

Evaluation of soil fertility and mulberry leaf quality on silkworm rearing and cocoon characteristics

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Soil samples were collected from six different mulberry growing areas of Malnad region of Karnataka and analyzed for the soil fertility and leaf quality parameters. The influence of soil nutrient status on mulberry plant growth and leaf quality with regard to five varieties M₅, DD, S₅₄, S₃₆ and V₁ and the overall impact on silkworm larval growth and cocoon characteristics were studied in detail. It was observed that the six sampling areas differed significantly in the parameters analyzed. Variety V₁ from Kadur region showed the best result among all the five varieties grown in six sampling areas.

Key words : Cocoon characteristics, Leaf quality, Mulberry growth, Larval growth, Soil nutrient status.

INTRODUCTION

The fertility of soil, in general, plays the key role in the development of any crop plant so also the mulberry plant. The growth and leaf nutrient status of mulberry plant varies in different geographic locations as the soil conditions change. Significance of chemical and biochemical constituents of mulberry leaf with respect to silkworm nutrition has been recognized by several researchers (Ito and Arai, 1963; Chaluvachari and Bongale, 1995). Quality and yield of mulberry leaf directly influences the silkworm larval growth and cocoon characteristics (Krishnaswami *et al.*, 1970; Das and Vijayaraghavan, 1990). However, information on the biochemical composition of mulberry leaf, its relation with soil fertility parameters and its relevance to the silkworm cocoon performance is extremely scanty. No study was undertaken so far in this regard as an integrated approach. Hence, the present study has been undertaken to evaluate the influence of soil fertility status of mulberry gardens of six different areas on the mulberry plant growth, quality of leaf and subsequent influence on the silkworm growth and cocoon characteristics.

MATERIALS AND METHODS

Six mulberry growing areas in Malnad regions of Karnataka namely Sringeri (SA-I), Shimoga (SA-II),

Kadur (SA-III), Honnali (SA-IV), Chikmagalur (SA-V) and Bhadravathi (SA-VI) were selected for the present study.

The six sampling areas were evaluated for soil fertility, mulberry plant growth and leaf nutrient status with respect to five varieties (M₅, DD, S₅₄, S₃₆ and V₁) and silkworm (*Bombyx mori* L.) larval growth and cocoon characteristics.

Soil sampling:

The soil samples were collected at a depth of 15-30cm. The samples were air dried, processed, passed through 2mm sieve and preserved for analysis.

Soil analysis:

Soil samples were analyzed for selected fertility parameters *viz.* pH, organic carbon (OC), electrical conductance (EC), total nitrogen (tN), available phosphorus (P), available potassium (K) and micronutrients (Zinc, Copper, Manganese, Iron and Boron) following standard methods of soil analysis (Perur *et al.*, 1973).

Evaluation of mulberry growth:

Growth and leaf yield data were collected from ten individual plants selected randomly among the six replicate plots after 60th day of pruning for the five varieties in

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