

## SEASONAL VARIATION IN CHEMICAL COMPOSITION OF IPIL-IPIL (*LEUCAENA LEUCOCEPHALA*)

Amjad Ali Ch., Zafar Iqbal, Muhammad Afzal  
and Muhammad Mushtaque

### Abstract

Samples of Ipil-Ipil (*Leucaena leucocephala*) grown at PFRI Faisalabad were collected bimonthly for two consecutive years to assess variation in chemical composition of twigs and leaves. Chemical analysis indicated composition of 27 to 32 percent Dry Matter (DM), 23 to 28 percent Crude Protein (CP), 4 to 6 percent Ether Extract (EE), 20 to 26 percent Crude Fibre (CF), 7 to 11 percent Ash and 32 to 37 percent Nitrogen-Free Extract (NFE) during different months. However, the variation in composition among different months was statistically non-significant.

### Introduction

The current status of animal protein deficiency in developing world is caused by lack of forage. Trees and shrubs play dual role serving both as shade and forage supply for livestock. During dry season, shrubs and trees provide green fodder i.e. twigs, leaves, flowers, fruit etc., often rich in protein, vitamins and minerals. However, during non-availability season, animals depend upon straw only from native grasses and this poor feed causes avitaminosis, mineral deficiencies and severe debilitation.

Ipil Ipil (*Leucaena leucocephala*) is a deep-rooted tree or arborescent shrub upto 10 m high. It is native to Mexico, but cultivated widely in the tropics as fodder plant especially on dry wastelands where little else will grow (Gohl, 1981). Ipil-ipil is a fast growing evergreen fodder tree with high protein content. It serves as fodder in the extreme season. Dry matter yield of 25-30 t/ha/year can be obtained by planting it at 1x1 m spacing. (Mohammad, 1989). Pure fodder intake of Ipil-ipil is generally not recommended due to mimosine contents in its leaves which causes shedding of wool and hair when consumed in large amounts (Singh, 1982). However, the mimosine content can be reduced by soaking it in water and drying (Gohl, 1981). Lim (1967) and Bhannasiri (1970) while studying chemical composition of fresh leaves and twigs of Ipil-ipil concluded that DM ranged 30.7-31.6%, CP 21-27%, CF 10-24.2%, Ash 3.5-8.9%, EE 2.7-6.5% and NFE 30.0-55.1%. Kharat *et al.* (1980) found 22.22% CP, 3.56% EE, 46.3%

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Punjab Forestry Research Institute, Faisalabad, Pakistan



Neutral Detergent Fibre and 29.79% Acid Detergent Fibre in Ipil-ipil. Sharma (1990) observed that leaves of Ipil-ipil contained 30.7% DM, 22.8% CP, 14.5% CF, 3.3% EE and 47.6% NFE.

Chemical composition of leaves varies in different months but the change in chemical composition at different localities is not regular as it is influenced by edaphic and climatic changes (Singh and Mudgal, 1967). Chemical composition is a fair indicator of feeding value of a plant species. Information on seasonal variation in chemical composition provides a guideline for utilizing tree fodders at specific stages to ensure optimum use. Little literature is available about seasonal variation in chemical composition of twigs and leaves of different species. The present study was, therefore, conducted with the objective to determine seasonal variation in proximate constituents of twigs and leaves of Ipil-ipil.

### Material and Methods

Ipil-ipil raised during 1986-87 in the arboretum of Punjab Forestry Research Institute, PFRI, Faisalabad was selected for this study. Random samples of green leaves and twigs (less than 15 cm in length) were collected bimonthly from different trees (January, March, May, July, September and November) for two years, i.e., from 1997 to 1998. The samples were weighed immediately after cutting and preserved in paper bags and marked for identification. The samples were dried in an oven at 65°C to a constant weight. The difference between fresh and dry weight indicated the moisture content of the samples. The dry matter present was thus calculated by the following formula:

$$\text{Dry matter percentage} = \frac{\text{Dry weight}}{\text{Fresh weight}} \times 100$$

The dried samples were ground to 1.0 mm mesh and preserved for proximate analysis (AOAC, 1984) for the following constituents:

1. Crude Protein (CP) %
2. Crude Fibre (CF) %
3. Ether Extract
4. Ash %
5. Nitrogen-Free Extract (NFE) %

The proximate analysis for the above constituents parameters was done thrice and the mean values were taken.