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Adoption Potential of *Gliricidia* Agroforestry Based Technologies in Dryland Areas of Dodoma Region, Tanzania

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Abstract

The declining soil fertility, among others, due to the limited access and use of mineral fertilisers by smallholder farmers has been frequently cited as a major factor limiting optimal productivity of field crops in dry-land areas of sub-Saharan Africa including those of Tanzania. In response to this challenge, an extensive collaborative research undertaken by the World Agroforestry Centre and local research institutions, led the development of agroforestry based soil fertility management technologies in Dodoma region as sustainable options to assist smallholder farmers with limited access to mineral fertilisers replenish their soils through nitrogen fixation and recycling of nutrients. This study was conducted to simulate adoption potential of *Gliricidia* agroforestry based technologies in dryland areas of Kongwa and Chamwino districts in Dodoma, Tanzania. Adoption and diffusion outcome prediction tool (ADOPT) was used to simulate adoption potential of *Gliricidia* agroforestry based technologies at the community level. Presentation of the technology diffusion results used the S-shaped function of time. Other useful adoption indicators considered were degree and intensity of adoption. The adoption rate was used since it is associated with other farm decisions making tools such as cost-benefit analysis. Results reveal that 13 % of farmers currently practice agroforestry technologies on their farms for profit maximisation and risk minimisation. The adoption rate peaks have been projected to be very high in both districts. However, it would take 14 years to reach the adoption peak of 94 %. Further, results reveal that access to tree seedlings, land tenure and access to agricultural inputs are important conditions for higher adoption peak levels. Monetary benefits to be generated within twelve months by farmers practicing agroforestry technologies offset the initial investment costs. *Gliricidia* agroforestry based technologies show great potential in addressing multifaceted constraints to farmers including soil fertility, moisture and detrimental effects of climate change. Integration of *Gliricidia* agroforestry based technologies and other soil and water conservation technologies and enhancing farmers' access to input including tree seedling are recommended to enhance adoption and diffusion of *Gliricidia* agroforestry based technologies in dryland areas of Dodoma region. This in the long run will improve food security and livelihoods through increased productivity.

Keywords: ADOPT, agroforestry, dryland areas, food security, soil fertility

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