



## MORPHOLOGICAL DESCRIPTOR

### WHEAT (*Triticum aestivum* L.)



Federal Seed Certification & Registration Department  
Ministry of Food, Agriculture & Livestock  
Government of Pakistan, Islamabad

*Testing Genetic Suitability and Adaptability: and  
Registration of Crop Varieties is Legal Obligation  
under Section 8 of Seed Act, 1976.*

**Dr. M. Ashraf Tajammal**  
**Ms. Naheed Naz**

**Morphological Descriptor**

Wheat

**GENERAL**

Variety name .....

Species name .....

Parentage .....

Pedigree .....

Breeder (s) .....

Comparable variety (s) .....

Breeding center/institute .....

Variety maintainer .....

Origin  Local  Exotic

Breeding method  Selection  Hybridization  Introduction  Any other

Areas of adaptation .....

Planting time .....

Maturity duration  Short  Medium  Long

Earlier than ..... Cultivar

Later than ..... Cultivar

Suitable for sowing  Early  Medium  Late  All sowings

**SEEDLING CHARACTERISTICS**

Seedling growth habit  Erect  Semi erect  Prostrate

Coleoptile color

Seedling anthocyanin  Absent  Weak  Medium  Strong

**PLANT CHARACTERISTICS**

Plant height (cm) ..... [Range.....]

Taller than ..... Cultivar

Shorter than ..... Cultivar

Color at booting  Blue green  Green  Pale green

**STEM CHARACTERISTICS**

Stem anthocyanin (at flowering)  Absent  Present

Stem waxy bloom  Absent  Weak  Medium  Strong  V. strong

Stem wall thickness  V. thin  Thin  Intermediate  Thick  V. thick

Stem stiffness  Soft  Intermediate  Stiff

Stem diameter (mm) .....

Peduncle length (cm) ..... [Range.....]

Productive tillers/m .....

Nodes/stem ..... [Range.....] From ground level

Straw color  White  Yellow white  Light red  Red  Brown

Lodging  Absent  Low  Medium  High  V. high

**FLAG LEAF CHARACTERISTICS**

Flag leaf attitude  Erect  Semi erect  Horizontal  Recurved

Flag leaf twist  Weak  Medium  Strong

Flag leaf length (cm) ..... [Range.....]

Flag leaf width (cm) ..... [Range.....]

Flag Sheath wax  Absent  Weak  Medium  Strong  V. strong

Sheath hairiness  Absent  Sparse  Medium  Profuse

Auricle hairiness  Absent  Sparse  Medium  Profuse

Auricle anthocyanin  Absent  Weak  Medium  Strong  V. strong

**EAR CHARACTERISTICS**

Ear emergence ..... [Days from Sowing]

Ear size  Small  Medium  Big

Ear length (cm) ..... [Range.....]

Ear width (cm) ..... [Range.....]

Wax at anthesis  Absent  Weak  Medium  Strong  V. strong

Color at maturity  White  Yellowish white  Light red  Red  Other

Ear shape  Tapering  Parallel  Clavate  Fusiform

Ear density  V. lax  Lax  Medium dense  Dense  V. dense

**Morphological Descriptor**

Wheat

Super Numerary spikelets	<input type="checkbox"/> Absent	<input type="checkbox"/> Occasional	<input type="checkbox"/> Many	<input type="checkbox"/> Numerous
Speltoids	<input type="checkbox"/> Absent	<input type="checkbox"/> Occasional	<input type="checkbox"/> Many	<input type="checkbox"/> Numerous
Shattering	<input type="checkbox"/> Resistant	<input type="checkbox"/> Low	<input type="checkbox"/> Moderate	<input type="checkbox"/> High
Ear kink/Twist	<input type="checkbox"/> Absent	<input type="checkbox"/> Weak	<input type="checkbox"/> Medium	<input type="checkbox"/> Strong
Ear awnedness	<input type="checkbox"/> Awned	<input type="checkbox"/> Awnletted	<input type="checkbox"/> Awnless	
Awn distribution	<input type="checkbox"/> Tip only	<input type="checkbox"/> Upper half	<input type="checkbox"/> Whole	
Awn length	<input type="checkbox"/> V. short	<input type="checkbox"/> Short	<input type="checkbox"/> Medium	<input type="checkbox"/> Long <input type="checkbox"/> V. long
Awn color	<input type="checkbox"/> White	<input type="checkbox"/> Yellowish white	<input type="checkbox"/> Red	<input type="checkbox"/> Light red <input type="checkbox"/> Black
Awn habit	<input type="checkbox"/> Erect	<input type="checkbox"/> Horizontal	<input type="checkbox"/> Divaricate	
Anther color	<input type="checkbox"/> Yellow	<input type="checkbox"/> Other		
Rachis hair apical	<input type="checkbox"/> Absent	<input type="checkbox"/> Sparse	<input type="checkbox"/> Medium	<input type="checkbox"/> Profuse
Rachis hair margin	<input type="checkbox"/> Absent	<input type="checkbox"/> Sparse	<input type="checkbox"/> Medium	<input type="checkbox"/> Profuse
Rachis length (cm)	.....			
Rachis width (mm)	.....			
No. of segments	.....			

**GLUME CHARACTERISTICS**

Glume length (mm)	.....	[Range.....]		
Glume width (mm)	.....	[Range.....]		
Glume length size	<input type="checkbox"/> Short	<input type="checkbox"/> Medium	<input type="checkbox"/> Long	
Glume width size	<input type="checkbox"/> Narrow	<input type="checkbox"/> Medium	<input type="checkbox"/> Wide	
Lower glume shape	<input type="checkbox"/> Broad flat	<input type="checkbox"/> Narrow humped		
Glume attachment	<input type="checkbox"/> Weak	<input type="checkbox"/> Medium	<input type="checkbox"/> Strong	
Glume pubescence	<input type="checkbox"/> Absent	<input type="checkbox"/> Present		
Glume surface	<input type="checkbox"/> Smooth	<input type="checkbox"/> Rough		
Lower glume shoulder shape	<input type="checkbox"/> Slopping	<input type="checkbox"/> Round	<input type="checkbox"/> Straight	<input type="checkbox"/> Elevated <input type="checkbox"/> Indented
	<input type="checkbox"/> Sloping/indent	<input type="checkbox"/> Straight/indent	<input type="checkbox"/> Round/indent	
Lower glume shoulder width	<input type="checkbox"/> V. narrow	<input type="checkbox"/> Narrow	<input type="checkbox"/> Medium	<input type="checkbox"/> Broad <input type="checkbox"/> V. broad
Beak length (mm)	.....	[Range.....]		
Lower glume beak shape	<input type="checkbox"/> Long/sharp	<input type="checkbox"/> Inflected	<input type="checkbox"/> Curved & humped	<input type="checkbox"/> Short/straight <input type="checkbox"/> Short & blunt
Lower glume beak size	<input type="checkbox"/> Short	<input type="checkbox"/> Medium	<input type="checkbox"/> Long	<input type="checkbox"/> V. long
Beak spicules	<input type="checkbox"/> Absent	<input type="checkbox"/> Present		
Keel spicules	<input type="checkbox"/> 1	<input type="checkbox"/> 3		
Glume.internal hair	<input type="checkbox"/> Absent	<input type="checkbox"/> Sparse	<input type="checkbox"/> Medium	<input type="checkbox"/> Profuse
Glume.internal impression	<input type="checkbox"/> Absent	<input type="checkbox"/> Small	<input type="checkbox"/> Medium	<input type="checkbox"/> Large

**SEED CHARACTERISTICS**

Seed color	<input type="checkbox"/> White	<input type="checkbox"/> Amber	<input type="checkbox"/> Red
Seed surface	<input type="checkbox"/> Opaque	<input type="checkbox"/> Shiny	
Seed shape	<input type="checkbox"/> Oval	<input type="checkbox"/> Ovate	<input type="checkbox"/> Elliptical
Seed length (mm)	.....	[Range.....]	
Seed width (mm)	.....	[Range.....]	
Seed thickness (mm)	.....	[Range.....]	
Seed size	<input type="checkbox"/> Small	<input type="checkbox"/> Medium	<input type="checkbox"/> Bold
Seed brush	<input type="checkbox"/> Short	<input type="checkbox"/> Medium	<input type="checkbox"/> Long
Seed germ size	<input type="checkbox"/> Small	<input type="checkbox"/> Medium	<input type="checkbox"/> Large
000, seed weight (g)	.....		
Seed groove	<input type="checkbox"/> Shallow	<input type="checkbox"/> Intermediate	<input type="checkbox"/> Deep
Seeds/ear	.....	[Range.....]	
Seed hardness	<input type="checkbox"/> Soft	<input type="checkbox"/> Medium	<input type="checkbox"/> Hard
Protein (%)	.....		
Chapati quality	<input type="checkbox"/> Good	<input type="checkbox"/> Medium	<input type="checkbox"/> Poor
Pelshinke	.....		
Bread quality	<input type="checkbox"/> Good	<input type="checkbox"/> Medium	<input type="checkbox"/> Poor
Loaf volume	.....		
Phenol reaction	<input type="checkbox"/> None	<input type="checkbox"/> V. low	<input type="checkbox"/> Light/brown <input type="checkbox"/> Black
Yield (kg/acre)	.....		

**ENVIRONMENTAL ADAPTABILITY** (Evaluation done under define conditions)

**Flowering Response to seasons**       Stable       Variable       Highly variable

**Drought tolerance**       Least tolerant       Medium       Most tolerant  
(Measured as reduction in yield).

**Tolerance to salinity**       Least tolerant       Medium       Most tolerant  
(Measured by reduction in plant height 30 days after sowing).

**Tolerance to acid soils**       Least tolerant       Medium       Most tolerant  
(Measured as reduction in plant height 30 days after sowing).

**Cold tolerance**       Least tolerant       Medium       Most tolerant  
(Measured as reduction in general vigour and productivity after being continuously exposed to an average temperature of 15 °C for at least 15 days).

**Heat tolerance**       Least tolerant       Medium       Most tolerant  
(Measured as yield reduction when continuously exposed to average of 40 °C during the flowering period).

**RESISTANCE TO INSECTS/PESTS**

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.....  
.....  
.....  
.....

**RESISTANCE TO DISEASES**

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.....  
.....  
.....  
.....

**DISTINGUISHING CHARACTERISTICS**

.....  
.....  
.....  
.....

**RECOMMENDED/APPROVED BY**

Variety Evaluation Committee (VEC)       Yes       No  
Experts Sub Committee       Yes       No  
Provincial Seed Council       Yes       No

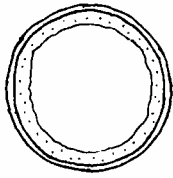
**COMMENTS OF SPOT EXAMINATION**

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.....  
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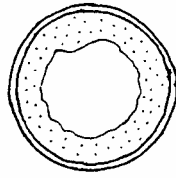
**ADDITIONAL INFORMATION**

.....  
.....  
.....  
.....

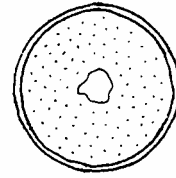
**STEM WALL THICKNESS**



Thin



Medium



Thick

**EAR SHAPE**



Tapering



Parallel



Clavate



Fusiform

**EAR DENSITY**

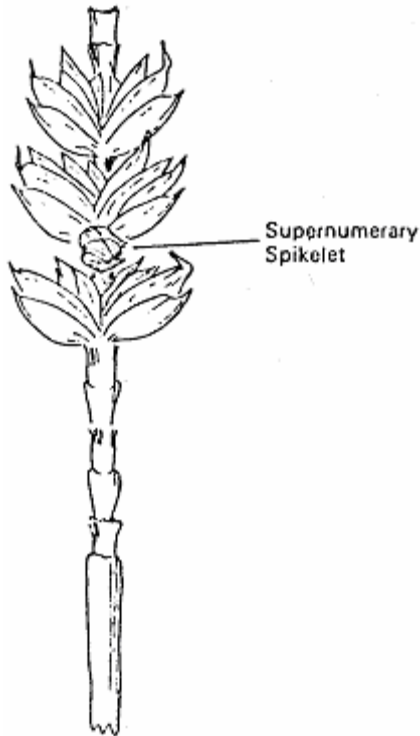


Lax

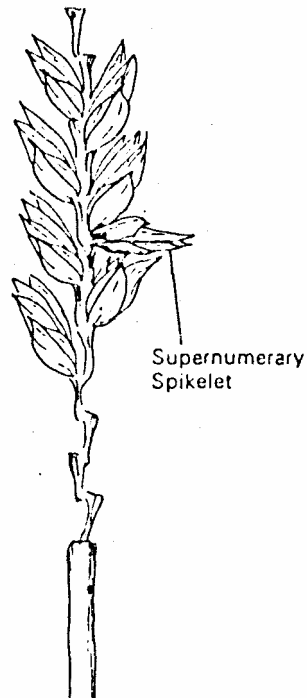


Dense

**SUPERNUMERARY SPIKELET**



Face view



Side view



**EAR KINK/TWIST**



Strong



Medium



Weak

**EAR AWNEDNESS**



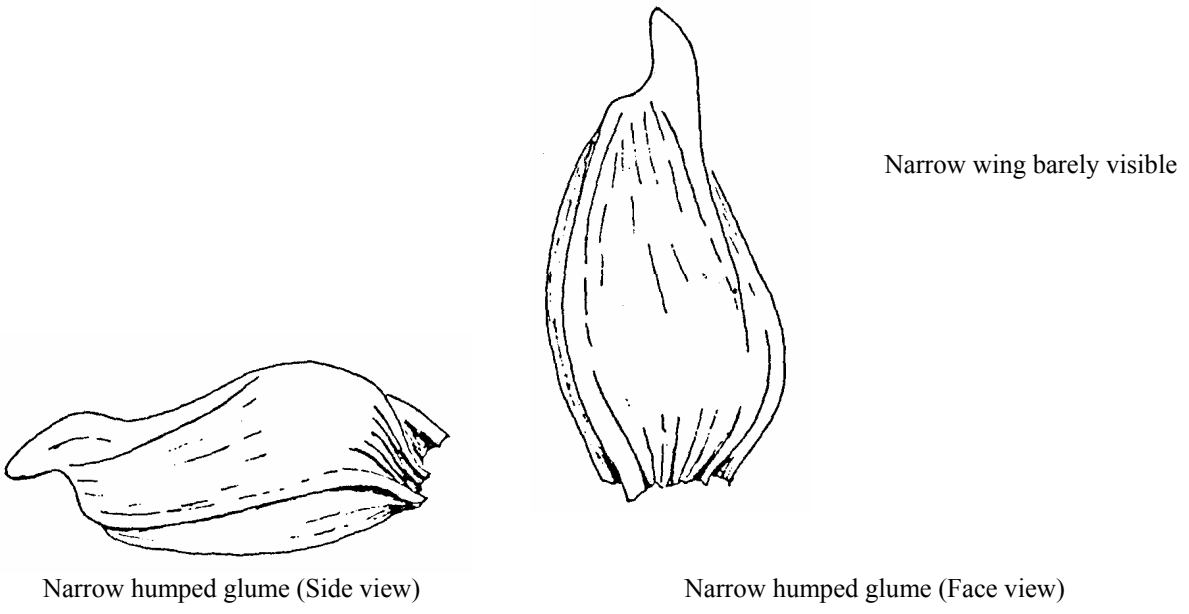
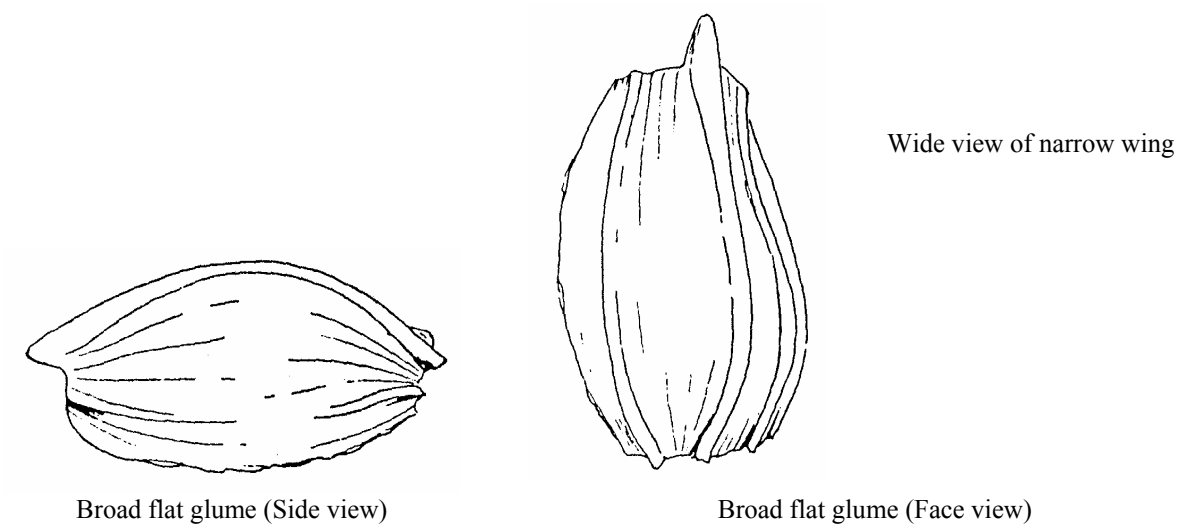
Awned

Awnless

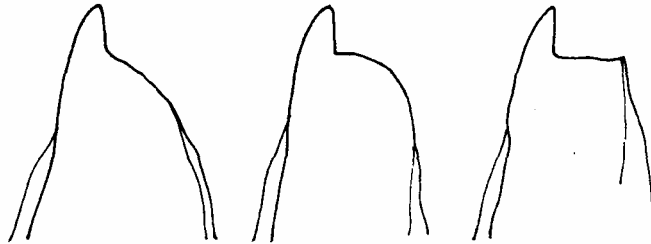


Awnleted

**LOWER GLUME SHAPE**



**LOWER GLUME SHOULDER SHAPE**



Sloping

Round

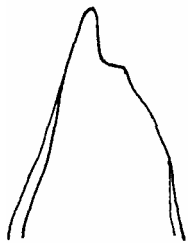
Straight



Elevated

Indented

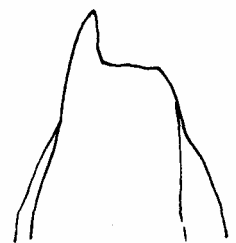
**LOWER GLUME SHOULDER WIDTH**



Narrow

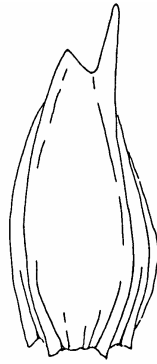


Medium

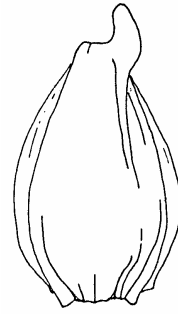


Broad

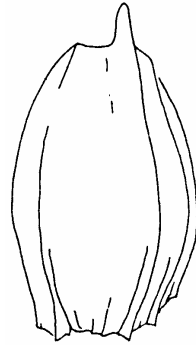
**LOWER GLUME BEAK SHAPE**



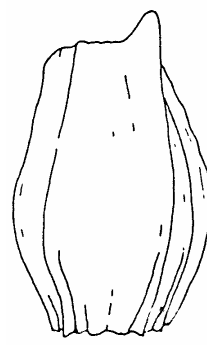
Long/sharp inflected



Curved and humped



Short/straight



Short and blunt

**LOWER GLUME BEAK SIZE**



Very short



Short

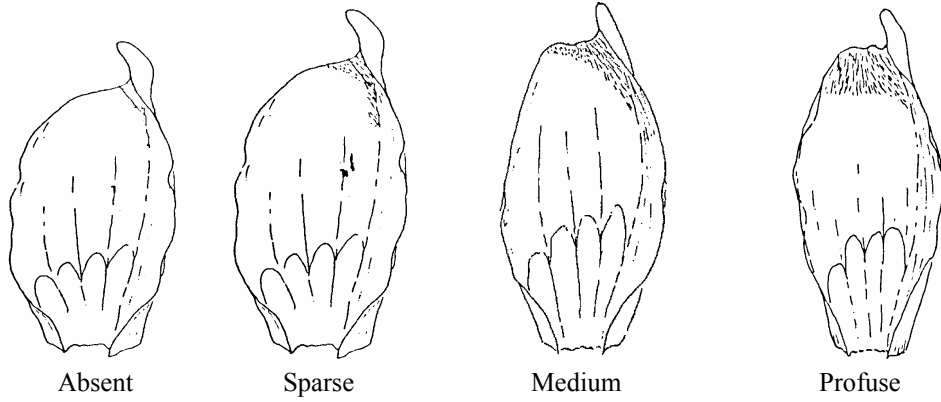


Medium

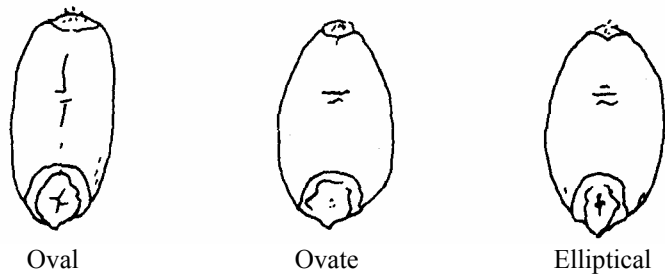


Long

**GLUME INTERNAL HAIRINESS**



**SEED SHAPE**



**SEED BRUSH**

