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“Can agroecological farming feed the world?
Farmers’ and academia’s views”

Confronting farmers’ perspectives with agronomic findings for the co-design of agro-ecological options in Burkina Faso

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Abstract

The challenges facing smallholder farmers in Burkina Faso are many, including poor soil fertility combined with unpredictable weather conditions and weak market infrastructure which increases their vulnerability to climate change. To increase the potential uptake of agro-ecological options, this study aims at tailoring the options to the smallholder farm context. We used an iterative approach following the Describe-Explain-Explore-Design (DEED) cycle to co-conceive, test, and co-evaluate agroecological options with farmers of different types. Agronomic trials were conducted in 2021 in two communities (Nagreonkoudogo and Tanvousse) of the Nagreongo commune in the soudano-sahelian zone of Burkina Faso. Each trial consisted of a randomised split plot of six treatments with four repetitions. The treatments included monocropped sorghum and cowpea, sorghum-cowpea line intercropping, traditional sorghum and cowpea intercropping (intra poquet intercropping), *Mucuna rajada* and short fallow with *Crotalaria retusa*. During a field visit, a voting evaluation of the tested options was conducted with the farmers at maturity of the cowpea. A second evaluation after harvesting used farmers’ own criteria. Results showed that the land equivalent ratio (LER) of the traditional intercropping in both Tanvousse (1.03) and Nagreonkoudogo (1.27) were larger than those of the 2/2 lines intercropping at 0.62 and 0.83, respectively. In Nagreonkoudogo, the first ranked option of the male and female farmers was the 2/2 lines association and the traditional association, respectively. In Tanvousse however, male farmers ranked the monocropped cowpea first, while female farmers chose *Crotalaria retusa* and the monocropped cowpea with the same score. Looking at the yield performance criteria, most farmers in general were satisfied with yield in Nagreonkoudogo as compared to Tanvousse this corroborates with average yield data. However, even though, agronomic results showed the relative advantage of the traditional association compared to monocropping, 100 % and 92 % of farmers were satisfied with yield performance of monocropping and traditional association respectively in Nagreonkoudogo. In Tanvousse, 57 % positively valued both traditional association and sorghum monocropped. Farmers yield performance assessment is in accordance with average yield but not with relative yield (LER). This implies the necessity of farmers and scientists to work together in the process of the co-conception.

Keywords: Agro-ecological options, co-conception, co-evaluation, farmer's criteria