
Wheat cultivation in Sindh Pakistan

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Abstract

The province of Sindh laying between 23° 40' and 28° 30N, and 66° 40' and 71° 10E can be compared with Egypt since for the past 1000 years, the two have received the gift of alluvium deposited by the rivers Indus and Nile, respectively. Flood plains and of both attracted early Neolithic people to experiment and develop food and feed crops.

In Pakistan wheat cover an area of 8,306,600 hectares, while in Sindh it cover an area of 1,120,300 hectare. For the same year wheat production in Pakistan was 18,237,600 tons, while in Sindh its production was 2,624,900 tons. Wheat in Pakistan was 2196 Kg/hectare, while in Sindh it was 2343 Kg/hectares.

Wheat varieties HYV in the year 1999 - 00 was 2,553 yield Kg/hectare, other wheat varieties was 981 Kg/hectare, total yield of wheat was 2491 Kgs/hectares.

Wheat in the year 1999 - 00 HYV varieties cover an area of 8,129,300 hectares, other wheat varieties cover an area of 333,700 hectare while total area under HYV was 846,3000 hectare. For the year wheat production of HYV was 20,751,300 tons, other variety production was total 21,078,600 tons.

For December 1st 2004, overall wheat sowing in Punjab and Sindh remained slightly below the monthly target of 60% in November 2004 with 67.2% of the area of sown in Sindh. Overall wheat sowing remained at 54.3%. He said provincial governments of Punjab and Sindh were given the target of 6.2 million hectare and 0.8 million hectares, respectively and the concerned food departments were asked to ensure wheat sowing in 60% of the area in November.

The official said the decision was taken in a view to achieve total production of 20.2 million tons of wheat so that the government should not have to import the commodity in the next fiscal year. Wheat cover 8.5 million hectare in Pakistan.

Unlike previous years, when 40% of the targeted area was to be sown with wheat in November in order to increase per hectare yield from 1,000 Kg to 1,300 kg, the Punjab out of the targeted area of 6.2 million, 4.16 million hectares was sown with wheat till November 27 against a little over four million hectares sown during the same period of the last year.

Similarly in Sindh wheat sown area remained at 0.332 million hectares till November 23, compared to 0.25 million hectares last year.

The targeted wheat sowing area in NWFP is 0.77 million hectares, 0.34 million hectares in Balochistan and 0.1 million hectares in the Azad Jammu and Kashmir, but the federal ministry of food and agriculture has not yet received figures from these areas.

Introduction

It is found in subtropical at higher altitude in the tropics to produce locally adapted cultivars. The optimum temperature for germination is 29°C under favorable condition germination takes place in 4-5 days. The seed rate varies 50-200Kgs/hectare. Time of maturity 95-150 days depending upon cultivar. Seeds should be used 50-60 Kg/acre. Seeds bed 1 1/2 to 2 inches in row having distance 6-8 inches. 80-100 plants per acre. In case of November sowing used 50Kgs/acre, in case of December sowing 60Kgs/acre.

General

Wheat Scientific name is *Triticum aestivum*, local names are Kanak and Gandum. Wheat belong to a family gramineae and genus *Triticum*. Genus *Triticum* comprising of three species.

Its cultivation starts during Neolithic probably as early as 6,000 to 7,000 year ago .Wheat crop requires a well pulverised but compact seedbed for good and uniform germination, 3 or ploughing in the summer, repeated harrowing in the rainy season, followed by 3 or 4 cultivation and planting immediately before sowing produce a good firm seedbed for the dry crop on alluvial soil.

Wheat belong species *Triticum*, *Triticum* spp are annual grasses, belong to tribe Triticeae, sub-family Pooideae. There are 3 wild species and 22 species, in closely related genus *Aegilops* The four species namely *Triticum aestivum* L., *T.durum* Desf., *T. dicoccum* Schuble and *T.sphaerococcum* Pereival. *T.dicoccum* is grown on very restricted scale. Its other names are popatiyea, Khapli, ravva, godhumalus and Samba. The most important species *T.aestivur* occupying 85% of total area under wheat. *T.durum* the macaroni wheat is second important occupying 14% of wheat area. *T.durum* is the most important species under rain fed condition.

Sowing season of various varieties of wheat in Sindh

Varieties and time of sowing

Varieties	North of Sindh	South of Sindh
Sarsubz	1 st Nov.-25 th Nov.	10 th Nov-15 th Dec.
Soghat 90	1 st Nov.-25 th Nov.	1 st Nov-25 th Nov.
Mehran 89	1 st Nov-20 th Nov.	7 th Nov-30 th Nov.
Abadgar 93	1 st Nov-20 th Nov.	7 th Nov.-30 th Nov.
Anmol 91	21Nov-15th Dec.	1 st Dec.-20 th Dec.
Tando Jam 83	21 st Nov-15 th Dec.	1 st Dec.-20 th Dec.
Marvi 2000	1 st Nov.-25 Nov	1 st Dec.-15 th Dec.
Momel 2002	1 st Nov-20 th Nov.	Both for North and South of Sindh.

Varieties of wheat in Sindh

Varieties for upper Sindh

Abadgar 93, Mehran 89, Sarsubz, Kirn 95, Sogat 90, T.J.83, Anmol 91 ,Bhatti, Khramen
Time of sowing.
From 1st Nov.-25th Nov. and 1st Dec.-30th Dec.

Varieties for lower Sindh

Abdagar 93, Mehran 89, Sarsubz, Kiran 95, Sogat 90, T.J.83, Anmol 91.
Time of sowing
1st Nov.-30th Nov., and 1st Dec.-30th Dec. 5, 04
Seed depth 2 inches deep and rows distance 9 inches.

Wheat varieties of Sindh Pakistan

Twelve varieties of Pakistan are : PB-85, V-86369, WDK-85, FSD-85, V-8624, CHKL-86, V-85060-1, PAK-81, FSDD-83, K-Noor-83, V-88022 and V-86371, C-217, C-250, C-591. (Ref. Nasir Mehdi Rizvi.1998)
C.pH47, A.T.38; Hsw III, C-591, c-518, H-68, I.P.120, Mexi-Pak-65, pak-70, Inia –66,
Noori, Blue Silver, Yacora, T.J.75, Munshi-76, (Abdul Whab Khoso 1977)
Varieties of Western Sindh : Pavion-7, ZA-77, Sindh 81, Sarsubz, Bluesilver, Tando Jam 83. Varieties of Eastern Sindh are : Pavion, Sarsab, ZA-77, Sindh 81, Blue silver, Tando Jam-83. (Ref. PARC-Islamabad), Other varieties are : H-68, C-591, c-273, Drik, Pak-70, Sitophilis Oryzae multiply faster rate than Tribolium Castaneum, Rhizopertha dominica and Trogloderma , Qranarium.

Soil

Wheat requires deep loam's or alluvial origin and well drained soil having uniform and mellow texture which help in peruse development root system. It also required organic matter Dwarf varieties show better results when grown 1.5 to 2.0 inches depth and land should be levelled (Abdul Whab Khoso 977), well drained loam and clayey loam are considered to be good for wheat. It can grow in sandy soil as well.

Timing of sowing

Proper sowing is depending upon variety and climatic conditions. In Kotri Barrage area and Hyderabad district local varieties H-68 and c-591 can be sown 15 days earlier. In case of dwarf varieties sowing should be completed in November while late varieties can be sown up to 10th December (Ref. Abdul Whab Khoso 1977). The depth of sowing varies 1.5 to 2.5 inches. The distance between two lines should be 9 inches only.

Belaton 1gm, Vitavax-2Kg, Topsin 2 gm, Benlate 2 Kg mixed with seed before sowing .
Before planting –Aldrin 55 or BHO 10% dust at the rate of 25 Kg/ha should be applied .

Seeds preparation for sowing

Wheat seed have certain diseases which spread by seed like karnal or partial bunt, loose smut, flag smut very harmful. So before sowing seeds are treated with Benlate or Vitavax-200 or Topson-M.30 Kg should apply.

Proper time and how many seeds per acre

Varieties	Time of cultivation	Weight of seeds per acre.
Sindh 81	1st Nov.-30 th Nov.	50Kgs
Sindh 81	10 th Nov.-30 th Nov.	50Kgs
ZA 77	1 st Nov.-20 th Nov.	50Kgs
ZA 77	7 th Nov. 30 th Nov.	50Kgs
Pavion	1 st Nov.-20 th Nov.	50Kgs
Pavion	7 th Nov.-20 th Nov.	50Kgs
Sursub Z	1 st Nov.-15 th Dec.	50Kgs
Sursub Z	10 th Nov.-15 th Dec.	50Kgs
Blue silver	21 st Nov.-15 th Dec	60Kgs
Blue silver	1 st Dec.-24 th Dec.	60Kgs
Tandojam 83	21 st Nov.-15 th Dec.	60Kgs
Tandojam 83	1 st Dec.- 21 st Dec.	60Kgs

Wheat seed should be healthy, free from diseases and infection, seed are not broken, seeds not mixed with weed seeds, seed having 95% growing capacity. Wheat storage Datayafa Stakin about 25-30 tablets/cubic feet or Malthion one portion with three portion with water spray on wheat. Pollination completed in 3-5 days.

Climate

It is grown in tropical and sub-tropical areas. It need rainfall 12 to 35 inches and a latitude of 300 to 600. Its growing season is 100 days . It can be grown up-to-the height of 10,000 feet.

Weedicides for wheat

These are as under:

Dicuran, Areton, Dozanex, Tolken, Buctril-1, 2-4-D, Bakral M, Logran Exter, Green star, Boroe site, Dicron M, Talkon, Earlian, Panther, Graminan, Stamp, Pomaspur, Protorex, Promaspur , Turbuneler D.P 70, Stamp, Bactral M, Bramenal, Talkan, Logran, Topick, Pochung.

Fertilizer

Nitrogen and phosphorus applied in the ratio of 2:1. All phosphorus be given at sowing time and higher doses of nitrogen may splinted in two applications, at sowing time and with second irrigation. (Abdul Wahab Khoso-1977).

Fertiliser application

N-55Kgs, phosphorus 27 Kg, 2 bags DAP and one bag urea at the time of cultivation or 2.5 bag phosphorus during cultivation and 1.5 bag urea 1st and 2nd irrigation time.

3 bags urea/acre two times, 1st at the time of sowing and 1st irrigation time. Phosphorus 2 bags/acre, K ,two bags/acre. Or Nitrogen 80-120kgs/ha, Phosphorus 40-60 Kg/ha, Potassium 40Kgs/ha, Zn 50 Kg/ha N:P:K at the rate of 10:23:15, with 3 bags/acre.

Soil type	At the time of sowing	1 st irrigation	2 nd irrigation
Weak soil	3 bags NPK (10:23:15) or 2 bags DAP or Engrozorour, 1 bag + 1 bag of MoP	1 bag urea	1 bag urea
Medium soil	2 bags NPK (10:23:15) or 1 1/2 bag DAP or Zorour 1 bag+ 1bag of MoP	1 bag urea	½ bag urea
Fertile land	2 bags NPK (10:23:15) or 1 bag DAP or Zorour, 1 bag + 1bag of MoP	1 bag urea	½ bag urea

Or

Land position	At the time of sowing	After sowing
Weak	2 bags of DAP	1 bag urea with water, after 3/4 th to 1 bag.
Medium	1 1/2 bag DAP	1 bag urea with 1 st water application 1/2 to 3/4 bag of urea after word .
Fertile land	1 bag DAP + 1/3 rd urea bag	1 bag of urea with 1 st water application.

March and April wheat usually shivels with heat.
 50 lb phosphorus + 40 lb nitrogen gives good results.
 30 lb nitrogen gives good results (Malik Ghuda Bux 1964)
 2-3 tones of FYM/hectare + organic matter.

Rotation

Normally rabi wheat is followed by kharif .The green manure crops like: sanai, moong, guar, lobia or hubam clover sown immediately after kharif to enrich the soil, gram, linseed, barley and mustard included in the rotations. Un irrigated wheat is rotated with jowar, bajara, or cotton in kharif in preceding year. Wheat grown mixed with barley, mustard, gram, lentil, safflower are common.

Irrigation

Three irrigation are needed.

- 1) 1st after 20 to 25 days of sowing. When root development start.
- 2) 2nd time on emergence of ear heads.
- 3) 3rd time at initial stage of seed formation

The irrigation should be three inches (Abdul Whab Khoso 1977).

4-6 irrigation are needed. 1st dose given at crown-root initiation stage about 20-25 days after sowing, 2nd dose at late ill ring, late jointing, flowering, milk and dough stage.(Mrs.A.M.Wadhvani 1987)

- 1) 1st growth-within 15-20 days or waterlog soil give 1st water 22-30 days after sowing.
- 2) 2nd Irrigation 20-22 days after 1st water application.
- 3) 3rd irrigation after 22 days of 2nd irrigation.
- 4) Last irrigation, in March or April, due to seed did not become dry.
- 5) One week growing wheat 15-20 days later give irrigation.

Crop require growing season of 100 days, annual rain fall 700 mm.

Tillage

A freely tillering annual 0.3-0.8 m tall, seminal root 3-6 in number.

Effect of primary and secondary tillage on the grain yield of barani wheat in 1982-83, rabi season at National Agriculture Research centre Islamabad.

Primary tillage	Depth Cm	Secondary MB	Secondary CU	Tillage SW	Tillage Disc	Mean
Mould bord.	30	4.50	3.98	4.30	4.46	4.30
Subsoller	45	3.90	3.78	3.70	3.82	3.80
Chisel	25	3.92	3.18	3.60	3.48	3.54
Cultivator	10	3.70	3.78	3.90	3.50	3.27
Mean	25	4.00	3.68	3.78	3.82	3.84

Diseases of wheat crop

The leaf spot diseases are as under:

- Septoria nodorum blotch
- Septoria tritici blotch
- Yellow spot

(Ref. Robert Loughman 1994)

They are caused by three different fungal pathogens but disease symptom and biology is same. Infected leaves show irregular or oval shaped spot, which initially are small, then turn yellow, moisture enable the pathogens to sporulate, disperse and infect, reduce photosynthetic area causing early leaf senescence. Severe disease in young crop can reduce tillering and delay flowering, infection late in the crop's life can hasten maturity and reduce the time available for grain filling resulting in shriveled.

Septoria nodorum blotch

Is caused by two stages of fungus. The sexual stage *Leptosphaeria nodorum* occurs on infested stubble and produces ascospores from perithecia. Which initiate the disease following aerial dispersal. The asexual stage *Septoria nodorum* occurs on infested stubble and the stage *Septoria nodorum* occurs on infested stubble and the stage found on disease plants producing pycnidiospores from minute brown pycnidia, which spread the disease in to new crop foliage. This disease is most damaged in warm moist conditions. Most damage occurs when *Septoria nodorum* attacks leaves.

Septoria tritici blotch

Septoria tritici blotch is caused by two stages of same fungus. The sexual stage *Mycosphaera erarrella graminicola* occurs on infested stubble and produces ascospores from perithecia which initiate the disease by aerial dispersal. Ascospores can be dispersed moderate distances in air. Ascospores land on new crop in much larger quantity, resulting in the development of earlier and more severe disease.

The asexual stage *Septoria tritici* occurs on stubble and disease plants producing pycnidiospores from small black pycnidia which spread the disease on to new crop foliage.

As with *Septoria nodorum* pycnidiospores are spread by splash dispersal. *Septoria tritici* produces pycnidia in rows between the veins of affected leaf, which are visible to the naked eye.

Yellow spot

It is caused by two stages of same fungus. The asexual stage *pyrenophora tritici-repentis* occur on infested stubble as indicated by the tell tale appearance of its fruiting bodies. (Pseudoperithecia). These can be seen in autumn and early winter as black, raised, oval bodies about the size of a pin head. The release which initiate the disease by aerial dispersal.

Ascospores of the yellow spot fungus are dispersed by short distance. The a sexual stage *Drechstera triticirepentis* produce conidia on leaf tissue killed by the fungus and spread the disease in to new crop foliage. Conidia are a yearly dispersed .All the above three diseases occur together and severity of each varies with season and location

Wheat Diseases (Ref. Mrs.A.M.Wadhani, 1987)

Disease name	Casual Organism
Black mould	Cladosporium herbarum
Glume blotch	Septoria nodorum
Leaf blotch	Septoria tritici
Pythium root rot	Phythium gromini colum
Selerotial disease	Pellicularia rotifii
Dilo-phosphorus leaf spot	Dilophosphjora rotfaii
Leaf blight	Atternaria triticina
Foot rot	Helmin thosporium Sativum end Fusarium
Hill bunt	Tittetia foetida and Tilletia curies
Karnal bunt	Neovossia indicia
Flag smut	Urocystis tritici
Loose smut	Ustilage tritici
Stem rust	Puccinia graminis
Stripe rust (Yellow rust)	Puccinia graminis
Leaf rust (brown rust)	Puccinia glumarum
Powdery mildew	Puccinia recondita
Mosaic streak	Erysiphe graminis
Earockle	Virus Anguium tritici
Tandu (Yellow rot)	Corynebacterium Tritici and nematodes Anguina tritici complex
Molya or cercal root rot worm	Heterodera avonae.

Diseases of wheat and their pathogen (Ref: L.M.Joshi, K.D.Strivastana, D.Visingh, L.B.Goel , s.Najourajan, 1978)

Diseases	Pathogen
Black rust	<i>Puccinia graminis</i>
Brown rust	<i>Puccinia recondita</i>
Yellow rust	<i>Puccinia striiformis</i>
Loose smut	<i>Ustilago nuda</i>
Flag smut	<i>Urocystis agropyri</i>
Hill bunt	<i>Tilletia caries</i>
Karnal bunt	<i>Neovossia indica</i>
Leaf blight	<i>Alternaria triticina</i>
Leaf blotch	<i>Septoria tritici</i>

Nematode disease molya caused by *Heterodera avenae* treatment DBCP 60% EC at the rate of 30l/hac.

Diseases

Disease	Pathogens
Leaf spot	<i>A.tenuissima</i> <i>A.alternata</i> <i>A. Tricola</i> <i>Drechslera sorokiniana</i> <i>D. catenaria</i> <i>D. nodulosa</i> <i>D.tetramera</i> <i>Helminthosporium atypicum</i> <i>Dilophospora alopecuri.</i> <i>Leptosphaerulina trifoli</i> <i>Chaetomium dolichotrichum</i> <i>Pyricularia Oryzae.</i>
Glume blotch	<i>S.nodorum</i> <i>Poma sorghina</i>
Powdery mildew	<i>Erysiphe graminis DC</i>
Powdery mildew	<i>Sclerophthora macrospora</i>

Disease	Pathogens
Root rot , foot rot and seedling blight	Curvularia verruciformis Drechslera sorokiniana D. tetramera D. halodes D. bicolor D.bicolor D.nodulosa Fusarium moniliforme F.dimuerum F.semitectum F. avenaccum F. graminarum F.culmorum Gaeum annoyces graminis Phthium graminocolum Sclero rolfsil Rhizoctonia solani.
Shooty mould	Cladosporium herbarum
Seed-borne.	Alternaria alternata. A.triticina. Drechlera sorokiniana D.tetramera Cochliobolus tritici Nigrospora sphaerica Curvalria pallescens C.geniculata C.verruculosa C.tritici Sclerotium Stemphyliunia Pphiobolus.
Ear cockle	Anguina tritici
Tundu	Anguina tritici and corynebacterium tritei.
Molya	Heterodera avenae
Virus	Chirke disease of cardaman (Mosaic streak of wheat.
Physiological diseases	Nitrogen deficiency Zinic deficiency Potash deficiency.

Fungal diseases

Diseases	Causing agent
Black rust	Puccinia graminis
Brown rust	Puccinia recondita
Yellow rust	Puccinia striit formis
Leaf rust	Puccinia recondita
Loose smut	Ustilago-tritici
Stem or black rust	Puccinia graminis Pers.
Blotch	Septoria spp;
Bunt	Tilletia spp
Loose smut	Ustilago nuda
Mosaic virus	

(Ref. Abdul Whab Khoso 1977)

Insect and pest are aphid- Toxoptera graminum Round.

Other Leaf diseases

Rust, Wheat stem rust, Wheat leaf rust, wheat stripe rust, Races of rust , and yellow defray.

Seed infection.

Seeds can become infected with S.nodorum or P.triticirepentis if moisture occur late in the season seed infected by P.tritici-repentis cause pink grain which affect crop marketability but does not carry disease to next crop, if used as seed. Seed infected with S.Nodorum Carry infection to next crop.

The major insect those effects on wheat at storage are

Insects	Scientific names
Kapra beetle	Troqoderma granarium
Grain borer	Rhyzoperths dominica
Grain weevil	Sitophilus oryzae
Red colour beetle	Tribolium castaneum

These insects made a damage about 2-4 % (Ref. Nasir Mehdi Rizvi 1998)

Chemical composition of wheat

The whole grain contains.

Composition	Percentage
Water	13%
Protein	11.5%
Fat	2%
Carbohydrate	70%
Fibre	2%
Ash	1.5%
White flour contain	White flour contain
Water	12.4%
Protein	10%
Fat	1.0%
Carbohydrate	76%
Fibre	0.3%
Ash	0.3%

Storage

The storage life depend upon moisture content .Grain with less than 10% moisture store well

Uses

Wheat is also used for the production of alcoholic beverages and industrial alcohol. The grain may be fed to livestock and straw provide a valuable fodder. The straw is used for wickerwork, baskets, hats, thatching and packing.

Fumigant gases

These are carbon disulphide, carbon tetrachloride, chlorpierine, Dichlorovos, Wthylene dichloride, Hydrogen cyanide, Methyl formate, Sulphuryl flouroide while phosphine or methyl bromide phosphine. Methyl bromide is preferred fumigant for ship fumigation due to its less exposure period requirement.

- The doses required fumigation with phosphine 1-2 gms phosphine per cubic meter to be administered for minimum exposure period of 5-7 days. Phosphine should not be used below 12 degree centigrade.
- The most convenient method to apply HCN in ship is by means of impregnated disc, which is affective for medical quarantine fumigation.
- The substantial harvest and post-harvest losses greatly contribute the low yield of wheat . (Ref. Nasir Mehdi Rizvi. 1998)

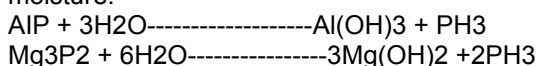
Type of fumigants (Ref.Nasir Mehdi Rizvi 1998)

Fumigants divided in to three classes.

- a) Solid based fumigants.
- b) Liquid fumigants.
- c) Low boiling fumigants.

a) Solid based fumigants

The Aluminium phosphide or Magnesium phosphide .Phosphine gas is released by it reaction with atmospheric moisture.



Aluminum phosphide available in pellets and tablets form.

b) Liquid Fumigants

Liquid fumigants include carbon tetrachloride ethylene dibromide, ethylene dichloride, the application of liquid fumigants in convenience.

c) Low boiling point fumigants.

Methyl bromide this gas penetrates quickly in to commodity and Aires off readily at the end of treatment.

Properties of Methyl Bromide

Physical properties are explained as under.

ALTERNATIVE NAME	MONOBROMOMETHANE.
CHEMICAL FORMULA	CH ₃ BR
BOILING POINT	3.6C°
MOLECULAR WEIGHT	99.94
SPECIFIC GRAVITY GAS (AIR=1)	1.732 AT 0C°
T.L.V	15PPM
G/M ³ TO PPM(30C)	260

Methyl bromide is a powerful organic solvent it is applied with 2% chlorpierin is added to formula used in fumigation work. Wheat after harvest spray with malathion 25:1

Harvesting

It should be harvested immediately after maturity. Harvesting when grains harden, straw becomes dry and brittle.

Improvement

The objectives of wheat breeding include the following.

- 1) Yield of grain which is dependent upon the amount of tillering, the number of spikes per unit area, the length and density of the spikes, the number of grains per spikelet and the size of grain.
- 2) Maturity of which early maturity is usually desired which may able the cultivar to escape hot weather, drought and some disease .
- 3) Standing ability with short stiff straw resistant to lodging.
- 4) Freedom from shattering.
- 5) Resistance to diseases and pests, particularly to rust, which had been referred to above.
- 6) Suitability to the local environment and methods of cultivation, including extension in to the hotter regions of the tropics.
- 7) Quality, including market quality, for which pure, clean. sound grain is required and milling and baking qualities

Reference has already been made to the improved modern cultivar produced in Mexico and to the work in Kenya. Work is also in progress in India.
(Ref. J.W.Puseglove 1975)

New technique to generate GM wheat

In a reverse genetic, nontransgenic approach to wheat crop improvement by TILLING, or targetting induced local lesions in genomes, Ann J.Slade, and her colleagues of Anawah Inc; in Seattle, Washington introduce a technique that can identify new mutations in a polyploid plant, such as wheat, as well as uncover inherent variation within and organisms's genome and eliminate the need to introduce a foreign DNA to get a new strain. The paper is published in the latest issue of Nature Biotechnology,. With TILLING, DNA from multiple individuals is pooled, and the polymerase chain reaction (PCR) is used to amplify a targeted region of the genome. The PCR product from the pool is heated and reannealed, allowing DNA strands from mutants and wild types to base pair with each other. The individuals composing the positive pools are sequenced to determine which individual carries the mutation and further tests may be undertaken to reveal the nature of the mutation. Unlike conventional mutation breeding, TILLING provides a direct measure of mutations induced. Slade identified 246 alleles of the waxy genes of wheat and was able to produce a new strain yielding large amounts of amylopectin in its grains. This full waxy wheat can be useful to making breads and pastas, as well as enhancing the strength and printing properties of paper produce.

(References. <http://www.nature.com/cgi-taf/DynaPage.taf?file=nbt/journal/vaop/ncurrent/full/nbt1043.html>.)

Conclusion.

The methods which help increase yield/acre are as under.

- Selection of land and its preparation.
- Better varieties and time of sowing
- Proper fertiliser
- Killing of weeds.
- Healthy seed
- Proper way of cultivation
- Proper irrigation
- Proper harvesting and storage
- If we take care of above factors we will get better quality and high yield of wheat.

References

- Agricultural statistic of Pakistan 1999-00 ,Govt. of Pakistan, Ministry of Food, Agriculture and livestock, Food, Agriculture and livestock division (Economic wing) Islamabad, 302p
- Annotated compendium of wheat diseases in India by L.M.Joshi, K.D.Srivastava, D.V.Singh, L.B.Giek abd S.Nagarajan, Indian Council of Agricultural Research New Delhi, 1978, 332pp
- Crop of Sindh by Abdul Wahab Khoso 1977, publish by Abdul whab khoso, 181p
- Dr.(Mrs) A.M.Wadhwani, Hand book of agriculture , Indian council of agricultural research N ew Delhi 1987, 1303p
- Hamri Zarat (Urdu) by Malik Ghuda Bux and Muzafar Hussain by Burea of Agricultrue West Pakistan Lahore 1964, 518p
- Identifying wheat leaf diseases by Robert Longhman, Plant Pathologist, Division of plant industry. Department of agriculture, Western Australia, bulletin 4287, June 1994,10p
- J.W.Purseglove, Tropical crops , monocotyledons, The English book society and Longman 1975,607p
- Pakistan Food and Agriculture Review, REG # ss.910, Vol III.No.1.II.III, by Nasir Mehdi Rizvi, 21pages, March 1998.
- Wheat Production, 1989-90 by Pakistan Agricultural Research Council. Islamabad, 63p.
<http://www.nature.com/cgi-taf/DynaPage.taf?file=nbt/journal/vaop/ncurrent/full/nbt1043.html>.)

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