The Pharma Innovation Journal 2021; 10(10): 1488-1490

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2021; 10(10): 1488-1490

www.thepharmajournal.com
Received: 07-08-2021
Accepted: 09-09-2021

Marupaka Praneeth
M.Sc. Ag. (Agronomy)
4th Semester Student,
Department of Agronomy,
SHUATS, Prayagraj,
Uttar Pradesh, India

Rajesh Singh
Assistant Professor,
Department of Agronomy,
SHUATS, Prayagraj,
Uttar Pradesh, India

Ekta Singh
Ph.D. Research Scholar,
Department of Agronomy,
SHUATS, Prayagraj,
Uttar Pradesh, India

Corresponding Author:
Marupaka Praneeth
M.Sc. Ag. (Agronomy)
4th Semester Student,
Department of Agronomy,
SHUATS, Prayagraj,
Uttar Pradesh, India

Response of late sown wheat (*Triticum aestivum* L.) to organic and liquid manures on yield and economics

Marupaka Praneeth, Rajesh Singh and Ekta Singh

Abstract
A field experiment was carried out during *Rabi* season of 2020-2021 at crop research farm of SHUATS, Prayagraj to study about the "Response of late sown wheat (*Triticum aestivum* l..) to organic and liquid manures on growth and yield"**.** The experiment was laid out in randomized block design by keeping three Poultry manure levels, *i.e.* PM1 - (PM 2t/ha), PM2 – (PM 2.5t/ha) and PM3 – (PM 3 t/ha) and Liquid manures (Panchagavya 3% and Vermiwash 3%) which was replicated three thrice. Results revealed that Poultry Manure 3.0 t/ha + Panchagavya 3% + Vermiwash 3% recorded significantly higher in grain yield (3.24 t/ha), straw yield (4.41 t/ha) and harvest index (42.13%). However, net returns (75,870.00 INR/ha) and B:C ratio (1.41) was also obtained with the application of Poultry Manure 3.0 t/ha + Panchagavya 3% + Vermiwash 3%. Therefore, I concluded that Poultry Manure 3.0 t/ha + Panchagavya 3% + Vermiwash 3% was produced more grains (3.24 t/ha) and economic effective (1.41).

Keywords: wheat, poultry manure, vermiwash, panchagava and yield

Introduction
Wheat (*Triticum aestivum* L.) is the world's most outstanding crop that excels all other cereals both in area and production, known as king of cereals. It's grown throughout the temperate, tropical and sub-tropical region in the world.

It constitutes the staple food in at least 43 countries. The most important wheat growing countries are the USA, China, India, Canada, Argentina, Australia and a number of Europeans countries. Maximum area under wheat is the China followed by India, Russian Federation and USA. India is second position in world wheat cultivation. India cover 295.76 lakhs of hectares area, 99.70 million tones production (12.32%), yield 3371(kg/ha). Three largest producing states of India, Uttar Pradesh 31.88, Punjab 17.85, Madhya Pradesh 15.91 during 2017-18 year, (Directorate of Economics & Statistics, DAC&FW 2017-18) [1].

India is the world's second largest producer of Rice, Wheat and other cereals. The huge demand for cereals in the global market is creating an excellent environment for the export of Indian cereal products. In 2008, India had imposed ban on export of rice and wheat etc. to meet domestic needs. Now, seeing the huge demand in the global market and country's surplus production, Country has lifted the ban, but only limited amount of export of the commodity are allowed. The allowed marginal quantity of exports cereals could not make any significant impact either on domestic prices or the storage conditions, (APEDA 2018) [2].

Organic farming is a production system which favors maximum use of organic materials, crop residues, animal excreta, legumes, on and off farm organic wastes, growth regulators, biopesticide etc. and discourage use of synthetically produced agro-inputs for maintaining soil health, productivity and pest management under the conditions of sustainable natural resources and healthy environment. Use of organic manures have been found to be promising in arresting the decline in productivity through correction of deficiencies of secondary and micro-nutrients and its beneficial influence on the physical and biological properties of soil (Kumar and Tripathi 2007) [7].

Poultry manure is a good source of nutrients for crops. It is also called as chicken manure, is an excellent soil amendment that provides nutrients for growing crops and also improves soil quality when applied wisely, because it has high organic matter combined with available nutrients for plant growth. Which contain higher amount of Nitrogen and Phosphorus compared to other bulky organic manures. The average nutrient content is 3.03 per cent N; 2.63 per cent P_2O_5 and 1.4 per cent K2O. Poultry manure is relatively a cheap source of both macro and micro nutrients and increase soil nitrogen, soil porosity and improve soil microbial activity. As poultry waste contains a high concentration of nutrients so addition of small

quantity of poultry manure in an integrated nutrient management system could meet the storage of FYM to some extent (Ghosh *et al*., 2004) [4]. Poultry manure carried out rapid mineralization.

Panchagavya, an organic product is the potential source of nutrients to play the role for promoting growth and providing immunity in plant system. Panchagavya consists of cow based five products *viz*. cow dung, cow urine, cow milk, curd and ghee. Bio- chemical properties of panchagavya revealed that it possesses almost all the major nutrient like NPK and micro nutrients necessary for plant and growth hormones like IAA & GA required for crop growth as well as the predominance of fermentative microorganisms like yeast, azotobacter, phospo bacteria and lactobacillus.

Application of vermiwash at 2% spray results increase in plant height, number of tillers, dry weight and yield attributes characters (Dekhane S.S 2017) [3]. Role of foliar application or seed soaking of panchagavya in production of many plantation crops had been well documented in India (Selvaraj 2003) [10].

Materials and Methods

The experiment was conducted during the *Rabi* season 2020-2021, at the Crop Research Farm, Department of Agronomy, Naini Agricultural Institute, Sam Higginbottom University of Agriculture, Technology and Sciences (SHUATS), Prayagraj (U.P.) which is located at 25^0 30' 42''N latitude, 81^0 60' 56" E longitude and 98 m altitude above the mean sea level. during *Rabi* season 2021 on sandy loam soil, having nearly neutral in soil reaction (pH 7.7), organic carbon (0.44), available nitrogen (171.48 kg/ha K), available phosphorus (27 kg/ha) and available potassium (291.2 kg/ha). The climate of the region is semi- arid subtropical. Treatments comprised of T_1– Poultry Manure 2.0 t/ha + Panchagavya 3%, T_2 – Poultry Manure 2.0 t/ha + Vermiwash 3%, T_3 – Poultry Manure 2.0 t/ha + Panchagavya 3% + Vermiwash 3%, T_4 – Poultry Manure 2.5 t/ha + Panchagavya 3%, T_5 - Poultry Manure 2.5 t/ha + Vermiwash 3%, T_6 – Poultry Manure 2.5 t/ha + Panchagavya 3% + Vermiwash 3%, T_7 – Poultry Manure 3.0 t/ha + Panchagavya 3%, T_8– Poultry Manure 3.0 t/ha + Vermiwash 3% and T_9 – Poultry Manure 3.0 t/ha + Panchagavya 3% +Vermiwash 3%. These were replicated thrice in Randomized Block Design.

Chemical analysis of soil

Composite soil samples are collected before layout of the experiment to determine the initial soil properties. The soil samples are collected from 0-15 cm depth and were dried under shade, powdered with wooden pestle and mortar, passed through 2 mm sieve and were analyzed for organic carbon by rapid titration method by Nelson (1975) [8]. Available nitrogen was estimated by alkaline permanganate method by Subbiah and Asija (1956) [11], available phosphorus by Olsen's method as outlined by Jackson (1967), available potassium was determined by using the flame photometer normal ammonium acetate solution and estimating by using flame photometer (ELICO Model) as outlined by Jackson (1973) [6] and available $ZnSO_4$ was estimated by Atomic Absorption Spectrophotometer method as outlined by Lindsay and Norvell (1978).

Statistical analysis

The data recorded were different characteristics were subjected to statistical analysis by adopting Fishers the method of analysis of variance (ANOVA) as described by Gomez and Gomez (2010) [5]. Critical difference (CD) values were calculated the 'F' test was found significant at 5% level.

Results and Discussion

Yield

The Data related that the grain and straw yield evaluated and tabulated in Table 1. Maximum grain yield (3.24 t/ha) and straw yield (4.41 t/ha) in Poultry manure in 3.0 t/ha + Panchagavya 3% + Vermiwash 3% which superior over all the treatments except with the application of treatment Poultry manure 3.0 t/ha + Panchagavya 3% in both parameters grain yield (3.07) and straw yield (4.27 q/ha) were followed similar trend. Under organic production, organic sources of nutrients are best option to maintain the health of soil, provide the equal opportunity for all the living existence of live and use from their beneficial activities, like nitrogen fixation, phosphorus solubilization, recycling of animal waste and green manure. FYM 25% + VC 75% + Panchagavya at 2% + Vermiwash at 5% spray, found better results in yield attributes i.e., grain, straw and harvest index. Similar results found (Tamim Fazily, C.S. Hunshal, 2010) [12], (Davari, M.R, 2007), (Pagar, R.D 2016 b).

Economics

It is revelated from the data presented in Table 2. The cost of cultivation of wheat crop recorded numerically higher (₹ 53,730) value for the treatment of application of Poultry manure in 3.0 t/ha + Panchagavya 3% + Vermiwash 3% and numerically minimum cost of cultivation was recorded with the application of Poultry manure in 3.0 t/ha + Panchagavya 3% (₹ 42,030). Numerically higher gross returns (₹ 1,29,600). Net returns (₹ 75, 870) and B:C ratio (1.41) were obtained with the application of Poultry manure in 3.0 t/ha + Panchagavya 3% + Vermiwash 3%.

Table 1: Response of Late Sown Wheat (*Triticum aestivum* L.) to Organic Manure and Liquid Manure on Yield

Sl. No.	Treatment	Grain yield (t/ha)	Straw yield (t/ha)	Harvest index (%)
1	Poultry Manure 2.0 t/ha + Panchagavya 3%	2.47	3.67	40.24
2	Poultry Manure 2.0 t/ha + Vermiwash 3%	2.1	3.3	38.87
3	Poultry Manure 2.0 t/ha + Panchagavya 3% + Vermiwash 3%	2.59	3.79	40.61
4	Poultry Manure 2.5 t/ha + Panchagavya 3%	2.78	3.98	41.12
5	Poultry Manure 2.5 t/ha + Vermiwash 3%	2.28	3.48	39.57
6	Poultry Manure 2.5 t/ha + Panchagavya 3% + Vermiwash 3%	2.89	4.09	41.40
7	Poultry Manure 3.0 t/ha + Panchagavya 3%	3.07	4.27	41.81
8	Poultry Manure 3.0 t/ha + Vermiwash 3%	2.42	3.62	40.05
9	Poultry Manure 3.0 t/ha + Panchagavya 3% +Vermiwash 3%	3.24	4.41	42.13
	F test	S	S	S
	SEm(±)	0.06	0.04	0.14
	C.D (P=0.05)	0.18	0.14	0.44

Table 2: Response of Late Sown Wheat (*Triticum aestivum* L.) to Organic Manure and Liquid Manure on Economics

Treatments	Cost of cultivation (INR ha^{-1})	Gross returns (INR ha^{-1})	Net returns (INR ha^{-1})	B:C Ratio
Poultry Manure 2.0 t/ha + Panchagavya 3%	42,030.00	98,800.00	56,770.00	1.35
Poultry Manure 2.0 t/ha + Vermiwash 3%	42,930.00	84,000.00	41,070.00	0.95
Poultry Manure 2.0 t/ha + Panchagavya 3% + Vermiwash 3%	44,730.00	1,03,600.00	58,870.00	1.31
Poultry Manure 2.5 t/ha + Panchagavya 3%	46,530.00	1,11,200.00	64,670.00	1.38
Poultry Manure 2.5 t/ha + Vermiwash 3%	47,430.00	91,200.00	43,770.00	0.92
Poultry Manure 2.5 t/ha + Panchagavya 3% + Vermiwash 3%	49,230.00	1,15,600.00	66,370.00	1.34
Poultry Manure 3.0 t/ha + Panchagavya 3%	51,030.00	1,22,800.00	71,770.00	1.40
Poultry Manure 3.0 t/ha + Vermiwash 3%	51,930.00	96,800.00	44,870.00	0.86
Poultry Manure 3.0 t/ha + Panchagavya 3% +Vermiwash 3%	53,730.00	1,29,600.00	75,870.00	1.41

Conclusion

It is concluded that the treatment Poultry Manure 3.0 t/ha + Panchagavya 3% + Vermiwash 3%. was found significantly more productive (3.24 t/ha). It is also recorded that maximum Benefit cost ratio (1.41) as compared to other treatment combinations.

Acknowledgement

The authors are thankful to Department of Agronomy, Naini Agricultural Institute, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj – 211007, Uttar Pradesh, India for providing us necessary facilities to undertake the studies.

References

1. Anonymous. Directorate of Economics &Statistics, DAC&FW eands.dacnet.nic.in 2017-18.
2. APEDA. Agricultural and Processed Food Products Export Development Authority 2018.
3. Dekhane SS, Mangave BD, Dumbre RB, Patel DJ. Response of nutrient management practices through organic substance on rice var. GR-11 in North Konkan Coastal zone of Maharashtra. International Journal of Environment, Agriculture and Biotechnology 2017, 2(6).
4. Ghosh BN, Prakash V, Singh RD. Micronutrient status in soybean (*Glycine max*) wheat (*Triticum aestivum* L.) cropping system in Kuma on region of Uttaranchal. Indian J. Agric. Sci 2004;71(2):149-152.
5. Gomez KA, Gomez AA. Statistical procedures for agricultural research 2nd edition. New York 1984,680.
6. Jackson ML. Soil chemical analysis. Prentice Hall of India Pvt. Ltd. New Delhi 1973.
7. Kumar, Alok, Tripathi HP, Yadav DS. Correcting nutrient for sustainable crop production. Indian Journal of Fertilizers 2007.
8. Nelson DW, Sommers LE. A rapid and accurate procedure for estimation of organic carbon in soil. Proceedings of Indian Academy of Science 1975;64:1815-1826.
9. Pagar RD, Jangilwad DB, Chaudhary MK. Effect of Panchagavya on Growth and Yield of Wheat (*Triticum aestivum* L.). Advances in Life Sciences 2011, 5(3).
10. Selvaraj N. Report of work done on organic farming at horticulture research station, Tamil Nadu Agriculture University, Ooty, India 2003, 2-5.
11. Subbiah B, Vand Asija GL. A rapid procedure for estimation of available nitrogen in soils. Current Science 1956;25:259-260.
12. Tamim Fazily CS, Hunshal. Effect of Organic Manures on Yield and Economics of Late Sown Wheat (*Triticum aestivum*). International Journal of Research and Review 2010;6(1):168-171.