

## Efficacy of Weedicides Under Varying Levels of Nitrogen on Yields and Quality of Wheat

by

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Application of manures and fertilizers and removal of weeds are essential for high production of wheat. Few informations are available about the effectiveness of weedicide under varying levels of nitrogen. Increase in yield due to weedicide application of 2, 4-D has been reported by Singh (1964), Mishra (1964), and Sinha and Thakur (1964). Klingman (1948), reported an increase in protein content due to 2, 4-D application. However, Overland and Rasmussen (1951), and Hill (1964) did not find any effect of weedicide on the protein content. Keeping these in view, an experiment was laid out at Ranchi Agricultural College Farm, Kanke (Ranchi), Bihar during *rabi* season of 1955—1966 to study the efficacy of weedicides under varying levels of nitrogen on weed control and yield and protein content of wheat.

**Materials and Methods:** The soil of the plot was clayey loam and acidic in nature (pH. 5.0). The experiment was laid out in split plot design with 18 treatments, weedicides being the main plot and fertilizer as sub-plot treatments. Two weedicides, *viz.*, Tafacide and Bladex G. were used. Tafacide was used at 1.12 kg/ha ( $W_1$ ) and 2.24 kg/ha ( $W_2$ ). Bladex G. was used at 0.84 kg/ha ( $W_3$ ) and 1.68 kg/ha ( $W_4$ ). Hand-weeding (H) and control (C), *i. e.*, no weedicide, were also included. N was used at three levels, *i. e.*, 44.8 ( $N_1$ ), 67.32 ( $N_2$ ) and 89.76 ( $N_3$ ) kg/ha. Net size of plot was 4.5 x 2.7 metres.

Weedicides were sprayed on 53rd day of sowing. The delay in spraying was due to poor growth as it was too cold in December. The variety of wheat used was N. P. 799. Sowing was done on 10th December, 1955. N was applied half as basal dose and half one month after sowing in the form of urea.

The protein of grain was determined by Kjeldahal method.

**Results:** The treatment-wise yield data of grain and straw and protein contents are presented in Table.

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Average yield of wheat grain and straw per plot and protein contents.

Treat- ments	N <sub>1</sub>			N <sub>2</sub>			N <sub>3</sub>			Mean		
	Yield in kg.		Protein per cent	Yield in kg.		Protein per cent	Yield in kg.		Protein per cent	Yield in kg.		Protein per cent
	Grain	Straw		Grain	Straw		Grain	Straw		Grain	Straw	
W <sub>1</sub>	2.36	4.61	9.24	1.88	3.70	10.03	2.15	4.58	10.66	2.13	4.29	9.99
W <sub>2</sub>	2.08	4.11	9.16	2.46	4.91	10.21	2.18	4.63	10.71	2.24	4.55	10.02
W <sub>3</sub>	2.08	4.10	9.33	1.95	3.83	9.94	2.45	4.83	10.55	2.16	4.25	9.94
W <sub>4</sub>	2.08	4.05	9.41	2.48	4.85	9.13	2.36	4.73	10.77	2.30	4.54	9.75
C	1.83	3.65	9.08	2.13	4.05	10.21	2.00	4.06	10.81	1.98	3.92	10.03
H	1.91	3.81	9.16	2.16	4.31	9.76	2.23	4.50	10.63	2.10	4.20	9.85
Mean	2.05	4.05	9.23	2.18	4.27	9.88	2.22	4.55	10.67	...	...	...

So far grain yield data are concerned though there was no significant difference between the main treatments (weed control measures) and sub-treatments (levels of N), and between different weed control measures, however, weedicides increased the yield of grain. Maximum increase (15.2 per cent) was with Bladex G. at 1.68 kg. a. e. per hectare (W<sub>4</sub>). Similar result has been reported by Mehrotra and Tiwary (1966). The non-significant difference was mainly due to poor population of weeds in the plot.

As regards straw yield data, there was no significant difference between the main treatments. There was significant difference between different levels of N and the interactions between main-plot and sub-plot treatments. N<sub>3</sub> has produced highest yield (4.55 kg per plot) followed by N<sub>2</sub> (4.27 kg) and N<sub>1</sub> (4.05 kg). This may be due to excessive vegetative growth provided by heavy dose of N. Jhala (1961), Sarwat and Sharma (1965) have also reported the same result. The weedicides in combination with higher dose of N have produced high straw yields. This is due to the fact that on one hand high dose of N produced more vegetative growth of wheat and on the other hand weedicides provided less competition due to suppression of weeds.

There was not much difference in the protein content in different measures of weed control. This finding is similar to those of Overland and Rasmussen (1957) and Hill (1964). The increasing rate of N had increased the protein content of wheat grain. This result was in conformity with the result of Arakeri *et al.* (1961).

**Summary:** To study the effect of different weed control measures including weedicides (Tafacide and Bladex G) and hand-weeding under different levels of N on the yields of grain and straw and protein content of wheat, an experiment was laid out at Ranchi Agricultural College, Kanke (Ranchi) during the *rabi* season of 1965—1966.

Though there was no significant effect of different weed control measures and different levels of N on the grain yield of wheat, however, different weed control measures increased the yields maximum upto 15.2 per cent over control.

The different weed control treatments did not significantly increase the yield of straw, whereas, different levels of N increased the yield significantly. The higher dose of nitrogen produced high yield.

Weed control measures slightly decreased the protein content of wheat grain. On the other hand different levels of N increased the protein content.

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