

## SOME WEEDS OF MAIN CASH CROPS OF PAKISTAN

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### ABSTRACT

Sugarcane, rice, wheat and cotton are the cash crop of Pakistan. These crops face the problem of weeds infestation during their growing period. Due to farmer's ignorance and their unawareness about the weeds they do not remove the weeds from the fields; therefore crop yield and quality are adversely affected.

**Key words:** main crops, some weeds, Infestation.

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### INTRODUCTION

Pakistan is an agricultural country and farming is the largest economic activity in Pakistan. Agricultural products, especially rice, cotton, raw cotton, cotton cloth, and tobacco are important export commodities. Agriculture is practiced in all areas of Pakistan but most crops are grown in the Indus River plain in Sindh and Punjab. The agricultural activities in plain areas are performed in two seasons; i.e., summer crops and winter crops. The crops which are cultivated before the beginning of winter season and harvested in early summer are known as "Rabi Crops". In this wheat, barley, gram, oil seeds, pulses etc are included, while those crops which are grown in the beginning in summer and harvested in early winter are called "Kharif Crops". These may include rice, sugarcane, millets, maize cotton etc.

In Pakistan weeds pose a serious problem in crop production. The farmers have little knowledge about losses due to weeds among crop plants. The smaller farmers do not bother to remove them from the fields due to lack of education and financial resources. Weeds growing among crop plants adversely affect yield and quality of the harvest and increased production costs, resulting in economic losses.

### DIFFERENCE BETWEEN WEED AND CROP PLANT

Different people give different definition of weed. The term "weed" means different things to different people. In the broadest sense it is any plant growing where it is not wanted.

A weed can be defined as those plants whose negative values outweigh their positive values. (Khan *et al.*, 2004). Weeds are the undesirable plants, which hamper the healthy growth of cultivated crops.

A crop plant is any plant grown for its value to man at a given time. Thus crops and weeds are plants and both of them extract moisture and mineral nutrients from the soil, take carbon dioxide (CO<sub>2</sub>) and light for photosynthesis from the same atmosphere and accommodate their build - up with in the same space. As both live in the same biosphere competition takes place for a particular factor, when it falls short of the demand of both as such the competition takes place in both plants (weeds and crop plants) and growth process is affected.

### CATEGORIZATION OF WEEDS

Weeds can be categorized as annuals, biennials and perennials which are responsible for the production decreased per unit area in various agricultural crops.

An annual weed is one that completes its life cycle in a single year. It includes by far the greatest number of weeds. Biennials produce roots, stem and leaves in the first year and flowers and seeds in the second year and there after. Perennials normally continue for three or more seasons under favorable conditions, they may live even longer (Alam, 1991).

Presently, more than 250 weed species have been found associated with different crops. Weeds commonly arise and infest crop lands from seeds and sexual propagules already present in or on the soil when a crop is planted (Alam, 2002). Weed seeds have remarkable capacity to germinate under varied conditions, but very peculiarly they are season bound and the peak period of germination always takes place in certain season in regular succession year after year. Another characteristic of the weed seeds is the phenomenon of "dormancy" which is an intrinsic

physiological power of seed to resist germination even under favorable conditions and also the seeds do not lose their viability for year even under adverse conditions (Ali *et al.*, 2005).

### **WEEDS AND MAIN CASH CROPS**

Pakistan is an agricultural country and agriculture is a backbone of its economy. Majority of the population of Pakistan is living in the rural areas and their dependence is normally on agricultural products. Sugarcane, Rice, Wheat, and Cotton are the main cash crops. In these crops some weeds are similar in all crops while some other are not found in all main crop. As agriculture year of Pakistan has two main cropping seasons Rabi and Kharif similarly weeds divided in to two Rabi and Kharif weeds. Rabi weeds infest the Rabi season crop, while Kharif weeds infest the Kharif crops. The majority of weeds are annuals with high reproductive potential.

### **SUGARCANE AND ITS WEEDS**

Sugarcane is an important cash crop of Pakistan. It is a type of long grass “perennial” in nature. The first crop is called “plant cane” and the succeeding crops are called “Ratoon crop”. Although it is a plant of tropical regions but it can also be cultivated in Sub-tropical areas. It is the most important and cheapest source of refined sugar, Gur, and desi shakkar are also prepared from sugarcane. The left out stalk fibers (bagasse) are used in the paper industries or as fuel and cattle feed.

### **CULTIVATION**

In Pakistan, sugarcane is cultivated in the spring in the month of February or March. It is harvested in November or December. It is included in both Rabi and Kharif crops. It is a “perennial” crop.

### **GROWING AREAS**

All the areas of Pakistan are not suited to the growth of sugarcane. It is mostly cultivated in canal irrigated areas of Sindh, Punjab, and Khybar pakhtoonkhwa

### **SINDH**

With regard to production of sugarcane Hyderabad division is at the first rank and Sukkur division at the second.

### **PUNJAB**

Faisalabad, Sargodha, Lahore, Multan, Gujranwala and Bahawalpur division are famous for its production.

### **KHYBAR PAKHTOONKHWA**

Peshawar and Mardan districts are at the top and some amount of sugarcane is also produced in the district of Dera-Ismail Khan and Bannu.

*Cynodon dactylon* and *Imperata cylindrica* are known to play as alternate host to ratoon stunting disease of sugarcane. Thus weeds essentially harm young sugarcane sprout by depriving them of moisture, nutrients and sun light. Poor growth of cane resulting from weed infestation also effects quality of the sugarcane.

Weeds that are present in the furrows i.e. along the cane rows cause more harm than those present in the inter-row spaces during early crop growth sub-periods. Thus the initial 90-120 days period of crop growth is considered as most critical period of weed competition. Therefore, the weed management practice adopted should ensure a weed free field condition for the first 3-4 months period.

### **PRODUCTION**

The average sugarcane production in the country ranges static between 45 to 53 tons/ha. This production is low compared to other cane producing countries. (Anon, 2009).

### **RICE AND ITS WEEDS**

Rice holds an important position among the cash crops. It fulfills the food requirements of our country but we also earn a lot of foreign exchange from its export. Besides it is an important raw material for manufacturing starch, paper, mattresses, hats etc Grain as well as its husk is also used as fodder for cattle. However, its average yield per hectare is low as compared to other rice producing countries (Anon, 2006). Many factors are involved for the low yield of rice but the major one is weeds infestation. Hence successful weed control is essential for obtaining optimum yield of rice.

The exact origin of rice is not known but most of the research worker gives this credit to South East Asia (Alam, 2002). Rice belongs to the genus “*Oryza*” two species of which are cultivated “*Oryza glaberrima*” and “*Oryza sativa*”. The former is found only in tropical West African countries, like the latter is found all over the rice growing areas of the globe.

**Table 1. Weeds of sugarcane.**

Sr. No	Family Name	Botanical Name	English Name	Local Name
1	Amaranthaceae	<i>Amaranthus viridis</i>	Cholia	Chalvera
2	Aizoaceae	<i>Trianthema portulacastrum</i>	-	Wisakh
3	Chenopodiaceae	<i>Chenopodium album</i>	Laamb's quarter	Jhil
4	Commelinaceae	<i>Commelina bengalensis</i>	-	Kanteri
5	Convolvulaceae	<i>Convolvulus arvensis</i>	Bind weed	Naro
6	Cyperaceae	<i>Cyperus rotundus</i>	Sedge nut grass	Kabah
7	Poaceae	<i>Cynodon dactylon</i>	Lawn grass	Chabbar
8	Poaceae	<i>Dactyloctenium aegyptium</i>	Egyptian finger	Madhana
9	Poaceae	<i>Imperata cylindrica</i>	Sword	Siru, Ulv
10	Poaceae	<i>Sorghum halepense</i>	Johnson grass	Baru
11	Portulacaceae	<i>Portulaca oleraceae</i>	Purslane	Kulfa

Verified by Technical Experts from Plant Protection Department Karachi, Pakistan. (2005).

### Cultivation

There are two methods of rice cultivation.

- (1) Broadcast sowing.
- (2) Transplantation.

### Broadcast sowing

This involves direct sowing of rice plant in the fields.

### Transplantation

In this method, sowing is first done in nursery. When the plants attain a height of 4 to 6 inches they are transplanted in to big fields. This method is also called the Japanese method. It is the most scientific and beneficial method. By this method, the per acre production increases considerably.

Rice is mostly cultivated in rows and the distance from row to row is kept about 6 inches while plant to plant distance remains 3 inches.

### Cultivation

#### Punjab

Cultivation of rice is mainly confined to the low lying part of Punjab plain and the flooded rivers. To small extent it is also grown in the sub mountain districts in the North and the canal irrigated areas.

The best varieties like Basmati, Parmal, Sukhdari, IRRI-6 etc are grown in Punjab in the division of Lahore and Gujrenwala. Some rice is also cultivated in Shakhupura, Sargodha, Faisalabad, Bahawalpul and Multan.

#### Sindh

The main qualities of rice, which are common in the province of Sindh are Kangni, Beghi, IRRI-8 etc. The districts of Sukkur division are the most famous for good quality rice cultivation.

#### Khybar Pakhtoonkhwa and Balochistan

Rice cultivation in Khyber PakhtoonKhwa, Balochistan and Azad Kashmir areas is not more than 2% of their total areas.

**Table 2. Weeds of Rice, Anwar-ul Haq *et al.*, (1976) and Alam *et al.*, (2002).**

Sr. No	Family Name	Botanical Name	English Name	Local Name
1	Acanthaceae	<i>Hygrophila auriculata</i>	-	Tal makhana
2	Asteraceae	<i>Ageratum conyzoides</i>	Goat weed	-
3	Capparidaceae	<i>Gynandropsis gynandra</i>	Karalia	Hurhuria
4	Commelinaceae	<i>Commelina benghalensis</i>	Spider wort	Kanchara Kanteri
5	Convolvaceae	<i>Convolvulus arvensis</i>	Field bind	Lehli
6	Cyperaceae	<i>Cyperus iria</i>	Rice flat sedge	Khana
7	Cyperaceae	<i>C. rotundus</i>	Nut grass	Deela/Kabah
8	Cyperaceae	<i>Cyperus bulbosus</i>	Bulb grass	-
9	Cyperaceae	<i>C. difformis</i>	Small flower Broad leaf	Buln
10	Poaceae	<i>Cynodon dactylon</i>	Bermuda grass / Lawn grass	Chabbar / Khabbal grass
11	Umbelliferaceae	<i>Centella asiatica</i>	Penny wort	Brahmi Buti

#### WHEAT AND ITS WEEDS

Wheat is the most popular food crop of Pakistan. It dominates all crops in acreage and production. It is a major source of food for a large section of the population of the world and is providing about 73% of the calories and proteins of the average diet to the world population (Heyne, 1987) and (Khan *et al.*, 2002).

Wheat is also used for the manufacturing of beer and other alcoholic beverages and food for livestock and poultry. The straw of the wheat is used for seating chairs, baskets, as cattle feed and Vickers work (Hassan *et al.*, 2005).

There are two main types of wheat.

#### **Vulgar or Sharbati (Common wheat)**

It is widely cultivated and is prized for “bread wheat”. It can be either a winter or spring wheat.

#### **Durum or macaroni wheat**

It also spelled *Durhum* (Brown *et al.*, 1989) *Triticum turgidum durum* or *Triticum durum* (Bushuk *et al.*, 1994). It has local importance and is mostly used for making of suji (Semolina) and Sewain (Vermicillies / Noodles).

#### **Cultivation**

Wheat is cultivated in all the four provinces of Pakistan. Punjab and Sindh provinces however rank at the top. The plain of Punjab and Sindh provinces have alluvial soil brought by River Indus and its tributaries. These rivers further increase the fertility of the soil by adding a number of organic and inorganic matters brought by them from various areas of our country. The plain areas of Punjab and Sindh have insufficient rainfall. This deficiency has been made up by providing canals and other irrigational facilities.

### Punjab

Punjab ranks at the top in the production of wheat the upper Indus plain accounts for 70% of the total wheat production of our country. Canal fed fields produce 2/3 and the rest comes from the rain fed fields.

The main wheat growing divisions are Sargodha, Faisalabad, Multan, Dera Ghazi Khan, Bahawalpur, Lahore, Sahiwal, Sialkot and Shaikhupura.

### Sindh

The province of Sindh ranks second in wheat production. Most of the lands devoted to wheat cultivation in the lower indus plain are located in the irrigated districts of Nawabshah, Hyderabad, and Sukkur.

### Khybar Pakhtoonkhwa

In the canal irrigated areas of Khyber Pakhtoonkhwa, Mardan, Peshawar and Bannu are famous for wheat cultivation. Tharparkar and the Khyber Pakhtunkhwa Province do not contribute much towards wheat production.

**Table 3. weeds of wheat Shaikh *et al.*, (2006) and Hanif *et al.*, (2004).**

Sr. No.	Family Name	Botanical Name	English Name	Local Name
1	Asteraceae	<i>Carthamus oxyacantha</i>	Wild safflower	Kanderi
2	Chenopodiaceae	<i>Chenopodium album</i>	Lamb's quarter	Jhil
3	Chenopodiaceae	<i>C. murale</i>	Nettle leaf weed	Kurund
4	Convolvulaceae	<i>Convolvulus arvensis</i>	Bind weed	Naro
5	Cyperaceae	<i>Cyperus rotundus</i>	Sedge nut grass	Deela/Kabah
6	Liliaceae	<i>Asphodelus tenuifolius</i>	Wild onion	Basri
7	Papilionaceae	<i>Alhagi pseudalhagi</i>	Camel thron	Kandero
8	Papilionaceae	<i>Medicago dentatus</i>	Wild medic	Maino
9	Papilionaceae	<i>Melilotus alba</i>	White clover	Sinjh
10	Papilionaceae	<i>Rumex dentatus</i>	Sheep sorrel	Jangli palak
11	Papilionaceae	<i>Vicia hirta</i>	Vetch weed	Matri
12	Poaceae	<i>Anena fatua</i>	Wild oat	Jhangli jai
13	Poaceae	<i>Cynodon dactylon</i>	Lawn grass	Chabbar
14	Poaceae	<i>Desmostachya bipinnata</i>	Deep root grass	Drubh / Dab
15	Poaceae	<i>Phalaris minor</i>	Canary grass	Dhanak
16	Primulaceae	<i>Anagallis arvensis</i>	Shepherd's clock	Bili booti
17	Rubiaceae	<i>Galium aparine</i> L	-	-

Rose is an ornamental or wild plant, when it grow in wheat field it is known as a weed of wheat (James *et al.*, 1991)

### COTTON AND ITS WEEDS

Cotton is considered to be the most important cash crop of Pakistan. Pakistan, ranks fifth in world cotton production. We also earn a large amount of foreign exchange from its export to other countries. Its importance may be estimated from the fact that it contributes 15% to the G.N.P. The entire textile industry directly or indirectly depends upon it. It provides employment to 2/3<sup>rd</sup> of industrial labour force.

Cotton is also known as "Silver Fiber". It is a woody fiber surrounded around the seeds of the plant the longing to genus "*Gossypium*". It is known to have been produced in the Indus plain since 3000 B.C.

### Cultivation

Cotton is a Kharif crop in Pakistan and is cultivated in the summer season. Sowing is mainly by broad and broadcasting begins in April in Sindh and May or June in Punjab, in Sindh, picking starts from August. Whereas in Punjab it begins in September or October. Cotton is mostly grown in rows and the minimum distance between rows to row is kept about 1 or 2 feet. Similarly, the minimum distance between plant to plant remains about 6".

### Sindh

The province of Sindh also produces a considerable amount of cotton. The canal irrigated areas of Sindh, constituting Hyderabad and sukkur division are the main cotton centers. Here both the american medium staple and desi qualities of cotton are grown. Sindh also produces surplus quantity of cotton which is more than the local requirements.

### Punjab

The province of Punjab has a network of canals leading out from the mighty river Indus. Bahawalpur, Faisalabad, Dera Ghazi Khan, Sargodha, Lahore, Multan and Gujranwala constitute the cotton belt. In these areas the well-known variety of medium staple cotton is grown. A small quantity of Desi quality cotton is allowed to be grown for domestic use. Punjab produces a surplus quantity of cotton and after meeting the local requirements the rest of it is exported.

### Khybar Pakhtoonkhwa and Balochistan

Cotton is grown in some canal irrigated areas of Khybar Pakhtoonkhwa and Balochistan.

**Table 4. Weeds of Cotton Anwar-ul-Haq *et al.*, (1976), Ali *et al.*, (2005) and Shaikh *et al.*, (2006).**

Sr. No.	Family Name	Botanical Name	English Name	Local Name
1	Aizoaceae	<i>Trianthema monogyna</i>	Horse purslane	It-Sit
2	Amaranthaceae	<i>Amaranthus viridis</i>	Green amaranth	Chulai
3	Amaranthaceae	<i>Digeria muricata</i>	-	Tandla
4	Convolvulaceae	<i>Convolvulus arvensis</i>	Field bind weed	Naro/Lehli
5	Cyperaceae	<i>Cyperus rotundus</i>	Purple nut sedge	Deela
6	Euphorbiaceae	<i>Euphorbia helioscopia</i>	Sun spurge	Dhodak
7	Euphorbiaceae	<i>Euphorbia prostrata</i>	Petty spurge	Dhodak
8	Poaceae	<i>Cynodon dactylon</i>	Bermuda grass	Khabbal ghash
9	Poaceae	<i>Echinochloa colonum</i>	Jungle rice	Swanki ghash
10	Poaceae	<i>Setaria viridis</i>	Green foxtail	Loomar ghash
11	Poaceae	<i>Sorghum halepense</i>	Johnson grass	Baru
12	Portulacaceae	<i>Portulaca oleracea</i>	Common purslane	Kulfa
13	Tiliaceae	<i>Corchorus tridens</i>	Wild jute	Jangli patsun
14	Zygophyllaceae	<i>Tribulus terrestris</i>	puncturevine	Bhakhra

**Table 5. Some common weeds of main cash crops**

Sr. No	Name of Common Weeds	Names of main cash Crops
1	<i>Amaranthus viridis</i> L	Sugarcane, Rice and Cotton.
2	<i>Chenopodium album</i>	Sugarcane and Wheat.
3	<i>Convolvulus arvensis</i>	Sugarcane, Rice, Wheat and Cotton.
4	<i>Cynodon dactylon</i>	Sugarcane, Rice, Wheat and Cotton.
5	<i>Cyperus rotundus</i>	Sugarcane and Rice.
6	<i>Portulaca oleraceae</i> L	Sugarcane and Cotton.

## CONCLUSION

In Pakistan majority of the farmers have little knowledge about the losses caused by weeds and they have not known how can and when to remove the weeds from the crop field. Due to illiteracy, farmers are unable to communicate with experts or with the staff of any agricultural research centre.

For the agricultural requirement and obtaining the optimum yield of crop, the awareness of farmers about the losses due to weeds is essential as well as the knowledge of weed control is necessary.

Govt. of Pakistan should take some steps for giving the knowledge about the losses caused by weeds and weed management. For this purpose some short courses or programs should be arranged in different agricultural training centers. In these training centers experts can illustrate and demonstrate the methods of weed control in local language, and with the help of demonstration plots furthermore, the farmers should be informed about the new technologies for controlling weed infestations.

Media, especially T.V plays an important role in this matter. Through T.V some programs can be broadcasted in which to show how and when to remove and control the weed infestation in crop fields, and when and which herbicides should be used. These types of programs will be helpful for farmers particularly those who are totally ignorant about the losses caused by weeds and methods of their control.

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