

CROP MODELING WITH REFERENCE TO CHANGING CLIMATE

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Rice is the single most important crop occupying 34 percent (0.77 million ha) of the total cultivated area in Sri Lanka. The total paddy yield contributes about 1.8% share of Gross Domestic Production in Sri Lanka. At present, the national average of rice is 4.0 Mt/ha and this has to be increased up to 5.3 mt/ha to meet the demand by 2020. Increasing competition in water use has spurred the concept of better use and management of water resources so that the needs of all stakeholders can be met properly. The need to study how water can be used efficiently is therefore necessary. Agriculture, being considered the major user of water, is a potential avenue to study water use efficiency.

A study was conducted at the Research and Development center, *Aralaganwila* in *Maha* season (2010/2011) for the purpose of crop modeling for forecasting the rice yield with the prevailing climatic conditions subjected to moisture stress (under rain fed condition). Agro-meteorological data with reference to Rainfall (RF), Temperature (T), Relative Humidity (RH) and Number of Bright Sunshine Hours (NBSH) were collected for past 20 years and annual average *Maha* season rice yield data for the reference period were collected. An empirical model was developed with the help of Multiple Regression technique with linear model to analyze the relationship of agro-meteorological data with the annual average *Maha* season rice yield. Results of the regression analysis revealed only NBSH and RH significantly affect the *Maha* season rice yield.

Key words: Annual rice yield, Crop modeling, Meteorological data