

# Extrapolation suitability for improved vegetable technology packages in Babati and Karatu districts of Tanzania

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## Abstract

Land suitability assessment match crop requirements with available natural resources to promote sustainable agricultural productivity. A recent study based on on-farm trials in Babati District of Tanzania demonstrated that improved vegetable cultivars grown under integrated management practices (IMP's) produced double the yield and net income compared to conventional farmers practice. The challenge for extension agencies is to promote adoption at scale of the proven IMP's for vegetable cultivars. In this study, biophysical conditions of the trial sites where the improved vegetable technology packages showed low yield gap and high net income were used as reference sites to identify other potentially suitable sites for extrapolating elite tomato (*Lycopersicon esculentum*; 'Tengeru 2010') and African eggplant (*Solanum aethiopicum*; 'Tengeru white'). Input variables include remote sensing data representing biophysical conditions that limit productivity of two improved vegetable cultivars. Extrapolation suitability index (ESI) for the two cultivars is generated by comparing the dissimilarity between biophysical conditions encountered at the reference trial sites to those of the wider extrapolation area. ESI maps identify areas where the improved vegetable cultivars under IMP's can be extrapolated with potentially low risk of failure in Babati and Karatu districts of Tanzania. A map is generated showing the most limiting factor for each cultivar at each grid cell to guide targeting of appropriate management practices especially for areas with sub-optimal biophysical conditions. Maps generated from this study can support setting of multi-location trials to further test adaptability of improved cultivars and management practices at specific biophysical context.