

Potassium Content of *Gliricidia maculata* Leaves and Tender Stems

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INTRODUCTION

Green manuring is an agricultural practice which dates back to ancient times, but it is only comparatively recently that a scientific study of the subject was begun. Green manuring offers many advantages to both soil and crop, and its effect on the latter are markedly evident. The chief advantages gained from green manures are: increase in the organic matter (especially the humus) and nitrogen contents of soils; conservation of the soil and its fertility and the improvement of its physical condition, and conservation of soil moisture. In addition there is an economy in the cost of weeding and some green manures are used as fodder. Further, microbiological activity in soil is increased on incorporation of green manures. Leguminous crops are the most popular due to their nitrogen fixing ability and consequently their higher nitrogen contents. The manurial value of some local green manure crops have been reported by Joachim (1926, 1928). In these studies leguminous crops were important due to their high nitrogen contents.

Potassium is an essential element for growth of all plants. Among basic metallic elements, it is absorbed in largest quantities by plants, although its functions are still not fully known. The presence of adequate available potassium in a soil influences the general tone and vigor of plants growing in it. This element increases crop resistance, encourages development of a strong root system and has a balancing effect on uptake of both nitrogen and phosphorus.

Gliricidia maculata is used as a shade and green manure tree for tea. This medium sized tree flourishes from sea level upto about 3,000 feet and is propagated from seed or cuttings. The latter is the easiest method as good seed is not easy to obtain on account of insect attack. These trees are usually lopped periodically; 8 to 12 years is given by some as the economic life of the plant. As a shade tree for coffee *Gliricidia* is also popular and could be used as a shade tree for cocoa also (Wright 1907). It is used as wind breaks in rubber plantations, and could be used as a green manure crop in these plantations too:

In view of the frequent inquiries made on the chemical composition of the more extensively cultivated green manure crops, and in order to ascertain to what extent leguminous green manure crops are richer in nitrogenous constituents than non-leguminous crops used for green manuring, analyses of the more important species of these plants were made, (Joachim, 1926, 1928).

MATERIALS AND METHODS

Samples of *Gliricidia maculata* collected from the Faculty of Agriculture, pasture unit at Peradeniya were used for this study.

Tender stem and leaf samples were air dried to constant weight and ground to pass a 0.5 mm sieve. Ground samples 0.5 g were used for analysis of total K by digesting the samples with HNO₃ and ternery mixture according to the method Jackson (1958).

Water soluble potassium in the material was determined using samples ground to pass a 0.5 mm sieve. Two gm. samples were extracted with 50 ml distilled water on a mechanical shaker for 1 hour. After filtering, filtrate was analysed for potassium using a flamephotometer.

RESULTS AND DISCUSSION

Relevant characteristics of *Gliricidia maculata* leaves and tender stems are presented in Table 1.

Table 1. Percentages of moisture, total and water soluble potassium

Moisture	84.7
Total K	1.57
Water soluble K	1.50

The emphasis on *Gliricidia maculata* has been mainly on its higher nitrogen content. In this study it was found that even though the total potassium content of plant material was only 1.57 % a substantial amount of it, i.e. 95.56% was in a readily available, water soluble form. Thus this readily available form of element (1.50%) can be efficiently utilized to supplement imported potassium fertilizers to a certain extent, and a fair amount of foreign exchange could be saved.

CONCLUSIONS

Gliricidia maculata could be not only used for its higher nitrogen content but also for its higher potassium content which is mainly in a water soluble readily available form.

GLIRICIDIA MACULATA LEAVES AND TENDER STEMS

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