



Tropentag, September 9-11, 2020, virtual conference

“Food and nutrition security and its resilience
to global crises”

Integrated Risk Assessment in *Gliricidia* Based Farming Systems in Dryland Areas of Dodoma Region, Tanzania

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Abstract

Climatic risks are a major obstacles to the sustainable agricultural productivity in most dryland areas of Sub Saharan Africa. In Tanzania, the impact of climatic risks on crops productivity is critical in dryland areas of Central Tanzania including Dodoma region. The productivity of many crops, for example maize, in Dodoma region is between 1–1.5 tons/ha contributing to high food poverty levels at 35.5 % and 51.4 % and nutritional deficiency of essential nutrients. As a way to deal with climatic risks and increase productivity, profitability and resilience of the farming systems, *gliricidia* agroforestry technology was developed in the dryland areas of Dodoma region, Tanzania. However, the major question is to what extent have farmers used *gliricidia* trees to reduce risks and improve farm level productivity and profitability? This study was conducted to assess the roles of *gliricidia* intercropping in reducing climatic risks and increase farm level profitability and to determine farmer's perception on risks. Risk assessment was also done in monoculture and pigeon pea intercropping systems for comparisons. The study adopted a cross-sectional research design whereby data was collected from 83 smallholder agroforestry households in dryland areas of Kongwa and Chamwino districts using a pre-structured questionnaire: households involved were those that had maintained agroforestry plots for at least two years. A linear regression model was used to analyses farmers' attitude towards climatic risk and their perception towards agroforestry as a coping strategy towards climatic risks. Most farmers (96 %) considered agro-forestry and intercropping (80 %) systems to be less risky compared to monoculture systems. Findings further show, farmers perceive adoption of agroforestry technologies reduce the impact of climatic risks on crop productivity by 75 %. Hence most (84.4 %) of the agroforestry farmers intercrop *Gliricidia Sepium* with other crops for risk minimisation and profit maximisation. Study findings also show variation in farmers' attitude towards risk coping measures based on age and levels of individual household income. It is concluded that *gliricidia* intercropping has a great potential in addressing climatic risks and enhance crop productivity, profitability and resilience of the farming systems.

Keywords: Agroforestry, Attitude, dryland areas, perception, risk

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