ශ්‍රී ලංකාවේ වියලි කලාපයේ වැව් පද්ධතිවල කෘෂිකාර්මික නිෂ්පාදනය සහ ජල කළමනාකරණය

(අනුරාධපුර දිස්ත්‍රික්කයේ තිරප්පනේ වැව් පද්ධතිය ආශ්‍රයෙන් කරන ලද භූගෝලීය අධ්‍යයනයකි)

ශාස්ත්‍රපති උපාධිය සඳහා ඉදිරිපත් කෙරෙන පශ්චාත් උපාධි නිබන්ධනය

ඩී. එම්. ඒ. කේ. ධනසේකර

භූගෝල විද්‍යා දෙපාර්තමේන්තුව
ශාස්ත්‍ර පීඨය
පේරාදෙණිය විශ්ව විද්‍යාලය
ශ්‍රී ලංකාව
1999

ABSTRACT

The 'dry zone' is the largest of the three principal climatic zones of Sri Lanka. It comprises of two thirds of the total land area of the country the extent is 1,62,000,000 ha. The dry zone conventionally demarcated by the 75" isoheyet, has a climate suitable for paddy and a variety of other field crops. There is a large area of land in the dry zone which is potentially suitable for agricultural development. For this reason, it is the dry zone which is pivotal for agro-based economic development of the country.

Water is the limiting factor when using dry zone lands for agricultural development. Therefore, l irrigation sector based on surface water supply is a key component. Although there are several institutions that provide services relating to water management and agricultural development, there is no proper co-ordination among them. This situation is a serious shortcoming. Yet, if properly managed the existing systems of tanks and canals can contribute immensely to increase agricultural productivity.

A small cascading systems of tanks situated in Thirappane Divisional Secretariat of the Anuradhapura District was selected for the present study. It was the Thirappane cascade consisting of five small tanks.

First this study examines the agricultural economy and the physical environmental factors such as climate, soils and hydrological conditions of the Thirappane cascade and its environs. It also examines the existing land use pattern of the area which is in harmony with the features of the terrain.

Next, (chapter two) reviews related previous studies, explain the objectives of the present study and discussion the significance of the proposed study.

The study was done primary as a field study based on a questionnaire survey. Entailed there were participation at season (*kanna*) meetings and discussions with relevant

officers and other persons. Also incorporated were data for secondary and tertiary source. The data was analysed by computer software, mapping of the study area done by the use of Geographical Information System. The details are in chapter III.

The present study is based on the tank cascade system concept a time tested system centred around efficient water use. The spatial, historic, social, economic and hydrological characteristics of the Cascade System is explained in chapter IV.

The influence of institutional structure is very critical in tank cascade. The structure institutional set up especially after the 1948 independence is discussed in detail next (chapter V). The chapter further examine the inherent problems of the institutional system and also presents solutions to these problems.

The next, section is the core of the study (in chapter VI). It examines the influence of the spatiality of water availability and the importance of water managed especially at the level of small rice paddy blocks. Discussed the water availability index, water management techniques traditional and new, and how land tenure affect water management in both traditional and new agricultural lands.

In this the following this emerged, First, land fragmentation is a serious problem which demands land consolidation. Lack of co-ordination among government institutions is a shortcoming which also leads to the problem of not properly maintaining irrigation structure such as sluice, canal and weirs. Moreover, the peasant farmers and not aware of the economic value of limited water resources whereas, the government officers do not effectively educate the farmers on the need to conserve water.

Eventually, it highlights that effective water management can definitely contribute substantially to stabilise agricultural productivity.