



INFLUENCE OF COW PRODUCTS AS A FERTILIZER ON THE FRUITS OF RIDGE GOURD AND BOTTLE GOURD IN NURTIENT ANALYSIS

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ABSTRACT

Organic farming is gaining importance in view of sustained agriculture and maintaining ecological balance. Heavy use of chemicals in agriculture has weakened the ecological base addition to degradation of soil, water resources and quality of food. For this organic liquid fertilizer is the best alternative to the conventional farming. In this, cow dung and cow urine based three organic liquid fertilizer were prepared such as Panchagavya, Beejamrutha and Jeevamrutha. These fertilizer are field-tested by selected two plants like ridge gourd and bottle gourd. In this gourd, panchagavya is used as a growth-promotor and immunity booster. Beejamrutha and Jeevamrutha is used to improve beneficial micro-organisms for the plant growth and the soil fertility. It also improves the nutrient quality in the mature fruits. For the quality analysis study, cucurbitaceae family is major source of medicinal agents since ancient time. In the series of cucurbitaceae plants, *Lagenaria siceraria* and *Luffa acutangula* is one of the excellent plants, gifted by the nature having composition of all the essential constituents that are required for normal and good human health. In this study, we used cow products as a main source of fertilizer to improve the fruits related to health aspects. In this study, to know the influence of liquid organic fertilizer in then mature fruit by nutrient analysis using ridge gourd and bottle gourd.

KEYWORDS: Bottle gourd, Organic liquid fertilizer, Quality analysis, Ridge gourd.

INTRODUCTION

The greatest challenge facing by the nation in the coming years is to provide safe food for the growing population in the country. Green revolution had lead to intensified agriculture to meet the ever increasing demand for food and fibre (Gupta., 2001). After the initiation of green revolution the crop productivity has increased manifold to meet the demand of ever growing population the world over. But the use of these chemicals have caused great damage to the environment in the form of pollution to air, water and soil and also led to various diseases to human beings, animals and plants (Mudiganti ram Krishna rao., 2015). Heavy use of chemicals in agriculture has weakened the ecological base addition to degradation of soil, water resources and quality of food. At this juncture a keen awareness has sprung of the adoption of "organic farming" as a remedy to cure. Organic agriculture is low cost and chemical free fertilizers. It is very essential to development a strong workable and compatible package of nutrient management through organic resources for various crops based on scientific facts, local conditions and economic viability (Kannaiyan, 2000). Different kinds of cow based liquid organic manure such as Panchagavya, Beejamrutha, Jeevamrutha etc used as biofertilizer In this, cow dung and cow urine are the base ingredients of

the Panchagavya, Beejamrutha and Jeevamrutha. The Panchagavya is a single organic input, which can act as a growth-promoter and immunity booster (Natarajan. K., 2003). The liquid fertilizer is used in different forms such as foliar spray, soil application along with irrigation water seed or seedling treatment etc. To study the efficacy of Panchagavya, Beejamrutha and Jeevamrutha in the growth of ridge gourd and bottle gourd. Using this vegetable the quality analysis was done. In this study, to know the nutrient analysis of antioxidant activity, vitamin-c and other nutrients.

MATERIALS AND METHODS

Panchagavya means blend of five products obtained from cow, namely cow dung, cow urine, cow milk, cow curd, cow ghee. This panchagavya has modified by few more ingredients like coconut water, toddy, jaggery, banana and fertile soil. Beejamrutha is a combinations of cow dung, cow urine, jaggery, lime solution and turmeric powder. Jeevamrutha is a liquid organic fertilizer made by cow dung, cow urine, jaggery gram flour and fertile soil. During fermentation, the cow products and other ingredients are involved and became more efficient and used as a proper fertilizer. This liquid is used as a fertilizer for the ridge gourd and bottle gourd. Seeds can be soaked and the seedlings can be dipped in the

solution. To study the qualitative analysis of liquid organic fertilizer using the vegetables like ridge gourd and bottle gourd. The mature edible portion of vegetable sample were analysed for nutrient quality. In this experiment, there are four important component were analysed like vitamin-C, B-carotene, phenolic compounds and antioxidant activity.

Determination of Vitamin C

Vitamin C content in the extract was determined by using dye-titration method.

Determination of Antioxidants

In the present study, antioxidants present in the mature fruit was estimated by Ferric Reducing Antioxidant Power.

Table 1: Nutrient Analysis of Ridge Gourd.

S.NO		CONTROL	TREATED
1.	Vitamin-C(mg/g)	101	122
2.	β -Carotene(mg/g)	0.00059	0.00086
3.	Total phenol(mg/g)	280	215
4.	Total Antioxidant activity(mg/g)	0.036	0.061

Table 2: Nutrient Analysis of Bottle Gourd.

S.NO		CONTROL	TREATED
1.	Vitamin-C(mg/g)	122	131
2.	β -Carotene(mg/g)	0.01073	0.00963
3.	Total phenol(mg/g)	301	311
4.	TotalAntioxidant activity(mg/g)	0.037	0.062

Level of significance at 1%.

RESULTS AND DISCUSSION

In this study, the mature fruits of control and the treated are used to compared for the nutrient analysis. We are mainly focus on the effects of liquid Panchagavya, Beejamrutha and Jeevamrutha on the vegetables of ridge gourd and bottle gourd. In nutrient aspects, the antioxidant plays an vital role in the health benefits. In ridge gourd, the amount of antioxidant content was doubled when compared to the control. The antioxidant activity in liquid organic fertilizer was 0.062(mg/g) and the control was 0.037(mg/g). In bottle gourd, there was a significant difference between the liquid organic fertilizer and the control. It can be observed that the control vegetables have antioxygenic activity was only 0.036(mg/g) whereas the organic vegetables have0.0061(mg/g). The total phenolic content of bottle gourd shows increase in the control. In the control, phenolic content was 280(mg/g) and the liquid fertilizer was 215(mg/g). In ridge gourd, there is a positive difference between the control and the treated vegetables. In control vegetables, the phenolic content was 301(mg/g) and the treated vegetables have 311(mg/g). According to ascorbic acid both of the ridge gourd and bottle gourd shows the significant difference between the treated and the control.

In the bottle gourd, the treated vegetables have 101(mg/g) and the control vegetables have 122(mg/g).

Determination of β - Carotene

The quantitative contents of carotenoids in the fruit were determined by DGHS.

Determination of Phenolics

The amount of phenolics in each of the fruit was evaluated by DGHS.

Statistical Analysis

The data are subjected to using spss22.0.

The treated vegetables of ridge gourd have131(mg/g) and the control vegetables have122(mg/g). In β -carotene, the treated vegetables of bottle gourd have much better results when compared to the control. The control vegetables have 0.00059(mg/g) and the β -carotene content of treated vegetables have 0.00086 (mg/g). In ridge gourd, the β -carotene content shows variation between the treated and the control. It was observed that β -carotene content of *L. acutangula* in control was 0.01073(mg/g) and the influence of liquid fertilizer vegetables have 0.00963(mg/g). The results of the *L.acutangula* nutrient analysis was varied. There is statistical significance between the control and treatment. One sample't test shows difference in nutrient analysis using SPSS 22.0.

Use of organic methods in farming is environment friendly largely because of harmonious cooperation with nature and absence of synthetic chemicals (matt et al., 2011). In the present study, it was noticed that antioxidant activity was maximum in the treatment when compared to the control. Kumar et al (2011) reported the panchagavya as a source of organic nutrient in blackgram(vigna mungo). Total phenolic compounds comprise a large group of organic substances and flavonoids are an important subgroup. The phenolic compounds may contribute directly to the antioxidant action, therefore it is investigate total phenolic content

(kandoliya et al., 2016 vyas VG 2015). In general, the higher phenol content was associated with higher antioxidant capacity. The presence of beneficial microorganisms in these liquid formulation might be mainly due to their constituents such as cow dung, cow urine, legume flour and jaggery (palekar 2006, sreenivasa et al 2010, neelima 2011).

In our work, total phenolic content in bottle gourd significantly increased in treated fruit when compared to the control. According to the analysis of gourds, the influence of the fertilizer had a significant effect on the nutritional –status of the fruits. Devakumar et al., (2011) who have reported that both jeevamrutha and panchagavya have enhanced the growth of nitrogen fixers in locally available substrates such as FYM, pressmud, compost and digested biogas slurry.

Improved B-carotene content in the bottle gourd shows the rich quality of organic liquid fertilizer. The positive effect of panchagavya on growth and productivity of crops has been reviewed and documented by somasundaram and amanullah (2007). The use of liquid products such as beejamrutha, jeevamrutha and panchagavya results in higher growth, yield and quality of crops. Panchagavya was an important one that enhanced the biological efficiency of crop and quality of fruits and vegetables production swaminathan et al., 2007. The young fruit of *Lagenaria siceraria* is also reported to be a good source of vitamin b complex, vitamin –C, b –Carotene and choline (bassey.s, antia et al., 2015). The bottle gourd fruit has been also reported to possess fair source of vitamin C and B-carotene (neeraj kant Sharma., 2013). The fresh fruits of *Luffa acutangula* exhibited antioxidant activity (pradip karmakar et al., 2013).

The study clearly revealed that there was significant improvement in the nutritious quality with the combined application of liquid organic manures over the control.

CONCLUSION

Organic liquid fertilizer improves the nutrient status and play an important role in every aspects of Indian life including agriculture. Plants sprayed with liquid fertilizer exhibited higher values of dominance variance over the control. Ridge gourd and Bottle gourd are good source of food and fibre. Lack of awareness in people about organic fertilizers leads to loss in quality and quantity of agricultural crop. In the present investigation reveals that organic fertilizers significantly higher nutritional content in ridge gourd and bottle gourd.

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