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Full Length Research Paper

Target area identification using a GIS approach for the introduction of legume cover crops for soil productivity improvement: a case study eastern Uganda

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Abstract

Amidst the economic backdrop of resource-poor farmers, combined research and extension efforts in developing countries have focused on developing and promoting potentially adaptable and economically acceptable agronomic technologies that suit farmers' situations. Practices like improved fallows with woody and herbaceous legumes (e.g. *Canavalia* sp., *Crotalaria* sp., *Mucuna* sp., *Lablab* sp., and *Tephrosia* sp.) are considered an appropriate approach to improving soil fertility management and an alternative to expensive, and often not available, inorganic fertilizers. However the challenge remains of how to target such technologies to different socio-economic and biophysical niches at the farm level. Targeting of legume cover crops (LCC) to areas with actual and potential soil fertility management problems using a GIS approach was investigated. Using available datasets it was possible to define, identify, and map potential areas for targeting of LCC soil fertility improvement technologies by overlaying maps of soil fertility status, cropping systems, population density and climate for the eastern region of Uganda. We showed that a geographic information systems based decision support system could provide targeted dissemination output to aid decision making. Shortcomings in the use of available data are discussed, as are the practical applications of this approach in choosing appropriate legume species.

Key words: LCC (legume cover crops), GIS (geographic information systems), targeting, agrotechnology transfer, improved decision-making, soil fertility improvement.



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