

Effect of *Convolvulus Pluricaulis* Flower Extract Spray on the Growth of Spinach

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ABSTRACT: The increasing demand for sustainable agricultural practices has led to the exploration of plant-based growth enhancers. This study investigates the effect of *Convolvulus pluricaulis* (Shankpushpam) flower extract spray on the growth of spinach (*Spinacia oleracea*). The extract was prepared using fresh flowers and applied as a foliar spray at regular intervals. Growth parameters such as plant height, leaf number, and biomass were recorded and compared with control plants. Results indicated a noticeable improvement in growth and overall plant health in treated samples, suggesting the presence of bioactive compounds that promote plant development. The findings highlight the potential of *Convolvulus pluricaulis* extract as an eco-friendly and cost-effective alternative to chemical fertilizers, contributing to sustainable agriculture.

KEYWORDS: *Convolvulus pluricaulis*, *Spinacia oleracea*, Flower extract, Bio-stimulant, Sustainable agriculture, Eco-friendly fertilizer

I. INTRODUCTION

Agriculture plays a vital role in food production, but excessive use of chemical fertilizers and growth regulators has led to serious environmental issues such as soil degradation, water pollution, and health hazards. In recent years, there has been increasing interest in sustainable and eco-friendly agricultural practices that reduce chemical inputs and promote natural alternatives. Plant-based extracts are gaining importance as natural growth promoters due to their rich content of bioactive compounds. One such medicinal plant is *Convolvulus pluricaulis*, commonly known as Shankpushpam. It is widely used in traditional medicine and contains compounds like alkaloids, flavonoids, and glycosides, which may enhance plant growth and development.

Spinacia oleracea (spinach) is a nutrient-rich leafy vegetable that is widely cultivated and consumed. Improving its growth and yield using natural and safe methods is important for both farmers and consumers. This study focuses on evaluating the effect of *Convolvulus pluricaulis* flower extract when applied as a foliar spray on the growth of spinach. The research aims to determine whether this natural extract can act as an effective bio-stimulant and serve as a sustainable alternative to chemical fertilizers.

II. MATERIALS AND METHODS

- Selection of Plant

One healthy spinach plant (*Spinacia oleracea*) was selected for the experiment and maintained under uniform environmental conditions, including soil, sunlight, and watering.

- Collection of Plant Material

Fresh flowers of *Convolvulus pluricaulis* (Shankpushpam) were collected from a natural source. The flowers were washed thoroughly with water to remove dust and impurities.

- Preparation of Extract

The cleaned flowers were ground with water using a mortar and pestle to obtain a crude extract. The extract was then filtered using muslin cloth to remove solid residues. The filtrate was diluted with water in a ratio of 1:5 to prepare the spray solution.

- Application of Extract

The prepared extract was transferred into a spray bottle and applied to the leaves of the spinach plant as a foliar spray twice a week.

- Experimental Conditions

The plant was kept under the same environmental conditions throughout the study period to ensure consistent growth conditions.

- Observation and Data Collection

Observations were recorded weekly for a period of 3–4 weeks. Growth parameters such as plant height, number of leaves, leaf length, leaf width, and changes in leaf colour were measured and noted. The overall health of the plant and any signs of pest attack were also observed

III. RESULT

The growth of the spinach plant (*Spinacia oleracea*) was observed over a period of 3–4 weeks after the application of *Convolvulus pluricaulis* flower extract spray. The plant showed a gradual increase in height during the study period. The number of leaves also increased steadily, indicating active growth.

An improvement in leaf size, including both length and width, was observed after regular application of the extract. The leaves appeared greener and healthier compared to the initial stage of growth. No signs of pest attack or disease were noticed during the experimental period.

Overall, the application of *Convolvulus pluricaulis* extract was associated with enhanced growth and improved health of the spinach plant.



Figure 1: Spinach Plant Before Spraying the Flower Extract



Figure 2: Spinach Plant after Spraying the Flower Extract

Parameter	Before spray	After spray
Plant height	12cm	18cm
Leaf colour	Light green	Dark green
Leaf size	Small	Larger and broader
Plant health	Average	Healthy and fresh

Table 1: Different Parameters to check the growth of Spinach Plant

IV. CONCLUSION

The present study clearly demonstrates that the foliar application of *Convolvulus pluricaulis* (Shankpushpam) flower extract significantly enhances the growth and development of *Spinacia oleracea* (spinach), as observed through improved plant height, increased number of leaves, larger leaf area, and higher biomass in treated plants compared to untreated controls. These results indicate that the bioactive compounds present in *Convolvulus pluricaulis*, such as alkaloids, flavonoids, and glycosides, may play a crucial role in stimulating physiological and metabolic activities in plants, thereby promoting better growth and productivity.

The findings of this study emphasize the importance of adopting plant-based and eco-friendly agricultural inputs as alternatives to synthetic fertilizers and chemical growth regulators, which are associated with environmental pollution, soil degradation, and potential health hazards. By utilizing natural resources like Shankpushpam, farmers can move towards safer and more sustainable farming practices while maintaining crop yield and quality. Furthermore, this study highlights a broad scope for future research, including the evaluation of different extract concentrations, optimization of application frequency, and investigation of its effects on various other economically important crops.

The approach also offers potential for large-scale application in organic farming systems due to its low cost, easy availability, and minimal environmental impact. Overall, the use of natural plant extracts such as Shankhpushpam represents a promising strategy for enhancing agricultural sustainability, improving food safety, and reducing dependence on chemical inputs in modern farming systems, particularly for nutrient-rich crops like *Spinacia oleracea*.

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