

The study on variation of the productivity of tea lands in the different agro-ecological regions in Sri Lanka

Little information is available between the variation of productivity and ageing of the tea plantations in the different agro ecological regions. Thus, the present study was carried - out in 25 selected tea estates representing five main tea growing agro-ecological zones *i.e. wet* and intermediate zones of up and mid country and wet zone of the low country. Bush count and annual yield data from three different fields based on yield category with varying soil conditions of sample estates were collected over the period of 20 years (1976-1995). The average total annual tea yield of the sampled fields from their bearing stage (2 years after planting) was plotted against with age. The relationship between bush stand and elevation was established by regression analysis using Minitab Statistical Package.

The analysis of yield data over the 20 years period showed that there are two patterns in yield variation with ageing of the tea plantations. When the annual fluctuations due to changes in field practices such as pruning is left out, the yield of low and mid country tea plantations showed an increasing trend until they reach the maximum productivity level by 10-13 years after bearing. The increase in tea yield up to 3rd pruning is due to

the spreading of tea bushes and strengthening of the frames or branches. Thereafter, the yield declines gradually due to ageing. Declining trend in tea yield with ageing could be attributed to bush debilitation and soil degradation which lead to the presence of unproductive bushes and low bush stand in the low and mid elevations. In contrast, the tea yield of up country and Uva reached its maximum by around 13-15 years from bearing stage and thereafter, yield got stabilized with ageing without any remarkable decline after the 3rd pruning. This could have been resulted from better soil and climatic conditions with a low bush debilitation in the upcountry. It was also observed that bush stand reduces with elevation *i.e* about 18% reduction in the bush stand for every 1000m deop in elevation ($r^2=0.38$ at $p<0.05$). This means that the low grown tea plantains record more vacancies in their fields.

The findings of this analysis show that adaptation of sanitary pruning measures especially from 3rd pruning on wards in extremely necessary to maintain the health and vigor of tea bush. A proper infilling programmes is needed to ensure maximum benefits from costly inputs in tea plantations and also secure a sustainable production in our tea lands.