



ISSN (E): 2277-7695  
ISSN (P): 2349-8242  
NAAS Rating: 5.23  
TPI 2022; SP-11(7): 2113-2117  
© 2022 TPI  
[www.thepharmajournal.com](http://www.thepharmajournal.com)  
Received: 19-04-2022  
Accepted: 22-05-2022

**Rahul Yadav**

MSc.(Ag)Agronomy, Faculty of  
Agricultural Sciences and Allied  
Industries, Rama University,  
Kanpur Nagar, Uttar Pradesh,  
India

**Dr. AS Yadav**

Department of Agronomy,  
Faculty of Agricultural Sciences  
and Allied Industries, Rama  
University, Kanpur Nagar,  
Uttar Pradesh, India

## Effect of different organic and inorganic source of nutrients on growth and yield of wheat (*Triticum aestivum* L)

**Rahul Yadav and Dr. AS Yadav**

### Abstract

This study was conducted on “Effect of different organic and inorganic source of nutrients on growth and yield of wheat (*Triticum aestivum* L) in central U.P” during the Rabi season of 2020-21 on Agricultural Farm of RAMA UNIVERSITY, KANPUR, 209217, (U.P.) INDIA. The experiment was laid out in simple RBD 11+1 (control) treatment and three replications. The treatments were T<sub>1</sub> Control, T<sub>2</sub> 100% RDF from NPK (120:60:40)kg/ha, T<sub>3</sub> 100% RDF from N+25% Recommended N from FYM, T<sub>4</sub> 75% RDF from N + 25% Recommended N from Poultry manure, T<sub>5</sub> 75% RDF from N+ 25% Recommended N from press mud, T<sub>6</sub> 75% RDF from N+25% Recommended N from vermicompost, T<sub>7</sub> 50% RDF from N+ 25% Recommended N from FYM+ 25% Recommended N from press mud, T<sub>8</sub> 50% RDF from N+25% Recommended N from FYM +25% Recommended N from Poultry manure, T<sub>9</sub> 50% RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost, T<sub>10</sub> 50% RDF from N +25% Recommended N thought Press mud +25% Recommended N from Poultry manure, T<sub>11</sub> 50% RDF from N+25% Recommended N from Pres mud +25% Recommended N from vermicompost, T<sub>12</sub> 50% RDF from N +25% Recommended N from vermicompost +25% Recommended N from Poultry manure. The best treatment was found to be T<sub>9</sub> 50% RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost in terms of, Plant population, Plant height, Dry matters, Number of tillers, number of effective tillers, leaf area index, days taken to flowering, length of ear, number of spike, number of spikelet/ear, number of grain per ear, biological yield, grain yield, straw yield, harvest index and B:C ratio.

**Keywords:** NPK, poultry, FYM, press-mud, vermicompost

### Introduction

Wheat is the world's most extensively farmed staple food crop. After China, India is the world's second-largest wheat producer. Wheat is India's second most popular grain after rice. India produces around 12% of the world's total wheat. Among the grains, wheat is well-known for its nutritional content. It has a greater protein content and a higher concentration of niacin and thiamine, as well as the distinctive component gluten, which is critical in the baking business. (Ahmad *et al.*)<sup>[1]</sup>. Wheat a major cereal crop is the world's second most important annual cereal crop followed by rice. China, India, the United States of America, Canada, Australia, and Russia are among the nations that cultivate wheat as a major grain crop.

The harvest of wheat in India, which is produced on an area of 25.1 million ha, has curved out to be yet another record year for wheat production, with the country's wheat production projected to reach a new high of 111.32 million tones in the 2021-22 crop year (July-June) Ministry of Agriculture and Farmers Welfare, Government of India (Anonymous 2021)<sup>[3]</sup>.

Environmentalists, soil scientists, and agricultural researchers all agree that the next step toward improving soil fertility and crop production is to implement so-called low input sustainable agriculture (LISA) technology or organic farming, which includes a set of practices such as sowing at the right time, using the right amount of manures, fertilizers, bio-fertilizers, and crop residues in a given area.

Organic agriculture is a comprehensive method based on a set of procedures that contribute to a healthy ecology, nutritious food, animal welfare, and social justice. It is centered on using as little external input as possible and avoiding synthetic fertilizers and pesticides. It is a farming system that employs management approaches that aim to restore the natural ecosystem, produce sustainable production, and offer weed, pest, and disease control through a diversified mix of mutually dependent living forms.

**Corresponding Author**

**Rahul Yadav**

MSc.(Ag)Agronomy, Faculty of  
Agricultural Sciences and Allied  
Industries, Rama University,  
Kanpur Nagar, Uttar Pradesh,  
India

FYM is the most widely employed organic manure in wheat-based agricultural systems. It is often sprayed to summer rice or maize crops, although it has a significant residual effect on the winter wheat crop. Some studies have also sought to determine the usefulness of FYM when applied to wheat directly.

All fertilizers should be used at the time of planting for late-planted wheat. Potassium should be administered according to the results of the soil analysis. Increased fertilizer usage corresponds to increased productivity, but in the years ahead, proper management of nutrients supplied by fertilizers will be more important than the quantity of nutrients given to wheat in order to maintain output. Lower rates, divided applications, and bands) of inorganic fertilizers on infertile kaolintic and oxide Solis are required to maintain good crop yields and an optimal nutrient balance in agro ecosystems.

### Materials and Method

Geographically, Kanpur is situated in sub tropical region at an altitude of 125.9 meter from the mean sea level and latitude ranging of 25° 56' to 28° 58' North and longitude 79° 31' to 80° 34' East. The climate of locality is semi arid with moderate rainfall and cold winters. The mean annual rainfall is 850 mm extending generally from the mid June to mid October. The temperature rises maximum during May - June (45 – 48 °C) and come down to 4 -5 °C during December - January. Occasional showers are also received during winter and summer.

The experiment was conducted in Randomized Block Design (RBD) with one control and 11 treatments and three replications at Students Instructional Farm of Rama University, Kanpur during *Rabi* (2020-21). The treatments were T<sub>1</sub> Control, T<sub>2</sub> 100% RDF from NPK (120:60:40)kg/ha, T<sub>3</sub> 100% RDF from N+25% Recommended N from FYM, T<sub>4</sub> 75% RDF from N + 25% Recommended N from Poultry manure, T<sub>5</sub> 75% RDF from N+ 25% Recommended N from press mud, T<sub>6</sub> 75% RDF from N+25% Recommended N from vermicompost, T<sub>7</sub> 50% RDF from N+ 25% Recommended N from FYM+ 25% Recommended N from press mud, T<sub>8</sub> 50% RDF from N+25% Recommended N from FYM +25% Recommended N from Poultry manure, T<sub>9</sub> 50% RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost, T<sub>10</sub> 50% RDF from N +25% Recommended N thought Press mud +25% Recommended N from Poultry manure, T<sub>11</sub> 50% RDF from N+25% Recommended N from Pres mud +25% Recommended N from vermicompost, T<sub>12</sub> 50% RDF from N +25% Recommended N from vermicompost +25% Recommended N from Poultry manure.

### Result and Discussion

The effect of organic and inorganic fertilizer is very obvious and consistent. There was significant difference among the application of the different treatment and among the treatment applied treatment T<sub>9</sub> (50% RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost) with (63.50 plants m<sup>-2</sup>) followed by T<sub>6</sub> (50% RDF from N+25% Recommended N from FYM +25% Recommended N from Poultry manure) with (58.00 plants m<sup>-2</sup>) which were significantly superior over T<sub>1</sub> (Control) with (42.50 plants m<sup>-2</sup>). There was insignificant difference at 30 DAS on the different treatment and there was significant difference among the treatment applied at 60, 90 DAS and at harvest, among the application of the different treatment, T<sub>9</sub> (50% RDF from

N+25% Recommended N from FYM +25% Recommended N from vermicompost) with (21.51, 53.57, 88.69 and 92.36) cm plant height followed by T<sub>6</sub> (75% RDF from N+25% Recommended N from vermicompost) with (20.22, 51.86, 84.57 and 89.57) cm plant height which were significantly superior over T<sub>1</sub> (Control) with (13.91, 42.51, 69.90 and 74.87) cm plant height.

The maximum dry weight was recorded in the treatment T<sub>9</sub> (50% RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost) with 71.60 g followed by the treatment T<sub>6</sub> (75% RDF from N+25% Recommended N from vermicompost) with 67.90 g and the minimum dry weight were recorded in the T<sub>1</sub> (Control) with 55.64 g.

The maximum number of tillers was recorded in the treatment T<sub>9</sub> (50% RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost) with 145.69 followed by the treatment T<sub>6</sub> (75% RDF from N+25% Recommended N from vermicompost) with 142.36 and the minimum number of tillers were recorded in the T<sub>1</sub> (Control) with 122.37.

There was significant difference among the application of the different treatment on DAS taken to 50% flowering and among the treatment applied treatment T<sub>9</sub> (50% RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost) with (58.94 days) followed by T<sub>6</sub> (75% RDF from N+25% Recommended N from vermicompost) with (61.26 days) which were significantly superior over T<sub>1</sub> (Control) with (71.57 days) DAS taken to 50% flowering.

The effect of organic and inorganic fertilizer on effective tillers is very obvious and consistent. There was significant difference among the application of the different treatment on number of effective tillers and among the treatment applied treatment T<sub>9</sub> (50% RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost) with (142.58) followed by T<sub>6</sub> (75% RDF from N+25% Recommended N from vermicompost) with (140.24) which were significantly superior over T<sub>1</sub> (Control) with (120.36) number of effective tillers.

There was significant difference among the application of the different treatment on Length of ear and among the treatment applied treatment the maximum length of ear was found in T<sub>9</sub> (50% RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost) with (9.85 cm) followed by T<sub>6</sub> (75% RDF from N+25% Recommended N from vermicompost) with (9.26 cm) which were significantly superior over T<sub>1</sub> (Control) with (7.13 cm) Length of ear.

There was significant difference among the application of the different treatment on Number of spikelet per ear and among the treatment applied the maximum number of spikelet per ear was found in treatment T<sub>9</sub> (50% RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost) with (17.58) followed by T<sub>6</sub> (75% RDF from N+25% Recommended N from vermicompost) with (17.03) which were significantly superior over T<sub>1</sub> (Control) with (15.26) number of spikelet per ear.

There was significant difference among the application of the different treatment on Number of grain/ear and among the treatment applied treatment T<sub>9</sub> (50% RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost) with (47.66) followed by T<sub>6</sub> (75% RDF from N+25% Recommended N from vermicompost) with (45.64) which were significantly superior over T<sub>1</sub> (Control) with (38.04) Number of grain/ear.

There was significant difference among the application of the different treatment on Test weight and among the treatment applied treatment T<sub>9</sub> (50%RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost) with (42.97 g) followed by T<sub>6</sub> (75% RDF from N+25% Recommended N from vermicompost) with (42.79 g) which were significantly superior over T<sub>1</sub> (Control) with (38.09) Test weight.

There was significant difference among the application of the different treatment on Grain yield and among the treatment applied treatment T<sub>9</sub> (50%RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost) with (4468 kg ha<sup>-1</sup>) followed by T<sub>6</sub> (75% RDF from N+25% Recommended N from vermicompost) with (4378 kg ha<sup>-1</sup>) which were significantly superior over T<sub>1</sub> (Control) with (3873 kg ha<sup>-1</sup>) Grain yield.

There was significant difference among the application of the different treatment on Straw yield and among the treatment applied treatment T<sub>9</sub> (50%RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost) with (6140 kg ha<sup>-1</sup>) followed by T<sub>6</sub> (75% RDF from N+25% Recommended N from vermicompost) with (5699 kg ha<sup>-1</sup>) which were significantly superior over T<sub>1</sub> (Control) with (5469 kg ha<sup>-1</sup>) Straw yield.

There was significant difference among the application of the different treatment on Harvest index and among the treatment applied treatment T<sub>9</sub> (50%RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost) with (42.13) followed by T<sub>7</sub> (50% RDF from N+25% Recommended N from vermicompost) with (42.04) which were significantly superior over T<sub>1</sub> (Control) with (40.09)

Harvest index.

Data shows that the highest electrical conductivity was found in the treatment T<sub>9</sub> (50%RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost) with (0.33 dSm<sup>-1</sup>) followed by the treatment T<sub>6</sub> (75% RDF from N+25% Recommended N from vermicompost) with (0.32 dSm<sup>-1</sup>) and the minimum was observed in the T<sub>1</sub> (Control) with (0.24 dSm<sup>-1</sup>).

In case of pH the maximum was found in treatment T<sub>9</sub> (50%RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost) with (8.28) followed by the treatment T<sub>6</sub> (75% RDF from N+25% Recommended N from vermicompost) with (8.01) and the minimum was observed in the T<sub>1</sub> (Control) with (7.25).

In case of organic content the similar trend was seen in which the maximum was found in treatment T<sub>9</sub> (50%RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost) with (0.49%) followed by the treatment T<sub>6</sub> (75% RDF from N+25% Recommended N from vermicompost) with (0.48%) and the minimum was observed in the T<sub>1</sub> (Control) with (0.41%).

The maximum available N, P, K was seen in the treatment T<sub>9</sub> (50%RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost) with (237.1, 22.50, 330.00 kg ha<sup>-1</sup> N, P, K respectively) followed by the treatment T<sub>6</sub> (75% RDF from N+25% Recommended N from vermicompost) with (226.80, 20.40, 313.00 kg ha<sup>-1</sup> N, P, K respectively) and the minimum was observed in the T<sub>1</sub> (Control) with (114.70, 9.10, 257.00 kg ha<sup>-1</sup> N, P, K respectively).

**Table 1:** Effect of different organic and inorganic source of nutrient on Plant Population, Plant height, Dry weight

Symbol	Treatment	Plant Population	Plant height (cm)				Dry weight (g)			
			30 DAS	60 DAS	90 DAS	At Harvest	30 DAS	60 DAS	90 DAS	At Harvest
T <sub>1</sub>	Control	42.51	13.91	42.51	69.90	74.87	13.06	42.36	51.28	55.64
T <sub>2</sub>	100%RDF from NPK (120:60:40)kg/ha	50.02	14.68	46.92	71.37	76.37	15.04	51.24	60.57	63.46
T <sub>3</sub>	100%RDF from N+25% Recommended N from FYM	49.12	15.38	48.61	73.47	78.66	13.86	53.78	61.60	64.60
T <sub>4</sub>	75%RDF from N + 25% Recommended N from Poultry	55.22	16.89	49.52	76.88	81.57	15.61	55.32	63.26	64.99
T <sub>5</sub>	75%RDF from N+ 25% Recommended N from Press mud	52.52	17.51	50.21	75.97	80.65	15.51	56.11	63.02	65.60
T <sub>6</sub>	75% RDF from N+25% Recommended N from vermicompost	58.10	20.22	51.86	84.57	89.57	17.36	57.37	64.26	67.90
T <sub>7</sub>	50% RDF from N+ 25% Recommended N from FYM+ 25% Recommended N from Press mud	51.03	16.58	45.91	79.59	84.13	14.87	50.57	58.65	63.50
T <sub>8</sub>	50% RDF from N+25% Recommended N from FYM +25% Recommended N from Poultry manure	50.53	18.03	47.60	77.57	82.32	15.36	55.68	56.99	62.60
T <sub>9</sub>	50%RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost	63.54	21.51	53.57	88.69	92.36	18.04	58.34	68.96	71.61
T <sub>10</sub>	50% RDF from N +25% Recommended N thought Press mud +25% Recommended N from Poultry manure	57.51	17.22	44.58	74.56	78.02	15.63	44.11	59.66	62.33
T <sub>11</sub>	50% RDF from N+25% Recommended N from Press mud +25% Recommended N from vermicompost	60.06	18.57	45.96	75.02	85.24	15.02	53.62	57.27	60.57
T <sub>12</sub>	50% RDF from N +25% Recommended N from vermicompost +25% Recommended N from Poultry manure	52.07	19.26	46.91	76.33	86.25	15.05	47.88	63.87	66.27
	S.Em (±)	NS	NS	3.54	3.42	3.37	NS	3.54	3.42	3.37
	C.D <sub>5%</sub>	7.22	NS	7.58	7.32	7.22	NS	7.58	7.32	7.22

**Table 2:** Effect of different organic and inorganic source of nutrient on Number of tillers m<sup>-2</sup> Days taken to 50% Flowering, Length of ear (cm), No. of spikelet/ear, No. of grain/ear, Test weight (g).

Symbol	Treatment	Number of tillers m <sup>-2</sup>			Days taken to 80% Flowering	Number of effective Tillers	Length of ear (cm)	No. of spikelet/ear	No. of grain/ear	Test weight (g)
		45 DAS	60 DAS	90 DAS						
T <sub>1</sub>	Control	75.96	107.57	122.37	71.57	120.36	7.13	15.26	38.04	38.09
T <sub>2</sub>	100% RDF from NPK (120:60:40)kg/ha	80.57	111.36	136.55	66.61	133.34	8.92	15.65	44.13	40.57
T <sub>3</sub>	100% RDF from N+25% Recommended N from FYM	85.96	122.36	140.26	69.60	137.69	9.03	15.87	43.26	40.99
T <sub>4</sub>	75% RDF from N + 25% Recommended N from Poultry	78.92	110.57	125.69	64.58	123.57	8.46	16.37	41.23	40.24
T <sub>5</sub>	75% RDF from N+ 25% Recommended N from Press mud	88.68	118.96	133.67	66.22	130.58	9.02	16.61	42.58	40.77
T <sub>6</sub>	75% RDF from N+25% Recommended N from vermicompost	90.57	125.67	142.36	61.26	140.24	9.26	17.03	45.64	42.79
T <sub>7</sub>	50% RDF from N+ 25% Recommended N from FYM+ 25% Recommended N from Press mud	84.66	120.69	135.69	70.25	133.99	8.56	16.46	44.43	42.19
T <sub>8</sub>	50% RDF from N+25% Recommended N from FYM +25% Recommended N from Poultry manure	88.60	123.60	138.61	67.58	135.95	9.13	16.03	42.72	41.24
T <sub>9</sub>	50% RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost	95.90	130.24	145.69	58.94	142.58	9.85	17.58	47.66	42.97
T <sub>10</sub>	50% RDF from N +25% Recommended N thought Press mud +25% Recommended N from Poultry manure	86.41	126.63	140.43	68.73	137.55	7.57	16.14	39.14	39.63
T <sub>11</sub>	50% RDF from N+25% Recommended N from Press mud +25% Recommended N from vermicompost	90.21	124.12	144.81	64.86	139.13	8.22	15.95	42.12	41.25
T <sub>12</sub>	50% RDF from N +25% Recommended N from vermicompost +25% Recommended N from Poultry manure	89.34	128.24	137.61	63.57	138.77	8.40	16.81	38.77	38.55
	S.Em (±)	3.65	4.01	3.56	3.12	3.13	3.11	3.14	0.918	0.968
	C.D <sub>5%</sub>	6.58	6.34	7.39	6.22	6.22	6.24	6.24	1.905	0.45

**Table 3:** Effect of different organic and inorganic source of nutrient on Grain yield Kg ha<sup>-1</sup> Straw Yield kg ha<sup>-1</sup> Harvest Index % B:C Ratio, Soil Properties, available N P K (Kg ha<sup>-1</sup>) of Wheat.

Symbol	Treatment	Grain yield Kg ha <sup>-1</sup>	Straw Yield kg ha <sup>-1</sup>	Harvest Index %	B:C Ratio	Soil Properties			Nitrogen kg ha <sup>-1</sup>	Phosphorous kg ha <sup>-1</sup>	Potassium kg ha <sup>-1</sup>
						E.C.	pH	O.C.			
T <sub>1</sub>	Control	3873	5469	40.10	1:1.65	0.24	7.25	0.41	114.70	9.10	257.00
T <sub>2</sub>	100% RDF from NPK (120:60:40)kg/ha	3898	5577	40.58	1:1.58	0.26	7.32	0.46	145.20	18.000	268.00
T <sub>3</sub>	100% RDF from N+25% Recommended N from FYM	3906	5484	41.67	1:0.58	0.28	7.41	0.43	179.20	13.50	285.00
T <sub>4</sub>	75% RDF from N + 25% Recommended N from Poultry	3896	5589	41.14	1:1.70	0.3	7.52	0.45	207.10	18.10	280.00
T <sub>5</sub>	75% RDF from N+ 25% Recommended N from Press mud	3955	5638	41.71	1:1.30	0.25	7.61	0.44	153.60	17.20	290.00
T <sub>6</sub>	75% RDF from N+25% Recommended N from vermicompost	4378	5699	41.99	1:1.47	0.32	8.01	0.48	226.80	20.40	313.00
T <sub>7</sub>	50% RDF from N+ 25% Recommended N from FYM+ 25% Recommended N from Press mud	4200	5757	42.04	1:1.46	0.31	7.85	0.42	197.60	16.80	300.00
T <sub>8</sub>	50% RDF from N+25% Recommended N from FYM +25% Recommended N from Poultry manure	4333	6070	41.82	1:1.32	0.27	7.95	0.47	170.10	17.40	276.00
T <sub>9</sub>	50% RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost	4468	6140	42.13	1:1.40	0.33	8.28	0.49	237.10	22.50	330.00
T <sub>10</sub>	50% RDF from N +25% Recommended N thought Press mud +25% Recommended N from Poultry manure	3912	5513	41.21	1:1.63	0.26	7.27	0.46	153.30	15.80	297.00
T <sub>11</sub>	50% RDF from N+25% Recommended N from Press mud +25% Recommended N from vermicompost	4121	5323	41.53	1:1.39	0.31	7.33	0.47	195.80	17.60	300.00
T <sub>12</sub>	50% RDF from N +25% Recommended	4209	5468	41.14	1:1.64	0.28	7.87	0.43	211.60	19.10	305.00

	N from vermicompost +25% Recommended N from Poultry manure									
	S.Em (±)	1.138	2.216	1.136						
	C.D <sub>5%</sub>	2.455	4.893	2.457						

### Conclusion

On the basis of our finding it can be concluded that the best treatment was found to be T<sub>9</sub> (50% RDF from N+25% Recommended N from FYM +25% Recommended N from vermicompost) in terms of Plant population, Plant height, Dry matters, Number of tillers, number of effective tillers, leaf area index, days taken to flowering, length of ear, number of spike, number of spikelet/ear, number of grain per ear, biological yield, grain yield, straw yield, harvest index and B:C ratio, Soil properties and available NPK in wheat.

### References

- Ahmad Bakhsh, Gurmani AH, Hatti AV, Habibur Rehman, Bakhsh A, Rehman H. Effect of balanced application of N, P and K on the yield of wheat under irrigated conditions. *Sarhand J Agric.* 2015;15(5):453-457.
- Allam AEHY, Teama EA. Effect of rate and timing of NPK fertilization on yield and quality of two wheat cultivars. *Assiut. J Agric. Sci.* 2015;26(4):3-13.
- Anonymous. The Hindu, Survey of Indian Agriculture. 2004;33-36.
- Awasthi UD, Bhan S. Performance of wheat (*Triticum aestivum*) varieties with different levels of nitrogen in moisture scarce conditions. *Indian J Agron.* 2016;38(2):200-203.
- CSA. Agricultural sample survey: Report on area and production for major crops. Statistical Bulletin 388. Addis Ababa, Ethiopia., 2017.
- Chaudhary NR, Vyas AK, Singh AK. Growth and nutrient uptake in wheat as influenced by nitrogen, phosphorus and zinc fertilization. *Annals of Agric. Res.* 2015;18(3):365-366.
- Chaudhary PP, Jat RS, Sharma HS. Interaction effect of phosphorus, sulphur and PSB inoculation on growth, yield and nutrient uptake of wheat. *Annals Agric. Res.* 2016;24(1):12-16.
- Chauhan RPS, Ram S. Response of wheat to different fertility levels under partially reclaimed salt affected soil. *Fertilizer News.* 2017;38(5):51-52.
- Gautam Kuldeep, Dynamics of native and applied N, P, K and Zn in bajra-wheat rotation. M.Sc. Thesis, CCS Haryana Agricultural University, Hisar. 2016.
- Khan M, Akhtar M, Safdar M, Mahmood S, Ahmed N. Effect of source and level of potash on yield and quality of potato tubers. *Pak J Bot.* 2018;42(5):3137-3145.
- Kapur ML, Talukdar NC, Rana DS. Influence of continuous application of inorganic fertilizers in a fixed maize-wheat rotation on some soil chemical properties. *J. Indian Soc. Soil Sci.* 1986a;34:198-199.
- Kataria N, Bassi K. Effect of organic mulch and nitrogen on early sown wheat (*Triticum aestivum*) under rainfed conditions. *Indian J Agron.* 1997;42(1):94-97.
- Kaushik J, Sharma HS. Effect of nitrogen and sulphur levels on concentrations and uptake of nitrogen in wheat. *Annals Biol. (Ludhiana).* 1997;13(1):85-86.
- Shehata S, Abdel-Azem H, Abou El-Yazied A, El-Gizawy A. Interactive effect of mineral nitrogen and biofertilization on the growth, chemical composition and yield of Celeriac plant. *Eur J Sci Res.* 2010;47(2):248-255.
- Behera U, Sharma A, Pandey H. Sustaining productivity of wheat-soybean cropping system through integrated nutrient management practices on the Vertisols of central India. *Plant Soil.* 2007;297(1):185-199.
- Channabasanagowda. Effect of Organic Manures on Growth, Seed Yield and Quality of Wheat, Department of Seed Science and Technology University of Agricultural Sciences, Karnataka *J Agric. Sci.* 2007;21(3):366-368
- Tamim F. Effect of Organic Manures on Yield and Economics of Late Sown Wheat (*Triticum aestivum*) *International Journal of Research & Review.* 2019;168(6):1.
- Frederick J, Camberato J. Water and nitrogen effects on winter wheat in the southeastern coastal plain: I. grain yield and kernel traits. *Agron J.* 1995;87(3):521-526.
- Hafiz *et al.*, Influence of Different Organic Manures on Wheat Productivity *International Journal of Agriculture and Biology.* 2011;13(1):137-140
- Reddy Pavan K. Effect of integrated use of inorganic and organic sources of nutrients on available nutrient status, inorganic P - fractions and enzyme activity in soil after harvest of maize in Maize-Groundnut cropping sequence in alfisols *An International Journal.* 2018;11(VI):3708-3712
- Spyridon *et al.*, Effect of Organic Manure on Wheat Grain Yield, Nutrient Accumulation, and Translocation *Agronomy Journal.* 2016, 108(2).