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EFFECT OF APPLICATION OF AMIRICH PLANT TONIC ON FLOWERING OF FENUGREEK PLANTS (TRIGONELLA FOENUM-GRAECUM L.)

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Abstract: Amirich plant tonic has a crucial role in the flowering process of Fenugreek plants that influence various physiological and biochemical pathways. This comprehensive analysis will explore the impact and applications of Amirich plant tonic in flowering of Fenugreek plants, encompassing their roles in plant growth, development, and stress responses. In the present study, a laboratory experiment was conducted during September and October months**.** The use of Amirich plant tonic is increasing day by day among the farmers in agricultural practice. In this experiment, the effect of (Amirich plant tonic) on fenugreek plants was studied with respect to different dosages. From the experimental results, one can conclude that, in all the treatments, the variation in growth parameters was recorded. In comparison with the control, the effective rate of growth parameters was observed in treatment II. In treatments I, III and in control, the flower formation was not observed. This suggests that, among all the treatments. Treatment II was found to be effective in all the growth parameters including the formation of flowers.

***Index Terms*-Amirich Plant Tonic, Fenugreek, Flowering, Growth Parameter, Soil.**

I. INTRODUCTION

Amirich plant tonic play a crucial role in the flowering process of Fenugreek plants influencing various physiological and biochemical pathways [1]. This comprehensive analysis will explore the impact and applications of amirich plant tonic in flowering Fenugreek plants, encompassing their roles in plant growth, development and stress responses.

Fenugreek (Trigonella foenum-graecum) is an annual herb widely cultivated for its culinary and medicinal uses. The flowering stage is a vital phase in the plant's life cycle, determining seed production and overall yield. Amirich plant tonic is considered as the building blocks of proteins, serve as essential molecules in various plant processes, including flowering [2]. Understanding its impact on Fenugreek flowering can provide valuable insights for optimizing agricultural practices. Fenugreek seeds, derived from the Trigonella foenum-graecum plant, has a rich history and a wide array of applications in culinary and medicinal practices across various cultures. These small, golden-hued seeds possess a distinctive aroma and a slightly bitter taste, adding depth and flavor to numerous dishes worldwide.

Fenugreek seeds are a staple in Indian, Middle Eastern, and North African cuisines. Their warm, nutty flavor profile lends itself well to curries, spice blends and pickles. Roasting the seeds enhances their taste, often done before grinding or adding whole to dishes. Fenugreek seeds are also used to make 'methi' leaves, commonly used in Indian cooking, adding a unique flavor to various dishes. The Amirich plant tonic play a multifaceted role in plant physiology. As precursors to proteins, they contribute to structural components, enzymes, and signaling molecules. In Fenugreek, specific amirich plant tonic act as signaling molecules during the transition from vegetative to reproductive growth [3]. For instance, arginine and lysine are known to modulate flowering time by interacting with key regulatory proteins. Flowering is a sensitive stage in a plant's life cycle, and environmental stressors can affect significantly. Nitrogen is the major component of amirich plant tonic, is crucial for plant growth and development [4]. Fenugreek's flowering process is intricately linked to nitrogen metabolism, where amirich plant tonic serves as carriers of nitrogen [5,6,7]. An in-depth examination of nitrogen assimilation pathways sheds light on how amirich plant tonic contributes to floral initiation and development [8]. Amirich plant tonic act as stress-responsive molecules, aiding Fenugreek in coping with adverse conditions. Proline, for instance, is known for its role in osmotic regulation, helping the plant withstand drought stress during flowering [9,10].

Amirich plant tonic participates in the reproductive success of Fenugreek by influencing pollination and fertilization processes. Certain amirich plant tonics act as attractants for pollinators, enhancing the chances of successful pollination [11,12,13,14]. Additionally, arginine has been identified as a crucial component in pollen tube growth, contributing to successful fertilization in

Fenugreek. The impacts and applications of fenugreek seeds vary across cultures and disciplines, showcasing its versatility and wide-ranging uses.Based on the above concept, the present study has been undertaken in order to study the impacts of amrich plant tonic and it's application on the flowering of fenugreek.

II. RESEARCH METHODOLOGY:

2.1 Sample Collection: A composite soil samples were collected from agricultural lands of Javagal village of Hassan district.The collected soil samples were air dried and passed through 2 mm mesh sieve and stored till analysis. The fenugreek seeds and amirich plant tonic was purchased from local agrochemical shops.

2.2 Experimental Set-up: For the experimental study, 2 Kg polythene pots were used. The amirich plant tonic was diluted to 1L with normal water for each concentration. The Amirich plant tonic major applications include to increase the fruit development and pollination. It also controls the falling of flowers in early stage. Additionally, it supports the growth of microflora in the soil. The processed soil samples were transferred to 2 Kg polythene pots and 30 fenugreek seeds were added and frequent watering is done to maintain water level for effective germination of fenugreek seeds. The prepared pots were kept for observation, after 3 days, the fenugreek seeds started germination and the timing and dosage of application are presented as follows. For all the treatments, two trails were maintained with one control.

Time of Application: - First Spray: - 15 - 20 days after transplantation/germination.
Second Spray: 20 days following the first spray, at the flowering or fruit setting stage.

Amirich dosage Preparation:

- 3ml in 1L Normal Water (Treatment-I)
- 5ml in1L Normal Water (Treatment-II)
- 10ml in 1L Normal Water (Treatment-III)

At the end of 15 days the seedlings germinated were counted and germination index was calculated and expressed in percentage. The germination percentage was calculated using the formula IST (1995) outlined.

Germination Index Percentage= (No. of Seedlings)/ (total no. of seeds) *100

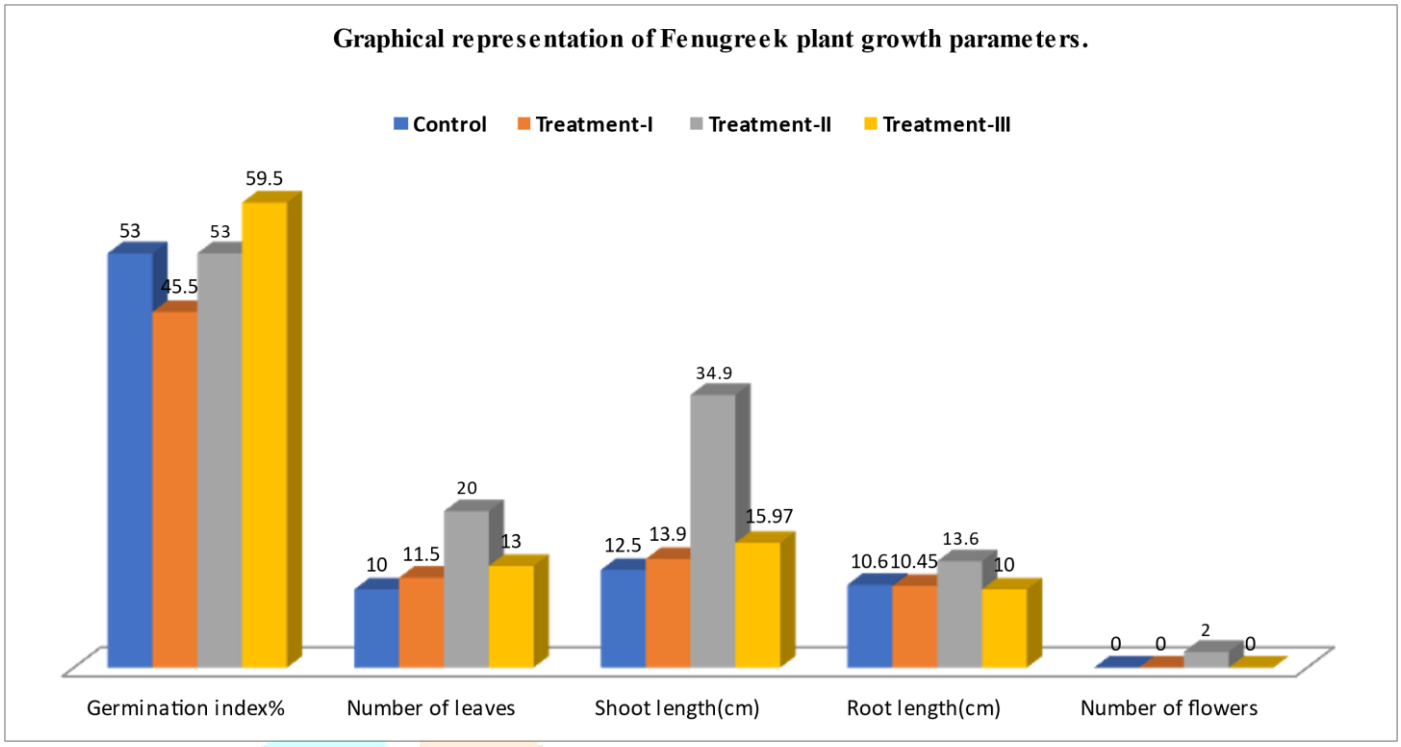
Measuring Growth Parameters of Fenugreek Plant.

- **Measurement of Shoot Length**: The centimeter scale was used to measure the shoot's length from the base to the tip, and the mean length was calculated.
- **Root Length Measurement**: Using a centimeter scale, the root's length was measured from the root collar region to the tip, and the mean length was calculated.
- **Number of Leaves:** The counting of leaves was done manually and was recorded.
- **Number of Pods:** A total count was done manually and the numbers was recorded for all the treatments.

III. Results & Discussion:

Table -1 Results of plant growth and yield parameter

Treatments	Trails	Germination Index (%)	Number Of leaves	Shoot length(cm)	Root length(cm)	Number of Flowers
Control	Trail-1	53	10	12.5	10.6	**Nil**
3ml in 1L water Treatment-I	Trail1	47	12	13.3	11.1	**Nil**
	Trail2	44	11	14.5	9.8	**Nil**
	Mean value	**45.5**	**11.5**	**13.9**	**10.45**	**Nil**
5ml in 1L water Treatment-II	Trail1	55	19	18.1	12.4	**02**
	Trail2	51	21	16.8	14.8	**0**
	Mean value	**53**	**20**	**34.9**	**13.6**	**02**
10ml in 1L water Treatment-III	Trail1	62	14	14.75	10.3	**Nil**
	Trail2	57	12	17.2	9.7	**Nil**
	Mean value	**59.5**	**13**	**15.97**	**10**	**Nil**



3.3 Variation in Germination Index: Germination index shows the percentage of seeds germinated. During the present investigation, in control, the mean value was found to be 53%. In comparison with the control, higher mean values was observed in treatment III followed by treatment II. The lowest mean value was observed in treatment I. This shows that, higher concentration of amrich tonic can influence greater rate of fenugreek seeds germination.

3.4 Variation in Number of Leaves: During the present study, a variation in the number of leaves was recorded. The leaves number counting was done manually. The results show that, in control, the mean value of leaves for control showed 10. In comparison to control, the higher mean value was recorded in treatment II and treatment III**.**

3.5 Variation in Shoot Length:
The shoot length was measured from the base to the tip of the shoot using a centimeter scale. In all the treatments, variations in shoot length were observed. In control, the shoot length was found to be 12.5cm. In comparison with the control, the high mean value of shoot length was observed in treatment II followed by treatment III.

3.6 Variation in Root Length and flowering: The experimental results showed variation in root length in all the treatments. In control, the root length was found to be 10.6 cm. In comparison with the control, the higher mean values for root length was recorded in treatment III. During the study, period, in all the treatments with control, the flower formation was not found effective. Only in treatment II. The appearance of few flowers were recorded. This indicates that, apart from all the treatments, the proper dosage of amirich plant tonic will influence the overall growth and development of fenugreek plants.

IV. Summary and Conclusion:
The use of Amirich plant tonic is increasing day by day among farmers. In this experiment, the effect of (Amirich plant tonic) on fenugreek plants was studied with respect to different dosages. From the experimental results, one can conclude that, in all the treatments, the variation in growth parameters was recorded. In comparison with the control, the effective rate of growth parameters was observed in treatment II. In treatments I, III and in control, the flower formation was not observed. This suggests that, among all the treatments. Treatment II was found to be effective in all the growth parameters including the formation of flowers.

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