

## Effect of seeding methods and weed management on wheat (*Triticum aestivum*)

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### ABSTRACT

A field experiment was conducted during rabi 2005-06 and 2006-07, to study the effect of seeding methods and weed management on wheat (*Triticum aestivum*) at C.S. Azad University of Agriculture and Technology, Kanpur. Furrow seeding 20 cm apart resulted in significantly higher yield attributes, grain yield and net profit than broadcast sowing of wheat. Among the weed control methods, Pendimethalin pre-emergence @ 1 kg a.i./ha + post-emergence of Isoproturon @ 1kg a.i./ha and 2,4-D @ 0.75 kg a.i./ha, recorded significantly highest grain yield (45.78q/ha), straw yield (70.46q/ha) and net profit (Rs.39844/ha). This method of weed control gave 20.0, 9.2 and 8.1 % higher grain yield and 32.7, 15.9, and 13.4 % higher net profit than under the methods of weedy check, Pendimethalin pre-emergence @ 1 Kg a.i./ha and post-emergence application of Isoproturon @ 1Kg a.i./ha + 2,4D @ 0.75 Kg a.i./ha, respectively. The same method of weed control reduced weed intensity and weed dry biomass significantly compared to other methods, by procuring highest weed control efficiency.

**Key words :** Wheat, Furrow seeding, Broadcasting, Herbicides, Economics

### INTRODUCTION

Maintenance of optimum well distributed plant population per unit area is one of the factors responsible for higher wheat yield. In indo-gangetic plains of north India, tillage operations and sowing of wheat are done generally by owned or hired tractor. Most of the tractor owners do not have seeding machines, thus sowing is done through broadcasting seed either before or after ploughing. The recommended method 'furrow seeding' is adopted only on limited area. Wheat crop is also infested with a number of weeds due to adoption of same crop sequence every year in a particular area. Some of the grassy weeds resemble with wheat in morphological characters and are not easily identified by the farmers, thus defy all manual mechanical attempts to control them. Seeding methods of wheat may also effect the weed intensity (Pandey and Kumar, 2005). Keeping above points in view, the present investigation was undertaken on seeding methods and weed management in wheat crop.

### MATERIALS AND METHODS

The field experiment was conducted at Students' Instructional Farm of C.S. Azad University of Agriculture and Technology, Kanpur (Uttar Pradesh) during winter seasons of 2005-06 and 2006-07. The soil was sandy loam in texture, low in organic carbon (0.40%), available P (10.9kg/ha) and available K (176kg/ha) with 7.8 pH. The treatments comprised of 3 seeding methods ( $M_1$ - Seed broadcast before last ploughing and planting ;  $M_2$ - Seed broadcasting after last ploughing but before planking ;  $M_3$ - Furrow seeding 20cm apart) and 4 weed control methods ( $W_0$ - Weedy check ;  $W_1$ -Pendimethalin pre-

emergence @ 1.0 kg a.i./ha;  $W_2$ - Post - emergence spray of 2,4-D @ 0.75kg a.i./ha + post - emergence of Isoproturon @ 1.0kg a.i./ha;  $W_3$ - Pendimethalin pre-emergence @ 1.0 kg a.i./ha + post - emergence of Isoproturon @ 1.0 kg a.i./ha and 2,4-D @ 0.75 kg a.i./ha). Experiment was conducted in split-plot design with seeding methods in main plots and weed control methods in sub-plots, replicated four times. Wheat variety PBW-343 was sown on 27.11.2005 and 5.12.2006 using seed rates of 100 and 125kg/ha, respectively.

The recommended dose of 120kgN, 60kg P205 and 40kg K20/ha was applied to the crop. Full dose of P and K along with half dose of N were applied basal and remaining N in two equal splits at tillering and boot stage. The crop received 4 irrigations in first year and 5 in second year crop. Weed count and weed dry biomass were recorded 120 days after sowing from an area enclosed in a quadrat of 0.25 m<sup>2</sup> randomly selected at 3 places in each plot. Weed count were subjected to square test transformation ( $x+0.5$ ) before statistical analysis. Pre-emergence application of herbicides was done 2 days after sowing while the post emergence application was done 30 days after sowing, using the knap-sack sprayer fitted with flat-fan nozzle.

### RESULTS AND DISCUSSION

#### Weed :

The major weed flora observed in the experimental plots included *Chenopodium album*, *Convolvulus arvensis*, *Anagallis arvensis*, *Phalaris minor*, *Cyperus rotundus* and *Cynodon dactylon*. In the plots of weedy check, *Cyperus rotundus* (36.45%), *Cynodon dactylon* (20.26%) and *Anagallis arvensis* (18.72%) dominated during 2005-06.