



RESEARCH ARTICLE

CHILLI CROP HAS SPECIFIC POTENTIAL OF PRODUCTIVITY WHICH IS AFFECTED BY ORGANIC FERTILIZERS, MIRAJ, MAHARASHTRA (INDIA)

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ABSTRACT

Indian agriculture economy is most widely recognized alternative farming system. Modern organic farming evolved as an alternative to chemical agriculture in the 1940s (P. K. Gupta 2004). The organic fertilizers are derived from plants, animals or mineral sources which help in reducing the use of chemical fertilizers for suitable agriculture. The use of organic fertilizers to meet the nutrient rich requirements would be an inevitable practice in the years to come for suitable agriculture since, organic manures do not improve the physical, chemical and biological properties of soil (V. D. Kapse) This study was designed to observe the effects of different organic fertilizers on growth and yield.

INTRODUCTION

Capsicum annum L. (Chilli) is a subtropical plant. Chilli is a valuable spice and also one of the most important cash crop. It grows in both seasons as Kharif (May to June) and Rabbi (September to October). We can go for 3-4 pickings for rainfed crop and 6-8 pickings for irrigated crop. The crop duration is about 150-180 days depending of variety, season, climate, soil, water, temperature and mainly on fertilizers. Chilli crop requires a balanced fertilizer management without which growth and development of the crop can be weekend leading to significant reduction in the yield of Chilli. Organic materials like farmyard manure, vermi-compost, cattle dung, poultry manure, fishmeal and crop residues are considered as a storehouse of various nutrients which are essential for the plant growth. Cattle dung- it is quick utilizable condition for improving and maintaining soil fertility. It has low nitrogen organic matter which brings about a temporary deficiency of mineral nutrients. Poultry manure- it is high in nitrogen and also contains a good amount of potassium and phosphorous. Raw chicken can burn and even kill plant. Improper compost of poultry manure is dangerous. (<https://www.gardeningknowhow.com>)

Fish meal- it is a quick acting organic manure and it is suitable for application to all crops.

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Organic fertilizer	Nitrogen (N)	Phosphorus (P ₂ O ₅)	Potash (K ₂ O)
Cattle dung	0.5 – 1.0	0.4 – 0.8	0.8 – 1.2
Poultry manure	1.0 – 1.8	3.0 – 9.0	0.3 – 1.5
Fish meal	4.0 – 10.0	1.4 – 1.8	0.8 – 0.9

Nitrogen: It is essential for chlorophyll synthesis, important in photosynthesis which plays a role in growth and produces branches. **Phosphorus:** It is essential to increase efficiency of root and increase the growth and strongness of stem. **Potassium:** Is essential for activating enzymes for the process of photosynthesis and respiration.

Study area: The experiment was conducted in the region of Miraj dist. Sangli (Maharashtra) during the period from March to November 2018. The experimental area is located at 16° 49' 27N and 74° 38' 48E at an altitude of 1814 feet from the sea level.

MATERIALS AND METHODS

The general soil type is black. The experiment was laid out in simple pots containing 4.5 kg soil in each. There were three treatment combinations in three replications and details are as follows. Performance of chilli plant was assessed by application of three different organic fertilizers- cattle dung, poultry waste and fish meal. Data was collected for growth, height, number of branches, number of flowers, number of fruits, chlorophyll content, weight of fruit, length of fruit etc.

**Fish meal- it is a quick acting organic manure and it is suitable for application to all crops
% of NPK in organic fertilizers (P.K.Gupta)**

Organic fertilizer	Nitrogen (N)	Phosphorus (P2O5)	Potash (K2O)
Cattle dung	0.5 – 1.0	0.4 – 0.8	0.8 – 1.2
Poultry manure	1.0 – 1.8	3.0 – 9.0	0.3 – 1.5
Fish meal	4.0 – 10.0	1.4 – 1.8	0.8 – 0.9

Table 1. Effect on morphological parameters and yield of chilli plant treated with organic fertilizers (Cattle dung, poultry waste, fish meal) at first harvest (Picking)

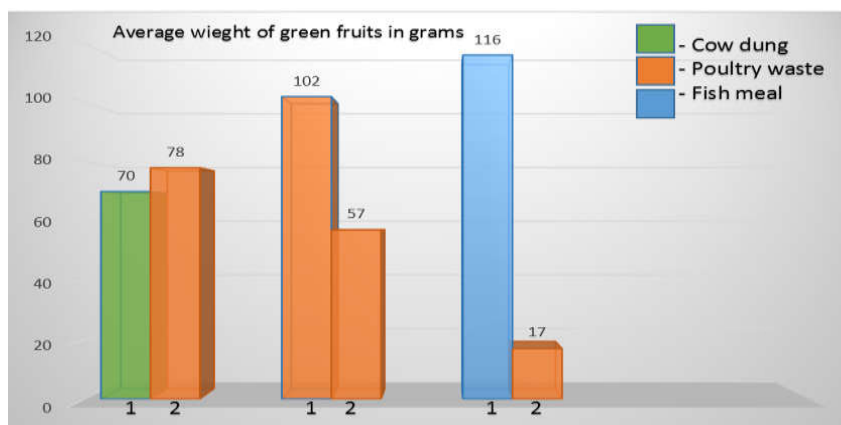
Treatment	Height (inch)	Branches	Colour of leaves	Size of fruit	Avg. weight of fruit in grams
Control	28	4	Yellow green	5cm	50gms
Cattle dung	31	6	Yellow green	7cm	70gms
Poultry waste	34	12	Dark green	5cm	102gms
Fish meal	28	13	Dark green	3cm	116gms

Table 2. Effect on morphological parameter and yield of chilli plant treated with organic fertilizer poultry waste to all sets for second harvest (picking)

Treatment	Height (inch)	Branches	Colour of leaves	Size of fruit	Avg. weight of fruit in grams
Cattle dung	31	6	Dark green	6cm	78 gms
Poultry waste	34	12	Dark green	5cm	57 gms
Fish meal	28	13	Dark green	3cm	17 gms

Total yield

Fertilizer	1 st yield	2 nd yield	Total
Cattle dung	70 gms	78 gms	148 gms
Poultry waste	102 gms	57 gms	159 gms
Fish meal	116 gms	17 gms	133 gms



Conclusion

Organic fertilizer fishmeal, showed a significant high rate of yield at first harvest/ picking (116gms) and at the second picking it became only 17 gms. Here it is concluded that the number of flowers and fruits are more but the size of fruit is small (3cm). Treatment to the Organic fertilizer poultry waste, showed the significant effect on yield rate. At the first picking it was 102gms and at the second picking it was 57gms as per its yield potential. Comparing to fish meal, its production is high and also the size of fruit is larger. Cattle dung showed moderate and control treatment showed the lowest growth. Fish meal showed the highest yield. At first harvest or at the first picking cattle dung and control treatment showed the least yield due to less chlorophyll content. Organic fertilizer cattle dung, showed less amount of chloroplast, leaves are yellow green in colour. Ultimately it showed effect on the yield rate. But when the chilli crop is treated with poultry waste, chloroplast amount was increased, leaves had dark green colour and the yield rate had also increased.

From this experimented work it is concluded that poultry waste is good organic fertilizer for chilli crop. Vimal et al reported that organic fertilizer poultry manure regulate the growth of chilli plant and increased the fruit length. (Mohammad).

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