



## Agronomic performance and adaptability study of New Guinea lines in sudanian and sudano-sahelian zones

Nofou Ouédraogo<sup>1\*</sup>, Gilles Ibié Thio<sup>1</sup>, Adama Sanou<sup>2</sup>, Issouf Kouraogo<sup>2</sup>, Oumar Boro<sup>1</sup>, Armel Prisca Sawadogo<sup>1</sup>, Djibril Yonli<sup>1</sup>, Vernon Gracen<sup>3</sup>, Baloua Nebie<sup>4</sup>

<sup>1</sup> Institute of Environment and Agricultural Research (INERA), 01 BP 476 Ouagadougou 01, Burkina Faso

<sup>2</sup> Institute of Environment and Agricultural Research (INERA), BP 910 Bobo Dioulasso 01, Burkina Faso

<sup>3</sup> Department of Plant Breeding and Genetics, 520 Bradfield Hall, Cornell University, Ithaca, NY 14850, USA

<sup>4</sup> International Crop Research Institute for Semi-Arid Tropics-Mali, Samanko, BP 320, Bamako-MALI

\*Corresponding author Email addresses: [nofou2008@yahoo.fr](mailto:nofou2008@yahoo.fr)/ [nofou2008@gmail.com](mailto:nofou2008@gmail.com)

Submitted on 13<sup>th</sup> October 2021. Published online at [www.m.elewa.org/journals/](http://www.m.elewa.org/journals/) on 30<sup>th</sup> November 2021  
<https://doi.org/10.35759/JABs.167.4>

### ABSTRACT

*Objective:* This study was conducted to evaluate agronomic performance and adaptability of new guinea lines in sudanian and sudano-sahelian agro climatic zones in Burkina Faso.

*Methodology and results:* The study was conducted during two years in three sites (Kamboinse, Fada and Farako-Ba) located in two different agro climatic zones (sudanien and sudano-sahélien). Twenty sorghum lines including checks (Kapelga, ICSV 1049) were evaluated in a randomized complete bloc design with genotypes as studied factors. Agromorphological parameters and midge damage were collected in all studies sites. As the results, among tested lines, seven lines (Kouria, PR3009B, ISX-09004-1-3-1-3-6-7-7-3, Fambe B, Lata//Grin-9-14-1-1-vrac, ISX-09005-7-4-3-1-10-6-6-10, 12B) were well adapted to sudano-sahélien zone whereas 13 were well adapted to sudanian zone according to heading date. Three lines (Lata//DouaG-4-27-1-1-vrac, 014-SB-EPDU-1004 and ND07e21 (17x30) F2-6-v) were stable across environments and only one line (Lata//Grin-9-14 -1-1-vrac) with the two checks (Kapelga and ICSV 1049) were stable under low yielding environment characterized by high midge pressure conditions. Three lines (ISX-09005-7-4-3-1-10-6-6-10, Lata//Ridb-3-9-1-1-vrac and Fambe B) were specific to high yielding environment (Kamboinse and Farako-Ba).

*Conclusions and applications of findings:* The stable lines (Lata//DouaG-4-27-1-1-vrac, 014-SB-EPDU-1004 and ND07e21 (17x30) F2-6-v) across environments constitute some promising lines to be registered in the national catalogue for vegetal varieties and will be promoted for cultivation in sudanian and sudano-sahélien zones to enhance sorghum production and to contribute to ensure food security in Burkina Faso.

**Key words:** Burkina Faso, GGE biplot, midge damage, grain yield, sorghum