

## Effect of panchagavya on growth parameter analysis of *Solanum Melongena*

### Publication History

Received: 20 April 2015

Accepted: 27 May 2015

Published: 31 May 2015

### Citation

Ranjitha B, Semmalar R. Effect of panchagavya on growth parameter analysis of *Solanum Melongena*. *Species*, 2015, 14(46), 186-195

EFFECT OF PANCHAGAVYA ON GROWTH PARAMETER ANALAYSIS OF SOLANUM  
MELONGENA

**RANJITHA.B AND SEMMALAR.R\***

PG & RESEARCH DEPARTMENT OF ZOOLOGY

GOVERNMENT COLLEGE FOR WOMEN (AUTONOMOUS)

KUMBAKONAM – 612 001. TAMIL NADU, INDIA

Corresponding Email : malarzoo84@g.mail.com

---

**ABSTRACT**

The role of panchagavya in agriculture is well described in Vedas. Panchagavya a vedic formulation for increased productivity, disease resistance in plants and potential of utilizing panchagavya as biofertilizer was treated on various pulses *solanum melongena*. Their common objective is to provide socioeconomic and ecological benefits. Among these benefits, improvement of soil quality is one of the interesting aspects since it contributes including food quality and safety, human and animal health, and also environment quality. Experimental seeding recorded higher rates of linear growth of both plant growth and roots as compared to control and that too maximum growth has observed in seedling grown in soil amended with seaweed based panchagavya at low concentration (25%) panchagavya soil. A similar observation was made on the number of leaves produced, leaf length, root length formed in the pulses by immunity booster and plant growth increased the levels of all the enzymes. In the present study a preliminary attempt have been made to find out the effect of Panchagavya on the growth of plants especially on Brinjal plant (*Solanum melongena*) growth parameter Analysis. The Panchagavya applied plants is well growth and not the attack of pathogens including Fungi, Bacteria, etc.

**Key words :** Panchagavya, plant growth parameter, chlorophyll.

## INTRODUCTION

Vegetables cultivation is a significant part of the national agricultural economy, especially in the developing world. It will be necessary to increase supply of food and other inputs to improve yields and productivity. India is an agricultural country ( *FAO., 2004*). The present problem in our country are the addition of synthetic chemicals like chemical fertilizer, Pesticides and soil amendments which began to affect not only the soil health and agricultural production but also the entire environment conditions. The entire worlds have been addressing the problem of long term ill effects of chemical fertilizers and pesticides used in agriculture. Organic farming to be effectively replaced by natural forming brings ecological sustainability and agricultural development reverse the degenerative momentum of modern agriculture. Now a day the cost of chemical fertilizer are going up very high. The farmers are getting used to organic manures to reduce the expenses towards fertilizers and to increase the yield of crops( *Odetola et al., 2004*).

. Their common objective is to provide socioeconomic and ecological benefits. Among these benefits, improvement of soil quality is one of the interesting aspects since it contributes including food quality and safety, human and animal health, and also environment quality (*Parr et al., 2002*). These of no – chemical fertilizers and pesticides is one of the common practices that have been introduced with alternative agricultural systems, which include the use of biofertilizer. The product from the cow such as cow milk, cow dung, cow urine, curd and ghee is called as ‘‘Panchagavya’’. Each product was taken with a proper measure to prepare Panchagavya. These five products are to mixed to get Panchagavya. Panchagavya induces the synergitic effect with bio fertilizer and soil microorganism; it leads to improved to water and nutrient – holding capacity. The soil begins to take on a spongy and is less prone to compaction (*Natrajan, 1999*). Panchagavya is a nutrient prepared by organic farmers of Tamil Nadu (one of the states in India) using indigeous materials and applied widely for agricultural and horticultural crops (*Natrajan, 2002*). Even HIV – Positive people respond well to Panchagavya therapy (*Dipty shrivastava., 2012*).

Eggplant has indigenous medicinal uses, treatment of several ailments including asthma, skin infections, and constipation. Fruit extract of plant have shown to posses antimicrobial activity against different bacterial and fungal strains (*Mukesh et al ., 2010*). Solanum with over

1,000 species worldwide. It is represented in Nigeria by about 25 species including those domesticated (Agoreyo *et al.*, 2012).

## MATERIALS AND METHODS

Panchagavya we need a wide method mud pot, concrete tank or plastic cans. Metal containers should not be used. First put the fresh cow dung and cow's ghee into the containers and mix it thoroughly twice daily for 3 days. On the fourth day add the rest of the ingredients and stir it twice daily for 15 days.

The Panchagavya stock solution will be ready After the 21th day. It should be kept in the shade and covered with a wire mesh or plastic Mosquito net to prevent houseflies from laying eggs and the formation of maggots(worms) in the solution. If sugarcane juicing 3 liters is not available and 500grams of jiggery dissolved in 3 liters of water. Likewise, if toddy is not available, add 100gm of yeast powder and 100 gm of jiggery to 2 liters of warm water. After 30 minutes, add this solution replace toddy in panchagavya. Another method is you take 2 liters of tender coconut water and keep it in a closed plastic containers for 10 days. After fermentation it becomes toddy. This solution can be prepared before hand and used to replace toddy. When stirred twice daily, the panchagavya solution can be kept for 6 months without any deterioration in this quality. When never the solution becomes thick due to evaporation of water over a long period, suitable quantity of water can be added to keep it in liquid state.

The pot culture in (*Solanum melongena*) plants (C, T1, T2, T3, T4) Where; (C – Control, T1 – Treatment - 1, T2 – Treatment – 2, T3 – Treatment - -3, T4 – Treatment – 4), the growth condition were recorded from the types of panchagavya treated crop grown and without panchagavya pot culture method and observed for the growth rate at 20<sup>th</sup>, 40<sup>th</sup>, and 60<sup>th</sup> days of plant.

Panchagavya was diluted to 25%, 50%, 75%, and 100% concentration using distilled water. (Panchagavya were measured as 25, 50, 75 and 100 ml and the volume was made up to 100 ml using 75, 50, 25 ml of distilled water). The growth parameter was followed by (Geetha and Devaraj 2013). The growth parameter were observed in Brinjal plant (*Solanum melongena*) plants at 20<sup>th</sup>, 40<sup>th</sup> and 60<sup>th</sup> day.

## RESULTS AND DISCUSSION

The present study reveals that microbes are abundant in the five products obtained from cow namely cow milk, cow curd, cow urine, cow ghee, cow dung. This product was prepared in different concentration and used as liquid fertilizer and bio control agent for the commercially valuable crops, and brinjal. Chemically high pH and optimum level of moisture and temperature having soil slowly altered by adding of panchagavya solution which forms better nutrient media for the microbial growth.

The panchagavya solution can be stored for 21 days for the purpose of sufficient fermentation. After completion of fermentation the effect on the growth and disease control in *Solanum melongena*. Grown in mud pots were studied after fermentation the different concentration (25%, 50%, 75%, and 100%) was mixed with in the soil in the experimental pot culture. After adding different concentration of the panchagavya solution on the potted plants the plants shows prominent changes of the morphological character.

The plant growth in Control plant. The plants growth in (T1, T2, T3, and T4) had different concentration of panchagavya solution was mixed. The plants growth and variation in morphological features were noted after 20<sup>th</sup> day, 40<sup>th</sup> day and 60<sup>th</sup> day. The T4 plant growth better plant growth when compared T1, T2, T3 and Control.

### **Plant growth:**

C - Control. T<sub>1</sub> - Panchagavya Treated 25%. T<sub>2</sub> - Panchagavya Treated 50%. T<sub>3</sub> - Panchagavya Treated 75%. T<sub>4</sub> - Panchagavya Treated 100%. The plants in showed (100% treatment) (T4 -25.2), (T3 -24.0), (T2 -21.5), (T1 - 20.2) and (C- 19.8).

### **Leaf length:**

The leaf length was observed (Table 2) for T4 (100% Treatment) was (8.17 cm), T3 (7.77 cm), T2 (7.48 cm), T1 (7.22 cm) and Control (6.96 cm).

### **Leaf weight:**

The plants growth one presented in (Table III) the maximum growth was observed T4 (100% Treatment) was (1.19), T3 (0.98), T2 (1.02), T1 (1.34) and Control (1.22).

**Root length:**

The root length was measured in (Table IV) Control, T1, T2, T3, and T4. The maximum length was observed in T4 (100% Treatment) was (10.2 cm), T3 (9.2 cm), T2 (8.3 cm), T1 (6.9 cm) and Control (5.8 cm).

**Chlorophyll estimation:**

The total chlorophyll was measured in (Table V) Control, T1, T2, T3, and T4. The maximum of chlorophyll was present in T4 (154.97 mg/g), T3 (108.69 mg/g) T2 (125.23 mg/g), T1 (139.67 mg/g), and Control (85.37 mg/g).

**Table : I Brinjal plant (Solanum melongena)****(Leaf length in cm)**

Leaf length	C	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
20 <sup>th</sup> day	1.54	1.85	1.91	1.94	2.07
40 <sup>th</sup> day	2.92	3.24	3.44	3.83	5.07
60 <sup>th</sup> day	6.96	7.22	7.48	7.77	8.17

**Table : II Brinjal plant (Solanum melongena)****(Plant growth in cm)**

S.NO	DAYS	C	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
1	20 <sup>th</sup> day	5.6	6.9	7.5	8.2	10.4
2	40 <sup>th</sup> day	14.2	15.9	16.3	16.9	17.2
3	60 <sup>th</sup> day	19.8	20.2	21.5	24.0	25.2

**Table : III Brinjal plant (Solanum melongena)**

**(Leaf Weight in gm)**

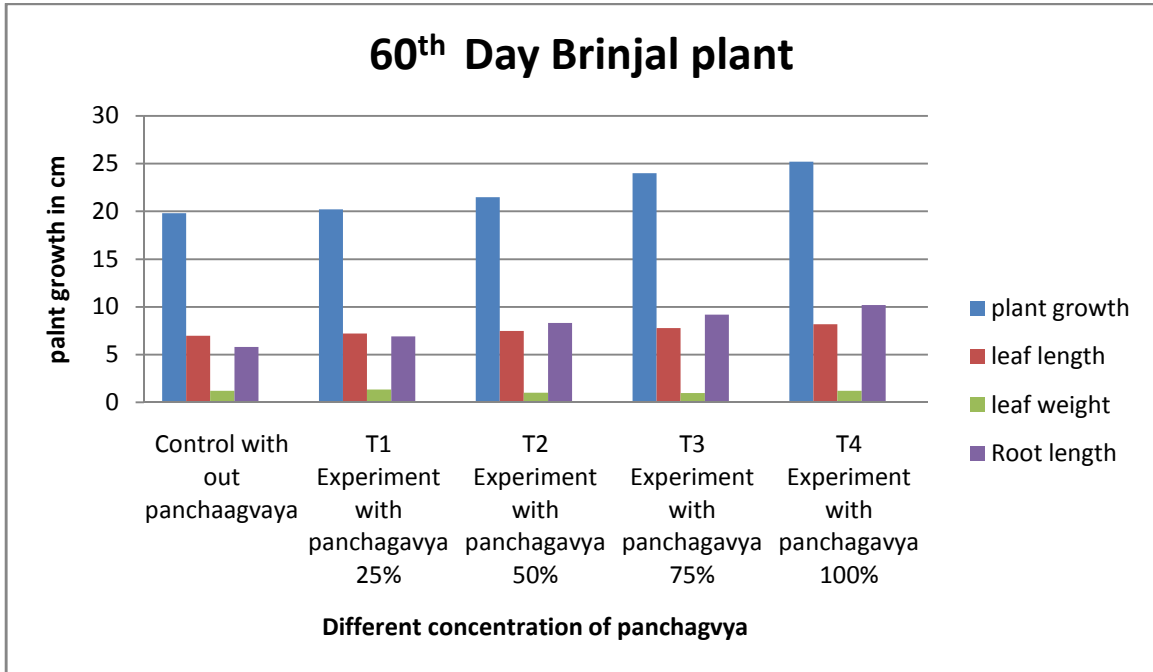
S.NO	Control	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
1	1.22	1.34	1.02	0.98	1.19

**Table : IV Brinjal plant (Solanum melongena)**

**(Root length in cm)**

S.NO	Control	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
1	5.8	6.9	8.3	9.2	10.2

**Total Brinjal plant growth, leaf length, leaf weight, root length in cm**



This is conformed after the earlier finding of Dalhamman et al .,(1996) studied cow dung and showed that it is used as renewable cooking energy and slurry compost. Ramachandra Reddy (1996) studied three modified formulations panchagavya prepared and tested by him. Bhaskara padmodaya (1996) described panchagavya effective Ayurvedic medicines in human diseases. Mattarino (1997) reported that 30 to 150 kg cow dung poured into gunny bags. Gunny bag was moved upwards and downwards for 10 to 14 days in 200 liter of water in drum. Drum water turns brown in color and developed Ammonia smell, when this mixture along with 2% water was sprayed on the plants, better yield was observed. Rajesekaran (2002) invented and studied effect of three modified formulation of panchagavya in *Oriza sativa* and sprayed MPGI was most effective. The preparation and use of panchagavya has been mentioned in ancient literature like Vishnu Dharma the holy book and padarthaguna Sindhamani (Kannusamy Pillai, 1929). This reveals that India has witnessed the use of panchagavya from ancient periods onwards. All over India during maha shivarathri the lingam is bathed with panchagavya. Natarajan (2002) from Kodumudi initiated the use of panchagavya as organic manure and also for curing plant disease in Tamil Nadu. The study reveals how the organic manures obtained from cow can be used for crop development. The results obtained can be applied as extensive methods for socio – economic and environment conservation on rural areas. Kalyan Gonak (1945) detailed urine as an effective medicinal and bio pesticides agent in human and plant disease. The present attempt has cow urine, cow milk and cow dung mixture as bio pesticides in *Solanum melongena*, with reference to the reduce fungal pathogenic activity on the above crops. Agriculture plays an important role in our country. Hence adequate production of agricultural products and their commercialization is very essential. Most of the countries among the world are facing the major problems of environmental pollution due to discharging of domestic, industrial wastes and solid and liquid waste from the agriculture agronomic practices. These problems can be solved by the recycling the waste and reduction of the use of inorganic fertilizer and pesticides. Now – a – days traditional methods which were time consuming in the past is being replaced by more efficient and low cost techniques. The microorganisms have earned an important place in improving soil fertility and productivity. Cattles play a very important role in India and for many households cattle plays and their life. The useful products obtained from



cattle are cow milk, cow dung, cow urine and processed products. Such as curd milk and ghee. These products are used as organic manure and called as “Panchagavya”.

## REFERENCES

**Mathivanan, Edwin, Amutha And Viswanathan** Panchagavya and *Andrographis paniculata* as Alternatives to production and Carcass characteristics. *International Journal of poultry Science* 5 (12) : 1144- 1150, 2006. ISSN : 1682-8356.

**Dr.K. Natarajan M.B.B.S**, book on Panchagavya, Panchagavya Manual, pp: 1/37.

**Gosavi Devesh, Premendrani John.** Effect of Panchagavya Ghrita on some neurological parameters in Albino rats. *Asian Journal of Pharmaceutical and clinical Research*, vol 5, Issue 1, 2002. ISSN : 0974-2441.

**Raghavendra, Gowthami, Shashank, Harish Kumar,** Panchagavya in organic crop production. Volume-2, Issue-2(April-June) 2014. ISSN : 2321-0001.

**Kurklu, Paul Hadley, Anne whedon.** Effects of Temperature and Time of Harvest on the growth and yield of aubergine. *Tr. J. of Agriculture and Forestry* 22 (1998) 341- 348.

**Agnieszka Sekaila, Stanislaw Cebula, Edward Kumichi,** Cultivated eggplants- origin, breeding objectives and genetic resources a review, *Horticulture*, 2007, 97-114

**Bindumathi Mohan, T.S. Srinivasan** Centre for Rural Training (TVSES), Hosur, India. Evaluation of organic growth promotes on yield of dry land vegetable crops in India.

**Dr. Dalal, Abhishek Mishra And P.F. Dhabarde,** Growth yield and quality to vegetables under chemical and organic farming. *International Journal of Scientific & Engineering Research*, volume 5, Issuen3, March -2014, ISSN : 2229-5518.

**G. Franklin, Sheeba And G. Laksmi Sita,** Regeneration of eggplant (*Solanum melongena*) from root Explants. *Society for In vitro biology* March-April 2004.

**Hoshna Banu Naujeer**, Morphological diversity in eggplant (*Solanum melongena*) their related species and wild types conserved at the National gene bank in Mauritius. International Master programme at the Swedish biodiversity Centre. No. 57-2009.

**Makesh Kumar Singh, Kushagra Nagari, Tripathi**, Potential Analgesic & Anti pyretic Herbal drugs: A comparative Review of Marketed products. *International Journal of Phytomedicine* 2 (2002), 197- 209.

**Narmata, K. Satam, S. Parab, Suvarna, Bhocr.** HPTLC Finger print Analysis and antioxidant activity of Flavonoid Fraction of *Solanum melongena* Linn fruit. *International Journal of Pharmacy and Pharmaceutical Sciences* vol 5, Issue 3, 2013. ISSN ; 0975-1491.

**Odetola, Iranloye And Akinloye**, Hypolipidaemic potentials of *Solanum melongena* and *Solanum gilo* on Hypercholesterolemic Rabbits. *Pakistan Journal of Nutrition* 3 (3); 180-187, 2004.

**Pankaj Nariya, Nikil Jirankalgikar, Rahul Wwarma & Subrata De.** Analytical study & HPTLC profile of panchagavya – A Traditional Ayurvedic preparation, *Asian journal of Biochemical and Pharmaceutical Research*. Issue-2, volume-2 2012. ISSN ; 2231-2560.

**Rajib Roychocodhury And Jagatputhi Tatt.** Differential Response by different parts of *solanum melongena* for heavy metal Accumulation, *plant Sciences feed* 2011-1(6) : 80-83. ISSN : 2231-1971.

**S. Sarkar, Kundu & D. Ghorai**, Validation of ancient liquid organics- Panchagavya and kuna panjala as a plant growth promoter. *Indian journal of Traditional knowledge* volume-13(2), April 2014, pp.398-403.

**Srimathi, Mariappan, Sundaramorthy And Pharamathma**, Efficacy of Panchagavya on seed invigoration of biofuel crops. *Academic journals, Scientific Research and essays* volume-8(41) pp.2031-2037, 2013. ISSN : 1922-2248.