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Efficacy of different commercially available weedicides on wheat *Triticum aestivum* in Rawalpindi Pakistan

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Abstract

Wheat (*Triticum aestivum L.)* is a major food cropand it is considered as main staple food in Pakistan. This crop is cultivated in both irrigated and rain fed areas of Punjab, Pakistan. The present study was conducted to compare the efficacy of four different commercial available weedicides included Starane –M, Clean wave, Clean field and Buctril Super against broad leaf weeds in relation to grain yield in wheat crop. Study was conducted in farmer fields in Rawalpindi, Punjab during 2013-14.Buctril super was observed with significant results both in weeds population and wheat yield. This present study will be helpful to understand the control measure of weeds problems of wheat crop in this area.

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Introduction

Wheat (*Triticum aestivum L.)* is an important staple food crop of Pakistan. During 2006-07, it was grown on an area of 8.578 million hectares with an annual production of 23.295 million tons and an average yield of 2.107 tons per hectare (MINFAL, 2009). It is a staple food of people in Pakistan and one third world's population. It is grown both in irrigated and rain fed areas with an annual production of 21.4 million tons (GOP, 2008). Wheat is the major crop of Pakistan. Other major crops include cotton, sugarcane, rice and maize which comprises 31.9% of agricultural value added and registered a growth of 3.2 % in fiscal year 2011-12.

There are many factors responsible of low yield in wheat, but weeds is one of the most important. Weeds are plants of native value, those compete for space, water, nutrients and carbon dioxide thus limiting the availability of basic requirements of the economic crop and decrease yield up to 20-40% (Oad *et al.,*2005). Yield losses from 5% to 100% have been reported in different crops of different areas depending upon the weed density, frequency, type and intensity of competition for growth / yield components (Ashiq *et al.*, 2003). Weeds also increase harvesting costs, reduce quality of product, and increase fire hazards (Arnon, 1972). Weeds are one of the major constraints in wheat production as they reduce productivity due to competition (Zimdahl, 1980), allelopathy (Hussain, 1983), by providing habitats for pathogens and thus severing as alternate host for various insects and fungi and increase harvesting costs (Rao, 1983).

The important broad leaved weeds found in the cultivated fields of Punjab are; *Convolvulus arvensis* (Lehli), *Chenopodium album* (Bathu), *Medicagopolymorpha* (Maina), *Rumexdentatus* (JangliPalak), *Carthamusoxyacantha* (Pohli), *Anagallisarvensis* (BilliBooti), *Cirsiumarvense*(Leh), *Melilotusindica* (Senji) and (Ahmad *et al.*, 1993; Ashiq*et al.*, 2003).In Barani areas, weeds are managed manually. However, nowadays it has become difficult due to labour cost and their unavailability. There are large number of weedicides are available that control weeds in wheat rather effectively. Chemical weed control is the easiest and most successful alternative method. It highly effective and the most economical approach to weed control (Marwat *et al.*, 2008).

Rawalpindi features a humid subtropical climate with long and very hot summers, a monsoon and short, mild and wet winters. The average annual rainfall is 941 mm. In summer, the record maximum temperature has soared to 46.5 °C (116 °F), while it dropped to a minimum −3.9 °C (25 °F) in the winter (Climatic Data, 2013).

The present investigation was designed to evaluate the effect of different weedicides on weeds and yield of wheat under agro ecological conditions of Rawalpindi.

Materials and methods

Investigation was conducting during the year 2013-14 at Rawalpindi, to study the effect of newly introduced, commercially available weedicides against broad leave weeds.

The experiment was laid out in Randomized Complete Block Design having three Replications with a plot size of 20x5 m2. The NPK was applied @ 150, 100, 60 kg ha^{-1}, respectively. During the weed management trial, weedicides i.e., Starane-M @ 750 ml/ ha, Clean Wave @ 1000ml/ ha, Clean Field @ 1000 ml/h and Buctril Super @ 750 ml/h were sprayed in different treatments. A weedy check plot was maintained to compare the treatment means. Spraying with knapsack hand sprayer fitted with T-jet nozzle. Treatments were applied 35 days after sowing and the weed dynamics data were recorded 25 days after treatment. The data was recorded on number of weeds before and after spray of weedicides, plant height (cm) and yield (Kg ha^{-1}). The data for each parameter were individually subjected to analysis of variance (ANOVA) and means were separated by using Least Significant differences (LSD) test at 5 % probability level (Steel *et al.,* 1997).

Results

Plant Height

The analyses of data regarding plant height showed highly significant differences among the different treatments (Table 1). Comparative study of means showed maximum plant height (91.53cm) was achieved by T 4 where buctril super 750 ml /h was applied followed by T 1 (Starane 750 ml/h) with 90.00cm height. Minimum plant height was 83.43 cm achieved by T5 (control).Treatement T2 (Clean weave @ 1000 ml /ha) and T3 (Clean field 1000 ml/h) showed 86.37 cm and 84.27 cm respectively.

Table 1. Effect of different weedicides weeds population in relation to wheat (*Triticum aestivum* L.) plant height and grain yield.

Treatments	Weeds population before spray	Weeds population after spray.	Plant height (cm)	Grain Yield (kg /ha)
Starane –M	14.33a	9.00d	90.00c	2025b
Clean wave 1	13.67b	11.75b	86.37b	1995d
Cleanfield	13.00b	11.53c	84.27c	1910c
Buctril Super	14.00a	7.67e	91.53d	2175a
Control	13.00b	12.00a	83.43a	1775e

Weeds population before Spray

Data regarding number of weeds before spray m -2 showed non-significant differences among the treatments (Table 1). Maximum numbers of weeds before spray (14.33) was going to be applied followed T4 (Buctril Super 750 ml/h) that was 14.00 as compared to the T2 (13.67) and T3 (13.00) , clean wave 1000 ml/ ha and Clean Filed @ 1000 ml/ha respectively.

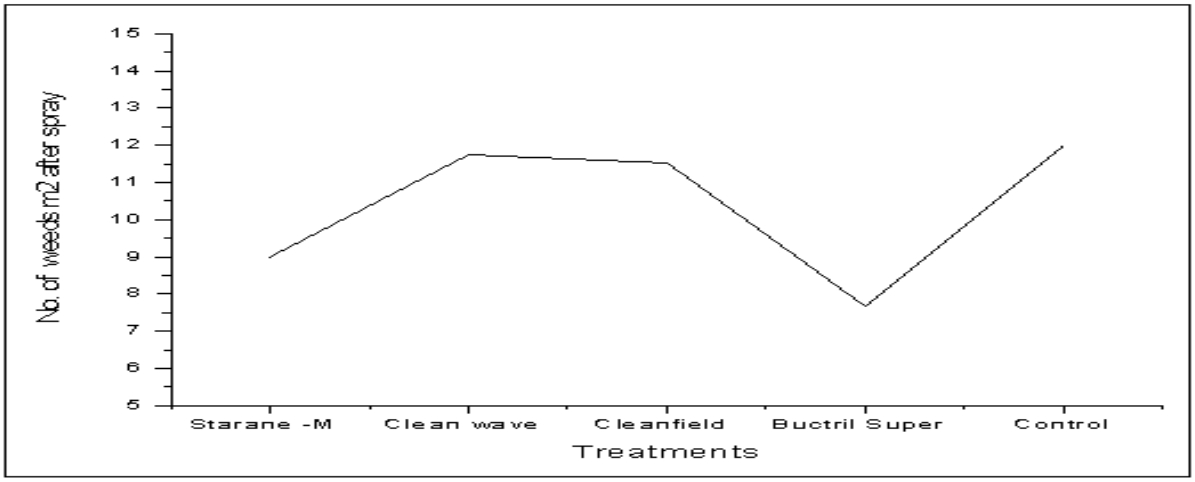

Fig. 1. Effect of herbicides on Population of weeds.

Weeds population after spray

Data concerning number of weeds after spray m2 showed significant differences among the treatments (Table 1 and fig.1). Minimum number of weeds after spray (7.67) were recorded in T4 where Buctril Super 750 ml/h was applied, followed by T1 (9.00) where Starane –M 750 ml/h was applied as compared to T5 (Control). Treatment T2 (Cleanwave 1000 ml/h), T3 (Cleanfield 1000 ml/h), T5 (Control) having 11.75, 10.53 and 12.00 m2 respectively. These findings are in great analogy with previous work of Khan *et al*., 1999, Khan *et al*., 2001, Qureshi *et al.,* 2002 and Hassan *et al.,* 2003. Usage of weedicides reduces the number of weeds in wheat.

Grain Yield (kg/h)

Analysis of data regarding grain yield showed significant differences among treatments.

Comparative study of means showed maximum number of yield (2175) was achieved in T4 where Buctril super 750 ml/h was applied. Starane-M 750 ml/h (T2) with grain yield 2025. Minimum number of grain yield was achieved in T5 (Control) where no weedicides was applied (Fig 1). These conclusions are in great correspondence with the work of Abbas*et al.*, 2009.

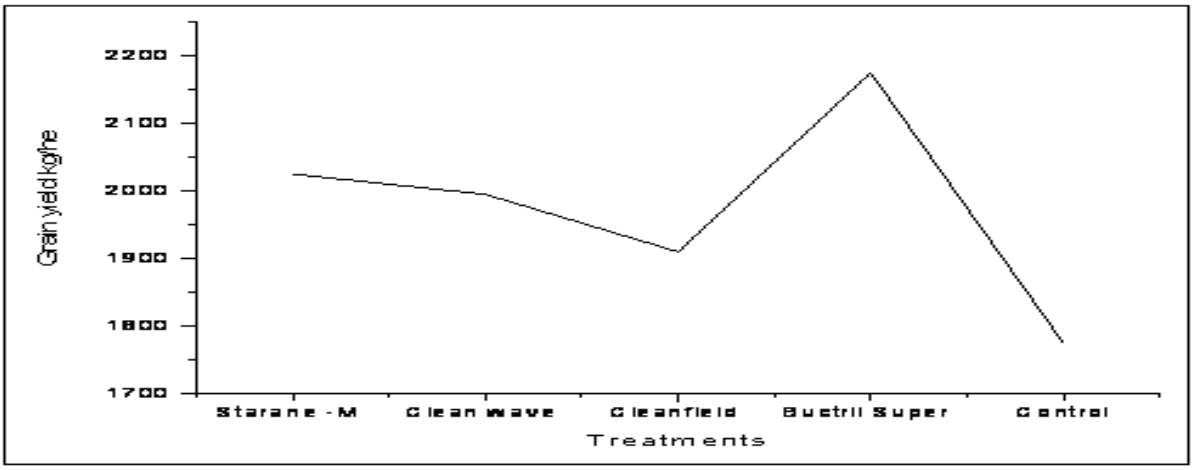

Fig. 2. Effect of herbicides on Grain yield.

Conclusion

The present study shows that use of Buctril super @ 750 ml/h reduced the growth of broad leave weeds in wheat and by using it maximum production of wheat can be managed in this area.

References

Abbas G, Anjum M, Abbas Z, Aslam M, Akram M. 2009. Impact of different herbicides on broad leaf weeds and yield of wheat. Pakistan Journal of Weed Science Research **15(1),** 1-10

Ahmad K, Shah Z, Khan I, Khan MQ. 1993**.** Effect of post emergence herbicides application and hand weeding on wheat and weed pressure. Pakistan Journal of Weed Science Research. **6(1-2),** 40-45.

Arnon I. 1972. Crop production in dry regions. Leonard Hill Book, London, U.K

Ashiq M, Nayyar MM, Ahmed J. 2003 Weed Control Hand Book for Pakistan, Directorate of Agronomy, Ayub Agricultural Research Institute, Faisalabad Climate Rawalpindi - Climate graph, Temperature graph, Climate table". Climate-Data.org. Retrieved 7 September 2013.

Govt. of Pakistan. 2008. Economic Survey of Pakistan 2007-08, Government of Pakistan Economic Advisor Wing, Finance Division. Islamabad.

Hassan G, Faiz B, Marwat KB, Khan M. 2003. Effects ofplanting methods and tank mixed herbicides on controlling grassy and broad leaf weeds and their effects on wheat cvFakhr-e-Sarhad.. Pakistan Journal of Weed Science Research Res. **9,** 1-11.

Hussain F. 1983. Biochemical inhibition - a less understood ecological factor in agro-ecosystem. Progressive Farming **3,** 33 - 37.

Khalil MF, Hassan G, Khan NM. 2008. Individual and combine effect of different herbicides on wheat control in wheat. Pakistan Journal of Weed Science Research **14(3-4),** 131-140.

Khan MA, Zahoor M, Ahmed I, Hassan G, Baloch MS. 1999. Efficacy of different herbicides for controlling broad leaf weeks in wheat (*Triticum aestivum* L.) Pak. J. Biol. Sci. **2(3),** 732-734.

Khan MH, Hassan G, Khan N, Khan MA. 2003. Efficacy of different herbicides for controlling broadleaf weeds in wheat. Asian J. Plant Sci. **2(3),** 254-256.

Marwat KB, Saeed M, Hussain Z, Gul B, Rashid H. 2008. Study of herbicides for weed control in wheat under irrigated conditions, Pakistan Journal of Weed Science Research **14(1-2),** 1-9.

MINFAL. 2009. Area, Production and Yield Per Hectare of Agricultural Crops. http://www.statpak.gov.pk

OadSC,Siddiqui MH, Buriro AU. 2005. Growth and yield losses in wheat due to different weed densities. Asian Journal of Plant Science **6(1),** 173-176

Qureshi MA, Jarwar AD, Tunio SD, Majeedano HI. 2002. Efficacy of various Weed Management practices in wheat. Pakistan Journal of Weed Science Research **8(1-2),** 63-69.

Rao VS. 1983. Principles of Weed Science. Oxford publishing Co. New Delhi. 540 P.

Riaz T, Khan SN, Javaid A. 2009. Weed flora of Gladiolus fields in district Kasur, Pakistan. The Journal of Animal and Plant Science. **19(3),** 144-148.

Steel RG ,Torrie JH, Dickey DA. 1997. Principles and Procedure of Statistics. 3rd Ed. McGraw Hill Book Co. Inc. Tokyo. Japan:172-76.

Zimdhal RL. 1980. Weed - crop competition. A Review. International Plant Protection Center, Oregon State University, U.S.A. 196 P.