1988, 1989-1990 and 1991-1992. Results have been displayed for only 1991-1992 and the others are missing. Analysis of variance table is also necessary to show the</p>                                                                                                                                                                                                       | <p><u>2.2.1 Field screening</u></p> <p>Approximately 1/14 of a hectare was planted in 1986-1987 cropping season with the CSM63 original population in a complete isolation from other sorghum fields at the Cinzana Agronomic Research Station (SRAC) in well 10 (F10). The final population was 2000 plants. Two hundred and eighty-eight (288) selfed panicles were retained for testa absence at maturity. Seed from</p>                                                                                                                                                                                                                                                                             |



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|  | <p>sources of variation.<br/>A brief description of the climatic and soil conditions during the experiment period.</p> | <p><b><i>288 panicles were planted along with bulk seeds of the original population at the SRAC to determine flowering and testa absence in 1987-1988 cropping season. Ten panicles in each progeny row, except those from the original population, were selfed per plot before flowering. Forty-five lines (45) from 15 families were visually selected for testa absence and planted in 1989-1990 season at SRAC for flowering, testa absence, plant height, maturity and flour quality. A field test for testa presence was performed by scraping 10-20 seeds per panicle with pocket knife and by flour appreciation before the KOH: B test on 45 families.</i></b></p> <p><b><u>2.2.2 Agronomic yield test</u></b></p> <p>For testa screening experiment, one row observation plot of 5 m was used per entry from 1987 to 1989.</p> <p>For yield test of 1990-1991, randomized complete block design (RCBD) was used with three replications. Experimental unit was three rows per entry. Spacing between rows was 0.75 m and 0.50 m between hills on the row for preliminary and yield tests. Row length was 5 m long. Net plot was 4.5m (9 hills /row) with an expected 27 hills at harvest by plot for grain yield. Planting was done on 19/07/1991. Thinning was performed at two plants per hill with a population density of 53 333 plants per hectare. Experiments were under rain-fed conditions. Hundred (100 kg/ha) of diammonium phosphate (DAP = 18N-46P<sub>205</sub>) were applied two weeks at thinning time and 50kg/ha of urea (46N) were applied as side dressing 40 days after emergence. Furrows were dug alongside each ridge close to seedlings to bury fertilizers. The first weeding was done on 2 July during thinning time; the second was on 30 July and the third was on 15 September during ridging time. Harvest was achieved after physiological maturity when grains were completely dried. Panicles from each plot was dried and weighted twice to confirm weight stability before threshing. Threshing was done by women using mortar and pestle.</p> <p><b><u>3.1 Environmental conditions at the experimental site</u></b></p> |
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|                               |      | <p>Cinzana is the Sahelian zone of Mali (Figure 3). Its geographic coordinates are 13°15 N; 5°58 E °N; and 265 m of altitude. It has mono-modal rainfall pattern with distinct rainy season in summer accounting on average for 690 mm. Mean annual maximal is 35.6 °C and minimal is 19.3 °C (Figure 1) with a maximum day length of 12h47. Soil is a clay-silt type at the experiment site.</p> <table><tr><th>Month</th><th>Jan.</th><th>Feb.</th><th>Mar.</th><th>Apr.</th><th>May</th><th>Jun.</th><th>Jul.</th><th>Aug.</th><th>Sep.</th><th>Oct.</th><th>Nov.</th></tr><tr><td>Monthly average rainfall (mm)</td><td>0</td><td>0</td><td>0</td><td>0</td><td>4</td><td>21</td><td>42</td><td>42</td><td>28</td><td>7</td><td>0</td></tr><tr><td>Minimum temp. (°C)</td><td>11</td><td>14</td><td>22</td><td>21</td><td>23</td><td>20</td><td>20</td><td>18</td><td>18</td><td>17</td><td>13</td></tr><tr><td>Maximum temp. (°C)</td><td>33</td><td>35</td><td>35</td><td>42</td><td>41</td><td>37</td><td>31</td><td>32</td><td>33</td><td>36</td><td>34</td></tr></table> <p><b>Figure 1: Monthly average rainfalls, minimum and maximum temperatures at the experimental site from 1986-1991. Cropping season starts on average in the third decade of June and ends in late September. Maximum rainfall occurs in July and August. For mid July planting, CSM63E reaches 50% flowering early September and maturity is complete in early October; giving the</b></p> | Month | Jan. | Feb. | Mar. | Apr. | May  | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Monthly average rainfall (mm) | 0 | 0 | 0 | 0 | 4 | 21 | 42 | 42 | 28 | 7 | 0 | Minimum temp. (°C) | 11 | 14 | 22 | 21 | 23 | 20 | 20 | 18 | 18 | 17 | 13 | Maximum temp. (°C) | 33 | 35 | 35 | 42 | 41 | 37 | 31 | 32 | 33 | 36 | 34 |
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| Month                         | Jan. | Feb.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Mar.  | Apr. | May  | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. |      |      |      |                               |   |   |   |   |   |    |    |    |    |   |   |                    |    |    |    |    |    |    |    |    |    |    |    |                    |    |    |    |    |    |    |    |    |    |    |    |
| Monthly average rainfall (mm) | 0    | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0     | 0    | 4    | 21   | 42   | 42   | 28   | 7    | 0    |      |      |      |                               |   |   |   |   |   |    |    |    |    |   |   |                    |    |    |    |    |    |    |    |    |    |    |    |                    |    |    |    |    |    |    |    |    |    |    |    |
| Minimum temp. (°C)            | 11   | 14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 22    | 21   | 23   | 20   | 20   | 18   | 18   | 17   | 13   |      |      |      |                               |   |   |   |   |   |    |    |    |    |   |   |                    |    |    |    |    |    |    |    |    |    |    |    |                    |    |    |    |    |    |    |    |    |    |    |    |
| Maximum temp. (°C)            | 33   | 35                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 35    | 42   | 41   | 37   | 31   | 32   | 33   | 36   | 34   |      |      |      |                               |   |   |   |   |   |    |    |    |    |   |   |                    |    |    |    |    |    |    |    |    |    |    |    |                    |    |    |    |    |    |    |    |    |    |    |    |



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|  |  | <p><b>opportunity for early new crop harvest, thus overcoming food shortage before new traditional crop harvest.</b></p> <p><b>3.2 Field data</b></p> <p><b>Number of different panicles retained from 2000 plants was 288 in 1986-1987, 45 from 288 plants in 1987-1988, 8 from 45 plants in 1989-1990 and 1 from 8 in 1990-1991 respectively per cycle of selection per normal cropping season. These numbers correspond respectively to selection pressure of 14,40; 15,63; 17,78 and 12.5 % per cycle of selection for non testa presence. In 1988-1989 and 1989-1990, there were respectively observation nurseries of selected 45 and 8 panicles for flowering and plant height.</b></p> <p><b>Means 50% flowering time of the 288 panicles was 65 days with a maximum of 75 days and a minimum of 59 days. For the 45 panicles, the average 50% flowering time was 61 days with a maximum of 69 days and a minimum of 55 days. Tables 1 and 2 give respectively agronomic traits information and analysis of variance on the 8 pure lines and original CSM63 population.</b></p> <p>Eight lines were retained (Tables 1) after the KOH:B test. There was no difference among the 9 lines for grain yield, while there were highly significant differences among lines for FD, PH and % decortication. Selected agronomic and cooking qualities are shown (Tables 1, 3, 4).</p> |
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| <p><b><u>Optional/General</u></b> comments</p> | <p>The paper is good and very informative. Correct text organization. For example list of references no. 22 put a fullstop (.) after 1982.</p> | <p><b>21 Laboratoire de semence du mali (2017)</b></p> <p><b>22.</b> Awika, J, McDonough, CM, Rooney, LW, and Waniska, RD. 2005. False Positives for Tannin Sorghum in Non-tannin Sorghum Using the Bleach Test. SAT eJournal/EJournal.ICRISAT.org. December Volume 1, Issue 1.</p> <p><b>23.</b> Cagampang, G.B.,Griffith, J.E., and Kirleis, A.W. 1982. Modified adhesion test for measuring stickiness of sorghum porridges. Cereal Chem. 59:234,</p> <p><b>24.</b> Mamoutou, K, SISSOKO, S., Teme, N., Deu, M., VAKSMANN, M., Camara, Y. BAZILE, D. Sako, A. F.M and Sidibé, A. 2014. Impact de la diffusion d'une variété améliorée de sorgho au Mali : interaction avec les variétés locales/ Dissemination impact of a sorghum improved variety in Mali: interaction with landraces.Agronomie Environnement et société. Décembre Vol. No 4/numéro 2.</p> |
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