

Effect of Weeds on the Yield of Wheat Crop in Tehsil Nowshera

L.R.Dangwal, Amandeep Singh, Tajinder Singh, Chanchal Sharma

Herbarium and Plant Systematic Lab., H.N.B Garhwal Central University,
SRT Campus, Badshithaul Tehri Garhwal-249199

Email: drlrdangwal@gmail.com
amamguru83@gmail.com

Abstract: - The present communication pertains to the effects of weeds on the yield of wheat crop in tehsil Nowshera of district Rajouri. During the course of study the authors have selected two plots of 01 hectare each (P1 and P2) in village Jaba of tehsil Nowshera during the year 2009-10. The plot P1 was marked as Weed Free plot (WF) and plot P2 as Weedy Plot (WP). Both the plots were ploughed and the seed beds were prepared by adding equal amount of NPK fertilizer (Urea 150 kg, DAP 100 kg and Potash 40 kg/hq). Same variety of wheat seeds were sown in both the plots during first week of Nov. 2009. Nitrogen fertilizer urea was given in split doses (50kg before sowing, 50 kg 40 DAS and 50 kg before flowering). In plot P1 (WF) 35 days after sowing two types of herbicides were sprayed i.e. 2, 4-D and isoproturon @ 0.75 kg/hq. for broad leaved and narrow leaved weeds resp. and dweeding (hand pulling and eradicating weeds with the help of digger and sickle) was done during the month of Feb.-Mar. 2010. In plot P2 (WP) no herbicide was sprayed and no dweeding was done as a result 28 weeds were reported from this plot. After ripening the crop was harvested (during first week of May 2010) from both the plots and threshed separately. The grains collected in different bags were weighed. A total of 28.4 quintal of wheat grains were collected from plot P1 (WF) and 21.2 quintal from plot P2 (WP). The weeds competes with wheat crop in plot P2 (WP) and hence reduced the yield by 25.35%. [Journal of American Science 2010;6(10):405-407]. (ISSN: 1545-1003).

Key words: - Wheat, Weeds, Plot, Yield.

1. Introduction: - Weeds are unwanted plant species growing in the domesticated crops. The concept of weeds as unwanted plant was born when man started to grow plants deliberately for food and other purposes. Holm, et.al 1979 estimated 250 weed species which are important for agricultural crops throughout the world. As cropland is an artificial ecosystem where the plants desired by man (crops) are cultivated but the weeds do come up into the crop fields and competes with crops mainly for space, sunlight, moisture, nutrients and reduces the quantity as well as quality of production. The competition of weeds for nutrients may results in such obvious responses as dwarfing in plant size, nutrient starved conditions, wilting and actual dying out of plants (Anderson 1996). Weed seeds germinate earlier to crops, their seedlings grows faster and aggressive so that they crowd out all other plants which possesses more value able properties and establish a kingdom of their own within a short period of time. Weed species mature ahead of crops so that their seeds are collected with the crop harvest and get distributed to other places.

Some weed species caused damage to crops by harboring pests and disease agents (Younkin 1942 and Peters 1955) reported that weeds acts as host for bacteria, viruses and nematodes that causes diseases in crop plants. Weeds show allelopathic effects on agricultural crops by secreting

allelochemicals that inhibit their growth and germination (Oudhia, P and Tripathi, R.S. 1998a). The weedy crops may sometime leads to complete failure. The cost of removing weeds adds to the cost of production of crops, thus producers losses part of their investment and the country suffers a reduction in agricultural products.

Wheat (*Triticum aestivum* Linn.) is an important cereal Rabi crop. It is a dietary mainstay for approximately one-third of the total world population (Johnson 1984). Being staple food wheat plays an important role in the economy of India, hence occupies a central position in agricultural policy making. The average per hectare yield of wheat is 2.71 tons (Anon, 1997) which is far less as compared to other advanced countries due to many factors out of which the problem of weeds is also prominent. Tiwari and Parihar (1993) reported that weeds reduced the yield of wheat crop by 34.3% which is more than the combined losses caused by insects, pests and diseases.

The present study area i.e tehsil Nowshera is located at an elevation range of 470-1200 m. asl and situated at latitude of 33° -10' and longitude of 74°-41'. The boundaries of tehsil Nowshera is bounded on the eastern side with Kalakote and Sunderbani blocks, on the northern side with Rajouri, its southern and western boundaries are bounded with Pakistan.

2. Material and methods: - The present study was undertaken to find out the effects of weeds on the yield of wheat crop. The study was conducted in village **Jaba** (irrigated area) of tehsil Nowshera in the year 2009-10. During the course of study the author's have selected two plots (**P1** and **P2**) of 01 hectare each. Both the plots were ploughed with the help of tractor, the exposed weed roots, rhizomes and other germplasm were collected and burned. The seed beds were prepared by adding equal amount of NPK fertilizer (Urea 150 kg, DAP 100 kg, Potash 40 kg/hq.) in both the plots. The plot (**P1**) was marked as weed Free plot (**WF**) and plot (**P2**) as weedy plot (**WP**). In both the plots (**P1** and **P2**) the wheat seeds of PBW 343(dwarf variety) were sown during first week of November 2009. The nitrogen fertilizer (Urea) was given in split doses (50kg before sowing, 50 kg 40 DAS and 50 kg before flowering). In plot **P1** (**WF**) 35 days after sowing two types of herbicides were sprayed i.e 2, 4-D and isoproturon @ 0.75 kg/hq for broad leaved and narrow leaved weeds respectively. The dweeding, hand pulling and eradicating weeds with the help of digger and sickle was done during the month of Feb. – Mar. 2010. In plot **P2** (**WP**) no herbicide was sprayed and no dweeding was done. In first week of May 2010 the ripened crop was harvested from both the plots (**P1** and **P2**) and kept separately. The harvested crop was threshed and the grains were collected in different bags. The grains from two plots (**P1** and **P2**) collected in different bags were weighed separately to determine the effect of weeds on the yield of wheat crop.

3. Result: - A good yield of wheat crop was obtained from Weed Free plot (**P1**) as compared to Weedy Plot (**P2**). A total of 28.4 quintal of wheat grains were obtained from Weed Free plot (**P1**) and 21.2 quintal from Weedy Plot (**P2**). This clearly indicated that weeds compete with wheat crop in plot **P2** for space, sunlight, moisture, nutrients and hence reduced the yield of crop. Moreover, the grains of plot **P2** were contaminated with weed seeds and was of low quality. The percentage (%) of yield loss can be calculated by using the following formula:-

{Total amount of wheat grains obtained from Weed Free plot (P1) – Total amount of wheat grains obtained from Weedy Plot (P2) ÷ Total amount of wheat grains obtained from Weed Free plot (P1)} × 100

$$= \{28.4 - 21.2 \div 28.4\} \times 100$$

$$= 7.2 \div 28.4 \times 100$$

$$= 25.35\%$$

Thus the weeds reduced the yield of Wheat crop by 25.35% in village **Jaba** of tehsil Nowshera.

The yield of wheat crop in plot **P1** (**WF**) and **P2** (**WP**) is indicated in **Fig. A** and the reduction of crop yield in plot **P2** (**WP**) is shown in **Fig. B**

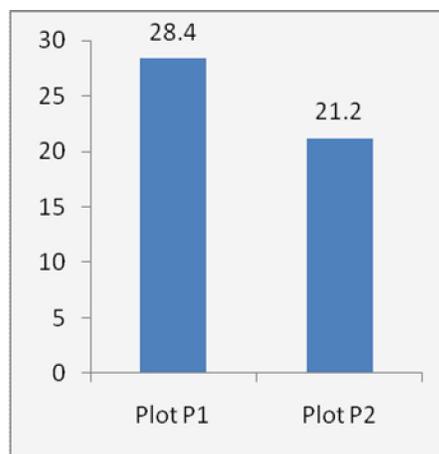


Fig. A. showing the yield of wheat crop in terms of quintal in plot **P1** and **P2**

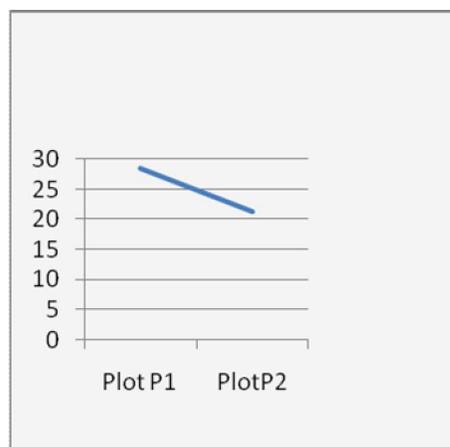


Fig. B. Line showing decrease in yield of Wheat crop in Plot **P2** (**WP**)

4. Discussions:-Wheat is the major Rabi crop of tehsil Nowshera but along with Wheat, Onion and Mustard are also grown on small scale. The economy of this tehsil revolves around production of its cash crops but the per hectare yield is less as compared to other parts of India due to many factors out of which the factor of weeds is also major contributor. In the study area it has been reported that weeds reduces the yield of wheat crop by 25.35% and caused enormous loss to the producers. In plot **P1** (**WF**) the yield of wheat crop was **28.4** quintal because 35 days after sowing when wheat crop reached 4-6 leaved stage the herbicides were sprayed which destroyed the weed species at early stages of competition, moreover the dweeding operation (hand pulling and eradicating

the weeds with the help of digger and sickle) carried in the month of Feb. – Mar. also help in destroying the remaining weeds. But in plot **P2 (WP)** where equal amount of NPK fertilizer was added and same variety of wheat seeds were sown the yield of crop was **21.2** quintal because no herbicide was sprayed and no weeding was done due to which many weed species grows and competes with crop plants for space, sunlight, moisture, nutrients and thus reduced the yield by **25.35%** besides reducing the yield they also reduces the quality of germplasm because the grains of plot **P2 (WP)** were contaminated with weed seeds. The 28 weed species reported from plot **P2** were:- *Achyranthes aspera*, *Amaranthus spinosus*, *Amaranthus viridis*, *Anagallis arvensis*, *Avena fatua*, *Bidens pilosa*, *Cannabis sativa*, *Capsella bursa-pastoris*, *Chenopodium album*, *C. murale*, *Convolvulus arvensis*, *Datura stramonium*, *Fumaria parviflora*, *Galium aparine*, *Lathyrus aphaca*, *Malvestrum coromandelianum*, *Medicago denticulata*, *Oxalis corniculata*, *Parthenium hysterophorus*, *Phalaris minor*, *Polygonum barbatum*, *Ranunculus scleratus*, *Rumex dentatus*, *Silene conoidea*, *Stelleria media*, *Taraxacum officinale*, *Vicia hirsuta* and *Vicia sativa* etc. Although some weed species reported from plot **P2** i.e *Achyranthes aspera*, *Cannabis sativa*, *Chenopodium album*, *Datura stramonium* and *Taraxacum officinale* etc. are of medicinal importance. Weeds like *Amaranthus viridis*, *Chenopodium album*, *Lathyrus aphaca*, *Vicia hirsuta* and *Vicia sativa* are also used in some cooking rasapies of the study area.

The present study may be helpful for farmers and agriculturists to find out the effects of weeds on the yield of crops and also helps in finding the role of herbicides in controlling the weeds. It also helps the scientists involved in the management of weeds.

5. Conclusion: - We may suggest that weeds are serious competitor of crops. They play a significant role in reducing the crop yield. In study area they reduce the yield of Wheat crop by **25.35%** and cause enormous loss to the producer's.

Correspondence to

Dr. L R dangwal

Herbarium and Plant Systematic Lab.,
H.N.B Garhwal Central University,
SRT Campus, Badshithaul Tehri Garhwal-
249199

Email- drlrdangwal@gmail.com

amaguru83@gmail.com

6. References:-

- [1] Anonymous. *Quarterly bulletin of statistics*. F.A.O (Food & Agriculture organization) 1997; 10.
- [2] Anderson C., Stryhn H., Streibig J.C. Decline of the flora in Danish arable fields. *J.appl. ecolo.*1996; 33 (3): 619-626.
- [3] Holm L., Pancho J.V., Herberger J.P., Pulkenett D.L. A geographical atlas of world weeds. Johnwiley.1979; 1391 pp.
- [4] Johnson V. A. World wheat production.1984; PP 1-5. In: *Genetic improvement in yield of wheat* (Ed.):E.L. Smith. CSSA Special publication no. 13.
- [5] Oudhia P., Tripathi R.S.1998a. Allelopathic effects of *Parthenium hysterophorus* L. on kodo, Mustard and problematic weeds. First International Conference on *Parthenium* management .11. UAS, Dhaward. India. 6-8 oct. 1997: 136-139.
- [6] Peters B.G. Soil-inhabiting nematodes. In *Soil zoology*, Butterworth sci. Publ., London, 1955; pp. 44-54.
- [7] Tiwari R.B., Parihar S.S. Weed management studies in wheat. *Ind. J .weed sci.*1993; 25 (3 and 4):120-22.
- [8] Younkin S.G. Weed suspects of the yellow dwarf virus. *Amer. Potato f*; 1942; 19: 6-11.

7/8/2010