

Wheat Crop Protection in Pakistan

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Abstract

Wheat is one of the fundamental rural products in Pakistan, with 80 percent of ranchers developing it on a territory of around nine million hectares amid the winter or "Rabi" season. This yield alone contributed around 10 percent of significant worth included farming and 2.1 percent of the nation's (GDP) in 2015. Promoting year (MY) 2016/17 wheat creation is conjecture at 25.3 million metric tons, insignificantly higher than a year back. In this paper we concentrated on expanding wheat yield by distinguish wheat edit both, diminishing its vermin pervasion and their administration with no use of pesticide.

Keywords: Wheat; Crop Protection; Pakistan

Wheat importance

Wheat is important staple food of Pakistan. It is harvested here from certain previous centuries. Weather condition and soil of Pakistan are suitable for wheat production. The nationwide yield of wheat has been increased as compared to past. Anyhow; there are more chances left to increase its yield. According to Pakistan statistics bureau, in 2016 - 2017 wheat is harvested on 9260 thousand hectare and its yield was 25482 thousand tons. In developed countries wheat yield is 10th time greater than our yield. Due to increase in population day by day, need of wheat requirement is increasing. In Punjab wheat production Area and yield described below of different years.

Year	Area (,0000 hectare)	Yield (,0000 metric tons)
2012-13	6511.27	18587
2013-14	6901.38	19739
2014-15	6979.48	19282
2015-16	6914.20	19526
2016-17	6750.03	20114

Table 1

Reasons behind decrease in cultivation area 2016-17

- Late maturity and harvesting of sugarcane crop
- Increase in soil humidity of wheat cultivated areas
- At the time of sowing decrease in humidity of Arid wheat cultivation lands.

Reasons behind increase in yield 2016-17

- Timely cultivation
- Accurate use of fertilizers due to low market price
- Suitable weather conditions i.e. more sun light period is provided to crop
- Usage of hybrid seed is more as compared to other production seasons.

Wheat pest in Pakistan

In Pakistan disease free hybrid varieties (Ujala 2016, faisalabad2008, lasani2008, Aeaas2011, Galaxy2013) are cultivated but these varieties are highly affected by wheat aphid (*Triticum aestivum* L.). it affects plant only at vegetative stage. Khan AM., *et al.* [1] Stated that "losses in wheat yield due to *Triticum aestivum* L. is 4.57%". Different types of narrow and broad leaf weed also effect yield. They compete with wheat plants for water, nutrients, sun light etc. in result of them either low quantity of yield is produced or poor quality produced. According to FC Oad., *et al.* 2007 "weeds exhibit the economic yield losses to the wheat crop, which may range from 24 - 39.95% and these must be controlled during the full growing season of the crop for achieving satisfactory crop yields".

Wheat aphid Attack is increasing from previous few years. It damages wheat crop by three ways:

1. Aphid sucks plant sap, plant color turned into yellowish and become weak. Quality and quantity of yield both effected.
2. Its excrete sweet fluid on leaves which cause germination of black rot and effect plant growth badly.

3. It transmit viral diseases fortunately in Punjab province have not been reported such diseases yet but in some Areas of Peshawar Symptoms of such diseases have been reported.

Other than aphid, black ant, termite, cut worms, army worm, pink borer, *Helicoverpa* spp, Rats and birds also cause loses in yield but their loses are below economic threshold level in Pakistan in standing crop so we can ignore them.

These diseases of wheat crops Black stem rust of wheat, Yellow or stripe rust of wheat, Loose smut of wheat, Bunt of wheat and foot rot are common in Pakistan.

Wheat aphid identification

It is porr in color. Body is pear like. On the upper part of body there are two veins present which excrete sweet fluid that cause growth of black fungus. If we shake wheat plant than their movement is very slow.

Wheat aphid management

In Pakistan its attack starts in month of February and march. Usually beneficial insects i.e. syrphid fly, *Chrysoperla carnea*, lady bird beetle reduce its population. High rain also decreases its population. Early sowing of wheat crop reduces risk of pest occurrence. If pest occur, then spray water at high pressure with the help of power sprayer. The traditional method to control wheat aphid is sowing of two lines of brassica campestris at the distance of 100 feet from wheat crop. aphid firstly attack on brassica campestris after that it attack on wheat plant so, natural enemies of aphid is developed at large number on this trap plant. Aphid which develops on brassica campestris do no feed on wheat plant but natural enemies which develop on brassica campestris feed on both Aphids which develop on brassica campestris as well as wheat plant. According to research conducted on adaptive research farm, wheat crop show more aphid attack on which nitrogen has been used 69 kg/acre as compared to wheat crop on which fertilizer has been used in adequate quantity (NPK69-46-25) kg/acre. So, fertilizer should be used in adequate quantity.

Black stem rust of wheat

Disease is causes by *Puccinia graminis* tritici. Brick red long postulates are formed on all green parts of plant with the passage of time these postulates turned into black color. Disease is spread quickly in high wind velocity Areas. Growing of resistance varieties and early sowing of crop can prevent disease attack.

Yellow or stripe rust of wheat

Disease is caused by *Puccinia striiformis*. Bright yellow postulates are formed on ears and leaves and later on turned into blackish color. Cold weather and high humidity is favorable by disease. Growing of resistance varieties and early sowing of crop can prevent disease attack.

Loose smut of wheat

Disease is caused by *Ustilago tritici*. Unhealthy ears are dark and contain dark powder of muck spores rather than grains. At first, spores are secured by a white or shiny (thin) layer, which burst and spores are overwhelmed by wind deserting just bare rachis. Contaminated ears seem somewhat sooner than the ordinary ones. Dip the seed in hot water at 50 degree centigrade before plantation for 60 - 65 minutes then cool and dry at normal temperature before plantation.

Bunt of wheat

Disease is caused by *T. caries* or *T. tritici*. Sick ears are darker in shading and contain contaminated grains, which are observed to be loaded up with dark powder that of spores, on squashing, give out on hostile smell like that of spoiled fish. The ailing plants are now and then hindered in development. Every one of the grains of an ear wind up tainted and get particularly decreased in size. To prevent disease use of resistance varieties, moist sowing method and early plantation are highly preferable.

Foot rot

Disease is caused by *Helminthosporium sativum*. Symptoms shows up in seedling stage, either the seeds decay in the dirt or seedlings indicate spoiling of roots and dark colored spots create on the lower parts of the stem. The influenced seedlings at last bite the dust and bring about diminishing of the harvest. In the grown-up yield the infection known as leaf spots since it shows up on the lower leaves shaping oval to oval spots. These spots broaden and at last influenced leaves turn darker. In the event that the plants either don't create grains or the grains delivered are wilted and some of the times have dark tips, it named as Black point complex. Disease is prevented by cultivation of resistance varieties and burning of wheat crop residues after its harvesting.

Wheat weeds

Weeds grow in forests, non-cultivated land, sides of canals and roads, Railway tracks in whole year and develop its seeds in huge quantity later on these weeds are spread in to agricultural land through Air, water or Animals. Weeds have great efficiency to produce seed as compared to wheat plant for example a single bathou plant (*Chenopodium murale* L.) produce 189000 seeds annually. In wheat crops most two types of weeds are present in Pakistan

Broad Leaf weeds

Cotyledon, which is paired by dicots, at the time of germination two seed leaves are appeared shows broad leaves with a network of veins on them are known as broad leaf weed. In Pakistan following important broad leaves weeds are present.

Common Name	Technical Name
Bathou	<i>Chenopodium murale</i> L.
Belli botti	<i>Anagallis arvensis</i> L.
Meani	<i>Trigonella monantha</i> L.
Chandeni botti	<i>Veronica agrestis</i> L.
Dodheak	<i>Sonchus arvensis</i> L.
Jangli Palak	<i>Rumex dentatus</i> L.
Jangli Sarsou	<i>Sisymbrium viridis</i> L.

Table 2

Narrow leaf weeds

The leaf blade emerges as a single leaf. Leaf grows long, rounded and veins are parallel known as Narrow leaf weeds. Following type of important narrow leaf weed are present in wheat crop.

Common name	Technical Name
Bhoin	<i>Cyperus iria</i> L.
Baru Ghars	<i>Sorghum halepense</i> L.
Naru ghars	<i>Paspalum Distichum</i> L.
Dumbi sitti	<i>Phalaris minor</i> L.
Bansi ghars	<i>Panicum antidotale</i> L.
Lumbar ghars	<i>Setaria viridis</i> L.
Jangli jayye	<i>Avena fatua</i> L.

Table 3

Wheat weeds management

1. Before sowing seed irrigate field, when weed has been grow properly then remove them through tillage practice. After that seed bed is prepared and cultivation of wheat is done. In this way 50% weed are removed.
2. Crop rotation also can be done to remove weeds.
3. At the time of sowing seed rate should be used to more than recommended seed rate in this way number of plants per acre is increase so that there is no space left for weed germination.
4. Land leveling is also an effective technique for weeds control.
5. Select varieties which grow rapidly at early stage and are highly Allelopathic towards wheat.
6. If the wheat is cultivated on small area then Physical removal of weeds is done by hand or hoes. This practice is effective in those countries which have very cheap labor.
7. During wheat cultivation in 30 - 40 days use of double bar harrow remove 50% weeds and increase in yield of approximately 16% [2-8].

Conclusion

Wheat Yield which we obtain is comparatively very low as compared to developed countries, there are more chances left to increase yield. By applying these cultural and Physicals techniques for control of insect pest, diseases and weeds there are maximum chances to increase Wheat yield with lower cost of production.

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