The Pharma Innovation Journal 2023; SP-12(12): 525-527

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; SP-12(12): 525-527

www.thepharmajournal.com
Received: 08-09-2023
Accepted: 12-10-2023

P Bhuvaneswari
M.Sc. (Ag), Student, Department of Agronomy, S.V. Agricultural College, ANGRAU, Tirupati, Andhra Pradesh, India

S Hemalatha
Professor and Head Department of Agronomy. S.M.G.R. Agricultural College, Udayagiri, Andhra Pradesh, India

S Tirumala Reddy
Senior Scientist, Department of Agronomy R.A.R.S, Tirupati, Andhra Pradesh, India

GP Leelavathy
Assistant Professor Department of Soil Science and Agricultural Chemistry S.V. Agricultural College, Tirupati, Andhra Pradesh, India

V Chandrika
Professor and Head, Department of Agronomy S. V. Agricultural College, Tirupati, Andhra Pradesh, India

Corresponding Author:
P Bhuvaneswari
M.Sc. (Ag), Student, Department of Agronomy, S.V. Agricultural College, ANGRAU, Tirupati, Andhra Pradesh, India

Organic nutrient management in fodder cowpea (*Vigna unguiculata* (L.)

P Bhuvaneswari, S Hemalatha, S Tirumala Reddy, GP Leelavathy and V Chandrika

Abstract
A field experiment was conducted during *rabi*, 2022-23 on sandy clay loam soils Dry land farm of S.V Agriculture College, Tirupati, Andhra Pradesh to study the "Organic nutrient management in fodder cowpea (*Vigna unguiculata* (L.)" The experiment was laid out in a split-plot design and replicated thrice. The treatments consisted of four varieties *viz.*, V_1: Vijaya, V_2: MFC-09-01, V_3: MFC-09-03, and V_4: MFC-08-14 assigned to main plots, four organic nutrient management practices *viz.*, F_1: Control, F_2: 100% organic source through (FYM) F_3: 75% organic source through (FYM) + *Rhizobium* + PSB + KSB and F_4: 50% organic source through (FYM) + *Rhizobium* + PSB + KSB allotted to sub plots. Among the varieties tested, higher growth parameters *i.e.*, (Plant height, leaf area index, number of branches plant^1) and green fodder yield was recorded with MFC-09-01 (V_2). Among organic nutrient management practices tried, *i.e.*, Maximum growth and yield was observed with application of 75% organic source through (FYM) + *Rhizobium* + PSB + KSB (F_3).

Keywords: Varieties, organic sources, growth parameters, fodder cowpea yield

Introduction
When compared to European nations, the production and use of fodder in India paints a very different picture. The country's current fodder resources can only supply between 45 and 50 per cent of the demand, and the severity of the fodder shortage varies from state to state. The situation is made worse by the expanding livestock industry, particularly that of genetically modified animals and this is the scenario of fodder production in India. Organic nutrient source gives major emphasis on recovery and maintenance of soil fertility and for sustainable yield. Organic systems rely on the management of organic matter to enhance the soil fertility and productivity (Naik *et al*., 2014) [7]. Organic matter has an overwhelming effect on almost all soil properties. A best organic nutrient source not only provides organic matter but also add essential minerals to the soil. Organic manure when incorporated in the soil has positive effects on plant growth, yield and soil physiochemical properties (Huang *et al*., 2007) [4]. Biofertilisers help in fixing atmospheric nitrogen and mobilizing fixed macro- and micronutrients in the soil into plant-available forms. Organic farming plays a critical role in preserving long term soil fertility and sustainability.

Materials and Methods
The experiment entitled "Organic nutrient management in fodder cowpea [*Vigna unguiculata* L.]" was conducted during *rabi*, 2022-23 at Dry land Farm S.V. Agricultural College, Tirupati. It is geographically situated at 13° 56' 564" N latitude and 79° 67' 684" E longitude, with an altitude of 182.9 m above the mean sea level, in Southern Agro- climatic Zone of Andhra Pradesh. The present experiment was laid out Split-plot Design and replicated thrice.
A total rainfall of 165 mm was received during the crop growth period in 9 rainy days. The data recorded on various parameters of growth and yield during the course of investigation were statistically analysed by following the analysis of variance procedure suggested by Panse and Sukhatme (1985) [9]. Statistical significance was tested with 'F' test at 5 per cent level of probability and wherever the 'F' test value was found significant, critical difference was worked out and the values were furnished.

Results and Discussion
Growth parameters and yield of fodder cowpea
The growth parameters *i.e*. Plant height, leaf area index, number of branches plant^{-1} was

higher with the variety MFC-09-01 (V_2), which was followed by MFC-08-14 (V_4), which was however comparable with Vijaya (V_1) at all stages of crop growth, where it was in parity with rest of varieties tested. The difference in plant height, leaf area index, number of branches per plant $^{-1}$ and green fodder yield among the varieties might be due to the variation in their genetic character and internodal length. Similar findings were observed with Babaji *et al*. (2011) [1], Manivasagaperumal *et al.* (2011) [5] Nandanwar and Patil (1990) [8] in fodder cowpea.

Among the various nutrient management practices tried, growth parameters *i.e*., Plant height, leaf area index, number of branches plant^{-1}, and green fodder yield (tha^{-1}) was higher with application of 75% N through organic source (FYM) + *Rhizobium* + PSB + KSB (F_3), which was followed by 50% N through organic source + *Rhizobium* + PSB + KSB (F_4) which was at par with 100% N through organic source (FYM) (F_2), whereas shorter plants were noticed in control (F_1). FYM could be attributed to the stimulated activities of microorganisms and synchronized release of nitrogen, which might have stimulated the cellular activity, useful for the process of cell division. The results are in close conformity with the findings of Zalate *et al.* (2009) [12], Verma and Munshi (2003) [11]. The probable reason might be due to biofertilisers has positive effect on release of nutrients and on the growth character due to increased cell division and cell expansion. The similar findings observed by Meena *et al.* (2014) [6] Patel *et al.* (2019) [10].

Higher green fodder yield was observed with the MFC-09-01(V_2) compare with other varieties might due to genetic potentiality to utilize and translocate photosynthates from source to sink. The superiority of the variety MFC-09-01(V_2) might due to superior performance of growth parameters. The similar findings observed by Gorade *et al.* (2014). 75% N through organic source (FYM) + *Rhizobium* + PSB + KSB (F3) registered significantly higher green fodder yield. The increased supply of nitrogen and its higher uptake by plant might have stimulated the rate of various physiological processes in plant and led to increased growth and yield. These findings are in support of Bama *et al.* (2013) [2].

Table 1: Growth parameters and yield of fodder cowpea as influenced by varieties and nutrient management practices

Treatments	Plant height (cm) at harvest	LAI at harvest	No of branches plant^{-1} at harvest	Green fodder yield (t ha^{-1})
Varieties(V)				
V_1: Vijaya	58.4	3.7	7.2	23.3
V_2: MFC-09-01	64.5	4.4	9.1	26.5
V_3: MFC-09-03	57.2	2.6	6.6	18.1
V_4: MFC-08-14	59.3	3.9	7.3	24.9
SEm±	1.26	0.165	0.246	0.616
CD(P=0.05)	3.7	0.5	0.72	18
Organic nutrient management practices (F)				
F_1: Control	57.5	2.8	3.8	18
F_2: 100% N through FYM	59.2	3.6	5.3	22.9
F_3: 75% N through organic source(FYM) +*Rhizobium* + PSB +KSB	63.4	4.6	5.9	29.7
F_4: 50% N through organic source (FYM) +R*hizobium* + PSB + KSB	59.4	3.7	5.4	24.5
SEm±	4.50	0.366	0.181	0.373
CD (P=0.05)	3.1	1.07	0.53	1.09
Varieties (V) x Organic nutrient management practices (F)				
V at F				
SEm±	2.156	0.732	0.361	0.6580
CD(P=0.05)	NS	NS		NS
F at V				
SEm±	2.161	0.655	0.376	0.6340
CD(P=0.05)	NS	NS	NS	NS

Conclusion

In conclusion the study revealed that cultivation of genotype MFC-09-01 with 75% of N through FYM + *Rhizobium* + PSB + KSB enhanced the yield, quality and economic returns of fodder cowpea in Southern Agro Climatic zone of A.P during *rabi.*

References

1. Babaji BA, Yahaya RA, Mahadi MA, Jaliya MM, Sharifai AI, Kura HN, *et al*. Growth attributes and pod yield of four cowpea (*Vigna unguiculata* (L.) Walp.) varieties as influenced by residual effect of different application rates of farmyard manure. Journal of Agricultural science. 2011;3(2):165.
2. Bama KS, Velayudham K, Babu C, Iyanar K, Kalamani A. Enshot of different nutrient sources on fodder yield, quality and soil fertility status of multicut fodder sorghum grown soil. Forage Research. 2013;38(4):207-212.
3. Gorade VN, Chavan LS, Jagtap DN, Kolekar AB. Response of green gram (*Vigna radiata* L.) varieties to integrated nutrient management in summer season. Agricultural Science Digest-A Research Journal. 2014;34(1):36-40.
4. Huang HS, Matevossian A, Whittle C, Kim SY, Schumacher A, Baker SP, *et al*. Prefrontal dysfunction in schizophrenia involves mixed-lineage leukemia 1-regulated histone methylation at GABAergic gene promoters. Journal of Neuroscience. 2007;27(42):11254-11262.
5. Manivasagaperumal R, Vijayarengan P, Balamurugan S, Thiyagarajan G. Effect of copper on growth, dry matter yield and nutrient content of *Vigna radiata* (L.) Wilczek. Journal of Phytology. 2011;15(2):177-178.
6. Meena JS, Verma HP, Pancholi P. Effect of fertility levels and biofertilizers on yield, quality and economic of cowpea. Agriculture for Sustainable Development. 2014;2(2):162-164.

7. Naik PK, Dhuri RB, Karunakaran M, Swain BK, Singh NP. Effect of feeding hydroponics maize fodder on digestibility of nutrients and milk production in lactating cows. Indian Journal of Animal Sciences. 2014;84(8):880-883.
8. Nandanwar RS, Patil AN. Phenotypic stability analysis in fodder cowpea. Annals of Plant Physiology. 1990;4(2):254-256.
9. Panse VG, Sukhatme PV. Statistical methods for Agricultural workers. ICAR. New Delhi; c1985. p. 100-174.
10. Patel BN, Patel KH, Singh N, Shrivastava A. Effect of phosphorus, FYM and bio-fertilizer on growth, yield attribute, yield and quality of summer greengram (*Vigna radiate* L.). Journal of Pharmacognosy and Phytochemistry. 2019;8(5):1108-1112.
11. Verma PD, Munshi MA. FYM A key component in enhancing ground nut productivity in Saurashtra Region of Gujarat. Haryana Agricultural University Journal of Research. 2003;33(2):143-147.
12. Zalate PY, Padmini DR. Effect of organic manure and biofertilizers on growth and yield attributing characters of kharif ground nut (*Arachis hypogaea* L.) International journal of Agricultural Sciences. 2009b;5(2):343-345.