



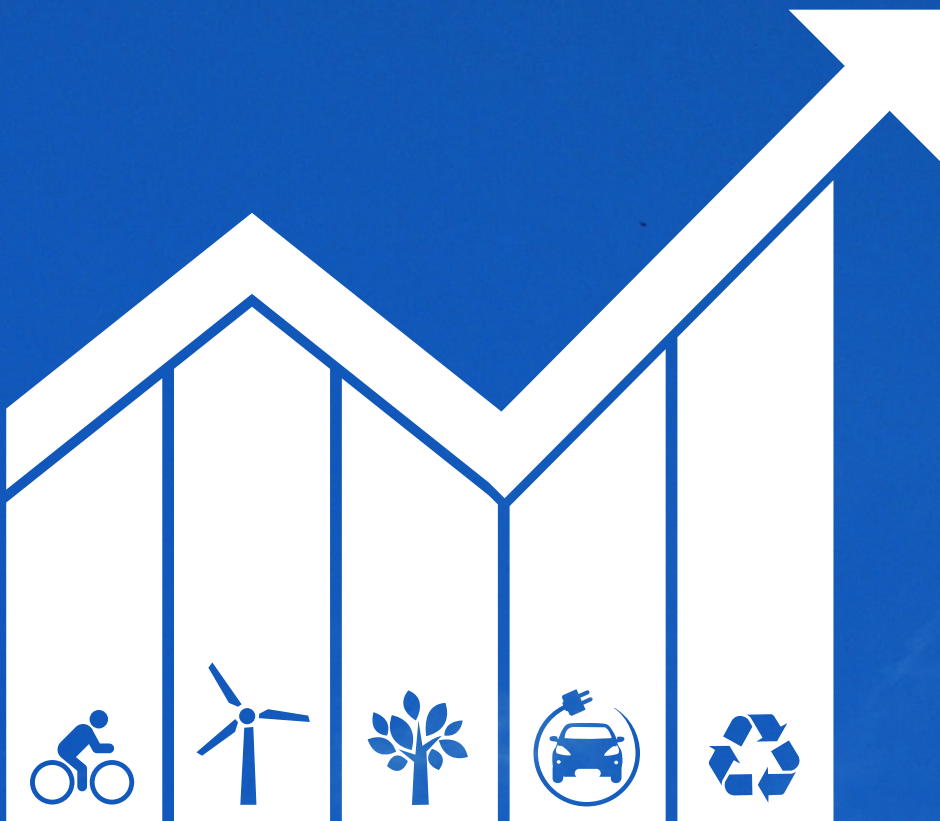
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# Smallholder adoption of technology: Evidence from the context of climate smart agriculture in South Africa

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## Abstract

Climate change represents a serious threat to African agriculture, consequently leading to water scarcity and climate variability. These challenges negatively impact agricultural production. Climate-smart Agriculture (CSA) technologies, such as drought-tolerant seed varieties (DTSVs), can provide a solution. However, effective adoption and use of these technologies within smallholder communities is not straight forward. This study investigated the factors determining adoption of CSA technologies by exploring the farmers' characteristics, contextual factors, and considered additional factors extracted from farmers' perceptions of CSA technology-specific attributes. The study was carried out in Limpopo Province, South Africa. Quantitative and qualitative data from farmers' cross-sectional survey (n=196) and focused group discussions (n=5), was subjected to descriptive and inferential statistical analysis. Factor analysis reduced 19 identified CSA technologies specific attributes to 5 factors that were used in the multinomial logistic regression model. Results show a range of drivers and barriers influencing DTSVs adoption. The adoption of DTSVs by sampled smallholder farmers were influenced by training and demonstration; knowledge and benefits related to DTSVs; necessary requirements like receiving tractor services on time, knowledge on better dates of DTSVs and weather information; enabling factors like additional training on DTSVs and information including knowledge about other CSA technologies other than DTSVs, gender, marital status and credit access. These results have policy implications for various stakeholders which reinforce multi-actor approach to climate change adaptation and building of functional institutions, enhancing training of smallholder farmers, improving on access to sufficient demonstrations, climate change information and credit support amongst other support.

**Keywords:** Climate smart agriculture, smallholder farmers, drought-tolerant seeds technology adoption, multinomial logit regression