

**MAPPING THE SOIL CHEMICAL PROPERTIES
AND LEAF QUALITY ON QUALITY TOBACCO
PRODUCTION IN SRI LANKA
: A GIS APPROACH**

A dissertation submitted to the
Faculty of Animal Science and Export Agriculture
Uva Wellassa University
In partial fulfillment of the requirements for the award of
Bachelor of Science in Export Agriculture

By
HASITHA CHATHURANGA MARASINGHE

**Export Agriculture Degree Programme
Faculty of Animal Science and Export Agriculture
Uva Wellassa University of Sri Lanka**

2014

ABSTRACT

Geographic Information System (GIS) can integrate and relate any data with a spatial component regardless of the source of data. It's easy to store, retrieve, manage and analyze geotechnical data. This research aims to investigate the development of a Geographic Information System (GIS) to better collect, manage, analyze and visualize soil chemical properties and leaf quality data which obtained from 52 locations of Galewela and Mahiyanganaya tobacco growing areas. This research presents the results of soil chemical properties and leaf quality distribution in selected areas and future potential tobacco growing areas.

In this study Galewela and Mahiyanganaya tobacco growing areas were chosen as sample area. Major soil chemical properties which affect to tobacco leaf quality were identified by correlation analysis in minitab statistics. Soil chemical property and tobacco leaf quality distribution maps were processed using interpolation technique in ArcGIS. Finally, all thematic layers were integrated in a GIS environment to generate potential map.

Soil pH, Magnesium, Acid saturation, Potassium and Nitrogen are identified as major influencing soil chemical properties for tobacco leaf quality.

In Mahiyanganaya; Rideela, Dehiaththakandiya, Sandunpura, Nawa Madagama and Diyawiddagama are identified as potential areas for tobacco cultivation. In Polonnaruwa; Sirpura, Pallegama and Selasumgama are identified as the most potential areas. In Galewela; Tholombagolla and Kalawewa are the most potential areas for quality tobacco production.

The study thus demonstrates that GIS is a very useful tool for demarcating potential areas for tobacco cultivation.

Keywords: archiving, analyzing, GIS, Tobacco, soil properties, leaf quality, interpolation, potential area