



## APPLICATIONS UNDER EXAMINATION

CORN

### CORN (*Zea mays*)

**Proposed denomination:** 'PH1D9K'  
**Application number:** 19-9786  
**Application date:** 2019/04/23  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Jennifer Steinke, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America

**Variety used for comparison:** 'PHEJW'

**Summary:** *Primary lateral branches are absent on the tassel of 'PH1D9K' while there are few primary lateral branches on the tassel of 'PHEJW'. Midway through anthesis, the silks of 'PH1D9K' have a medium to strong intensity of anthocyanin colouration whereas those of 'PHEJW' have an absent or very weak intensity of anthocyanin colouration. Including the tassel, the plants of 'PH1D9K' are taller than the plants of 'PHEJW'. The ears of 'PH1D9K' are longer, and including the kernels, have a larger diameter than those of 'PHEJW'. The kernel of 'PH1D9K' is dent-like type while it is flint-like type for 'PHEJW'.*

#### **Description:**

**PLANT:** inbred yellow variety, small ratio for height of upper ear peduncle insertion to plant height, anthesis and silk emergence occur late to very late in the season

**STEM:** absent or very slight degree of zig-zag, strong to very strong intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** intermediate undulation of margin, very small to small angle with stem, straight

**TASSEL:** primary lateral branches absent, moderately sparse to medium density of spikelets on middle third of main branch

**GLUME:** absent or very weak intensity of anthocyanin colouration throughout

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** absent or very weak to weak intensity of anthocyanin colouration

**EAR:** medium to strong intensity of anthocyanin colouration of silks, short husk (level with tip), conico-cylindrical shape, few to a medium number of rows of grain, absent or very weak intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** present on a low to medium percentage of plants, short

**KERNEL:** dent-like type, yellow on top and dorsal side

**TILLERING:** absent

**Origin and Breeding:** 'PH1D9K' was developed by Pioneer Hi-Bred International, Inc. using the pedigree method of plant breeding. The initial cross was conducted between proprietary inbred lines in 2004, in Miami, Missouri, USA. The F1 generation was planted, self pollinated and the F2 seed bulked in Salinas, Puerto Rico. In 2005, the F2 seed was planted and self pollinated with subsequent F3 ear selection in LaSalle, Colorado, USA. From 2006 to 2009, the the F3 to F7 seed was planted ear to row and self pollinated with subsequent ear selection. In 2009, the F8 seed was planted ear to row, self pollinated and the F9 seed bulked as breeder seed in Algoma, Iowa, USA. 'PH1D9K' was selected based on tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, yield in hybrid combination, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH1D9K' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on 30 measurements per variety. Mean differences were significant at the 5% probability level

based on paired Student's T-tests. Results were supported by the official technical examination report 201200314, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

**Comparison table for 'PH1D9K'**

	'PH1D9K'	'PHEJW'*
<i>Plant height (including tassel) (metres)</i>		
mean	1.95	1.75
std. deviation	0.06	0.07
<i>Ear length (cm)</i>		
mean	17.73	15.35
std. deviation	1.45	1.20
<i>Ear diameter (in middle including kernels) (cm)</i>		
mean	4.23	3.89
std. deviation	0.29	0.26

\*reference variety



Corn: 'PH1D9K' (top) with reference variety 'PHEJW' (bottom)

**Proposed denomination:** 'PH1W4Z'  
**Application number:** 19-9794  
**Application date:** 2019/04/23  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Gary Weber, Pioneer Hi-Bred International, Inc., Sioux Falls, South Dakota, United States of America

**Variety used for comparison:** 'PHWMK'

**Summary:** *The angle between the main axis and lateral branches on the tassel of 'PH1W4Z' is very small to small while it is small to medium for 'PHWMK'. The second lateral branch from the bottom of the tassel of 'PH1W4Z' is straight, while it is slightly recurved for 'PHWMK'. Midway through anthesis, the silks of 'PH1W4Z' have a weak intensity of anthocyanin colouration while those of 'PHWMK' have a medium to strong intensity of anthocyanin colouration. From the beginning of anthesis to just before milk development, the brace roots of 'PH1W4Z' have a medium to strong intensity of anthocyanin colouration while those of 'PHWMK' have a very strong intensity of anthocyanin colouration. The main axis of the tassel above the highest lateral branch is very short for 'PH1W4Z' while it is medium in length for 'PHWMK'. Including the tassel, the plants of 'PH1W4Z' are taller than the plants of 'PHWMK'. The leaf blade just above the upper ear of 'PH1W4Z' is narrower than that of 'PHWMK'. Including the kernels, the ears of 'PH1W4Z' have a larger diameter than those of 'PHWMK'. The primary ear of 'PH1W4Z' is located higher on the stem than that of 'PHWMK'.*

**Description:**

**PLANT:** inbred yellow variety, small to medium ratio for height of insertion of peduncle of upper ear to plant height, anthesis and silk emergence occur mid-season to late in the season

**STEM:** absent or very slight degree of zig-zag, medium to strong intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** strong degree of undulation of margin, small angle with stem, straight to slightly recurved

**TASSEL:** medium number of primary lateral branches, medium density of spikelets on middle third of main branch, main axis above lowest lateral branch very short, main axis above highest lateral branch very short

**LATERAL BRANCHES (SECOND BRANCH FROM BOTTOM OF TASSEL):** straight, very small to small angle with main axis, short

**GLUME:** absent or very weak intensity of anthocyanin colouration throughout

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** medium intensity of anthocyanin colouration

**EAR:** weak intensity of anthocyanin colouration of silks, short husk (level with tip), conico-cylindrical shape, few to medium number of rows of grain, absent or very weak intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** present on a very low percentage of plants

**KERNEL:** intermediate between flint-like and dent-like type, yellow on top and dorsal side

**TILLERING:** present on a low to medium percentage of plants

**Origin and Breeding:** 'PH1W4Z' was developed by Pioneer Hi-Bred International, Inc., using a double haploid plant breeding method. In 2005, the initial cross was conducted between proprietary inbred lines in Eau Claire, Wisconsin, USA. The F1 seed was planted, induced to produce haploid seed and the haploid seed bulked in Santiago, Chile. In 2006, the H1 seed was planted in Kekaha, Kauai, Hawaii, USA and induced to create a double haploid. In 2007, the D1 seed was planted, self pollinated with subsequent ear selection in Willmar, Minnesota, USA. In 2009, the D2 seed was planted ear to row, self pollinated and the D3 seed bulked. In 2009 and 2010, the D3 to D5 lines were planted ear to row and self-pollinated with subsequent ear selection. In 2011, the D6 seed was planted, self pollinated and the D7 seed bulked as breeder seed in Brookings, South Dakota, USA. 'PH1W4Z' was selected based on yield in hybrid combination, tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH1W4Z' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured

characteristics were based on 30 measurements per variety. Mean differences were significant at the 5% probability level based on paired Student’s T-tests. Results were supported by the official technical examination report 201400048, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

**Comparison table for ‘PH1W4Z’**

	‘PH1W4Z’	‘PHWMK’*
<i>Plant height (including tassel) (metres)</i>		
mean	1.93	1.78
std. deviation	0.05	0.12
<i>Leaf blade width (leaf just above upper ear) (cm)</i>		
mean	8.26	8.98
std. deviation	0.30	0.49
<i>Ear diameter (in middle including kernels) (cm)</i>		
mean	4.30	4.12
std. deviation	0.13	0.24
<i>Primary ear, height from ground (metres)</i>		
mean	0.89	0.74
std. deviation	0.07	0.08

\*reference variety



Corn: ‘PH1W4Z’ (top) with reference variety ‘PHWMK’ (bottom)

**Proposed denomination:** 'PH1W6W'  
**Application number:** 19-9795  
**Application date:** 2019/04/23  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Tariq Mahmood, Pioneer Hi-Bred Production Company, Winnipeg, Manitoba

**Variety used for comparison:** 'PHHEN'

**Summary:** *The angle between the main axis and lateral branches on the tassel of 'PH1W6W' is small to medium while the angle is very small for 'PHHEN'. Including the tassel, the plants of 'PH1W6W' are shorter than the plants of 'PHHEN'. The leaf blade just above the upper ear of 'PH1W6W' is wider than that of 'PHHEN'. The ears of 'PH1W6W' are shorter, and including the kernels, have a larger diameter than those of 'PHHEN'. The primary ear of 'PH1W6W' is located lower on the stem than that of 'PHHEN'.*

**Description:**

**PLANT:** inbred yellow variety, small to medium ratio for height of insertion of peduncle of upper ear to plant height, anthesis and silk emergence occur early in the season

**STEM:** absent or very slight degree of zig-zag, medium to strong intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** intermediate degree of undulation of margin, small angle with stem, straight to slightly recurved

**TASSEL:** many primary lateral branches, medium to moderately dense spikelets in middle third of main branch, main axis above lowest lateral branch short to medium in length, main axis above highest lateral branch very short

**LATERAL BRANCHES (SECOND BRANCH FROM BOTTOM OF TASSEL):** straight, small to medium angle with main axis, very short to short

**GLUME:** absent or very weak intensity of anthocyanin colouration at base, weak to medium intensity of anthocyanin colouration at middle and apex

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** medium intensity of anthocyanin colouration

**EAR:** absent or very weak intensity of anthocyanin colouration of silks at ripening of the grain, very short to short husk (below level of tip), conico-cylindrical shape, medium to many rows of grain, strong intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** present on a medium to high percentage of plants, long

**KERNEL:** dent type, yellow on top and dorsal side

**TILLERING:** present on a very low to low percentage of plants

**Origin and Breeding:** 'PH1W6W' was developed by Pioneer Hi-Bred International, Inc. using the pedigree method of plant breeding. In 2006, the initial cross was conducted between proprietary inbred lines in Salinas, Puerto Rico. In 2007 the F1 generation was planted, self pollinated and harvested in bulk in Willmar, Minnesota, USA. Respectively, in 2007 and 2008, the F2 population and F3 families were self pollinated with subsequent ear selection in Moorhead, Minnesota, USA. From 2009 to 2012, the F4 to F10 lines were self pollinated with subsequent ear selection. In 2012, the F11 line was self pollinated and the F12 seed bulked as breeder seed in Moorhead, Minnesota. 'PH1W6W' was selected based on tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, yield in hybrid combination, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH1W6W' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on 30 measurements per variety. Mean differences were significant at the 5% probability level based on paired Student's T-tests. Results were supported by the official technical examination report 201500232, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

**Comparison table for 'PH1W6W'**

	'PH1W6W'	'PHHEN'*
<i>Plant height (including tassel) (metres)</i>		
mean	1.62	1.81
std. deviation	0.10	0.07
<i>Leaf blade width (just above upper ear) (cm)</i>		
mean	9.53	7.87
std. deviation	0.72	0.50
<i>Ear length (cm)</i>		
mean	13.72	15.45
std. deviation	1.20	1.80
<i>Ear diameter (in middle including kernels) (cm)</i>		
mean	4.29	4.08
std. deviation	0.20	0.16
<i>Primary ear, height from ground (metres)</i>		
mean	0.76	0.93
std. deviation	0.11	0.08

\*reference variety



Corn: 'PH1W6W' (top) with reference variety 'PHHEN' (bottom)

**Proposed denomination:** 'PH25VV'  
**Application number:** 19-9796  
**Application date:** 2019/04/23  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Steve Szalma, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America

**Variety used for comparison:** 'PH0AV'

**Summary:** *The tassel of 'PH25VV' has few primary lateral branches while the tassel of 'PH0AV' has a medium number of primary lateral branches. From the beginning of anthesis to just before milk development, the brace roots of 'PH25VV' have a medium to strong intensity of anthocyanin colouration while those of 'PH0AV' have an absent or very weak intensity of anthocyanin colouration. The main axis of the tassel above the highest lateral branch is medium in length for 'PH25VV' while it is very short to short for 'PH0AV'. Including the tassel, the plants of 'PH25VV' are taller than the plants of 'PH0AV'. The leaf blade just above the upper ear of 'PH25VV' is wider than that of 'PH0AV'. The ears of 'PH25VV' are longer, and including the kernels, have a larger diameter than those of 'PH0AV'.*

**Description:**

**PLANT:** inbred yellow variety, small to medium ratio for height of insertion of peduncle of upper ear to plant height, anthesis and silk emergence occur mid-season

**STEM:** absent or very slight degree of zig-zag, medium to strong intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** strong degree of undulation of margin, small angle with stem, straight

**TASSEL:** few primary lateral branches, medium density of spikelets on middle third of main branch, main axis above lowest lateral branch medium to long, main axis above highest lateral branch medium in length

**LATERAL BRANCHES (SECOND BRANCH FROM BOTTOM OF TASSEL):** straight, small angle with main axis, short to medium in length

**GLUME:** absent or very weak intensity of anthocyanin colouration at base, absent or very weak to weak intensity of anthocyanin colouration at middle and apex

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** strong to very strong intensity of anthocyanin colouration

**EAR:** weak to medium intensity of anthocyanin colouration of silks, short to medium husk (level with to extending one quarter the length of ear above tip), cylindrical shape, few to medium number of rows of grain, very strong intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** absent

**KERNEL:** dent type, yellow on top and dorsal side

**TILLERING:** absent

**Origin and Breeding:** 'PH25VV' was developed by Pioneer Hi-Bred International, Inc. using a double haploid plant breeding method. In 2006, the initial cross was conducted between proprietary inbred lines in Eau Claire, Wisconsin, USA. In 2007, the F1 underwent a haploidization process in Kekaha, Kauai, Hawaii, USA with the resulting haploid doubled and self pollinated with subsequent ear selection in Arica, Chile. In 2008, the D1 line was planted, self pollinated and harvested in bulk in Willmar, Minnesota. From 2010 to 2012, the D2 to D6 lines were self-pollinated with subsequent ear selection. In 2013, the D7 line was self pollinated and the D8 seed bulked as breeder seed in Willmar, Minnesota. 'PH25VV' was selected based on yield in hybrid combination, tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH25VV' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on a minimum of 26 measurements per variety. Mean differences were significant at the 5% probability level based on Student's T-tests. Results were supported by the official technical examination report 201700287, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

**Comparison table for 'PH25VV'**

	'PH25VV'	PH0AV*
<i>Plant height (including tassel) (metres)</i>		
mean	1.79	1.78
std. deviation	0.09	0.08
<i>Leaf blade width (just above upper ear) (cm)</i>		
mean	9.39	7.97
std. deviation	0.66	0.49
<i>Ear length (cm)</i>		
mean	14.99	12.75
std. deviation	1.27	0.94
<i>Ear diameter (in middle including kernels) (cm)</i>		
mean	4.26	3.87
std. deviation	0.21	0.33

\*reference variety



Corn: 'PH25VV' (top) with reference variety 'PH0AV' (bottom)



**Proposed denomination:** 'PH26NC'  
**Application number:** 19-9797  
**Application date:** 2019/04/23  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Tariq Mahmood, Pioneer Hi-Bred Production Company, Winnipeg, Manitoba

**Variety used for comparison:** 'PH4V6'

**Summary:** *For the plants of 'PH26NC', anthesis occurs very early in the season while it occurs early in the season for the plants of 'PH4V6'. From the beginning of anthesis to just before milk development, the brace roots of 'PH26NC' have an absent or very weak intensity of anthocyanin colouration while those of 'PH4V6' have a strong to very strong intensity of anthocyanin colouration. The main axis of the tassel above the highest lateral branch for 'PH26NC' is short to medium in length while it is very short to short for 'PH4V6'. Including the tassel, the plants of 'PH26NC' are shorter than the plants of 'PH4V6'. The leaf blade just above the upper ear of 'PH26NC' is wider than that of 'PH4V6'. Including the kernels, the ears of 'PH26NC' have a smaller diameter than those of 'PH4V6'. The kernel of 'PH26NC' is yellow on the dorsal side while it is yellow orange for 'PH4V6'. On the middle third of the upper most cob, the glumes of 'PH26NC' have a medium intensity of anthocyanin colouration while the glumes of 'PH4V6' have a strong intensity of anthocyanin colouration. The primary ear of 'PH26NC' is located lower on the stem than that of 'PH4V6'.*

**Description:**

**PLANT:** inbred yellow variety, very small ratio for height of insertion of peduncle of upper ear to plant height, anthesis and silk emergence occur very early in the season

**STEM:** medium degree of zig-zag, absent or very weak intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** strong degree of undulation of margin, small angle with stem, slightly recurved

**TASSEL:** medium number of primary lateral branches, medium density of spikelets on middle third of main branch, main axis above lowest lateral branch medium to long, main axis above highest lateral branch short to medium in length

**LATERAL BRANCHES (SECOND BRANCH FROM BOTTOM OF TASSEL):** straight, small angle with main axis, medium to long

**GLUME:** absent or very weak intensity of anthocyanin colouration throughout

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** weak to medium intensity of anthocyanin colouration

**EAR:** absent or very weak intensity of anthocyanin colouration of silks, very short to short husk (below tip to level with tip), conico-cylindrical shape, few rows of grain, medium intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** present on a medium to high percentage of plants, long

**KERNEL:** intermediate between flint-like and dent-like type, yellow on top and dorsal side

**TILLERING:** present on a very low percentage of plants

**Origin and Breeding:** 'PH26NC' was developed by Pioneer Hi-Bred International, Inc. using the pedigree method of plant breeding. In 2006, the initial cross was conducted between proprietary inbred lines in Pandorf, Austria. The F1 generation was planted, self pollinated and harvested in bulk in Buin, Chile. Respectively, in 2007 and 2008, the F2 population and F3 families were self pollinated with subsequent ear selection in Moorhead, Minnesota, USA. From 2009 to 2012, F4 to F9 lines were self pollinated with subsequent ear selections. In 2012, the F10 line was self pollinated and the F11 seed bulked as breeder seed in Buin. 'PH26NC' was selected based on tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, yield in hybrid combination, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH26NC' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on 30 measurements per variety. Mean differences were significant at the 5% probability level based on paired Student's T-tests. Results were supported by the official technical examination report 201500260, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

**Comparison table for 'PH26NC'**

	'PH26NC'	PH4V6*
<i>Plant height (including tassel) (metres)</i>		
mean	1.40	1.72
std. deviation	0.08	0.10
<i>Leaf blade (just above upper ear) (cm)</i>		
mean	8.05	7.53
std. deviation	0.37	0.38
<i>Ear diameter (in middle including kernels) (cm)</i>		
mean	3.67	3.80
std. deviation	0.25	0.14
<i>Primary ear, height from ground (metres)</i>		
mean	0.55	0.85
std. deviation	0.05	0.06

\*reference variety



Corn: 'PH26NC' (top) with reference variety 'PH4V6' (bottom)

**Proposed denomination:** 'PH2DNP'  
**Application number:** 19-9798  
**Application date:** 2019/04/23  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Thomas Barker, Pioneer Hi-Bred International, Inc., Drury, Missouri, United States of America  
Brandon Wardyn, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America

**Variety used for comparison:** 'PH17RD'

**Summary:** *Midway through anthesis, the silks on the ear of 'PH2DNP' have a weak to medium intensity of anthocyanin colouration while those of 'PH17RD' have a very weak to weak intensity of anthocyanin colouration. Including the tassel, the plants of 'PH2DNP' are taller than the plants of 'PH17RD'. The leaf blade just above the upper ear of 'PH2DNP' is wider than that of 'PH17RD'. The ear of 'PH2DNP' is shorter than the ear of 'PH17RD'. The ear of 'PH2DNP' has medium to many rows of dent-like type grain while the ear of 'PH17RD' has a few rows of flint-like type grain. The primary ear of 'PH2DNP' is located higher on the stem than that of 'PH17RD'.*

**Description:**

**PLANT:** inbred yellow variety, small to medium ratio for height of insertion of peduncle of upper ear to plant height, anthesis and silk emergence occur late to very late in the season

**STEM:** absent or very slight degree of zig-zag, medium intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** absent or very weak degree of undulation of margin, very small to small angle with stem, straight

**TASSEL:** absent or very few primary lateral branches, moderately sparse to medium density of spikelets on middle third of main branch

**GLUME:** absent or very weak intensity of anthocyanin colouration throughout

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** weak intensity of anthocyanin colouration

**EAR:** weak to medium intensity of anthocyanin colouration of silks, long husk (extends one third the length of the ear above tip), conico-cylindrical shape, medium to many rows of grain, absent or very weak intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** present on a low percentage of plants

**KERNEL:** dent-like type, yellow on top and dorsal side

**TILLERING:** absent

**Origin and Breeding:** 'PH2DNP' was developed by Pioneer Hi-Bred International, Inc. using a double haploid plant breeding method. In 2007, the initial cross was conducted between proprietary inbred lines in Puerto Vallarta, Mexico. The F1 generation was planted, self pollinated and harvested in bulk in 2007 in York, Nebraska and the haploidization process conducted on the resulting F2 progeny in 2008 in Oahu, Hawaii, USA. The haploids were doubled and self pollinated with subsequent ear selection. In 2008, the D1 line was self pollinated and harvested in bulk in Puerto Vallarta. In 2009, the D2 line was self pollinated with subsequent ear selection in York, Nebraska. In 2010, the D3 line was self pollinated and the D4 seed bulked as breeder seed in Puerto Vallarta, Mexico. 'PH2DNP' was selected based on yield in hybrid combination, tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH2DNP' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on a minimum of 29 measurements per variety. Mean differences were significant at the 5% probability level based on Student's T-tests. Results were supported by the official technical examination report 201700139, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

## Comparison table for 'PH2DNP'

	'PH2DNP'	'PH17RD'*
<i>Plant height (including tassel) (metres)</i>		
mean	1.84	1.77
std. deviation	0.10	0.08
<i>Leaf blade width (leaf just above upper ear) (cm)</i>		
mean	11.03	9.87
std. deviation	0.74	0.48
<i>Ear length (cm)</i>		
mean	14.22	16.68
std. deviation	2.08	0.78
<i>Primary ear, height from ground (metres)</i>		
mean	0.87	0.78
std. deviation	0.10	0.10

\*reference variety



Corn: 'PH2DNP' (top) with reference variety 'PH17RD' (bottom)

**Proposed denomination:** 'PH2DPY'  
**Application number:** 19-9799  
**Application date:** 2019/04/23  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Eric Riedeman, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America

**Variety used for comparison:** 'PHVRZ'

**Summary:** *For the plants of 'PH2DPY', anthesis and silk emergence occur mid to late in the season while anthesis and silk emergence occur late to very late in the season for the plants of 'PHVRZ'. The angle between the main axis and second lateral branch from the bottom of the tassel of 'PH2DPY' is small while the angle is very small for 'PHVRZ'. The second lateral branch from the bottom of the tassel of 'PH2DPY' is straight while that of 'PHVRZ' is slightly recurved. From the beginning of anthesis to just before milk development, the brace roots of 'PH2DPY' have weak to medium intensity of anthocyanin colouration while those of 'PHVRZ' have a strong to very strong intensity of anthocyanin colouration. Including the tassel, the plants of 'PH2DPY' are shorter than the plants of 'PHVRZ'. The ear of 'PH2DPY' is shorter, and including the kernels, has a larger diameter than the ear of 'PHVRZ'. The ear of 'PH2DPY' has medium to many rows of grain while the ear of 'PHVRZ' has few rows of grain. The primary ear of 'PH2DPY' is located higher on the stem than that of 'PHVRZ'.*

**Description:**

**PLANT:** inbred yellow variety, medium ratio for height of insertion of peduncle of upper ear to plant height, anthesis and silk emergence occur mid-season to late in the season

**STEM:** absent or very slight degree of zig-zag, weak to medium intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** intermediate degree of undulation of margin, very small angle with stem, straight

**TASSEL:** medium to many primary lateral branches, medium density of spikelets on middle third of main branch, main axis above lowest lateral branch medium to long, main axis above highest lateral branch very short to short

**LATERAL BRANCHES (SECOND BRANCH FROM BOTTOM OF TASSEL):** straight, small angle with main axis, straight, medium length

**GLUME:** absent or very weak intensity of anthocyanin colouration at base, medium to strong intensity of anthocyanin colouration at middle and apex

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** absent or very weak intensity of anthocyanin colouration

**EAR:** medium intensity of anthocyanin colouration of silks, medium to long husk (extends between one quarter to one third the length of the ear above tip), conico-cylindrical shape, medium to many rows of grain, weak to medium intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** absent

**KERNEL:** dent type, yellow on top and dorsal side

**TILLERING:** absent

**Origin and Breeding:** 'PH2DPY' was developed by Pioneer Hi-Bred International, Inc. using a double haploid plant breeding method. In 2007, the initial cross was conducted between proprietary inbred lines in Miami, Missouri, USA. In 2008, the F1 underwent a haploidization process in Kekaha, Kauai, Hawaii, USA. In 2009, the haploids were doubled and self pollinated with subsequent ear selection in Buin, Chile. In 2009, the D1 line was self pollinated and harvested in bulk in Algona, Iowa. In 2011 and 2012, the D2 and D3 lines were self pollinated with subsequent ear selection in Orange City, Iowa and Puerto Vallarta, Mexico, respectively. In 2012, the D4 line was self pollinated and the D5 seed bulked as breeder seed in Arica, Chile. 'PH2DPY' was selected based on yield in hybrid combination, tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH2DPY' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on 30 measurements per variety. Mean differences were significant at the 5% probability level

based on paired Student’s T-tests. Results were supported by the official technical examination report 201700145, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

**Comparison table for ‘PH2DPY’**

	‘PH2DPY’	‘PHVRZ’*
<i>Plant height (including tassel) (metres)</i>		
mean	1.81	1.97
std. deviation	0.07	0.09
<i>Ear length (cm)</i>		
mean	13.31	15.28
std. deviation	0.95	1.03
<i>Ear diameter (in middle including kernels) (cm)</i>		
mean	4.62	4.19
std. deviation	0.19	0.21
<i>Primary ear, height from ground (metres)</i>		
mean	0.89	0.98
std. deviation	0.05	0.10

\*reference variety



Corn: ‘PH2DPY’ (top) with reference variety ‘PHVRZ’ (bottom)

**Proposed denomination:** 'PH2FDW'  
**Application number:** 19-9800  
**Application date:** 2019/04/23  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Lori Scott, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America

**Variety used for comparison:** 'PH1DBM'

**Summary:** *During anthesis, the angle between the main axis and the second lateral branch from the bottom of the tassel of 'PH2FDW' is large while the angle is small for 'PH1DBM'. From the beginning of anthesis to just before milk development, the brace roots of 'PH2FDW' have a very strong intensity of anthocyanin colouration while those of 'PH1DBM' have an absent or very weak to weak intensity of anthocyanin colouration. Including the tassel, the plants of 'PH2FDW' are shorter than the plants of 'PH1DBM'. Including the kernels, the ear of 'PH2FDW' has a smaller diameter than the ear of 'PH1DBM'. The kernel of 'PH2FDW' is dent-like type while the kernel of 'PH1DBM' is flint-like type. The primary ear of 'PH2FDW' is located lower on the stem than that of 'PH1DBM'.*

**Description:**

**PLANT:** inbred yellow variety, very small ratio for height of insertion of peduncle of upper ear to plant height, anthesis occurs early in the season, silk emergence occurs very early to early in the season

**STEM:** absent or very slight degree of zig-zag, very strong intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** intermediate degree of undulation of margin, very small to small angle with stem, straight to slightly recurved

**TASSEL:** few primary lateral branches, medium density of spikelets on middle third of main branch, main axis above lowest lateral branch medium in length, main axis above highest lateral branch very short to short

**LATERAL BRANCHES (SECOND BRANCH FROM BOTTOM OF TASSEL):** straight to slightly recurved, large angle with main axis, medium in length

**GLUME:** absent or very weak intensity of anthocyanin colouration at base, absent or very weak to weak intensity of anthocyanin colouration at middle and apex

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** absent or very weak intensity of anthocyanin colouration

**EAR:** absent or very weak intensity of anthocyanin colouration of silks, short to medium husk (level with to extending one quarter the length of the ear above tip), cylindrical shape, very few to few rows of grain, strong intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** present on a high percentage of plants, medium to long

**KERNEL:** dent-like type, yellow on top and dorsal side

**TILLERING:** present on a low to medium percentage of plants

**Origin and Breeding:** 'PH2FDW' was developed by Pioneer Hi-Bred International, Inc. using the pedigree method of plant breeding. The initial cross was conducted between proprietary inbred lines in 2008, in Ithaca, Michigan, USA. The F1 generation was planted, self pollinated and the F2 seed bulked in Puerto Vallarta, Mexico. Respectively, in 2009 and 2010, the F2 population and F3 families were self pollinated with subsequent F3 ear selection in Moorhead, Minnesota. From 2011 to 2014, the F4 to F8 lines were self pollinated with subsequent ear selections. In 2014, the F9 line was self pollinated and the F10 seed bulked as breeder seed in Buin, Chile. 'PH2FDW' was selected based on tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, yield in hybrid combination, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH2FDW' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on a minimum of 29 measurements per variety. Mean differences were significant at the 5% probability level based on Student's T-tests. Results were supported by the official technical examination report 201700151, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

**Comparison table for 'PH2FDW'**

	'PH2FDW'	'PH1DBM'*
<i>Plant height (including tassel) (metres)</i>		
mean	1.65	1.85
std. deviation	0.07	0.05
<i>Ear diameter (in middle including kernels) (cm)</i>		
mean	4.04	4.17
std. deviation	0.20	0.12
<i>Primary ear, height from ground (metres)</i>		
mean	0.66	0.80
std. deviation	0.07	0.05

\*reference variety



Corn: 'PH2FDW' (top) with reference variety 'PH1DBM' (bottom)



**Proposed denomination:** 'PH2TB4'  
**Application number:** 19-9801  
**Application date:** 2019/04/23  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Lori Carrigan, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
 Gustavo Garcia, Pioneer Hi-Bred Production Company, Woodstock, Ontario  
 Jianbin Yu, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America

**Variety used for comparison:** 'PH13HK'

**Summary:** *Midway through anthesis, the silks on the ear of 'PH2TB4' have a weak to medium intensity of anthocyanin colouration while those of 'PH13HK' have a strong to very strong intensity of anthocyanin colouration. Including the tassel, the plants of 'PH2TB4' are taller than the plants of 'PH13HK'. The ear of 'PH2TB4' is longer, and including the kernels, has a larger diameter than the ear of 'PH13HK'. The primary ear of 'PH2TB4' is located higher on the stem than that of 'PH13HK'.*

**Description:**

PLANT: inbred yellow variety, small ratio of height of insertion of peduncle of upper ear to plant height, anthesis and silk emergence occur mid-season

STEM: absent or very slight degree of zig-zag, very strong intensity of anthocyanin colouration on brace roots

LEAF BLADE (JUST ABOVE UPPER EAR): intermediate degree of undulation of margin, very small to small angle with stem, straight to slightly recurved

TASSEL: few to a medium number of primary lateral branches, medium density of spikelets on middle third of main branch, main axis above lowest lateral branch medium to long, main axis above highest lateral branch medium in length

LATERAL BRANCHES (SECOND BRANCH FROM BOTTOM OF TASSEL): straight to slightly recurved, small to medium angle with main axis, medium in length

GLUME: absent or very weak intensity of anthocyanin colouration at base, weak to medium intensity of anthocyanin colouration at middle and apex

ANTHER (ON MIDDLE THIRD OF MAIN BRANCH): weak intensity of anthocyanin colouration

EAR: weak to medium intensity of anthocyanin colouration of silks, short to medium husk (level with to extending one quarter the length of the ear above tip), conico-cylindrical shape, few to medium number of rows of grain, absent or very weak intensity of anthocyanin colouration on glumes of cob

EAR WINGS: present on a high percentage of plants, short to medium in length

KERNEL: intermediate between flint-like and dent-like type, yellow on top and dorsal side

TILLERING: present on a very low percentage of plants

**Origin and Breeding:** 'PH2TB4' was developed by Pioneer Hi-Bred International, Inc. using a double haploid plant breeding method. In 2008, the initial cross was conducted between proprietary inbred lines in Woodstock Ontario, Canada. In 2009, the F1 underwent a haploidization process in Willmar, Minnesota, USA. The haploids were doubled and self pollinated with subsequent ear selection in Buin, Chile. In 2011, the D1 and D2 lines were self pollinated and harvested in bulk in Willmar, Minnesota and Puerto Vallarta, Mexico, respectively. In 2012, the D3 line was self pollinated with subsequent ear selection in Willmar, Minnesota. In 2012, the D4 line was self pollinated and the D5 seed bulked as breeder seed in Buin. 'PH2TB4' was selected based on yield in hybrid combination, tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH2TB4' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on 30 measurements per variety. Mean differences were significant at the 5% probability level based on paired Student's T-tests. Results were supported by the official technical examination report 201800249, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

Comparison table for 'PH2TB4'

	'PH2TB4'	PH13HK*
<i>Plant height (including tassel) (metres)</i>		
mean	1.87	1.71
std. deviation	0.07	0.11
<i>Ear length (cm)</i>		
mean	15.37	13.82
std. deviation	0.87	1.19
<i>Ear diameter (in middle including kernels) (cm)</i>		
mean	4.39	3.88
std. deviation	0.18	0.26
<i>Primary ear, height from ground (metres)</i>		
mean	0.81	0.72
std. deviation	0.09	0.07

\*reference variety



Corn: 'PH2TB4' (top) with reference variety 'PH13HK' (bottom)

**Proposed denomination:** 'PH2TBY'  
**Application number:** 19-9802  
**Application date:** 2019/04/23  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Lori Scott, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America

**Variety used for comparison:** 'PH1DB1'

**Summary:** *During anthesis, the angle between the main axis and the second lateral branch from the bottom of the tassel of 'PH2TBY' is of a medium degree while the angle is very small for 'PH1DB1'. Midway through anthesis, the silks on the ear of 'PH2TBY' have a very strong intensity of anthocyanin colouration while those of 'PH1DB1' have a strong intensity of anthocyanin colouration. From the beginning of anthesis to just before milk development, the brace roots of 'PH2TBY' have a very strong intensity of anthocyanin colouration while those of 'PH1DB1' have a medium intensity of anthocyanin colouration. The ear of 'PH2TBY' is shorter, and including the kernels, has a larger diameter than the ear of 'PH1DB1'. The kernel of 'PH2TBY' is yellow orange on the dorsal side while it is yellow for 'PH1DB1'.*

**Description:**

**PLANT:** inbred yellow variety, medium ratio for height of insertion of peduncle of upper ear to plant height, anthesis occurs early to mid-season, silk emergence occurs early in the season

**STEM:** absent or very slight degree of zig-zag, very strong intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** strong degree of undulation of margin, small angle with stem, slightly recurved

**TASSEL:** few primary lateral branches, moderately sparse to medium density of spikelets on middle third of main branch, main axis long to very long above lowest lateral branch, main axis medium to long above highest lateral branch

**LATERAL BRANCHES (SECOND BRANCH FROM BOTTOM OF TASSEL):** straight, medium angle with main axis, medium in length

**GLUME:** absent or very weak intensity of anthocyanin colouration throughout

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** medium to strong intensity of anthocyanin colouration

**EAR:** very strong intensity of anthocyanin colouration of silks, medium length husk (extends one quarter the length of the ear above tip), conico-cylindrical shape, few to a medium number of rows of grain, strong intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** present on a very low percentage of plants

**KERNEL:** intermediate between flint-like type and dent-like type, yellow on top, yellow orange on dorsal side

**TILLERING:** present on a low to medium percentage of plants

**Origin and Breeding:** 'PH2TBY' was developed by Pioneer Hi-Bred International, Inc. using a double haploid plant breeding method. In 2008, the initial cross was conducted between proprietary inbred lines in Moorhead, Minnesota, USA. In 2009, the F1 underwent a haploidization process in Arica, Chile. The haploids were doubled and self pollinated with subsequent ear selection in Buin, Chile. In 2010 and 2011, the D1 and D2 lines were self pollinated and harvested in bulk in Moorhead, Minnesota. In 2012, the D3 line was self pollinated with subsequent ear selection. In 2013, the D4 line was self pollinated and the D5 seed bulked as breeder seed in Moorhead, Minnesota. 'PH2TBY' was selected based on yield in hybrid combination, tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH2TBY' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on 30 measurements per variety. Mean differences were significant at the 5% probability level based on paired Student's T-tests. Results were supported by the official technical examination report 201900134, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

Comparison table for 'PH2TBY'

	'PH2TBY'	'PH1DB1'*
<i>Ear length (cm)</i>		
mean	13.91	15.53
std. deviation	0.65	1.01
<i>Ear diameter (in middle including kernels)(cm)</i>		
mean	4.46	4.21
std. deviation	0.65	1.01

\*reference variety



Corn: 'PH2TBY' (top) with reference variety 'PH1DB1' (bottom)

**Proposed denomination:** 'PH2TSK'  
**Application number:** 19-9816  
**Application date:** 2019/04/29  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Steve Szalma, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
Heather Ripley, Pioneer Hi-Bred International, Inc., Wilmar, Minnesota, United States of America

**Variety used for comparison:** 'PH1MB5'

**Summary:** *Midway through anthesis, the silks on the ear of 'PH2TSK' have a medium intensity of anthocyanin colouration while those of 'PH1MB5' have a weak intensity of anthocyanin colouration. Including the tassel, the plants of 'PH2TSK' are taller than the plants of 'PH1MB5'. The leaf blade just above the upper ear of 'PH2TSK' is narrower than that of 'PH1MB5'. The ear of 'PH2TSK' is shorter, and including the kernels, has a larger diameter than the ear of 'PH1MB5'. The primary ear of 'PH2TSK' is located higher on the stem than that of 'PH1MB5'.*

**Description:**

**PLANT:** inbred yellow variety, small ratio for height of insertion of peduncle of upper ear to plant height, anthesis occurs mid-season, silk emergence occurs mid-season to late in the season

**STEM:** absent or very slight degree of zig-zag

**LEAF BLADE (JUST ABOVE UPPER EAR):** intermediate degree of undulation of margin, very small to small angle with stem, straight to slightly recurved

**TASSEL:** medium to many primary lateral branches, medium density of spikelets on middle third of main branch, main axis above lowest lateral branch short to medium in length, main axis above highest lateral branch very short

**LATERAL BRANCHES (SECOND BRANCH FROM BOTTOM OF TASSEL):** straight, very small angle with main axis, very short to short

**GLUME:** absent or very weak intensity of anthocyanin colouration throughout

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** absent or very weak intensity of anthocyanin colouration

**EAR:** medium intensity of anthocyanin colouration of silks, medium to long husk (extends one quarter to one third the length of the ear above tip), cylindrical shape, medium to many rows of grain, weak intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** present on a high percentage of plants, medium in length

**KERNEL:** dent type, yellow on top and dorsal side

**TILLERING:** absent

**Origin and Breeding:** 'PH2TSK' was developed by Pioneer Hi-Bred International, Inc. using the pedigree method of plant breeding. The initial cross was conducted between proprietary inbred lines in 2008, in Puerto Vallarta, Mexico. In 2009, the F1 generation was planted, self pollinated and the F2 seed harvested in bulk in Willmar, Minnesota, USA. Respectively in 2010 and 2011, the F2 population and F3 families were self pollinated with subsequent ear selection. From 2012 to 2013, the F4 to F6 lines were self pollinated with subsequent ear selection. In 2013, the F7 line was self pollinated and the F8 seed bulked as breeder seed in Willmar, Minnesota. 'PH2TSK' was selected based on tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, yield in hybrid combination, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH2TSK' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on 30 measurements per variety. Mean differences were significant at the 5% probability level based on paired Student's T-tests. Results were supported by the official technical examination report 201800277, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

**Comparison table for 'PH2TSK'**

	'PH2TSK'	PH1MB5*
<i>Plant height (including tassel) (metres)</i>		
mean	1.85	1.67
std. deviation	0.11	0.07
<i>Leaf blade width (leaf just above upper ear) (cm)</i>		
mean	8.16	8.63
std. deviation	0.43	0.45
<i>Ear length (cm)</i>		
mean	14.53	16.04
std. deviation	0.81	0.92
<i>Ear diameter (in middle including kernels) (cm)</i>		
mean	5.00	4.76
std. deviation	0.15	0.25
<i>Primary ear, height from ground (metres)</i>		
mean	0.81	0.77
std. deviation	0.08	0.06

\*reference variety



Corn: 'PH2TSK' (top) with reference variety 'PH1MB5' (bottom)

**Proposed denomination:** 'PH2TV4'  
**Application number:** 19-9817  
**Application date:** 2019/04/29  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Martin Arbelbide, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
Julia X Zhang, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America

**Variety used for comparison:** 'PH12K9'

**Summary:** *For the plants of 'PH2TV4', anthesis and silk emergence occur mid-season to late in the season while anthesis and silk emergence occur late to very late in the season for the plants of 'PH12K9'. Primary lateral branches are absent or very few on the tassel of 'PH2TV4' while the tassel of 'PH12K9' has a few primary lateral branches. From the beginning of anthesis to just before milk development, the brace roots of 'PH2TV4' have a medium to strong intensity of anthocyanin colouration while those of 'PH12K9' have a strong to very strong intensity of anthocyanin colouration. Including the tassel, the plants of 'PH2TV4' are shorter than the plants of 'PH12K9'. The leaf blade just above the upper ear of 'PH2TV4' is narrower than that of 'PH12K9'. The primary ear of 'PH2TV4' is located lower on the stem than that of 'PH12K9'.*

**Description:**

**PLANT:** inbred yellow variety, very small to small ratio for height of insertion of peduncle of upper ear to plant height, anthesis and silk emergence occur mid season to late in the season

**STEM:** absent or very slight degree of zig-zag, medium to strong intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** intermediate degree of undulation of margin, very small to small angle with stem, straight to slightly recurved

**TASSEL:** absent or very few primary lateral branches, medium density of spikelets on middle third of main branch

**GLUME:** absent or very weak intensity of anthocyanin colouration throughout

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** medium intensity of anthocyanin colouration

**EAR:** absent or very weak to weak intensity of anthocyanin colouration of silks, short husk (level with tip), conico-cylindrical shape, few to a medium number of rows of grain, medium to strong intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** present on a low to medium percentage of plants, short to medium in length

**KERNEL:** dent-like type, yellow on top and dorsal side

**TILLERING:** absent

**Origin and Breeding:** 'PH2TV4' was developed by Pioneer Hi-Bred International, Inc. using a double haploid plant breeding method. In 2007, the initial cross was conducted between proprietary inbred lines in Marion, Iowa, USA. In 2009, the haploidization process was conducted on the F1 progeny in Oahu, Hawaii, USA. In 2009, the haploids were doubled and self pollinated with subsequent ear selection in Oahu, Hawaii. In 2010, the D1 line was self pollinated and harvested in bulk in Eau Claire, Wisconsin, USA. In 2012 and 2013, the D2 and D3 generations were self pollinated with subsequent ear selections in Eau Claire, Wisconsin and Arica, Chile, respectively. In 2014, the D4 line was self pollinated and the D5 seed bulked as breeder seed in Eau Claire, Wisconsin. 'PH2TV4' was selected based on yield in hybrid combination, tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH2TV4' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on 30 measurements per variety. Mean differences were significant at the 5% probability level based on paired Student's T-tests. Results were supported by the official technical examination report 201800279, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

Comparison table for 'PH2TV4'

	'PH2TV4'	PH12K9*
<i>Plant height (including tassel) (metres)</i>		
mean	1.86	2.03
std. deviation	0.07	0.10
<i>Leaf blade width (leaf just above upper ear) (cm)</i>		
mean	8.95	9.23
std. deviation	0.45	0.39
<i>Primary ear, height from ground (metres)</i>		
mean	0.73	0.93
std. deviation	0.09	0.09

\*reference variety



Corn: 'PH2TV4' (top) with reference variety 'PH12K9' (bottom)



**Proposed denomination:** 'PH2TVM'  
**Application number:** 19-9818  
**Application date:** 2019/04/29  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Martin Arbelbide, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
Julia X Zhang, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America

**Variety used for comparison:** 'PHEWB'

**Summary:** *For the plants of 'PH2TVM', anthesis and silk emergence occurs mid-season to late in the season while for the plants of 'PHEWB' anthesis and silk emergence occur early to mid-season. The tassel of 'PH2TVM' has few to a medium number of primary lateral branches while the tassel of 'PHEWB' has medium to many primary lateral branches. Including the tassel, the plants of 'PH2TVM' are shorter than the plants of 'PHEWB'. The leaf blade just above the upper ear of 'PH2TVM' is narrower than that of 'PHEWB'. The ear of 'PH2TVM' is shorter, and including the kernels, has a smaller diameter than the ear of 'PHEWB'. The glumes on the cob of 'PH2TVM' have a strong to very strong intensity of anthocyanin colouration while the glumes on the cob of 'PHEWB' have a weak to medium intensity of anthocyanin colouration. The primary ear of 'PH2TVM' is located higher on the stem than that of 'PHEWB'.*

**Description:**

**PLANT:** inbred yellow variety, large to very large ratio for height of insertion of peduncle of upper ear to plant height, anthesis and silk emergence occur mid-season to late in the season

**STEM:** absent or very slight degree of zig-zag, absent or very weak intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** intermediate degree of undulation of margin, very small to small angle with stem, straight to slightly recurved

**TASSEL:** few to a medium number of primary lateral branches, medium density of spikelets on middle third of main branch, main axis above lowest lateral branch long, main axis above highest lateral branch medium in length

**LATERAL BRANCHES (SECOND BRANCH FROM BOTTOM OF TASSEL):** straight, very small angle with main axis, medium to long

**GLUME:** absent or very weak intensity of anthocyanin colouration throughout

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** absent or very weak intensity of anthocyanin colouration

**EAR:** absent or very weak intensity of anthocyanin colouration of silks, medium to long husk (extends one quarter to one third the length of the ear above tip), cylindrical shape, medium number of rows of grain, strong to very strong intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** present on a low percentage of plants

**KERNEL:** dent type, yellow on top and dorsal side

**TILLERING:** absent

**Origin and Breeding:** 'PH2TVM' was developed by Pioneer Hi-Bred International, Inc. using a double haploid plant breeding method. In 2006, the initial cross was conducted between proprietary inbred lines in Kekaha, Kauai, Hawaii, USA. In 2007, the haploidization process was conducted on the F1 progeny in Mankato, Minnesota, USA. In 2008, the haploids were doubled and self pollinated with subsequent ear selection in Arica, Chile. In 2009, the D1 line was self pollinated and harvested in bulk in Eau Claire, Wisconsin, USA. In 2012, the D2 and D3 lines were self pollinated with subsequent ear selections in Eau Claire, Wisconsin and San Felipe, Chile, respectively. In 2013, the D4 line was self pollinated and the D5 seed bulked as breeder seed in Eau Claire, Wisconsin. 'PH2TVM' was selected based on yield in hybrid combination, tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH2TVM' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on a minimum of 29 measurements per variety. Mean differences were significant at the 5%

probability level based on Student’s T-tests. Results were supported by the official technical examination report 201800280, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

**Comparison table for ‘PH2TVM’**

	‘PH2TVM’	‘PHEWB’*
<i>Plant height (including tassel) (metres)</i>		
mean	1.48	1.61
std. deviation	0.05	0.10
<i>Leaf blade width (leaf just above upper ear) (cm)</i>		
mean	7.74	8.48
std. deviation	0.38	0.39
<i>Ear length (cm)</i>		
mean	13.63	15.10
std. deviation	1.36	0.94
<i>Ear diameter (in middle including kernels) (cm)</i>		
mean	4.39	4.73
std. deviation	0.23	0.14
<i>Primary ear, height from ground (metres)</i>		
mean	0.83	0.75
std. deviation	0.06	0.09

\*reference variety



Corn: ‘PH2TVM’ (top) with reference variety ‘PHEWB’ (bottom)

**Proposed denomination:** 'PH41W6'  
**Application number:** 19-9819  
**Application date:** 2019/04/29  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Dave Fischer, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America

**Variety used for comparison:** 'PH12K5'

**Summary:** *The angle between the main axis and second lateral branch from the bottom of the tassel of 'PH41W6' is of a medium degree while the angle is very small to small for 'PH12K5'. The tassel of 'PH41W6' has few to a medium number of primary lateral branches while that of 'PH12K5' has absent or very few to few primary lateral branches. The second lateral branch from the bottom of the tassel of 'PH41W6' is long and moderately recurved while it is short to medium in length and straight to slightly recurved for 'PH12K5'. From the beginning of anthesis to just before milk development, the brace roots of 'PH41W6' have a very strong intensity of anthocyanin colouration while those of 'PH12K5' have an absent or very weak to weak intensity of anthocyanin colouration. Including the tassel, the plants of 'PH41W6' are shorter than the plants of 'PH12K5'. The leaf blade just above the upper ear of 'PH41W6' is narrower than that of 'PH12K5'. The ear of 'PH41W6' is shorter, and including the kernels, has a smaller diameter than the ear of 'PH12K5'. The primary ear of 'PH41W6' is located lower on the stem than that of 'PH12K5'.*

**Description:**

**PLANT:** inbred yellow variety, small to medium ratio for height of insertion of peduncle of upper ear to plant height, anthesis occurs late in the season, silk emergence occurs late to very late in the season

**STEM:** absent or very slight degree of zig-zag, very strong intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** absent or very weak degree of undulation of margin, very small angle with stem, straight

**TASSEL:** few to a medium number of primary lateral branches, medium density of spikelets on middle third of main branch, main axis above lowest lateral branch very long, main axis above highest lateral branch medium to long

**LATERAL BRANCHES (SECOND BRANCH FROM BOTTOM OF TASSEL):** moderately recurved, medium angle with main axis, long

**GLUME:** absent or very weak intensity of anthocyanin colouration at base, weak intensity of anthocyanin colouration at middle and apex

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** weak to medium intensity of anthocyanin colouration

**EAR:** absent or very weak intensity of anthocyanin colouration of silks, short husk (level with tip), conico-cylindrical shape, very few to few rows of grain, medium to strong intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** absent

**KERNEL:** dent-like type, yellow on top and dorsal side

**TILLERING:** absent

**Origin and Breeding:** 'PH41W6' was developed by Pioneer Hi-Bred International, Inc. using a double haploid plant breeding method. In 2007, the initial cross was conducted between proprietary inbred lines in Buin, Chile. In 2009, the haploidization process was conducted on the F1 progeny in Oahu, Hawaii, USA. In 2010, the haploids were doubled and self pollinated with subsequent ear selection in Oahu, Hawaii. In 2010, the D1 line was self pollinated and harvested in bulk in Puerto Vallarta, Mexico. In 2013, the D2 and D3 lines were self pollinated with subsequent ear selections in Marion, Iowa, USA and Puerto Vallarta, respectively. In 2014, the D4 line was self pollinated and the D5 seed bulked as breeder seed in Marion, Iowa. 'PH41W6' was selected based on yield in hybrid combination, tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH41W6' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on 30 measurements per variety. Mean differences were significant at the 5% probability level

based on paired Student’s T-tests. Results were supported by the official technical examination report 201900142, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

**Comparison table for ‘PH41W6’**

	‘PH41W6’	‘PH12K5’*
<i>Plant height (including tassel) (metres)</i>		
mean	1.71	1.96
std. deviation	0.09	0.07
<i>Leaf blade width (leaf just above upper ear) (cm)</i>		
mean	9.53	10.25
std. deviation	0.40	0.54
<i>Ear length (cm)</i>		
mean	17.19	18.86
std. deviation	0.87	1.41
<i>Ear diameter (in middle including kernels) (cm)</i>		
mean	3.99	4.31
std. deviation	0.19	0.17
<i>Primary ear, height from ground (metres)</i>		
mean	0.79	0.90
std. deviation	0.08	0.06

\*reference variety



Corn: ‘PH41W6’ (top) with reference variety ‘PH12K5’ (bottom)

**Proposed denomination:** 'PH42JS'  
**Application number:** 19-9820  
**Application date:** 2019/04/29  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Martin Fabrizius, Pioneer Hi-Bred International, Inc., Redwood Falls, Minnesota, United States of America  
Julia X Zhang, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America

**Variety used for comparison:** 'PH1DK3'

**Summary:** *During anthesis, the angle between the main axis and the second lateral branch from the bottom of the tassel of 'PH42JS' is very small to small while the angle is small to medium for 'PH1DK3'. Midway through anthesis, the silks on the ear of 'PH42JS' have a weak intensity of anthocyanin colouration while those of 'PH1DK3' have a very strong intensity of anthocyanin colouration. The main axis of the tassel above the highest lateral branch is of medium length for 'PH42JS' while it is very short to short for 'PH1DK3'. Including the tassel, the plants of 'PH42JS' are taller than the plants of 'PH1DK3'. The leaf blade just above the upper ear of 'PH42JS' is wider than that of 'PH1DK3'. The ear of 'PH42JS' is shorter than that of 'PH1DK3'. The kernel of 'PH42JS' is yellow on the dorsal side while it is yellow orange for 'PH1DK3'. The glumes on the cob of 'PH42JS' have a medium intensity of anthocyanin colouration while that of 'PH1DK3' has a strong intensity of anthocyanin colouration.*

**Description:**

**PLANT:** inbred yellow variety, very small ratio for height of insertion of peduncle of upper ear to plant height, anthesis occurs mid-season to late in the season, silk emergence occurs early to mid-season

**STEM:** absent or very slight degree of zig-zag, strong intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** absent or very weak undulation of margin, very small to small angle with stem, straight

**TASSEL:** few to a medium number of primary lateral branches, medium density of spikelets on middle third of main branch, main axis above lowest lateral branch medium to long, main axis above highest lateral branch medium in length

**LATERAL BRANCHES (SECOND BRANCH FROM BOTTOM OF TASSEL):** slightly to moderately recurved, very small to small angle with main axis, short to medium in length

**GLUME:** absent or very weak intensity of anthocyanin colouration at base, weak intensity of anthocyanin colouration at middle and apex

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** weak to medium intensity of anthocyanin colouration

**EAR:** weak intensity of anthocyanin colouration of silks, short husk (level with tip), cylindrical shape, medium to many rows of grain, medium intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** absent

**KERNEL:** dent type, yellow on top and dorsal side

**TILLERING:** present on a low percentage of plants

**Origin and Breeding:** 'PH42JS' was developed by Pioneer Hi-Bred International, Inc. using a double haploid plant breeding method. In 2008, the initial cross was conducted between proprietary inbred lines in Puerto Vallarta, Mexico. In 2009, the F1 underwent a haploidization process in Oahu, Hawaii, USA. The haploids were doubled and self pollinated with subsequent ear selection. In 2010, the D1 line was self pollinated and harvested in bulk in Eau Claire, Wisconsin, USA. In 2011 and 2013, the D2 and D3 generations were self pollinated and harvested in bulk in Willmar Minnesota, USA. In 2013, the D4 line was self pollinated and the D5 seed bulked as breeder seed in Buin, Chile. 'PH42JS' was selected based on yield in hybrid combination, tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH42JS' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on a minimum of 29 measurements per variety. Mean differences were significant at the 5%

probability level based on Student’s T-tests. Results were supported by the official technical examination report 201900154, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

**Comparison table for ‘PH42JS’**

	‘PH42JS’	‘PH1DK3’*
<i>Plant height (including tassel) (metres)</i>		
mean	1.77	1.67
std. deviation	0.12	0.08
<i>Leaf blade width (leaf just above upper ear) (cm)</i>		
mean	8.85	7.87
std. deviation	0.25	0.40
<i>Ear length (cm)</i>		
mean	13.76	14.85
std. deviation	1.38	1.57

\*reference variety



Corn: ‘PH42JS’ (top) with reference variety ‘PH1DK3’ (bottom)

**Proposed denomination:** 'PH42KN'  
**Application number:** 19-9849  
**Application date:** 2019/05/10  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Gustavo Garcia, Pioneer Hi-Bred Production Company, Woodstock, Ontario  
Travis Coleman, Pioneer Hi-Bred Production Company, Lethbridge County, Alberta

**Variety used for comparison:** 'PH18WY'

**Summary:** *Midway through anthesis, the silks on the ear of 'PH42KN' have an absent or very weak to weak intensity of anthocyanin colouration while those of 'PH18WY' have a weak to medium intensity of anthocyanin colouration. The main axis of the tassel above the highest lateral branch is of a medium length for 'PH42KN' while is is very short to short for 'PH18WY'. Including the tassel, the plants of 'PH42KN' are taller than the plants of 'PH18WY'. The leaf blade just above the upper ear of 'PH42KN' is narrower than that of 'PH18WY'. The ear of 'PH42KN' is longer and including the kernels, has a smaller diameter than the ear of 'PH18WY'. The primary ear of 'PH42KN' is located lower on the stem than that of 'PH18WY'.*

**Description:**

**PLANT:** inbred yellow variety, very small to small ratio for height of insertion of peduncle of upper ear to plant height, anthesis occurs mid-season, silk emergence occurs early to mid-season

**STEM:** absent or very slight degree of zig-zag, very strong intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** intermediate degree of undulation of margin, very small to small angle with stem, straight to slightly recurved

**TASSEL:** few to a medium number of primary lateral branches, medium density of spikelets on middle third of main branch, main axis above lowest lateral branch medium in length, main axis above highest lateral branch medium in length

**LATERAL BRANCHES (SECOND BRANCH FROM BOTTOM OF TASSEL):** straight, small to medium angle with main axis, short to medium in length

**GLUME:** absent or very weak intensity of anthocyanin colouration throughout

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** absent or very weak intensity of anthocyanin colouration

**EAR:** absent or very weak to weak intensity of anthocyanin colouration of silks, short husk (level with tip), conico-cylindrical shape, few to a medium number of rows of grain, medium to strong intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** absent

**KERNEL:** intermediate between flint-like and dent-like type, yellow on top and dorsal side

**TILLERING:** absent

**Origin and Breeding:** 'PH42KN' was developed by Pioneer Hi-Bred International, Inc. using the pedigree method of plant breeding. In 2009, the initial cross was conducted between proprietary inbred lines in Willmar, Minnesota, USA. The F1 generation was planted, self pollinated and harvested in bulk in Buin, Chile. Respectively in 2011 and 2012, the F2 population and F3 families were self pollinated with subsequent ear selection in Woodstock, Ontario, Canada. From 2013 to 2016, F4 to F7 lines were self pollinated with subsequent ear selection. In 2016, the F8 line was self pollinated and the F9 seed bulked as breeder seed in Woodstock, Ontario, Canada. 'PH42KN' was selected based on tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, yield in hybrid combination, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH42KN' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on 30 measurements per variety. Mean differences were significant at the 5% probability level based on paired Student's T-tests. Results were supported by the official technical examination report 201900155, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

**Comparison table for 'PH42KN'**

	'PH42KN'	'PH18WY'*
<i>Plant height (including tassel) (metres)</i>		
mean	1.91	1.86
std. deviation	0.05	0.08
<i>Leaf blade width (leaf just above upper ear) (cm)</i>		
mean	7.98	8.38
std. deviation	0.29	0.46
<i>Ear length (cm)</i>		
mean	14.09	12.83
std. deviation	1.05	0.77
<i>Ear diameter (in middle including kernels) (cm)</i>		
mean	4.13	4.31
std. deviation	0.25	0.19
<i>Primary ear, height from ground (metres)</i>		
mean	0.81	0.88
std. deviation	0.04	0.07

\*reference variety



Corn: 'PH42KN' (top) with reference variety 'PH18WY' (bottom)



**Proposed denomination:** 'PH42RF'  
**Application number:** 19-9821  
**Application date:** 2019/04/29  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Lori Scott, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
Matt Walch, Pioneer Hi-Bred International, Inc., Moorhead, Minnesota, United States of America  
Manilal William, Pioneer Hi-Bred International, Inc., Kitchener, Ontario

**Variety used for comparison:** 'PHEHG'

**Summary:** *From the beginning of anthesis to just before milk development, the brace roots of 'PH42RF' have an absent or very weak intensity of anthocyanin colouration while those of 'PHEHG' have a medium intensity of anthocyanin colouration. The ears of 'PH42RF' are longer, and including the kernels, have a smaller diameter than the ears of 'PHEHG'.*

**Description:**

**PLANT:** inbred yellow variety, small ratio for height of insertion of peduncle of upper ear to plant height, anthesis and silk emergence occurs early to mid-season

**STEM:** absent or very slight degree of zig-zag, absent or very weak intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** intermediate degree of undulation of margin, very small to small angle with stem, straight to slightly recurved

**TASSEL:** many primary lateral branches, medium density of spikelets on middle third of main branch, main axis above lowest lateral branch medium in length, main axis above highest lateral branch very short

**LATERAL BRANCHES (SECOND BRANCH FROM BOTTOM OF TASSEL):** straight, very small to small angle with main axis, short to medium in length

**GLUME:** absent or very weak intensity of anthocyanin colouration at base, weak intensity of anthocyanin colouration at middle and apex

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** medium to strong intensity of anthocyanin colouration

**EAR:** absent or very weak intensity of anthocyanin colouration of silks, very short to short husk (below tip to level with tip), conico-cylindrical shape, few to medium number of rows of grain, medium to strong intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** present on a low percentage of plants, short to medium in length

**KERNEL:** dent-like type, yellow on top and dorsal side

**TILLERING:** absent

**Origin and Breeding:** 'PH42RF' was developed by Pioneer Hi-Bred International, Inc. using a double haploid plant breeding method. In 2009, the initial cross was conducted between proprietary inbred lines in Woodstock, Ontario, Canada. In 2010, the F1 underwent a haploidization process in Oahu, Hawaii, USA. The haploids were doubled and self pollinated with subsequent ear selection. In 2010, the D1 line was self pollinated and harvested in bulk in Puerto Vallarta, Mexico. In 2013, the D2 and D3 lines were self pollinated with subsequent ear selection in Moorhead, Minnesota, USA and Buin, Chile, respectively. In 2014, the D4 line was self pollinated and the D5 seed bulked as breeder seed in Moorhead, Minnesota. 'PH42RF' was selected based on yield in hybrid combination, tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH42RF' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on 30 measurements per variety. Mean differences were significant at the 5% probability level based on paired Student's T-tests. Results were supported by the official technical examination report 201900156, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

Comparison table for 'PH42RF'

	'PH42RF'	PHEHG*
<i>Ear length (cm)</i>		
mean	13.93	13.14
std. deviation	1.30	0.96
<i>Ear diameter (in middle including kernels) (cm)</i>		
mean	4.43	4.78
std. deviation	0.30	0.15

\*reference variety



Corn: 'PH42RF' (top) with reference variety 'PHEHG' (bottom)

**Proposed denomination:** 'PH42SY'  
**Application number:** 19-9822  
**Application date:** 2019/04/29  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Jean-Marc Montpetit, Pioneer Hi-Bred Production Company, Coteau-de-Lac, Quebec

**Variety used for comparison:** 'PH1DB1'

**Summary:** *The angle between the main axis and second lateral branch from the bottom of the tassel for 'PH42SY' is small while the angle is very small for 'PH1DB1'. Midway through anthesis, the silks on the ear of 'PH42SY' have a weak to medium intensity of anthocyanin colouration while those of 'PH1DB1' have a strong intensity of anthocyanin colouration. From the beginning of anthesis to just before milk development, the brace roots of 'PH42SY' have a strong intensity of anthocyanin colouration while those of 'PH1DB1' have a medium intensity of anthocyanin colouration. The main axis of the tassel above the highest lateral branch is medium in length for 'PH42SY' while it is long for 'PH1DB1'. Including the tassel, the plants of 'PH42SY' are shorter than the plants of 'PH1DB1'. The ear of 'PH42SY' is shorter, and including the kernels, has a larger diameter than that of 'PH1DB1'. The kernel of 'PH42SY' is dent-like type while the kernel of 'PH1DB1' is flint-like type. The primary ear of 'PH42SY' is located lower on the stem than that of 'PH1DB1'.*

**Description:**

**PLANT:** inbred yellow variety, small ratio for height of insertion of peduncle of upper ear to plant height, anthesis and silk emergence occurs early to mid-season

**STEM:** absent or very slight degree of zig-zag, strong intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** intermediate degree of undulation of margin, small angle with stem, straight to slightly recurved

**TASSEL:** few primary lateral branches, medium density of spikelets on middle third of main branch, main axis above lowest lateral branch long, main axis above highest lateral branch medium in length

**LATERAL BRANCHES (SECOND BRANCH FROM BOTTOM OF TASSEL):** straight, small angle with main axis, medium in length

**GLUME:** absent or very weak intensity of anthocyanin colouration throughout

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** absent or very weak to weak intensity of anthocyanin colouration

**EAR:** weak to medium intensity of anthocyanin colouration of silks, short to medium husk (level with to extending one quarter the length of the ear above tip), conico-cylindrical shape, medium to many rows of grain, medium to strong intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** present on a high percentage of plants, medium in length

**KERNEL:** dent-like type, yellow on top and dorsal side

**TILLERING:** present on a medium to high percentage of plants

**Origin and Breeding:** 'PH42SY' was developed by Pioneer Hi-Bred International, Inc. using a double haploid plant breeding method. In 2008, the initial cross was conducted between proprietary inbred lines in Moorehead, Minnesota, USA. The F1 generation was planted, self pollinated and harvested in bulk in Buin, Chile and the haploidization process conducted on the resulting F2 progeny in 2009, in St. Polycarpe, Quebec, Canada. The haploids were doubled and self pollinated with subsequent ear selection in Buin. In 2009 and 2010, the D1 and D2 lines were self pollinated and harvested in bulk in St. Polycarpe, Quebec. In 2012, the D3 line was self pollinated with subsequent ear selection in St. Polycarpe, Quebec. In 2013, the D4 line was self pollinated and the D5 seed bulked as breeder seed in Buin. 'PH42SY' was selected based on yield in hybrid combination, tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH42SY' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on 30 measurements per variety. Mean differences were significant at the 5% probability level

based on paired Student’s T-tests. Results were supported by the official technical examination report 201900158, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

**Comparison table for ‘PH42SY’**

	‘PH42SY’	PH1DB1*
<i>Plant height (including tassel) (metres)</i>		
mean	1.83	1.86
std. deviation	0.05	0.06
<i>Leaf blade width (leaf just above upper ear) (cm)</i>		
mean	8.10	8.66
std. deviation	0.33	0.35
<i>Ear length (cm)</i>		
mean	14.52	15.96
std. deviation	1.27	0.70
<i>Ear diameter (in middle including kernels) (cm)</i>		
mean	4.42	4.31
std. deviation	0.21	0.15
<i>Primary ear, height from ground (metres)</i>		
mean	0.81	0.89
std. deviation	0.06	0.07

\*reference variety



Corn: ‘PH42SY’ (top) with reference variety ‘PH1DB1’ (bottom)

**Proposed denomination:** 'PH42V3'  
**Application number:** 19-9823  
**Application date:** 2019/04/29  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Michael Chandler, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America

**Variety used for comparison:** 'PH12KB'

**Summary:** *For the plants of 'PH42V3', anthesis and silk emergence occurs mid to late in the season while anthesis emergence occurs late to very late in the season and silk emergence occurs very late in the season for the plants of 'PH12KB'. From the beginning of anthesis to just before milk development, the brace roots of 'PH42V3' have an absent or very weak intensity of anthocyanin colouration while those of 'PH12KB' have a medium to strong intensity of anthocyanin colouration. The main axis of the tassel above the highest lateral branch is very short to short for 'PH42V3' while it is medium in length for 'PH12KB'. Including the tassel, the plants of 'PH42V3' are shorter than the plants of 'PH12KB'. The leaf blade just above the upper ear of 'PH42V3' is narrower than that of 'PH12KB'. The ear of 'PH42V3' is shorter than the ear of 'PH12KB'. The glumes on the cob of 'PH42V3' have a medium to strong intensity of anthocyanin colouration while those of 'PH12KB' have a weak to medium intensity of anthocyanin colouration. The primary ear of 'PH42V3' is located lower on the stem than that of 'PH12KB'.*

**Description:**

**PLANT:** inbred yellow variety, large ratio for height of insertion of peduncle of upper ear to plant height, anthesis and silk emergence occurs mid-season to late in the season

**STEM:** absent or very slight degree of zig-zag, absent or very weak intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** absent or very weak degree of undulation of margin, small angle with stem, straight

**TASSEL:** medium to many primary lateral branches, medium density of spikelets on middle third of main branch, main axis above lowest lateral branch medium to long, main axis above highest lateral branch very short to short

**LATERAL BRANCHES (SECOND BRANCH FROM BOTTOM OF TASSEL):** straight, small angle with main axis, medium in length

**GLUME:** absent or very weak intensity of anthocyanin colouration at base, weak to medium intensity of anthocyanin colouration at middle and apex

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** very strong intensity of anthocyanin colouration

**EAR:** very strong intensity of anthocyanin colouration of silks, short to medium husk (level to extending one quarter the length of the ear above tip), conical shape, many rows of grain, medium to strong intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** present on a high percentage of plants, medium to long

**KERNEL:** dent type, yellow on top and dorsal side

**TILLERING:** present on a low percentage of plants

**Origin and Breeding:** 'PH42V3' was developed by Pioneer Hi-Bred International, Inc. using a double haploid plant breeding method. In 2008, the initial cross was conducted between proprietary inbred lines in Puerto Vallarta, Mexico. In 2009, the F1 underwent a haploidization process in Oahu, Hawaii, USA. The haploids were doubled and self pollinated with subsequent ear selection. In 2010 and 2013, the D1 and D2 lines were self pollinated and harvested in bulk in Janesville, Wisconsin, USA. In 2014, the D3 line was self pollinated and harvested in bulk in Arica, Chile. In 2015, the D4 line was self pollinated and the D5 seed bulked as breeder seed in Janesville, Wisconsin. 'PH42V3' was selected based on yield in hybrid combination, tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH42V3' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured

characteristics were based on 30 measurements for the candidate variety and a minimum of 14 measurements for the reference variety. Mean differences were significant at the 5% probability level based on Student's T-tests. Results were supported by the official technical examination report 201900159, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

**Comparison table for 'PH42V3'**

	'PH42V3'	PH12KB*
<i>Plant height (including tassel) (metres)</i>		
mean	1.69	1.75
std. deviation	0.07	0.04
<i>Leaf blade width (leaf just above upper ear) (cm)</i>		
mean	6.97	8.92
std. deviation	0.35	0.47
<i>Ear length (cm)</i>		
mean	13.82	15.34
std. deviation	1.07	1.55
<i>Primary ear, height from ground (metres)</i>		
mean	0.81	0.89
std. deviation	0.06	0.07

\*reference variety



Corn: 'PH42V3' (top) with reference variety 'PH12KB' (bottom)

**Proposed denomination:** 'PH42YG'  
**Application number:** 19-9824  
**Application date:** 2019/04/29  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Edwin Grote, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America

**Variety used for comparison:** 'PHW6G'

**Summary:** *From the beginning of anthesis to just before milk development, the brace roots of 'PH42YG' have a strong to very strong intensity of anthocyanin colouration while those of 'PHW6G' have an absent or very weak to weak intensity of anthocyanin colouration. Including the tassel, the plants of 'PH42YG' are shorter than the plants of 'PHW6G'. The leaf blade just above the upper ear of 'PH42YG' is wider than that of 'PHW6G'. The ear of 'PH42YG' is longer, and including the kernels, has a larger diameter than that of 'PHW6G'. The glumes on the cob of 'PH42YG' have a strong intensity of anthocyanin colouration while those of 'PHW6G' have a weak intensity of anthocyanin colouration. The primary ear on the stem of 'PH42YG' is located lower on the stem than that of 'PHW6G'.*

**Description:**

**PLANT:** inbred yellow variety, small ratio for height of insertion of peduncle of upper ear to plant height, anthesis occurs late in the season, silk emergence occurs mid-season to late in the season

**STEM:** absent or very slight degree of zig-zag, strong to very strong intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** intermediate degree of undulation of margin, very small to small angle with stem, straight

**TASSEL:** few to a medium number of primary lateral branches, medium density of spikelets on middle third of main branch, main axis above lowest lateral branch short to medium in length, main axis above highest lateral branch short

**LATERAL BRANCHES (SECOND BRANCH FROM BOTTOM OF TASSEL):** straight to slightly recurved, small angle with main axis, medium to long

**GLUME:** absent or very weak intensity of anthocyanin colouration throughout

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** absent or very weak to weak intensity of anthocyanin colouration

**EAR:** absent or very weak intensity of anthocyanin colouration of silks, medium to long husk (extends between one quarter to one third the length of ear above tip), cylindrical shape, few to a medium number of rows of grain, strong intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** present on a medium to high percentage of plants, short to medium in length

**KERNEL:** flint-like type, yellow on top and dorsal side

**TILLERING:** present on a very low to low percentage of plants

**Origin and Breeding:** 'PH42YG' was developed by Pioneer Hi-Bred International, Inc. using a double haploid plant breeding method. In 2009, the initial cross was conducted between two F1 proprietary hybrids in Janesville, Wisconsin, USA. In 2010, the F1 underwent a haploidization process in Arica, Chile. The haploids were doubled and self pollinated with subsequent ear selection. In 2011 and 2013, the D1 to D3 lines were self pollinated and harvested in bulk in Janesville, Wisconsin. In 2014, the D4 line was self pollinated and harvested in bulk in Kekaha, Kauai, Hawaii. In 2014 the D5 line was self pollinated and the D6 seed bulked as breeder seed in Janesville, Wisconsin. 'PH42YG' was selected based on yield in hybrid combination, tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH42YG' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on a minimum of 29 measurements per variety. Mean differences were significant at the 5% probability level based on paired Student's T-tests. Results were supported by the official technical examination report 201900152, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

**Comparison table for 'PH42YG'**

	'PH42YG'	PHW6G*
<i>Plant height (including tassel) (metres)</i>		
mean	1.93	2.11
std. deviation	0.13	0.08
<i>Leaf blade width (leaf just above upper ear) (cm)</i>		
mean	10.10	8.05
std. deviation	0.67	0.58
<i>Ear length (cm)</i>		
mean	15.02	14.30
std. deviation	0.95	1.14
<i>Ear diameter (in middle including kerneks) (cm)</i>		
mean	4.50	4.11
std. deviation	0.20	0.18
<i>Primary ear, height from ground (metres)</i>		
mean	0.82	1.00
std. deviation	0.07	0.09

\*reference variety



Corn: 'PH42YG' (top) with reference variety 'PHW6G' (bottom)



**Proposed denomination:** 'PH4358'  
**Application number:** 19-9825  
**Application date:** 2019/04/29  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Tariq Mahmood, Pioneer Hi-Bred Production Company, Winnipeg, Manitoba  
Leon Hendrickx, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America

**Variety used for comparison:** 'PH1DB2'

**Summary:** *Midway through anthesis, the silks on the ear of 'PH4358' have a strong intensity of anthocyanin colouration while those of 'PH1DB2' have a weak to medium intensity of anthocyanin colouration. Including the tassel, the plants of 'PH4358' are shorter than the plants of 'PH1DB2'. The leafblade just above the upper ear of 'PH4358' is wider than that of 'PH1DB2'. The primary ear of 'PH4358' is located higher on the stem than that of 'PH1DB2'.*

**Description:**

**PLANT:** inbred yellow variety, small to medium ratio for height of insertion of peduncle of upper ear to plant height, anthesis and silk emergence occur early in the season

**STEM:** absent or very slight degree of zig-zag, weak intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** strong degree of undulation of margin, small to medium angle with stem, straight to slightly recurved

**TASSEL:** absent or very few to few primary lateral branches, medium density of spikelets on middle third of main branch, main axis above lowest lateral branch medium to long, main axis above highest lateral branch medium in length

**LATERAL BRANCHES (SECOND BRANCH FROM BOTTOM OF TASSEL):** straight, small angle with main axis, medium in length

**GLUME:** absent or very weak intensity of anthocyanin colouration throughout

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** medium intensity of anthocyanin colouration

**EAR:** strong intensity of anthocyanin colouration of silks, medium to long husk (extends between one quarter to one third the length of the ear above tip), conico-cylindrical shape, few to a medium number of rows of grain, absent or very weak intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** present on a medium to high percentage of plants, short to medium in length

**KERNEL:** intermediate between flint-like and dent-like type, yellow on top and dorsal side

**TILLERING:** present on a high percentage of plants

**Origin and Breeding:** 'PH4358' was developed by Pioneer Hi-Bred International, Inc. using a double haploid plant breeding method. In 2008, the initial cross was conducted between proprietary inbred lines in Eau Claire, Wisconsin, USA and the F1 generation planted, self pollinated and harvested in bulk in Puerto Vallarta, Mexico. In 2009, the F2 generation underwent a haploidization process. The haploids were doubled and self pollinated with subsequent ear selection. In 2010 and 2011, the D1 and D2 lines were self pollinated and harvested in bulk in Buin, Chile and Moorhead, Minnesota, USA, respectively. In 2013, the D3 line was self pollinated with subsequent ear selection in Moorhead, Minnesota. In 2014, the D4 line was self pollinated and the D5 seed bulked as breeder seed in Carman, Manitoba, Canada. 'PH4358' was selected based on yield in hybrid combination, tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH4358' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on 30 measurements per variety. Mean differences were significant at the 5% probability level based on paired Student's T-tests. Results were supported by the official technical examination report 201900162, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

**Comparison table for 'PH4358'**

	'PH4358'	'PH1DB2'*
<i>Plant height (including tassel) (metres)</i>		
mean	1.60	1.68
std. deviation	0.09	0.05
<i>Leaf blade width (leaf just above upper ear) (cm)</i>		
mean	8.76	8.44
std. deviation	0.46	0.46
<i>Primary ear, height from ground (metres)</i>		
mean	0.75	0.66
std. deviation	0.09	0.07

\*reference variety



Corn: 'PH4358' (top) with reference variety 'PH1DB2' (bottom)

**Proposed denomination:** 'PH435M'  
**Application number:** 19-9826  
**Application date:** 2019/04/29  
**Applicant:** Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America  
**Agent in Canada:** Pioneer Hi-Bred Production Co., Calgary, Alberta  
**Breeder:** Julia X Zhang, Pioneer Hi-Bred International, Inc., Johnston, Iowa, United States of America

**Variety used for comparison:** 'PHEDR'

**Summary:** *At completion of anthesis, the second lateral branch from the bottom of the tassel of 'PH435M' is straight while that of 'PHEDR' is slightly recurved. From the beginning of anthesis to just before milk development, the brace roots of 'PH435M' have a strong to very strong intensity of anthocyanin colouration while those of 'PHEDR' have a weak to medium intensity of anthocyanin colouration. Including the tassel, the plants of 'PH435M' are taller than the plants of 'PHEDR'. The leaf blade just above the upper ear of 'PH435M' is wider than that of 'PHEDR'. The ear of 'PH435M' is shorter, and including the kernels, has a larger diameter than the ear of 'PHEDR'. The primary ear of 'PH435M' is located higher on the stem than that of 'PHEDR'.*

**Description:**

**PLANT:** inbred yellow variety, small to medium ratio for height of insertion of peduncle of upper ear to plant height, anthesis and silk emergence occur mid-season to late in the season

**STEM:** absent or very slight degree of zig-zag, strong to very strong intensity of anthocyanin colouration on brace roots

**LEAF BLADE (JUST ABOVE UPPER EAR):** strong degree of undulation of margin, small angle with stem, slightly recurved

**TASSEL:** medium number of primary lateral branches, medium density of spikelets on middle third of main branch, main axis above lowest lateral branch long, main axis above highest lateral branch very short to short

**LATERAL BRANCHES (SECOND BRANCH FROM BOTTOM OF TASSEL):** straight, small to medium angle with main axis, long

**GLUME:** absent or very weak intensity of anthocyanin colouration at base, strong intensity of anthocyanin colouration at middle and apex

**ANTHER (ON MIDDLE THIRD OF MAIN BRANCH):** absent or very weak intensity of anthocyanin colouration

**EAR:** medium to strong intensity of anthocyanin colouration of silks, medium to long husk (extends between one quarter to one third the length of the ear above tip), conico-cylindrical shape, many rows of grain, medium intensity of anthocyanin colouration on glumes of cob

**EAR WINGS:** present on a low to medium percentage of plants, short

**KERNEL:** dent type, yellow on top and dorsal side

**TILLERING:** absent

**Origin and Breeding:** 'PH435M' was developed by Pioneer Hi-Bred International, Inc. using a double haploid plant breeding method. In 2009, the initial cross was conducted between proprietary inbred lines in Wilmar, Minnesota, USA and the F1 generation planted, self pollinated and harvested in bulk in Puerto Vallarta, Mexico. In 2010, the F2 generation underwent a haploidization process in Oahu, Hawaii, USA. The haploids were doubled and self pollinated with subsequent ear selection. In 2011, the D1 line was self pollinated and harvested in bulk in Eau Claire Wisconsin, USA. In 2013, the D2 and D3 lines were self pollinated with subsequent ear selection in Mankato, Minnesota, USA and Puerto Vallarta, respectively. In 2014, the D4 line was self pollinated and the D5 seed bulked as breeder seed in Arica, Chile. 'PH435M' was selected based on yield in hybrid combination, tassel size, pollen production, germination ability, stalk lodging resistance, late season plant health, grain quality, as well as disease and insect resistance.

**Tests and Trials:** The comparative trial for 'PH435M' was conducted in Coteau-du-lac, Quebec during the 2019 growing season. The trial was planted in a RCB Design with 3 replicates. Each replicate consisted of one row of approximately 20 plants, 3 metres in length with 76 cm between the rows. There was a total of 50 to 60 plants per variety. Measured characteristics were based on 30 measurements per variety. Mean differences were significant at the 5% probability level based on paired Student's T-tests. Results were supported by the official technical examination report 201900166, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

**Comparison table for 'PH435M'**

	'PH435M'	'PHEDR'*
<i>Plant height (including tassel) (metres)</i>		
mean	2.03	1.85
std. deviation	0.11	0.06
<i>Leaf blade width (leaf just above upper ear) (cm)</i>		
mean	8.16	7.14
std. deviation	0.50	0.28
<i>Ear length (cm)</i>		
mean	13.09	15.81
std. deviation	1.19	0.99
<i>Ear diameter (in middle including kernels) (cm)</i>		
mean	4.77	4.67
std. deviation	0.16	0.17
<i>Primary ear, height from ground (metres)</i>		
mean	0.93	0.88
std. deviation	0.08	0.06

\*reference variety



Corn: 'PH435M' (top) with reference variety 'PHEDR' (bottom)