

THE EFFECT OF DIFFERENT TYPES OF SOIL ON THE GROWTH AND OTHER MORPHOLOGICAL CHARACTER OF *DATURA STRAMONIUM* L

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ABSTRACT

The growth behavior and other characteristics studies of *Datura stramonium* L., were conducted under 5 different types of soil i.e. clayey, sandy, loamy, control (clayey loam) and leaf mold, in pots and field. It was found that the plants growing in leaf mold soil were very healthy, much taller, having long, internodes, larger leaves and capsules. They had more fresh and dry weights. Early flowering was also observed in the leaf mold soil. Plants growing in loamy soil were shorter, bearing smaller leaves and capsules and had less fresh and dry weights. In contrast to these, plants growing in other 3 types of soil i.e. clayey, sandy and control (clayey loam) had poor growth.

INTRODUCTION

Datura stramonium L. belongs to the family *Solanaceae* (Stewart, 1972) and is a pharmacopoeial drug plant of British and United State Pharmacopoeias (Khan & Hussain, 1960) containing up to 0.7% alkaloids hyocyamine, atropine, apoatropine, belladonine, scopolamine, resin etc (1950).

Description: *Datura stramonium* L. is, on average, 30 to 150 cm tall with erect, forking and purple stems (Richard *et al.*, 1997). The leaves are large, 7 to 20 cm long and 6 to 15 cm wide, coarsely dentately lobed, nearly glabrous (Wallis, 1960). The flowers are one of the most distinctive characteristics of *Datura stramonium*: they are trumpet-shaped, white to purple, and 5-12.5 cm long. The flowers open and close at irregular intervals during the evening, earning the plant the nickname Moonflower (Richard *et al.*, 1997). The fruit is thorny capsule, dehisces septifragally to form four valves to liberate numerous seeds (Wallis, 1960). The seeds are flattened, reniform, black or dull dark brown and marked by shallow reticulate depressions (Marwat *et al.*, 2005). All parts of the plant emit a foul odor when crushed or bruised (Richard *et al.*, 1997).

Constituents: We have already described the constituents and uses of *Datura*

stramonium L. in one of our previous papers (Marwat *et al.*, 2005).

Purpose of the research work: The purpose of the research work is to find the most suitable soil for the growth and development of *Datura stramonium* L.

MATERIALS AND METHODS

In order to study the effect of 5 different types of soil conditions on the growth and other morphological characteristics of *Datura stramonium* L. the project was divided into two parts. In first part the experiment was set up in pots and in second part the experiment was conducted in field condition.

(A) Pot Experiment

Types of soil used: Following 5 different types of soil were put in 25 pots of the same size, using 5 pots for each type of soil.

Clayey soil: Pure clay brought from atypical area.

Sandy soil: Pure sand brought from a typical area.

Loamy soil: Pure clay and pure sand mixed in equal proportion by volume.

Leaf mold: Leaves buried in the soil with other organic matter.

Control soil: The garden soil of Botany Department, Peshawar University.