**Journal of Applied Biosciences 219: 24224 – 24234**
**ISSN 1997-5902**

# Effects of agroecological transition cropping systems on grain sorghum and cowpea yields in the Nando region of Burkina Faso.

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Submitted 16/03/2026, Published online on 30/04/2026 in the https://www.m.elewa.org/journals/journal-of-applied-biosciences-about-jab/ https://doi.org/10.35759/JABs.219.1

## ABSTRACT

*Objective:* to evaluate the effects of agroecological transition cropping systems on grain sorghum and cowpea yields.

*Methodology and results:* A trial was set up at the Saria Environmental and Agricultural Research Station using a completely randomized block factorial design. Factors evaluated included (i) cropping system, (ii) crop variety, (iii) fertilization, and (iv) pest control type. Results showed yield increases of 56.99% for grain sorghum grain and 49.26% for stover in sole grain sorghum plots compared to intercropping system. The combination of the different factors led to an increase of grain sorghum grain yield but stover yield was not significantly affected. For cowpea, the results showed that grain yield in sole production sole cropping was 280.84 kg greater than yield obtained in plots where cowpea was intercropped with grain sorghum. A 36.78% increase in cowpea grain yield was observed in plots that received the improved variety compared to those where the local variety was used. However, the study showed a 317.27% increase in stover yield for the local variety compared to the improved variety. The combination of the different factors tested in this study resulted in substantial cowpea yields of 1,075.05 kg $ha^{-1}$ for grain and 5,672.73 kg $ha^{-1}$ for stover. The factor of microdose mineral fertilization and pesticide treatment did not have any significant specific effects on grain sorghum and cowpea yields.

*Conclusion and application of results:* to achieve high grain sorghum yields, growing of sole cropping with microdose mineral fertilization can be recommended regardless the sorghum variety; to achieve high grain yields of cowpea, growing of improved varieties in sole cropping with microdose mineral fertilization and chemical or biological controls of pests can be recommended; to achieve high stover yields of cowpea, the use of improved varieties in sole cropping with microdose mineral fertilization and chemical or biological control of pests can be recommended; to achieve higher total yields of grain sorghum and cowpeas, intercropping grain sorghum and cowpeas with microdose mineral fertilization is recommended. .

**Keywords:** agroecological transition, Burkina Faso, cowpea, cropping systems, grain sorghum