

***An agroclimatic land evaluation
for rain-fed agriculture:***

a case study of the Attanagalu-Kala Oya area,
with application to Sri Lanka at large

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Abstract

A reassessment of the productivity of agricultural land can be considered as a timely pre-requisite in order to upgrade the quality of life of the people of Sri Lanka. Therefore, a rationalization of land-use in Sri Lanka through a more meaningful land evaluation methodology is essential to optimize the productivity. This study has attempted to introduce a land evaluation methodology for rainfed agriculture in Sri Lanka on the basis of agro-climate.

This thesis consists of ten chapters, with a number of relevant tables, diagrams and maps. Chapter 1 is a systematic sequential analysis of different aspects and patterns of rainfall and agricultural land-use in Sri Lanka. Chapter 2 is devoted to a literature survey to assess critically the methodology used in land evaluation at national and international levels. Selected methods and modelling procedures suitable for Agro-climatic land evaluation for Sri Lanka are synthesized in Chapter 3.

Chapter 4 presents the step-wise process of the methodology followed in this study.



The aim of chapter 5 is to introduce a rational agro-climatic classification and zoning system for Sri Lanka. With this purpose in view, existing climatic zoning systems in Sri Lanka are briefly reviewed, and new criteria and methodology are evolved. Newly formulated methodology is adopted for the purpose of presenting a more meaningful agro-climatic zoning.

Chapter 7 is a detailed analysis of agro-climate in the study area. Modelling of water balance and crop yields are carried out with long term agro-climatic data base. Through modelling of water balance and crop yields, identification of most suitable crops, earliest sowing dekad, crop water requirements, water deficit and relative yield decrease of the study area are carried out.

The influence of soil moisture on crop growth and production during the growing period is assessed in chapter 8. Two computer simulation models are applied using actual field data collected from different soil profiles of the study area during Maha 1985/86. This exercise has helped to characterise soil moisture regime, water extraction by plant roots and actual evapotranspiration during the Maha growing period.

The final results of the study is presented in chapter 9 as suitability classifications. The suitability maps for selected crops are given separately in appendixVII.

The findings and conclusions of the study are summarized in chapter 10.