

Effect of dung, urine and slurry of different farm animals on yield and quality of spinach

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ABSTRACT

Experiment was carried out in the department of Soil Science and Agriculture Chemistry, Marathwada Agriculture University, Parbhani during January to March 2006. Application of dung urine slurry of sheep, goat, jafabadi and murrha buffalo gave significant higher yield over cow and bullocks. Dung urine slurry of lal kandhari cow and lal kandhari bullock showed low yields and organic carbon content in among the animals. Dung, urine and slurry of sheep gave superior results with respect to quality of spinach. Results indicated that the highest yield was obtained with dung urine slurry of sheep followed goat and jafabadi buffalo.

Key words : Dung, Urine, Slurry, Yield and quality of spinach, Farm animals

INTRODUCTION

The use of cow-dung in agriculture was shown since long time. It was used for dressing seed, plastering cut ends of vegetatively propagating sugarcane, dressing wounds, sprinkling diluted suspension on plants etc. since ancient time. Indian farmer use cow-dung in different ways. In general the cow dung urine slurry of farm animals gave good effect on vegetative and reproductive growth of different crops. The chemical fertilizers are costly and are not easily available to the farmers hence farmers are attracted towards the organic sources. Organic manures are bulky and leafy vegetable and are easier and cheaper to transport, handling and storage. They were also relatively inexpensive initially and produced much greater responses. These organic manures are having long term effect on soil. It maintains soil fertility for longer time. These are the the main source of replacing soil fertility. Organic manure presently used regularly by farmers growing sugarcane, fruit and vegetable crops. The vegetables play an important role in the balanced diet of human beings by providing not only the energy rich food but also promise supply of vital protective nutrients like minerals and vitamins.

Yamazaki (1998) observed effect of soybean meal, compost pig manure and composted cattle dung mixed with sawdust applied singly, on the yield and quality leafy vegetables like spinach, lettuce and cabbage for five years experiment. The effect was related to the decomposition of organic nitrogen and was greater with soybean meal than either with pig manure or cattle dung mixed with slurry. Cattle dung mixed with slurry alone did not maintain yields. Better quality was obtained with pig manure and cattle dung mixed with saw dust than with chemical fertilizer.

Sharma (1995) in a trial with okra recorded maximum yield of green pod with the application of fermented dung and slurry.

MATERIALS AND METHODS

The dung urine and slurry prepared from urine + dung of different cattle was analysed for biochemical characteristics. The cattle selected were jersey (cross bred cow), lal kandhari (Deshi cow), lal kandhari (deshi bullock), jafabadi buffalo, murrha buffalo, sheep and goat. They were fed with fodder on same farm. The animals selected were three to five years age. The effect of dung urine and slurry prepared from different farm animals on yield and quality of spinach was evaluated with pot culture experiment conducted at Department of Soil Science and Agricultural Chemistry, Marathwada Agricultural university, Parbhani during 22 January to 22 March, 2006.

Eight treatments were replicating by three times during summer season 2006 (Jan.-March) using Spinach (vegetable) variety Pusa Jyoti. Recommended dose of fertilizer @ 100:50:50 (NPK) was compared with different treatments of dung urine slurry of different farm animals.

During experimentation treatments given were as follows: T₁-Dung urine slurry of cross breed cow (jersey), T₂-Dung urine slurry of cow deshi (lal kandhari), T₃-Dung urine slurry of bullock deshi (lal kandhari), T₄-Dung urine slurry of buffalo-jafabadi, T₅-Dung urine slurry of buffalo deshi (murrha), T₆-Dung urine slurry of sheep, T₇-Dung urine slurry of goat and T₈-RDF

Dibbling 6 to 7 seeds in each pot did sowing. Thinning was done to maintain proper plant population in each experimental pot. Only two plants were maintained in

each pot.

The dung urine slurry was prepared with at the proportion of 10 kg dung +10 lit. urine of farm animals + 100 gm jaggary + 200 lit. water. It was kept as such for 5 days in earthen pot by covering cloth on earthen pot. This slurry was applied to the plant by ring method. Slurry was applied @ 500ml/pot at three time with 15 days interval, from germination onwards.

RESULTS AND DISCUSSION

The studies on effect of dung urine and slurry of different farm animals on yield, dry matter and organic carbon revealed that recommended dose of fertilizer and dung urine slurry of sheep recorded similar yield of spinach and were superior over all other treatments (Table 1). The dung urine slurry of sheep recorded highest yield. Dung urine slurry of sheep also recorded similar result as that of RDF. The dung urine slurry of sheep was rich in nutrients applied three times at 15 days was comparable

Table 1 : Effect of dung urine slurry of different farm animals on yield of spinach

Sr. No.	Treatment	Yield (g /pot)
T ₁	Dung urine slurry of jersy cow	26.96
T ₂	Dung urine slurry of Lal kandhari cow	28.30
T ₃	Dung urine slurry of Lal kandhari bullock	26.62
T ₄	Dung urine slurry of buffalo jafrabadi	28.55
T ₅	Dung urine slurry of buffalo murreh	27.35
T ₆	Dung urine slurry of sheep	30.61
T ₇	Dung urine slurry of goat	28.49
T ₈	Recommended dose of fertilizer	30.59
	S.E.±	0.28
	C.D. (P=0.05)	0.86

with the recommended dose of fertilizer for spinach.

Goat, jafrabadi and murreh buffalo gave significant higher yield over the dung urine slurry of cow and bullocks. Buffalo is water loving animal, fed with concentrated cake and roughages, hence slurry is concentrated in nutrients than jersy cow, lal kandhari cow and lal kandhari bullock showed low yields and organic carbon content in leaf because their feeding habit is different as compared to buffalo.

Shelke *et al.* (1999) indicated that substitution of 60% urea N by poultry manure followed by substitution of 60% urea N by FYM were found more effective for increasing plant height and number of branches per plant in brinjal.

Jagdeesh *et al.* (1994) found that the substitution of N by biogas spent slurry at 25% level has increased chilli

pod yield by 47% over the control. Gunjkar *et al.* (1998) found that the treatment recommended dose of fertilizer along with two time application of cow-dung slurry recorded significantly highest yield of red chilli/ha. Yamazaki (1998) observed the effect of soybean meal (SM), composted pig manure (PM) and composted cattle dung mixed with sawdust (CMS), applied singly or with chemical fertilizer, on the yield and quality of vegetables (spinach, lettuce, cabbage) was studied in a five years experiment.

Table 2 : Effect of dung urine slurry of different farm animals on iron and chlorophyll content of spinach

Sr. No.	Treatment	Fe (ppm)	Chlorophyll Content (mg/g)
T ₁	Dung urine slurry of jersy cow	12.48	6.319
T ₂	Dung urine slurry of Lal kandhari cow	13.47	6.520
T ₃	Dung urine slurry of Lal kandhari bullock	12.58	6.414
T ₄	Dung urine slurry of buffalo jafrabadi	14.47	6.620
T ₅	Dung urine slurry of buffalo murreh	13.88	6.125
T ₆	Dung urine slurry of sheep	15.31	6.785
T ₇	Dung urine slurry of goat	15.22	6.423
T ₈	Recommended dose of fertilizer	15.38	6.785
	S.E.±	0.20	0.02
	C.D. (P=0.05)	0.60	0.08

Sharma (1995) in a trial with okra, maximum yield of green pod was recorded with the application of 10 ton copost/ha. + fermented cow-dung @ 2 lit./sq.m (86.04 q/ha.) as compared to the control (34.60 q/ha). The increasing in yield due to increasing in length and girth of pod of this treatment. Kolhe *et al.* (1988) indicated that the biofertilizer treatment gave significantly higher yield in all the leafy vegetables as compared to untreated control. Palak (spinach) gave maximum yield (260.14 q/ha), while minimum in Shepu (vegetable) (54.57 q/ha). Shepu and palak vegetable crops showed greater response because they have recorded 15.25 and 14.95 % more yield over the untreated control, respectively, it was followed by methi and safflower.

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