

## INFLUENCE OF ORGANIC MANURING ON GROWTH AND YIELD OF STRAWBERRY Cv. CHANDLER

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### ABSTRACT

The research work was conducted at Newly Developmental Farm (NDF), Horticulture Section, The University of Agriculture Peshawar, Pakistan during 2012. The objective was to find out the optimum dose of Farm yard manure and poultry manure for the growth and yield of Strawberry plants and to find out the survival rate of cultivar Chandler of Strawberry during the frost of the fall season. In this study, organic matter, farmyard manure and poultry manure were used for percent plant survival, plant height (cm), number of branches plant<sup>-1</sup> and number of leaves plant<sup>-1</sup> of Strawberry Cv. Chandler where the greater percentage of plant survival, plant height, number of branches and leaves were obtained in plants treated with farmyard manure compared to poultry manure.

**Keywords:** *Fragaria ananassa* Duch, Chandler, Farmyard Manure (FYM), Poultry manure

### INTRODUCTION

Strawberry (*Fragaria x ananassa* Duch.) is one of the most important fruits of the world which has attained a premier position in the world fruit market not only as fresh fruit but also in the processing industries (Sharma and Sharma, 2003). There are more than 20 described species and many hybrids and cultivars of strawberry. The most common strawberries grown commercially are cultivars of the garden strawberry. Strawberries are not true berries. The fleshy and edible part of the fruit is receptacle and the parts that are sometimes mistakenly called “seeds” are achenes (E-Flora, 2008).

The fruit is appreciated for its characteristic aroma, bright red color, juicy texture and sweetness. The flowers are white and grow in clusters on thin stalks. In addition to the seeds produced by these flowering plants, strawberries are spread by stolons as they get older. Nutritionally strawberries are considered to be good low caloric and are a potential source of vitamin C and fibers. It has maximum vitamin C content. It is also considered as a good source of minerals, iron and sodium. A mature fruit contains 89.9% water (Anonymous, 2011)

The modern Garden strawberry is believed to have been first cultivated in the late 13<sup>th</sup> century. The strawberry culture is mostly

suitable for the farmers having small land holdings, as it fetch maximum economic returns. Nowadays strawberries are grown in many parts of the world including Japan, USA, Mexico, Italy and Germany. In Pakistan the work on the strawberry culture was started in 1986 at NARC, Islamabad. Where it produced Only 274 tons strawberry on 78 hectares land during the year 2008 to 2009 (GOP, 2009). Also Korona and Tuft have been identified as the two best varieties for cultivation in the Malakand division (Ayaz *et al.*, 1998).

Strawberry is a cool season crop. It grows in hilly areas especially in Swat and Murree with little tendency to strawberry cultivation in plain areas of Peshawar, where it is cultivated in November. Flowering occurs in April and early May. It continues till late May-June. Fruits should be consumed just after picking for home consumption because it is highly perishable. The average temperature in May-June is about 30- 35°C, during which it is difficult for the farmers to shift strawberries into the market because the chances of deterioration are more during transportation (Amin, 1996).

Among the various factors which contribute towards the growth and yield of strawberry, nutrition is the important term of crop production (Umar *et al.*, 2008).

Integrated nutrient management includes the use of inorganic, organic and microbial sources of nutrients which ensure balanced nutrient proportion by enhancing nutrient response efficiency and maximizing crop productivity of desired quality.

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At present, synthetic chemicals contribute a lot in fulfilling the nutrient requirement but their regular, excessive and unbalanced use may lead to health, polluting our environment i.e. water, land and air resources, depletion of physico-chemical properties of the soil and ultimately poor yields. Hence application of organic manures like FYM and poultry manure to soil not only improve soil physical properties, pH, water holding capacity but also add important nutrients to the soil, thus increase the nutrient availability and its ultimate absorption by plant. Keeping this in view, a study was conducted to analyze the effect of FYM and Poultry manure on growth, yield of strawberry cv. Chandler.

## MATERIALS AND METHODS

An experiment was conducted in Newly Developmental Farm (NDF), Horticulture Section, The University of Agriculture Peshawar, Pakistan. Three plots were prepared in the field. Runners of strawberry plants were taken from Swat and uniform size were transplanted on ridges at a spacing of 15 x 30 cm in first week of October during the year of experimentation. Organic fertilizer was applied to the two plots while one plot was remained without fertilizer (Control). The plots were treated with the following organic fertilizers:

Plot no.1 was treated with Farmyard manure (FYM).

Plot no.2 was treated with Poultry manure.

Plot no.3 was remained without fertilizer (control).

### Parameters Studied

Data was recorded on the following growth parameters:

**Percent plant survival:** The percent plant survival was calculated at the end of the experiment by using the formula:

$$\% \text{ Survival} = \frac{\text{No. of plants survived}}{\text{Total No. of plants}} \times 100$$

**Plant height:** The average height of the plants from the soil to the tip of the plant was measured with a scale and average was calculated.

**Number of branches plant<sup>-1</sup>:** The total number of branches plant<sup>-1</sup> was calculated in randomly selected plants and average was calculated.

**Number of leaves plant<sup>-1</sup>:** The total number of leaves plant<sup>-1</sup> was calculated in randomly selected plants and average was calculated.

**Table 1.** Organic fertilizers affects the Percent plant survival, Plant height (cm), Number of branches plant<sup>-1</sup> and Number of leaves plant<sup>-1</sup> of Strawberry Cv. Chandler:

Treatments	Percent Survival (%)	Plant height (cm)	No. of branches plant <sup>-1</sup>	No. of leaves plant <sup>-1</sup>
FYM	92%	10.44 cm	6.4	18.8
Poultry Manure	86.5%	9.9 cm	5.6	16.8
Control	75%	8.5 cm	4.5	13.5

## RESULTS AND DISCUSSIONS

### Percent plants survival

The data recording Percent plant survival (%) is presented in the Table 1. The data indicated maximum percentage of plants survived (92%), in FYM treated plants, followed by (86.5%) in the plants treated by poultry manure. The minimum percentage of plants survival was recorded in the 3<sup>rd</sup> plot i.e. (75%) in control treatment.

The maximum percentage of plants survival in FYM treated plots might be due to sufficient nutrients supply which helped in good photosynthesis, while the minimum percentage of plants survival in controlled plots might be due to deficiency of nutrients and low photosynthesis rate.

**Plant height (cm)**

The data recorded on average plant height is presented in the Table. The data indicated the maximum plant height (10.44cm) in FYM treated plants, followed by the plants which were treated by poultry manure (9.9cm). The minimum plant height (8.5cm) was recorded in the control treatment. The maximum plant height in FYM treated plants might be due to sufficient nutrients supply which helped in good photosynthesis, while the minimum plant height in controlled plot might be due to deficiency of nutrients with low photosynthesis rate.

**Number of branches plant<sup>-1</sup>**

The data recorded on number of branches plant<sup>-1</sup> is presented in the Table. The data indicated the maximum number of branches plant<sup>-1</sup> (6.4) in FYM treated plants, followed by the plants which were treated by poultry manure (5.6). The minimum numbers of branches plant<sup>-1</sup> (4.5) were recorded in the control treatment. The maximum number of branches in FYM treated plants might be due to good availability of nutrients which help the plants in vegetative growth. While the minimum number of branches in the plants which were in the control treatment was due to the unavailability of nutrients, leading to poor growth of plants.

**Number of leaves plant<sup>-1</sup>**

The data recorded on number of leaves plant<sup>-1</sup> is presented in the Table. The data indicated the maximum number of leaves plant<sup>-1</sup> (18.8) in FYM treated plants, followed by the plants which were treated by poultry manure (16.8). The minimum numbers of leaves plant<sup>-1</sup> (13.5) were recorded in the control plot. The maximum number of leaves in FYM treated plants might be due to good availability of nutrients which helped the plants in vegetative growth, while the minimum number of leaves in the plants which were in control plot was due

to the unavailability of nutrients, due to which the growth of plants was retarded.

**CONCLUSION AND RECOMMENDATIONS**

Greater percentage of plant survival, plant height, number of branches and leaves were obtained in plants treated with FYM compared with poultry manure and can resist the extreme cold of winter season. FYM as the suitable organic fertilizer is recommended for the best production and high yield of strawberry runners under the agro-climatic conditions of Peshawar.

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