

## **Vegetation condition index: A proxy weather parameter in land suitability analysis**

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### **Abstract**

The Vegetation Condition Index (VCI), an extension of the Normalised Difference Vegetation Index (NDVI) is a useful model for detecting crop yield productivity, yield prediction and climate modelling. It approximates the rainfall component of weather in NDVI value and allows the quantifying of the impact of rainfall on maize crop. In view of the of the recurrent problem of food insecurity, the thrust of this research was to use the VCI-drydekads in Ward 36 of Mberengwa District to determine the land suitability potential of the area with regard to maize crops. Maize crop performance is a function of critical variables which include rainfall and soil nutrients. The VCI was used to detect maize crop land suitability by calculating the number of VCI-drydekads under rain-fed maize, and Land Utilisation Type (LUT) along with soil map analysis by virtue of the Geographic Information System (GIS). The exceedingly high number of VCI-drydekads and the pedological constraints show that subject to the Food and Agriculture Organisation (FAO) land suitability guidelines, Ward 36 has had the worst maize crop failure and has hence been factor- rated as currently not suitable (n1) and marginally suitable (s3) respectively. This apparently disqualified area's land suitability potential for maize crop production (LUT). On the basis of its results, this study recommends that the Agricultural Technical and Extension Services (AGRITEX) evaluates the feasibility of relying on maize crops and proceed to advise resettled A1 farmers to implement the best diversified farming investment through such drought-tolerant varieties as sorghum and millet. Furthermore, Government should consider allocating bigger plots to A1 farmers to facilitate the commercial livestock production (LUT) of cattle, sheep and goats with subsidised loan schemes, inputs, technical support, and market networks.

**Key terms:** Vegetation Condition Index; Normalised Difference Vegetation Index; Yield prediction; Land utilisation type; VCI-drydekads