



E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2019; SP3: 128-130

G Pradeep Kumar
Assistant Professor, Oriental
University, Indore, Madhya
Pradesh, India

Bada Maheswara Reddy
Assistant Professor, Faculty of
Agriculture, Bhagwant
University Ajmer, Rajasthan,
India

Lipika Das
District manager centre of
sustainable Agriculture North
Tripura, India

Thota Anitha
Assistant Professor, Faculty of
Agriculture, Bhagwant
University Ajmer Rajasthan
India

Pingidi Soujanya
Assistant Professor, Faculty of
Agriculture, Bhagwant
University Ajmer, Rajasthan,
India

Correspondence
G Pradeep Kumar
Assistant Professor, Oriental
University, Indore, Madhya
Pradesh, India

(Special Issue- 3)
National Conference

“Sustainable Agriculture and Recent Trends in Science &
Technology”
(February 22nd & 23rd, 2019)

Influence of integrated nutrient management on growth of chilli (*Capsicum annum var. frutescens L.*)

**G Pradeep Kumar, Bada Maheswara Reddy, Lipika Das, Thota Anitha
and Pingidi Soujanya**

Abstract

The treatments include 3 levels of inorganic fertilizers, NPK (100, 75 & 50% of recommended dose of NPK i.e. 120: 60:50 kg/ha), and recommended dose of FYM i.e. @25t/ha and their combinations. Thus 10 treatments including control were studied in a Randomized block design keeping three replication. The plot size is 4.5m×3.0m and the spacing of 30*45cm. Biofertilizers were applied as seed treatment, seedling dip treatment and soil application. The observations on growth characters were recorded. The treatment T8 (NPK+FYM+Azospirillum) has the best result. This experiment will reveal that Biofertilizers in combination with inorganic fertilizers performed better as compared to the control. Recommended doses of NPK alone.

Keywords: Integrated Nutrient Management, Nitrogen, Potassium, Phosphorus, Recommended Dose, Growth, *Capsicum annum var. frutescens L.*

Introduction

Chilli (*Capsicum annum var. frutescens L.*) belongs to the family Solanaceae. Chillies are native of Peru and Mexico and Portuguese were the first to introduce chillies in India during 15th century (1584). The Portuguese brought the stock of sweet pepper or bell pepper belongs to the same species, *Capsicum annum var frutescence L.* Besides most common grown species, it's cultivation became popular in the 17th century. It is popularly known as “King of spices”. It is most important commercial spice crops of India. Chilli is famous for its pleasant aromatic flavour, pungency and high colouring substance. It is used very widely in culinary, pharmaceutical and beverage industries. Hence, chilli finds diverse utility as a spice, condiment, culinary supplement, medicine and vegetable, besides it is an important commercial crop. Chilli is grown all Over the country and is used in almost all dishes. West Bengal and Rajasthan account for more than 80 of total area and production. Chilli of commerce, *Capsicum annum var frutescence* is classified into several groups of cultivation on the basis of fruit shape and the manner in which it is prepared and used. They can be eaten fresh or added in curries, sambar, rasum and other meat, fish and vegetable dishes to impact pungency, colour and flavor to food items. Dried fruits are used to make universal curry powder and curry paste. Fresh green and ripe chillies are used to make all kinds of pickles, different sauces and paste. The pungent principle of chilli is Capsicin (C₁₈H₂₇NO₃) which is a condensation product of 3-hydroxy 4 methoxy benzyl amize and decylenic acid produces a high irritation vapour heating. This has high medicinal value specially anti-cancerous and instant pain relief. A non- conventional use of chilli as self-defence sprays is gaining popularity in different countries.

Chilli performs well in warm humid tropical and sub-tropical regions. A temperature range of 20⁰-30⁰ C is optimum for chilli. Extreme temperature, below 15⁰C and above 35⁰C significantly reduce reproductive growth and pollen viability. Humidity favour growth but frost is injurious. Low temperature at fruit ripening stage may deal colour development in the fruit. Chilli grow best in well-drained loam soil rich in organic matter. Chilli can also be grown in heavy soil rich in organic matter particularly for dry chilli production. The pH should

be around 6.5-7.5. It can tolerate salinity to a considerable extent. Chilli performs well with rain fall of 6000-1200 mm spread over 4 to 5 months. Enough water should be available, but the soil should also have good drainage facility.

Andhra Jyothi G5 variety has been developed by Acharya Ranga Agriculture University (ANGRAU). Fruits are long, thin, and red in colour and usually curved at the tip. Pods are long (above 10 cm), thin and pendent, contain low seeds and mildly pungent. To assess the effect of organic, inorganic and their combination on growth and yield of green chilli.

The experiment is done to check the growth of chilli conducted during 2016-17 in the department of horticulture Srinagar (garwhal) uttarakhand. The treatments include 3 levels of inorganic fertilizers, NPK (100, 75 & 50% of recommended dose of NPK i.e. 120: 60:50 kg/ha), and recommended dose of FYM i.e., @25t/ha and their combinations. Thus 10 treatments including control were studied in a randomized block design keeping three replication. The plot size is 4.5m*3.0m and the spacing of 30*45cm. the observations on growth characters were recorded. The treatment T8 (NPK + FYM + Azospirillum) has the best result. This experiment will reveal that biofertilizers in combination with inorganic fertilizers performed better as compared to the control. Recommended doses of NPK alone.

Materials and Methods

The experiment was carried out in a farmers field in ongole.

Which lies in the eastern portion of praksam district in region of Andhra pradesh. Ongole is located at eastern portion of praksam district having geographical co ordinates of 15° 30' 0" N, 80° 3' 0" E with 10m(33ft) above MSL.

In winter (December-February) the temperature will be average of 25.6° C and summer (March-June) having high temperature of 39°C. and also have 2 monsoons like :

The experiment was laid out in randomized block design (RBD) with three replications. The randomization of treatment was done with the help of random number table (Fisher, 1950). The details of layout are as under

Design	: Randomized Block design
Number of treatment	: 10
Number of replication	: 3
Total no of plots	: 30
Net plot size	: 4.5mx3.0m
Plant to plant distance	: 30cm
Row to row distance	: 45cm
No of rows per plant	: 10
No of plants per row	: 10
Width of irrigation channel	: 1m
Replication border	: 1m
Variety	: Andhra Jyothi G5
Season	: Rabi
Length of experimental field	: 37.50 m
Width of experimental plant	: 15.50 m

Table 1

Treatment	Growth attributes		
	Plant height(cm)	Number of branches per plant	Number of leaves per plant
T ₁ (control)	34.5	6.1	60.8
T ₂ (100%RDF)	45	8.6	68
T ₃ (100%FYM)	40	10.2	64.5
T ₄ (100%Azospirillum)	36.5	8	63.3
T ₅ (100%RDF+100%FYM)	45	11.4	69.5
T ₆ (75%RDF+75%FYM)	43.6	11	68.4
T ₇ (50%RDF+50%FYM)	43	10.8	67.6
T ₈ (T ₅ +Azospirillum)	50	14.1	73
T ₉ (T ₆ +Azospirillum)	48	13.5	71.8
T ₁₀ (T ₇ +Azospirillum)	47	13.1	70.4
SE(m)±	1.71	0.80	1.16
CD at 5%	3.5	1.7	2.02

Result and Discussion

The growth parameters we have taken are plant height, no. of branches, and no. of leaves/plant and the recorded data indicated that the maximum plant height of 50cm, with 14 branches and 73 no. of leaves/plant is the best resulted with the application dose of 100%NPK+100%FYM+Azospirillum and the result shows that the maximum growth can be seen in the plants which are treated @ 120:60:50 of NPK + 25 tonnes FYM + Azospirillum/ha by using the RBD design.

Economics

Significantly the highest gross returns of Rs. 4,16,960 / and the net return of 3,43,524 with benefit cost ratio of was recorded in the treatment of T8 (100% NPK + 100% FYM + Azospirillum) based on the experiment it can be concluded that the chilli variety "ANDHRA JYOTHI G5" is recorded the highest growth with the application of (120:60:50 of NPK +25tn FYM + Azospirillum/ha)

Conclusion

Andhra Jyothi G5 variety has been developed by Acharya

Ranga Agriculture University (ANGRAU). Fruits are long, thin, and red in colour and usually curved at the tip. Pods are long (above 10 cm), thin and pendent, contain low seeds and mildly pungent. To assess the effect of organic, inorganic and their combination on growth and yield of green chilli.

On the basis of results of the present investigation, the following inferences are drawn:

Chilli var. 'Andhra jyothi' responded well in terms of plant growth and green fruit yield to the application of organic, inorganic and bio-fertilizer sources. and Plant growth characters of chilli were found promising with T₈ (T₅ (100% NPK + 100% FYM) + Azospirillum).

References

1. Adilakshmi A, Korat DM, Vaishnav PR. Effect of organic manures and inorganic fertilizers on insect pest infesting Okra. Karnataka Journal of Agricultural Sciences. 2008; 21(2):287-89.
2. Dane S, Laugale V. Influence of intercrop on plant growth and yield. Research for Rural Development. 2014; (1):1-18.

3. Kaminwar SP, Rajagopal V. Fertilizer response and nutrient requirement of rain fed chillies in Andhra Pradesh. *Fert. News*. 1993; 36(7):21-26.
4. Kasture. Effect of phosphorous and sulphur on yield and uptake of nutrient by chilli (*Capsicum annuum* L.) on lateritic soils of Konkan. M. Sc. (Agri.) Thesis submitted to Dr. B. S. K. K. V., Dapoli. India (M. S). (Unpublished), 2001.
5. Kokare. Comparative efficacy of different fertilizer briquettes and organic manures on chilli (*Capsicum annuum* L. cv. Pusa Jwala) in lateritic soils of Konkan. M.Sc. (Agri.) Thesis submitted to D. B. S. K. K. V. Dapoli, Maharashtra, India, 2013.
6. Kondapa D. Effect of integrated nutrient management on growth, yield and economics of chilli (cv. Byadgi dabbi) in a vertisol. Journal article: *Karnataka Journal of Agricultural Sciences*. 2009; 22(2):438-440.
7. Malewar GU, Syed I, Rudraksha GB. Integrated Nitrogen Management in chilli (*Capsicum annuum* L.). *Bulletin of Indian Institute of Soil Science*. 1998; 2:156-163.
8. Naveen NE, Panneerselvam S, Anand SR. Effect of organic manures on growth and yield attributes of green chillies (*Capsicum annuum* L.) *Research on Crops*. 2009; 10(3):616-20.
9. Sujay YH, Giraddi RS. Role of intercrops for the management of chilli pests. *Karnataka Journal of Agricultural Sciences*. 2015; 28(1):53-58.