



Effect of weeder in yield of wheat crop through system of wheat inentisification method

B.K. YADAV¹ AND B.S. KHERAWAT*
Krishi Vigyan Kendra (B.A.U.), GARHWA (RANCHI) JHARKHAND

Abstract : The OFT was planned in the *Rabi* of 2012-13. Farmer's practice selected was the age old traditional method of hand weeding. Since, several tools and equipments are now available, so dutch hoe was selected as one of the technological option vis a vis chemical control. Chemical weeding with pendimethalin @ 1.5 kg/ha after 2-3 days of sowing +one weeding at knee height stage with Dutch Hoe showed minimum weed population with highest yield (30.2 q/ha) and highest B:C ratio (3.5).

Key Words : Wheat, Weeds, Weedicides, Garhwa, OFT

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INTRODUCTION

Wheat is one of the oldest cereals and most important food crop in the world. In India wheat is the second most important food crop (Mehla *et al.*, 2000). Wheat is the second major cereal crop grown in different regions of Jharkhand. Most of the soils of Jharkhand are acidic and light in texture. The productivity of wheat crop and per capita availability of wheat in Jharkhand is quite low. Out of several reasons cited for its low productivity, the plethora of weed species competing with the wheat crop for nutrition is the most limiting one. A host of weed diversity is found in wheat crop (Munda *et al.*, 1997). The crop wheat is very much susceptible to weed. Generally farmers of Jharkhand avoid applying weedicides. Good control of weeds can be attained through combining several techniques which can work cooperately to produce a weed suppressing cropping system. Studies by Mariga (1990) found that a combination of 66 % of the recommended dosage of metolachlor in a wheat/bean intercrop produced the best results under weed suppression and, therefore, it is the best package for small holder farmers. The same study revealed that a combination of intercropping and reduced herbicide dosages reduced the number of

weeding in a wheat crop from three to two. The introduction of the integrated weed management (IWM) in farmers' field is the answer to the weed management problem (Gaur Singh 2000). Controlling weed by other means than hand weeding is time saving as well as labour (Legere *et al.*, 2005). Taking this problem at village area, this OFT was designed.

MATERIAL AND METHODS

The OFT was planned in the *Rabi* of 2012-13. For this a 500m² plot in a preselected village named Narayanpura in Garhwa district of Jharkhand was selected. Farmer's practice selected was the age old traditional method of hand weeding. Since, several tools and equipments are now available, so Dutch hoe was selected as one of the technological option. Chemical control is by far the most commonly used weed control method, so it formed the natural choice of technological option. All the standard package of practices were followed The experiment was laid out in randomized block design with 10 replications. Test crop was wheat and there were four treatments as per the technologies selected which is given below :

* Author for correspondence

¹Crop Improvement Division, Centrail Soil Salinity Research Institute, KARNAL (HARYANA) INDIA

Table 1 : Yield and yield parameters of wheat under various treatments combinations

Technology options	Technology assessed	Tillers (No.)/m ²	Weed population (No.)/m ²	Grain yield (q/ha)	B:C ratio
Farmer practice	One hand weeding at 20 days after sowing)	99.44	94.8	22.5	2.8
Technological options 1	Two weeding with Dutch hoe first 10 days after sowing and 2 nd at knee height stage	108.78	39.9	27.8	3.4
Technological options 2	Chemical weeding with pendimethalin @ 1.5 kg/ha after 2-3 days of sowing	107.22	31.3	26.9	3.2
Technological options 3	Chemical weeding + One weeding at knee height stage with Dutch hoe	120.33	10.5	30.2	3.5
	S.E.±		1.05	.514	
	C.D. (P=0.05)		2.16	1.06	
	CV (%)		7.6	6.05	

Details of technology selected :

- Farmers Practices : One hand weeding at 20 days after sowing
- Technological options 1 : Two weeding with Dutch hoe first 10 Days after sowing and 2nd at knee height stage.
- Technological Options 2 : Chemical weeding with pendimethalin @ 1.5 kg/ha after 2-3 days of sowing.
- Technological Options 3 : Chemical weeding + one weeding at knee height stage with Dutch hoe (TO-1).
- Year of experiment : *Kharif*, 2009
- Experimental design : Randomized Block Design
- Replication : 10
- Crop : wheat
- Plot Size : 500 m²
- Source of technology : BAU, Ranchi
- Production system and thematic area : Integrated weed management

The standard cultivation practices prescribed for wheat under irrigated conditions were followed. Field observations involving plant height, number of tillers per meter etc parameters were recorded.

RESULTS AND DISCUSSION

Field tests were conducted to evaluate the performance of three different types of technological options selected over farmer's practice. Different parameters selected were number of weed / m², tillers per square meter, grain yield q/ha and B:C ratio. Crop yield is a complex phenomenon which

depends upon accumulation and partitioning of photosynthates from source to sink. This partitioning of photosynthates may vary depending upon the time of sowing, effective weed control which results in differential growth and development of the crop. As per results presented in Table 1, weed suppression was highly significant in the technological option 3. Farmer's field had host of weed biomass and was no match to different treatment combinations of weed management. A perusal of the data presented in Table 1 indicated that, the significant reduction in weed population was recorded with successive technological options. The maximum weed population of 94.8/ m² was recorded in farmer's practice. Similarly statistically significant reductions in weed population was recorded in technological option 3 *i.e.* chemical weeding + one weeding at knee height stage with Dutch hoe which was significantly higher over farmer's practice and at par with other technological options tested. This indicated that chemical weeding + one weeding at knee height stage with Dutch hoe resulted in increased number of tillers and plant height, which may be attributed to the favourable climatic conditions and availability of more water, nutrients due to effective weeds control, which coincided with the active growth period of the crop. Chemical weeding @ 1.5 kg/ha after 2-3 days of sowing +one weeding at knee height stage with Dutch hoe showed minimum weed population with highest yield (30.2 q/ha) and highest B:C ratio (3.5). This may be attributed to the facts that technological option 1 had no chemical treatment and crop attained less growth and development, which resulted in poor source to sink partitioning of the photosynthates and thus resulted in formation of lesser number of cobs per plant. Highly significant yield and yield parameters data were obtained in all the three technological options compared to farmer's practice. Cost benefit ratio calculated was significantly higher in the treatment three.

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