



Government of Pakistan  
PBRR, Pakistan

**Plant Breeders' Rights Registry**

## **Plant Breeders' Rights Journal**



Official Journal of Plant Breeders' Rights Registry, Pakistan

*July 2023*

# **PLANT BREEDERS' RIGHTS JOURNAL**

An official journal

of

**Plant Breeders' Rights Registry  
Ministry of National Food Security and Research  
Government of Pakistan**

Plant Breeders' Rights Registry G-9/4,  
Mauve Area, Islamabad, Pakistan

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## **EDITORIAL**

It is my pleasure to share that the Plant Breeders' Rights (PBR) Registry is creating awareness regarding importance, benefits and implementation status among the stakeholders. In this context, an awareness seminar at Khyber Pakhtunkhwa was held to disseminate the information regarding the PBR Act and Rules and their implementation status. Participants from provincial research system and administration exchanged their experience and expectations from the opportunity created by the Regulations. The Registry extended its services to work together with scientists to streamline their plant varietal documentation and presentation of application for the PBR Rights.

Similar activities are planned at institutional levels of other provinces of Pakistan. This will create awareness and close interaction among the stakeholders involved in plant variety development and protection. In future focal person from the Registry will be appointed for each specific region to have focused and close linkages. perks and privileges of the protected material. Along with this, Training of the manpower also started at headquarter to have knowledge of the technical aspects of the PBRR.

Dr. HayatUllah Tareen  
Registrar  
Plant Breeders' Rights Registry  
Mauve Area, G-9/4, Islamabad

## SCOPE OF REGISTRY

Plant Breeders Rights Registry is enhancing its capacity to extend the scope of the crops. The following new crops are included in the extended list of the protectable plant species:

SR. NO.	CROP NAME	SCIENTIFIC NAME
1.	Mung bean	<i>Vigna radiata</i> L.
2.	Tomato	<i>Lycopersicon esculentum</i> L.
3.	Date palm	<i>Phoenix dactylifera</i> L.
4.	Peach	<i>Prunus</i> spp.
5.	Lentil	<i>Lens culinaris</i> L.
6.	Pear	<i>Pyrus</i> spp.
7.	Sorghum	<i>Sorghum sudanense</i> L.
8.	Mango	<i>Mangifera indica</i> L.
9.	Onion	<i>Allium</i> spp.
10	Oat	<i>Avena sativa</i> L.

## CASES FOR OPPOSITION

### 1. Application No.: PBRR-MAIZE-33/21

Name of the applicant: Bayer Pakistan Limited

Institute: Bayer Pakistan Limited

Name of Breeder(s):

Prashant Golegaonkar-Monsanto Thailand Limited 56 M006  
Dinthong Wongthong Phitsanulok, 65130 Thailand

Name of Co-breeder(s):

Application for: New Plant Variety

Denomination of variety: DK-8022

Crop: Maize (*Zea mays* L.)

Type of the variety: Hybrid

Name of initial variety

(in case EDV): Not Applicable

Salient features:

CHARACTERISTICS	DESCRIPTION
Comparable variety (s)	DK-6714
Origin	Exotic
Breeding method	Hybridization
Areas of adaptation	Punjab-KPK-Sindh
Type of variety	Hybrid
Maturity duration	Medium
Sowing time	June-Aug
<b>SEEDLING CHARACTERISTICS</b>	
Seedling length (cm)	10.6
Coleoptile anthocyanin	Absent
First leaf color	Green
First leaf tip	Round
First leaf length (mm)	4.2
First leaf width (mm)	1.5
<b>PLANT CHARACTERISTICS FOR HYBRIDS AND OPEN POLLINATED VARIETIES ONLY</b>	

Plant length up to flag leaf	Long (>180 cm)
<b>STEM CHARACTERISTICS</b>	
Stem length (cm)	248-252
Taller than	DK 8148
Internode length (cm)	15.06
Internode diameter (cm)	2.3-2.5
Mid node anthocyanin	Absent
Stem tillering	Absent
Stem anthocyanin coloration of brace roots	Absent
<b>LEAF CHARACTERISTICS</b>	
Leaf angle between blade and stem	Wide (>45°)
Leaf attitude of blade	Drooping
Leaf width of blade	Medium (8-9 cm)
<b>TASSEL CHARACTERISTICS</b>	
50% Tassel emergence	50-53 (days)
50% Tassel emergence	Medium (50-55 days)
Anthocyanin coloration at base of glume	Absent
Anthocyanin coloration of glume excluding base	Present
Angle between main axis and lateral branches	Wide
Attitude of lateral branches	Straight
Anthocyanin coloration of anthers	Present
Density of spikelets	Spare
Tassel angle between main axis and lateral branches	Wide (>45)
Tassel length (cm)	45.1- 45.5
Tassel stalk length	19.2- 20.1
Exsertion above flag leaf (cm)	6.1- 6.5
No. of lateral branches	8-10
Lateral branch density	Lax
<b>FLOWER CHARACTERISTICS</b>	
Anther fertility	Normal

Pollen shedding	Medium
Anther color	Purple
Pollen color	Yellow
Glume color	Purple
<b>EAR CHARACTERISTICS (UPPER EAR)</b>	
50% silk emergence (days)	53-55
Later than	DK8148, 30Y87
Silk color	Pink
Insertion height (cm)	135-140
Peduncle length (cm)	7-8
Ear leafy extension	Absent
Ear husk length	Medium
No. of husk blades	8-9
Ear shape	Cylindrical
Ear length (cm)	18-19
Ear diameter (mm)	46-48
Seed rows /ear	16-18
Seeds / row	39- 42
Seed row arrangement	Straight
No. of ears / plant	1
Ear weight (g)	255.6
Cob color	White
<b>SEED CHARACTERISTICS</b>	
Seed color	Orange
Seed tip color	White
Color of sides	Orange
Seed shape	Toothed
Seed length (mm)	11.8
Seed width (mm)	8.5
Seed thickness (mm)	3.7
Seed type	Semi dent

Seed wax	Absent
Seed size	Medium
Seed weight /ear (g)	206.6
000, Seed weight (g)	304.1
Grain: Cob ratio	82 %
Yield (MT/ha)	8.4-8.6
Seed sweetness	Absent
Seed waxiness	Absent
Seed opaqueness	Absent
<b>ENVIRONMENTAL ADAPTABILITY</b>	
Flowering Response to seasons	Stable
Drought tolerance	Medium
Tolerance to salinity	Most tolerant
Tolerance to acid soils	Most tolerant
Cold tolerance	Most tolerant
Heat tolerance	Medium
Resistance to insects/pests	Moderate resistance
Resistance to diseases	Moderate resistance
<b>DISTINGUISHING CHARACTERISTICS</b>	Medium tall semi erect leaves, purple anther with purple glums, orange red cylindrical ears

Opposition can be filed upto: 18-08-2023





**8022**



DK8022



**DK8022**

## 2. Application No.: PBRR-MAIZE-34/21

Name of the applicant: Bayer Pakistan Limited

Institute: Bayer Pakistan Limited

Name of Breeder(s):

Prashant Golegaonkar-Monsanto Thailand Limited 56 M006  
Dinthong Wongthong Phitsanulok, 65130 Thailand

Name of Co-breeder(s):

Application for: New Plant Variety

Denomination of variety: DK-8148

Crop: Maize (*Zea mays* L.)

Type of the variety: Hybrid

Name of initial variety

(in case EDV): Not Applicable

Salient features:

<b>CHARACTERISTICS</b>	<b>DESCRIPTION</b>
Breeding center/institute	Bayer Pakistan Private Limited, Karachi
Comparable variety (s)	DK 6714
Origin	Exotic (Thailand)
Breeding Method	Hybridization (Single cross hybrid)
Areas of adaptation	Punjab, Sindh
Days to Maturity (days)	102-108
Maturity duration	Medium
Earlier than	DK 6714
Sowing time	Autumn season (mid June - August)
Suitable for	Autumn season
<b>SEEDLING CHARACTERISTICS</b>	
Seedling length (cm)	12.5
Coleoptile anthocyanin	Weak
First leaf color	Green
First leaf tip	Round
First leaf length (mm)	82.8
First leaf width (mm)	31.8

<b>STEM CHARACTERISTICS</b>	
Stem length (cm)	190-237
Shorter than	DK 6714
Internodal length (cm)	13-16
Internodal diameter (cm)	2-4
Mid node anthocyanin	Weak
Stem tillering	Absent
Root (brace root) anthocyanin	Absent
<b>TASSEL CHARACTERISTICS</b>	
50% Tassel emergence (days)	51-53
Earlier than	DK 6714
Tassel length (cm)	36
Tassel stalk length (cm)	10
No. of lateral branches	16-17
Lateral branches density	Semi-Erect
Lateral branches attitude	Dense
<b>FLOWER CHARACTERISTICS</b>	
Anther fertility	Normal
Pollen shading	Heavy
Anther color	Green
Pollen color	Yellow
Glume color	Green
<b>EAR CHARACTERISTICS (UPPER EAR)</b>	
50% silk emergence (days)	53-56
Earlier than	DK 6714
Silk color	Green
Insertion height (cm)	95-110
Peduncle length (cm)	4-4
Ear leafy extensions	Absent
Ear husk length	Medium
Ear shape	Slightly Conical

Ear length (cm)	17-19
Ear diameter (cm)	4.4-4.8
Seed rows/ear	14-16
Seed/row	32-38
Seed row attitude	Straight
No. of ears/plant	1
Ear weight (g)	240-265
Cob pith color	White
<b>SEED CHARACTERISTICS</b>	
Seed color	Orange
Seed tip color	Orange
Color of sides	Orange
Seed length (mm)	11
Seed width (mm)	5
Seed thickness (mm)	3
Seed type	Flint
Seed wax	Absent
Seed size	Medium
Seed weight/ear (g)	170-205
1000 Seed weight (g)	390
Grain. Cob ratio	80%
Yield	11 MT/ha
<b>RESISTANCE</b>	
Lodging	Low
<i>Helminthosporium</i> ssp.	Moderately resistant
<i>Fusarium</i> spp.	Moderately resistant
Streak virus	Resistant
Insects	Moderately resistant

Opposition can be filed upto: 18-08-2023

### 3. Application No.: PBRR-RICE-59/22

Name of the applicant: Principal Scientist, SSRI, Pindi Bhattian

Institute: SSRI, Pindi Bhattian

Name of Breeder(s):

- i. Muhammad Khalid Bhatti
- ii. Dr. Ghulam Shabbir

Name of Co-breeder(s):

Application for: New Plant Variety

Denomination of variety: Al-Khalid Rice

Crop: Rice (*Oryza sativa* L.)

Type of the variety: OPV

Name of initial variety  
(in case EDV): Not Applicable

Salient features:

CHARACTERS	DESCRIPTION
Maturity duration	Medium
Suitable for sowing	Medium
Photo sensitivity	Sensitive
Suitable for nursery transplantation	4 weeks
<b>SEEDLING CHARACTERISTICS</b>	
Seedling color	Light green
Coleoptile color	Colorless
Seedling length	35 cm
<b>LEAF CHARACTERISTICS</b>	
Leaf Length	85-90 cm
Leaf length of blade	Long
Leaf anthocyanin	Absent
Leaf width	1.0-1.2 cm
Leaf width	Medium

Leaf pubescence	Absent
Leaf color	Green
Leaf sheath color	Green
Leaf senescence	Late
Ligule color	Papery
Ligule length	2.4-2.5 cm
Ligule shape	2-Cleft
Collar color	Pale Green
Flag leaf attitude	Erect
Flag leaf length	36-45 cm
Flag leaf width	1.1-1.2 cm
<b>STEM CHARACTERISTICS</b>	
Mature stem length	120-125 cm
Stem attitude	Erect
Stem thickness	0.6
Stem stiffness	Very stiff cm
Tillers/plant	18
Internode color	Yellow
No. of nodes/ stem	8
Maturity straw color	Lemon straw
<b>PANICLE CHARACTERISTICS</b>	
Panicle length	30-33 cm
Panicle length	Very long
Panicle type	Compact
Spikelet density	Dense
Spikelets/panicle	114
Branches/ panicle	Profuse
Secondary branches	Present
Intensity of secondary branches	Strong
Attitude of Branches	Erect to semi erect
Panicle exertion	Moderately exerted

Panicle curvature of main axis	Semi straight
Awning at maturity	Absent
Shattering	Very low
Thresh ability	Intermediate
<b>SEED CHARACTERISTICS</b>	
Seed awning	Absent
Apiculus color (maturity)	Straw
Husk color	Straw
Husk pigment	Absent
Husk pubescence	Sparse
Pubescence length	Short
Seed shape	Semi crescent
Seed length	15.0-16.2 mm
Seed width	2.20-2.22 mm
Seed thickness	2-2.40 mm
1000 seed weight	33 g
Sterile lemma length	3.0-4.5 mm
Sterile lemma color	Straw
Seed size	Extra long
Lodging	High tolerant
Kernal length	10 mm
Kernal width	2 mm
Kernal color	Off-white
Kernal appearance	Translucent
Chalkiness	Absent
Kernal quality	Fine
<b>ENVIRONMENTAL ADAPTATION</b>	
Flowering response to seasons	Stable
Tolerance to salinity	Medium
Resistance to insects/pests	Resistant to leaf folder
Resistance to diseases	Moderately susceptible to BLB

**DISTINGUISHING CHARACTERISTICS**

Highly tolerant against lodging, deflexed panicle character, robust and straight plant, tolerant to salinity

Opposition can be filed up to: 18-08-2023**4. Application No.: PBRR-WHEAT-60/22**

Name of the applicant: NARC, PARC, ISLAMABAD

Institute: NARC, PARC, ISLAMABAD

Name of Breeder(s):

- i. Dr. Maqsood Qamar, D-040, Wheat Program, CSI, NARC, Islamabad
- ii. Mrs. Sundas Waqar, D-041, Wheat Program, CSI, NARC, Islamabad
- iii. Dr. Muhammad Shahzad Ahmad, D-140, Wheat Program, CSI, NARC, Islamabad
- iv. Syed Haidar Abbas, D-043, Wheat Program, CSI, NARC, Islamabad
- v. Dr. Zahid Mehmood, D-042, Wheat Program, CSI, NARC, Islamabad
- vi. Dr. Imtiaz Hussain, D-030, Wheat Program, CSI, NARC, Islamabad
- vii. Dr. Sikander Khan Tanveer, D-049, Wheat Program, CSI, NARC, Islamabad

Name of Co-breeder(s):

Application for: New Plant Variety

Denomination of variety: NARC SUPER

Crop: Wheat (*Triticum aestivum* L.)

Type of variety: OPV

Name of initial variety (in case EDV): Not Applicable

Salient features:

CHARACTERISTICS	DESCRIPTION
Maturity duration	Medium
Earlier than	Pakistan-2013
Later than	Fareed-2006

<b>SEEDLING CHARACTERISTICS</b>	
Growth habit	Semi-erect
Coleoptile color	White
Seedling anthocyanin:	Absent
<b>PLANT CHARACTERISTICS</b>	
Plant height	95-98 cm
Taller than	Fareed-06
Shorter than	Pakistan-2013
Color at booting	Green
<b>STEM CHARACTERISTICS</b>	
Stem anthocyanin	Absent
Stem waxy bloom	Strong
Stem wall thickness	Intermediate
Stem stiffness	Intermediate
Stem diameter	5-6 mm
Stem length	34-39.7cm
Productive tillers /m <sup>2</sup>	255-265
Nodes/stem	4
Straw color	Yellow white
Lodging	Absent
<b>FLAG LEAF CHARACTERISTICS</b>	
Flag leaf attitude	Erect
Flag leaf twist	Medium
Flag leaf length	18-22 cm
Flag leaf width	1.7-2 cm
Sheath wax	Weak
Sheath hairiness	Sparse
Auricle hairiness	Absent
Auricle anthocyanin	Absent
<b>EAR CHARACTERISTICS</b>	
Ear emergence	106

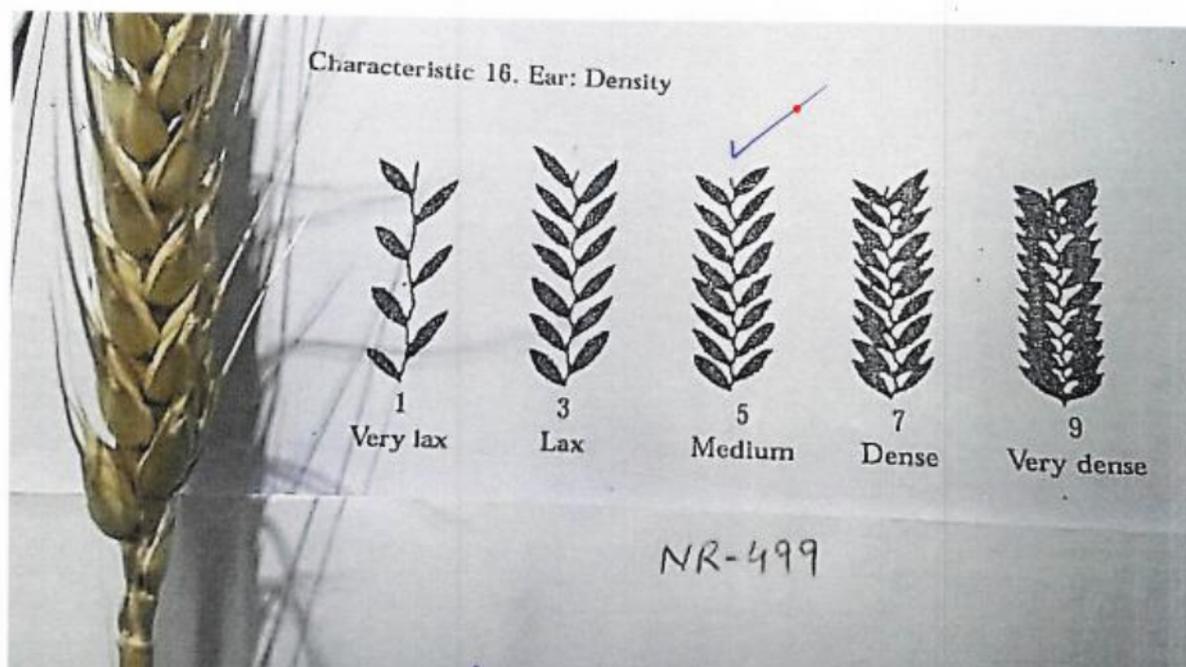
Ear size:	Medium
Ear length	11.5-14 cm
Ear width	1.8-2.5 cm
Wax at anthesis	Medium
Color at maturity	Yellowish white
Ear shape	Parallel
Ear density	Dense
Supernumerary spikelets	Absent
Speltoids	Absent
Shattering	Resistant
Flex/kink/twist	Weak
Ear awnedness	Awned
Awn distribution	Whole
Awn length	Long
Awn color	Yellowish white
Awn habit	Erect
Awn color	Yellow
Awn hair apical	Sparse
Awn hair margin	Medium
Awn length	Nov-13
Awn width	0.3-0.4mm
Number of segments	22-23
<b>GLUME CHARACTERISTICS</b>	
Glume length	9-10 mm
Glume width	5 mm
Glume length size	Medium
Glume width size	Medium
Lower glume shape	Narrow humped
Glume attachment	Medium
Glume pubescence	Absent
Glume surface	Rough

Lower glume shoulder shape	Sloping
Lower glume shoulder width	Very narrow
Beak length	7 mm
Lower beak shape	Long /sharp inflected
Lower glume beak size	Short
Beak spicules	Absent
Keel spicules	1
Glume internal hair	Absent
Glume internal imprint	Small
<b>SEED CHARACTERISTICS</b>	
Seed color	Amber
Seed surface	Opaque
Seed shape	Elliptical
Seed length	7-8 mm
Seed width	3-4 mm
Seed thickness	2-2.8 mm
Seed size	Medium
Seed brush	Medium
Seed germ size	Small
1000 seed weight	42 – 48
Seed groove	Shallow
Seeds/ear	65-75
Seed hardness	Hard
Protein	13-13.7 %
Chapati quality	Good
Bread quality	Good
Yield	6900kg/ ha
<b>ENVIRONMENTAL STABILITY</b>	
Flowering response to season	Stable
Drought tolerance	Medium
Tolerance to salinity	Medium

Cold tolerance	Medium
Heat tolerance	Medium
<b>RESISTANCE TO DISEASES</b>	
Stem rust (black): ( <i>Puccinia graminis</i> )	Moderately Resistant
Leaf rust (brown): ( <i>Puccinia recondita</i> )	Moderately Resistant
Stripe rust (yellow): ( <i>Puccinia striiformis</i> )	Moderately Resistant
Loose smut	Moderately resistant
<b>DISTINGUISHING CHARACTERISTICS</b>	Yellowish white color at maturity, parallel ear shape, narrow humped lower glume and long /sharp inflected lower glume beak shape

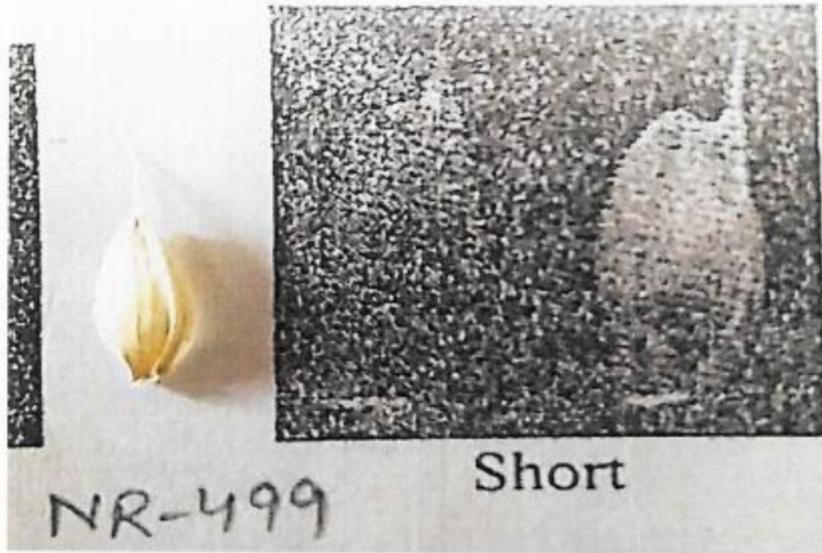
Opposition can be filed up to: 18-08-2023.

## EAR DENSITY



**BEAK SIZE**

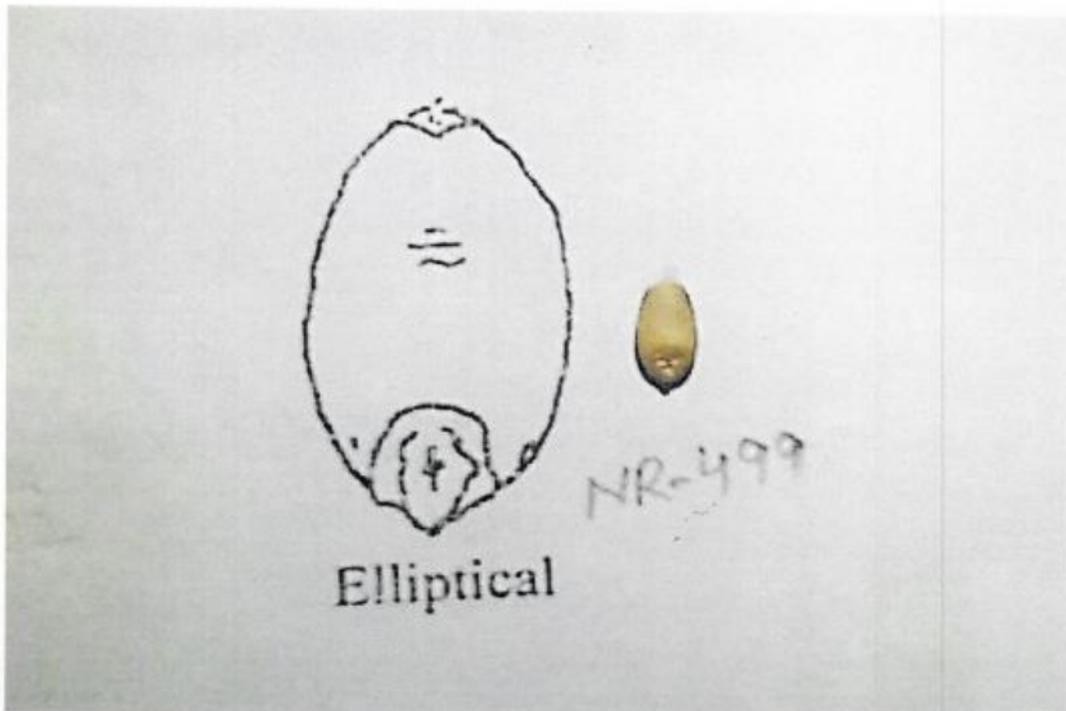
LOWER GLUME BEAK SIZE



NR-499

Short

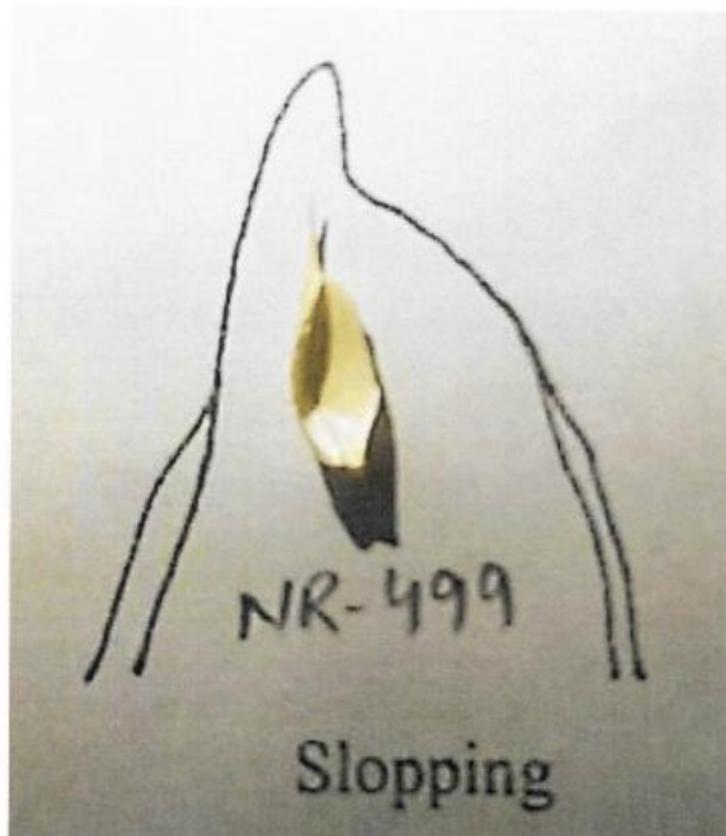
**SEED SHAPE**



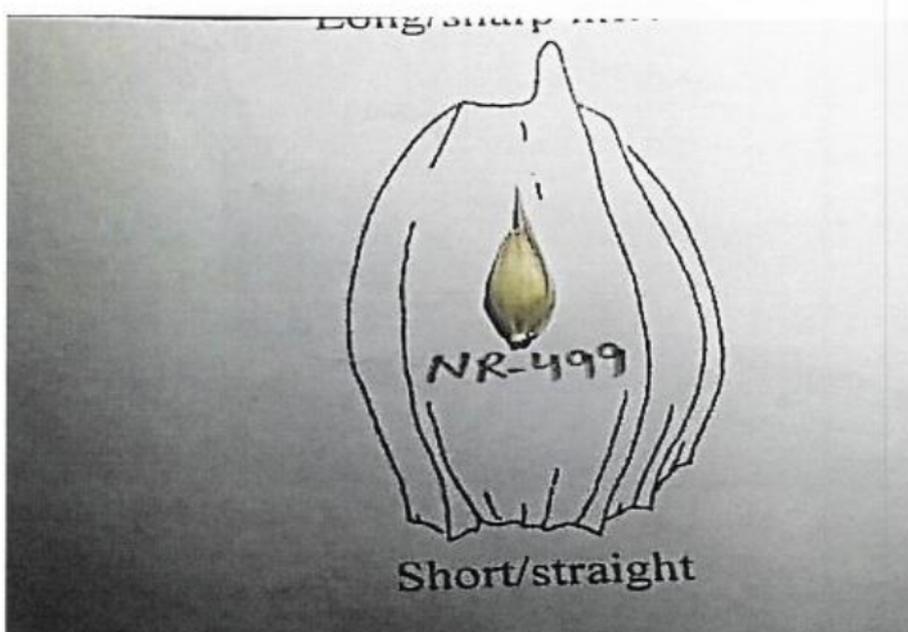
Elliptical

NR-499

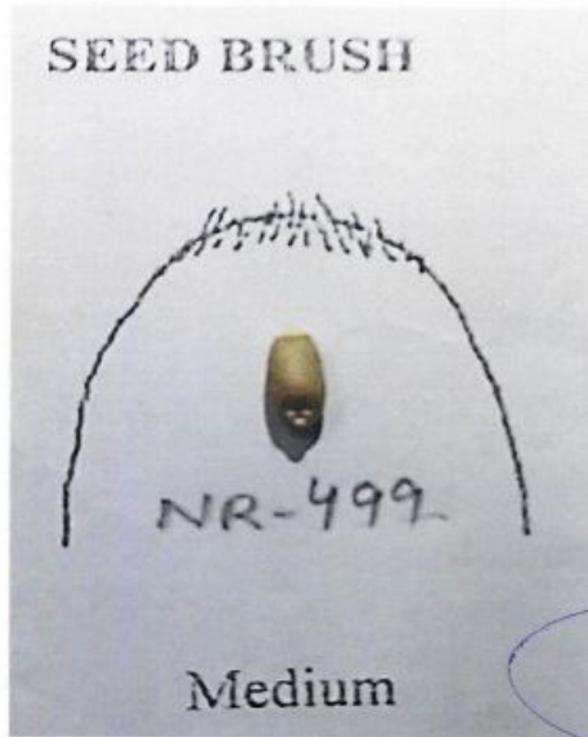
## SHOULDER SHAPE



## BEAK SHAPE



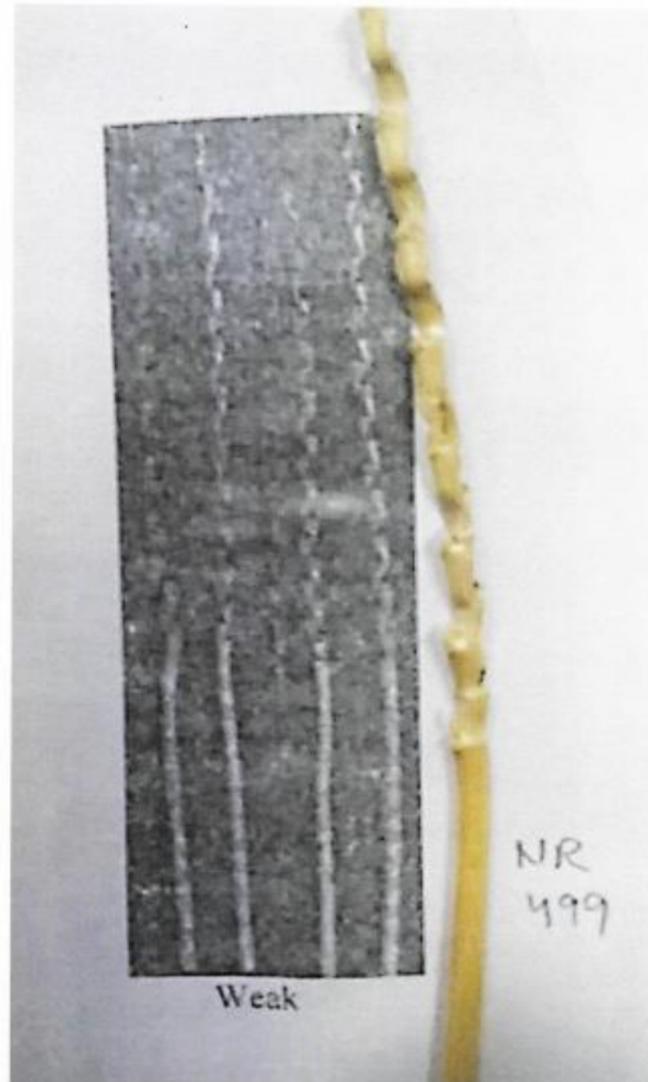
## SEED BRUSH



## EAR SHAPE



**EAR KINK/TWIST**



## 5. Application No.: PBRR-MAIZE-72/22

Name of the applicant: University of Agriculture, Faisalabad

Institute: University of Agriculture, Faisalabad

Name of Breeder(s):

- i. Dr. Muhammad Aslam, Associate Professor, Plant Breeding and Genetics, University of Agriculture, Faisalabad
- ii. Dr. Muhammad Amir Maqbool, FSC&RD, Islamabad

Name of Co-breeder(s):

Application for: New Plant Variety

Denomination of variety: PB-ProA-2017

Crop: Maize (*Zea mays* L.)

Type of the variety: Hybrid

Name of initial variety  
(in case EDV): Not Applicable

Salient features:

CHARACTERISTICS	DESCRIPTION
Maturity duration	Medium
Sowing time	Spring
<b>SEEDLING CHARACTERISTICS</b>	
Seedling length	8 to 10 cm
Coleoptile anthocyanin	Strong
First leaf color	Green
First leaf tip	Pointed
First leaf length	6 mm
First leaf width	1.5 mm
<b>PLANT CHARACTERISTICS FOR HYBRID AND OPEN POLLINATED VARIETIES ONLY</b>	
Plant length up to flag leaf	Medium (120-180)
<b>STEM CHARACTERISTICS</b>	
Stem length	173-175 cm

Internodal length	11 cm
Internodal diameter	2.1-2.4 cm
Mid node anthocyanin	Present (Strong)
Stem tillering	Absent
Stem anthocyanin coloration of brace roots	Present
<b>LEAF CHARACTERISTICS</b>	
Leaf angle between blade and stem	Small (<45)
Leaf attitude of blade	Drooping
Leaf width of blade	Medium (8-9)
<b>TASSEL CHARACTERISTICS</b>	
50% Tassel emergence	Medium (57-65 days Spring, 48-55 days Kharif)
Anthocyanin coloration at the base of glume	Present
Anthocyanin coloration of glume excluding base	Present
Angle between main axis and lateral branches	Wide
Anthocyanin coloration of anthers	Present
Density of spikelets	Medium
Tassel angle between main axis and lateral branches	Narrow (<45)
Tassel length	36-38 cm
Tassel stalk length	14-16 cm
Exsertion above flag leaf	2 to 50 cm
No. Of lateral branches	32
Lateral branches density	Semi dense
<b>FLOWER CHARACTERISTICS</b>	
Anther fertility	Normal
Pollen shading	Heavy
Anther color	Purple
Pollen color	Yellow
Glume color	Purple
<b>EAR CHARACTERISTICS</b>	
50% silk emergence	59-67 days

Silk color	Yellow
Insertion height	83-90 cm
Peduncle length	2-4 cm
Ear leafy extensions	Absent
Ear husk length	Medium
No. of husk blades	9-10
Ear shape	Conico-cylindrical
Ear length	17.8-21.5 cm
Ear diameter	4.3-4.6 cm
Seed rows/ear	14
Seed/row	38
Seed row arrangement	Straight
No. Of ears/plant	1
Ear weight	200-210 g
Cob color	White
<b>SEED CHARACTERISTICS</b>	
Seed color	Yellow
Seed tip color	Yellowish
Color of sides	Slight Yellow
Seed shape	Indented
Seed length	10 mm
Seed width	8 mm
Seed thickness	3 mm
Seed type	Flint
Seed wax	Absent
Seed size	Medium
Seed weight/ear	150 g
1000 Seed weight	350 g
Yield	11 MT/ha
Seed sweetness	Present
Seed waxiness	Absent

Seed opaqueness	Absent
<b>ENVIRONMENTAL ADAPTABILITY</b>	
Drought tolerance	Medium
Tolerance to acid soils	Medium
Cold Tolerance	Medium
Tolerance to Salinity	Medium
Heat Tolerance	Medium
<b>RESISTANCE</b>	
Insects	Resistant
<i>Fusarium</i> spp.	Resistant
<b>DISTINGUISHING CHARACTERISTICS</b>	Pro-vitamin A bio-fortified, Good Shelling percentage, High Yielding Three-way Cross, Intermediate Maturity

Opposition can be filed up to: 18-08-2023

#### 6. Application No.: PBRR-MAIZE-74/22

Name of the applicant: Shafiq Ur Rehman

Institute: Kissan seed corporation

Name of Breeder(s):

Name of Co-breeder(s):

Application for: New Plant Variety

Denomination of variety: SB-319

Crop: Maize (*Zea mays*)

Type of the variety: Hybrid

Name of initial variety  
(in case EDV): Not Applicable

Salient features:

CHARACTERISTICS	DESCRIPTION
Maturity duration	Medium
Sowing time	February-March/July-August
<b>SEEDLING CHARACTERISTICS</b>	

Seedling length	3.4 - 3.6 cm
Coleoptile's anthocyanin	Medium
First leaf color	Dark Green
First leaf tip	Round
First leaf length	5.2 - 5.3 mm
First leaf width	1.5 - 1.6 mm
<b>PLANT CHARACTERISTICS FOR HYBRID AND OPEN POLLINATED VARIETIES ONLY</b>	
Plant length up to flag leaf	Long (>180 cm)
<b>STEM CHARACTERISTICS</b>	
Stem length	242 – 246 cm
Taller than	CS-200
Internodal length	15.5-16 cm
Internodal diameter	1.6-1.7 cm
Mid node anthocyanin	Absent
Stem tillering	Absent
Stem anthocyanin coloration of brace roots	Present
<b>LEAF CHARACTERISTICS</b>	
Leaf angle between blade and stem	Wide (>45)
Leaf attitude of blade	Semi Erect
Leaf width of blade	Medium (8-9 cm)
<b>TASSEL CHARACTERISTICS</b>	
50% Tassel emergence	Late (55-60 days)
Anthocyanin coloration at the base of glume	Absent
Anthocyanin coloration of glume excluding base	Absent
Angle between main axis and lateral branches	Wide
Attitude of lateral branches	Semi Erect
Anthocyanin coloration of anthers	Absent
Density of spikelets	Dense
Tassel angle between main axis and lateral branches	Wide (>45)
Tassel length	36-37 cm

Tassel stalk length	8 to 9 cm
Exsertion above flag leaf	44-46 cm
No. Of lateral branches	12 to 14
Lateral branches density	Dense
<b>FLOWER CHARACTERISTICS</b>	
Anther fertility	Normal
Pollen shading	Heavy
Anther color	Yellow
Pollen color	Yellow
Glume color	Green
<b>EAR CHARACTERISTICS</b>	
50% silk emergence	59-63 days
Silk color	Green
Insertion height (cm)	94-96 cm
Peduncle length (cm)	8.0-8.5 cm
Ear leafy extensions	Present, Short, Rare
Ear husk length	Medium
No. of husk blades	9-10
Ear shape	Slightly Conical
Ear length	19.5 cm
Ear diameter	4.6 cm
Seed rows/ear	14-16
Seed/row	40-43
Seed row arrangement	Slightly Curve
No. of ears/plant	1 to 2
Ear weight	191 g
Cob color	White
<b>SEED CHARACTERISTICS</b>	
Seed color	White
Seed tip color	White
Color of sides	White

Seed shape	Indented
Seed length	11.8 mm
Seed width	9.3 mm
Seed thickness	5 mm
Seed type	Medium
Seed wax	Absent
Seed size	Bold
Seed weight/ear	166 g
1000 Seed weight	318 g
Grain. Cob ratio	87%
Yield	10.2 MT/ha
Seed sweetness	Absent
Seed waxiness	Absent
Seed opaqueness	Absent
<b>ENVIRONMENTAL ADAPTABILITY</b>	
Flowering Response to seasons	Variable
Drought tolerance	Medium
Tolerance to acid soils	Least tolerant
Cold tolerance	Least tolerant
Heat tolerance	Most tolerant
<b>RESISTANCE TO INSECTS/PESTS</b>	
<i>Helminthosporium</i> spp.	Variable
<i>Fusarium</i> spp.	Medium
Streak virus	Least tolerant
<b>DISTINGUISHING CHARACTERISTICS</b>	It is a tall hybrid with semi erect, broad and long (more than normal as to other hybrids) a bit curved leaves with bold cobs at the middle of the plant, the husk cover becomes light purplish at the maturity which clearly differentiate it from other hybrids. Middle leaves above the cobs are long, semi erect & over lapping.

Opposition can be filed up to: 18-08-2023

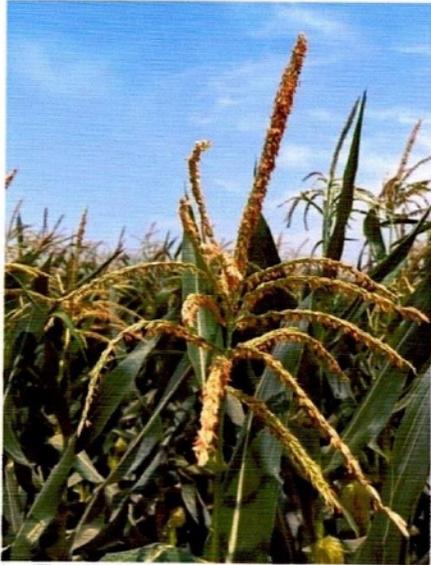
## Hybrid SB-319



## Hybrid SB-319



## Hybrid SB-319



## Hybrid SB-319



## 7. Application No.: PBRR-MAIZE-78/23

Name of the applicant: Syngenta Crop Protection AG

Institute: Syngenta Crop Protection AG

Name of Breeder(s):

Thana Amornchaipiriyakul, Syngenta Crop Protection AG 25<sup>th</sup>  
Floor, Tower A, CW Tower, 0 Ratchadapisek Road, Huai  
Khwang District, Bangkok Name of Co-breeder(s):

Name of Co-breeder(s):

Application for: New Plant Variety

Denomination of variety: NK-7468

Crop: Maize (*Zea mays* L.)

Type of the variety: Hybrid

Name of initial variety  
(in case EDV): Not Applicable

Salient features:

<b>CHARACTERISTICS</b>	<b>DESCRIPTION</b>
Days to Maturity	105-110 days
Maturity duration	Medium
Suitable season	Autumn
<b>SEEDLING CHARACTERISTICS</b>	
Coleoptile anthocyanin	Strong
First leaf color	Green
First leaf tip	Round
<b>STEM CHARACTERISTICS</b>	
Stem length	220 cm
Stem tillering	Absent
Root anthocyanin	Medium
Lodging	Low
<b>LEAF CHARACTERISTICS</b>	

Leaf color	Green
Mid leaves attitude	Semi-erect
Leaf sheath anthocyanin	Absent
Leaf Margin waves	Few
Leaf senescence	Medium
<b>TASSEL CHARACTERISTICS</b>	
Tassel length	40.7 cm
Tassel stalk length	37.27 cm
Exsertion above flag leaf	3.43 cm
Lateral branches density	Intermediate
Lateral branches attitude	Erect
Anther fertility	Normal
Pollen shading	Heavy
Glume color	Yellow
<b>EAR CHARACTERISTICS</b>	
50% silk emergence	62 days
Silk color	Pink
Insertion height	3.4 cm
Peduncle length	14 cm
Ear leafy extensions	Absent
Ear husk length	Medium
Ear length	15 cm
Seed row attitude	Straight
No. of ears/plant	1-2
Cob color	White
<b>SEED CHARACTERISTICS</b>	
Seed color	Orange
Seed tip color	Yellow
Color of sides	Orange
Seed size	Medium
Seed type	Intermediate

Yield	11-12 MT/ha
Seed waxiness	Absent
<b>LODGING</b>	
Lodging	Low
<b>RESISTANCE TO INSECTS/PESTS</b>	
<i>Helminthosporium</i> spp.	MS
Insects	MS

Opposition can be filed up to: 18-08-23

## NEWS AND EVENTS

### FREE RICE SEED

The Balochistan government plans to provide free rice seeds and farming equipment to farmers in four districts, funded by a \$5 million grant from the Asian Development Bank. Umaid Ali Khokhar, the Secretary of the agriculture department, emphasized the department's dedication to advancing the agricultural sector and supporting farmers. Last year, the distribution of wheat seeds was initiated to assist farmers following substantial damage to agriculture caused by monsoon rains. The wheat seed was distributed fairly among farmers, leading to unprecedented wheat yields in Balochistan. In aftermath of the 2022 floods, the Asian Development Bank also announced a \$15 million loan for the province.



### PAK CHINA COOPERATION

The Hainan State Farms Nanfan Industrial Group, a Chinese seed company, and the Pakistani embassy in China have reached an agreement to explore collaboration opportunities in plant varietal breeding. The Pakistani embassy has shown interest in fostering cooperation between agricultural businesses in both nations, while the Chinese seed company will engage with Pakistani seed companies and research institutions to identify possible pathways for the varietal breeding, agricultural R&D, and cultivation. An online forum is set to be organized to promote cooperation and exchanges in the seed sector. Recently, China gathered 124,000 new agricultural germplasm resources during its third census since 2015.

## MAJOR THREAT FOR COTTON PRODUCTION

Water scarcity is major threat to early Kharif season crops like cotton. The country can only store about 13 million acre-feet (MAF) of water while it loses approximately 15-17 MAF. This considerable amount of water loss costs the national economy around USD 1 billion, a figure that could be mitigated through more efficient water use, as per a meeting of the Indus River System Authority (IRSA).



Climate change has disrupted water availability patterns, delaying the flow of water in rivers and impacting crops during the Kharif season. Major Kharif crops include rice, maize, mash pulse, and cotton. According to the IRSA, the provinces of Punjab and Sindh are expected to experience a 27% water deficit this Kharif season, which poses a significant threat to Kharif crops, particularly cotton—a vital crop for Pakistan's agricultural sector.

The production of cotton in Pakistan has declined as farmers have shifted their focus to more profitable alternatives, such as rice, maize, and sugarcane. Over the past four years, cotton yields have dropped from around 12 million bales to just 7 million bales in 2020-21, and approximately 9.45 million bales in 2021-22. Additionally, last year's unprecedented flooding caused extensive damage to the existing cotton crop, leading to a total production of only 4.76 million bales, significantly below the target of 9 million bales.

## GRACE PERIOD FOR LOCAL SEED PRODUCTION

The government of Pakistan has recently approved a five-year grace period for the enforcement of its previously stated rule 4(8)(b)(iv), which requires seed importing companies to produce at least 10 percent of the seed from their imported varieties locally in the first year (initially set to start in 2022), and no less than 50 percent within five years. This rule pertains to the implementation of the amendment made during 2021 in the Seed (Business Regulation) Rules, 2016. The grace period is a result of ongoing advocacy and engagement efforts by the international seed companies, spearheaded by Crop Life Pakistan. It is understood that this grace period is effective retroactively, covering the years from 2022 to 2027.