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Effect of conservation tillage and weed management practices on weeds on nutrients content and uptake by wheat (*Triticum aestivum* L.)

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Abstract
An experiment on "Effect of conservation tillage and weed management practices on weeds on Nutrients content and uptake by wheat (*Triticum aestivum* L.)" was conducted at Shradhay Bhagwati Singh Agriculture Research farm, Hazipur, Chandra Bhanu Gupt Krishi Mahavidyalaya, B.K.T., Lucnkow (U.P.) during *Rabi* Season of 2022-23 The experiment was laid out in split plot design (SPD) with conversation tillage and four weed control practice. Results revealed that among tillage practices crop received zero tillage + residue and in weed management practices Sulfosulfuron 75% WP @ 24 g A.I./ha found significantly superior respect to nutrients content and uptake by wheat.

Keywords: *Triticum aestivum*, conservation tillage, weed management, nutrients content

Introduction
Roughly 2.5 billion people, or 36% of the world's population, depend on wheat (*Triticum aestivum* L.), one of the most important staple crops in the world. Improvements in its production have made the nation self-sufficient in food grains. Roughly 55% of all carbohydrates and 20% of all dietary calories consumed worldwide come from it (USDA, 2019) [12]. Due to improved irrigation and fertilizer facilities (Avena ludoviciana Dur), wheat varieties have led to an issue with grassy weeds, especially Phalaris minor Retz and wild oats, depending on the severity of the infestation. Broadleaf and grassy weeds together can cause significant crop losses and make weed control more difficult (Singh *et al*., 2002) [10].

Methodology
The experiment was carried out during Rabi 2022-23 at Shradhay Bhagwati Singh Agriculture Research Farm, Hajipur, Chandra Bhanu Gupta Krishi Mahavidyalaya, BKT, Lucknow (U.P.). The field was well leveled having good soil condition. In order to determine the physico-chemical characteristics of experimental plot a soil sample was collected from different places at random with the help of soil augar to a depth of 0-15 cm prior to application of fertilizers. The soil sample representing the whole field was taken and analyzed in laboratory for physico-chemical properties. The experiment was laid out in split plot design (SPD) with conversation tillage and four weed control practice with combination of 12 treatment and replicated three times. The treatments were allotted randomly to various main plots and sub plots.

Result and Discussion
The data pertaining to nutrient content (%) in grain and straw and its uptake are subjected to statistically analyzed and present in table .A perusal of data indicate that tillage practices and weed management affected the nutrients content and its uptake by grain and straw statistically. Crop received zero tillage + residue (T_2) recorded higher content (%) of N, P and K and its uptake by grain and straw significantly over rest of the treatments. The lowest content (%) and uptake of N, P and K was recorded with conventional tillage (T_1).

The higher uptake of N, P and K by grain and straw with zero tillage + Residue (T_3) was mainly because of higher grain and straw yield with this treatments. Post emergence spray of sulfosulfuron @ 25 g A.I./ha recorded the highest content (%) and its uptake (N, P and K) by grain and straw which was followed by metsulfuron @ 60 g A.I./h and 2, 4-D @ 0.75 kg/ha. The lowest content (%) and uptake of N, P and K was observed under weedy check treatment.

The higher availability of nutrients owing to efficient control of weeds by zero tillage + residue recorded higher content (%) of N, P, K and higher uptake of N, P and K by grain and straw was mainly due to higher grain and straw yield with this treatments. Weedy check recorded the lowest content (%) of N, P and K is grain and straw was because of lower availability of Nutrients in soil due to higher weed dry weight and lower uptake due to lower grain and straw yield. Post emergence spray of sulfosulfuron recorded higher content (%) of nutrients and its uptake as compared to metsulfuron and 2, 4-D was due to higher availability of nutrients plant which provided higher grain and straw yield and higher uptake of N, P and K by crop. Poor availability of nutrients to crop under weedy check resulted lover content (%) of N, P and K and its uptake due to poor grain and straw yield with this treatment.

Table 1: Uptake of N, P and K (kg/ha) by grain and straw as affected by tillage practices and weed management practices

Treatments	Nutrient Uptake (kg/ha)					
	Grain Content (%)			Straw Content (%)		
	N	P	K	N	P	K
Tillage Practices						
Conventional tillage (CT)	75.97	9.58	21.30	57.58	13.55	76.55
Zero tillage (ZT)	96.93	12.52	27.06	68.06	17.20	92.00
Zero tillage + residue (ZTR)	102.77	14.86	28.87	74.81	19.48	100.52
SEm±	2.22	0.40	0.44	0.60	0.45	1.27
CD (P=0.05)	6.55	1.21	1.25	1.82	1.27	3.73
Weed management						
Weedy check	55.11	7.33	15.47	43.92	10.43	58.75
Metsulfuron 20% WP @ 20g A.I./ha (PoE)	101.35	13.51	27.44	73.46	19.53	96.12
2,4-D @ 38@EC@0.8kg A.I./ha (PoE)	86.07	10.01	22.63	67.10	15.37	83.88
Sulfosulfuron 75% WP @ 24 g A.I./ha	106.60	14.65	28.87	76.53	20.30	99.18
SEm±	1.20	0.31	0.20	0.31	0.40	0.60
CD (P=0.05)	3.55	0.92	0.61	0.92	1.21	1.80

These results are in arrangement with Katara *et al*. (2012) [13]; Mishra *et al*. (2010) [14]; Mishra *et al*. (2021) [6]; Mishra *et al*. (2023) [7]; Ahmed *et al*. (2010) [1]; Choudhary *et al*. (2011) [15]; Sharma *et al*. (2011) [9]; Kumar *et al*. (2013) [5]; Upasani *et al*. (2014) [11]; Sharma *et al*.(2015) [8]; Choudhary *et al*. (2017) [3]; Kaur *et al*. (2018) [16].

Conclusion

Zero tillage + residue (ZTR) find significant higher than other tillage practices under nutrient uptake. Sulfosulfuron 75% WP @ 24 g A.I/ha significantly more suitable than other herbicides treatments under nutrient uptake

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