Indian Journal of Natural Rubber Research, **13**(1&2) : 98-102, 2000

IMPACT OF WEATHER ON YIELD AND YIELD COMPONENTS IN SOME ELITE *HEVEA* CLONES

The influence of weather on the yield of *Hevea* is well recognised. The ultimate effect of weather parameters on yield is mediated through their effects on various yield components. The composite effect of environmental variables influences the yield of rubber more than any of the individual effect (Rao *et al.*, 1990). Moreover the variations in the meteorological parameters such as irradiance, temperature and vapour pressure deficit when exceeding a given threshold may cause stress in *Hevea*. A better understanding of the role of individual environmental factors on yield through their influence on yield components would be useful to evaluate the performance of different *Hevea* clones.

Observations were made in a clone evaluation trial laid out at the Rubber Research Institute of India Farm, Kottayam (Latitude 9° 32'N, Longitude 76° 36'E and altitude 73m above msl). Four hybrid *Hevea* clones (14/82, 17/82, 22/82 and 30/82) in an eleven year old plantation were selected for this study. These clones were developed from the crosses between RRII 105 and RRIC 100. The hybrids were comparable in yield to RRII 105 (Licy, 1997). The trees were maintained under uniform cultural practices and the same system of tapping. Six trees of uniform girth were selected from each clone for recording observations. Yield (g/tree/tap) and the yield components initial flow (IF) rate (ml/cm/min), dry rubber content (DRC) (% W/v) and plugging index (PI) were measured using standard methods (Milford *et al.*, 1969). Observations were made at weekly intervals from January to July 1996.

The soil moisture and weather data were also recorded on the days on which the yield components were recorded. Soil moisture was determined gravimetrically from samples collected from depths of 0 to 15 and 15 to 30 cm on the previous and the same day of the yield data analysis. Weather data like maximum and minimum temperature, relative humidity, wind speed, soil temperature, sunshine hours and rainfall from the RRII agrometeorological observatory were collected. Rainfall was recorded only for dry months extending from January to May.

Path coefficient analysis (Williams *et al.*, 1990) was used to understand the direct and indirect effects of environmental factors on yield through yield components. The correlation between the meteorological factors and yield were worked out. The data on the path coefficient analysis for each *Hevea* clone are shown separately in Tables 1 to 5. Results indicated that the direct negative influence of maximum temperature is high for the hybrid 14/82. Wind speed and soil temperature had significant negative association influencing the yield indirectly. Sunshine hours positively influenced the yield, both directly and indirectly through maximum temperature. Cumulative rainfall had significant positive influence on the yield through yield components. The results indicate that the clone 14/82 is very sensitive to weather in general and to temperature in particular.