

**A REPORT OF THE  
NATIONAL SUNFLOWER VARIETY REVIEW BOARD**



**ASSOCIATION OF OFFICIAL SEED CERTIFYING AGENCIES**

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ASSOCIATION OF OFFICIAL SEED CERTIFYING AGENCIES  
(April 2009)

The Association of Official Seed Certifying Agencies (AOSCA) National Sunflower Variety Review Board (NSFVRB), reviewed the following varieties on April 23, 2009, in Fargo, North Dakota. The Board recommended the inclusion of these varieties for certification. Seed of these varieties may be certified, providing production meets all standards of the Certifying Agency of the jurisdiction in which the seed is grown.

All variety information, including descriptions, claims, and research data to support any claim was supplied to the National Sunflower Variety Review Board by the applicants. The National Sunflower Variety Review Board makes judgment regarding recommendation of varieties for inclusion in certification based on the data supplied. Beyond this, the National Sunflower Variety Review Board takes no position on the accuracy or truthfulness of any description or claim made by the applicants.

Further information on current procedures, application forms, and details regarding the National Sunflower Variety Review Board can be obtained from:

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Respectfully submitted,

Ron Larson, Chairman  
National Sunflower Variety Review Board

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## 20344

- 20344 is an Advanta F9 high-oleic sunflower B line (pollen fertility maintainer) developed from a B-line population. This population resulted from the cross Pervenet // 20002 / B14-1438-11-11-4. Pervenet is an old Rassic variety and was used in this cross as a high-oleic source. The lines 20002 and B14-1438-11-11-4 are Advanta proprietary B lines, developed at the Advanta research center at Venado Tuerto – Argentina. Pedigree method was followed along with selection for good agronomics, intermediate maturity, oil content, high-oleic percentage, and PET1 sterility maintenance. The general and specific combining abilities were tested in F8. The line was considered stable for all traits in the nursery of Venado Tuerto, Argentina, season 1998-99. The line 20344 and its hybrids were tested in Fargo, ND (USA) in 2008. 20344 is the B line of the female 10344 (CMS PET1), which produces mid-early and mid maturity hybrids, so adapted to mid season growing areas of Argentina and the U.S.
- 20344 and its hybrids are considered mid-early or mid maturity, so adapted and recommended for merchandising in mid season growing areas Argentina and the U.S. They were tested in Balcarce, Buenos Aires, Argentina: season 2008/09, 2<sup>nd</sup> planting date; Spain, Pavia, in 1997; Fargo, ND, USA, in 2008  
The primary uses of the hybrids produced with 25044 are mid-oleic (Nusun) and high-oleic oils.

- Maturity (relatively early, medium or late?): late  
Height (relatively short, medium or tall?): tall  
Stem branching: no branching  
Leaf shape: cordate Leaf margins: Coarsely serrate  
Leaf attitude: descending Leaf surface: Slightly crinkled  
Leaf color: green  
Ray flowers: present Ray flower color: Yellow  
Disk flower color: yellow Stigma anthocyanin: absent  
Pollen color: yellow Pappi color: Green  
Receptacle shape: convex Head (neck) attitude: descending  
Seed outer pericarp color: Striped black Seed middle pericarp color: white  
Stripe appearance: Light gray, lateral and marginal Seed shape: narrowly ovate  
Seed cross-section: curved

State expected variants or other varietal traits that will assist in identification in the field:

Very uniform in blooming and all the other traits; medium plant height; the head is large, convex and descending at maturity; seeds are black with light-gray marginal and lateral stripes, narrowly ovate and long.

- 20344 is moderate resistant to *Phomopsis* and susceptible to *Sclerotinia*, *Verticillium*, and black rust.
- Advanta Pacific, LLC is fully responsible for the respective sunflower inbred line maintenance and multiplication, preserving its genetic purity identity and seed quality. The multiplication procedure comprises 3 generations (stages): 1. Breeder seed (produced under bags - direct Sunflower Breeder supervision), and 2. Foundation, and Basic seed is produced under cages or in isolated plots.
- If 20344 is accepted by official certifying agencies, certified seed will be first offered for sale in 2010. Advanta US, Inc. does not want the acreage certified each year to be published by AOSCA and the certifying agencies.
- For present, application will not be made for P.V.P.



## 25044

1. 25044 is a high-oleic, downy-mildew (race 730) resistant B line developed by Advanta Pacific LLC from a B-line population (2Donor89). The population 2Donor89 resulted from the cross HA 89 / Pervenet // 24290HO)-4-4-45-3-3. HA 89 is a public line released by USDA, Pervenet is an old Russian variety, and 24290HO)-4-4-45-3-3 is an Advanta proprietary B line. Pedigree method was followed along with selection for good agronomics, earliness, oil content, high-oleic percentage, and PET1 sterility maintenance. The general and specific combining ability was tested in F5 and F6, respectively. 25044 is the B line of the female 15044 (CMS PET1), which produces early and mid-early hybrids, adapted to short and mid season growing areas in the U.S. and Canada.
2. 25044 and its hybrids are considered early and mid-early, so adapted and recommended for merchandising in short and mid season sunflower growing areas of the North Central U.S. and Canada. They were tested in Mapleton, ND; Cooperston, ND; Lisbon, ND, and Portage, MB. The primary uses of the hybrids produced with 25044 are mid-oleic (Nusun) and high-oleic oils.
3. Maturity (relatively early, medium or late?): early  
Height (relatively short, medium or tall?): short  
Stem branching: no branching  
Leaf shape: cordate Leaf margins: Finely serrate  
Leaf attitude: horizontal Leaf surface: smooth  
Leaf color: green  
Ray flowers: present Ray flower color: yellow  
Disk flower color: yellow Stigma anthocyanin: absent  
Pollen color: yellow Pappi color: green  
Receptacle shape: convex Head (neck) attitude: ascending  
Seed outer pericarp color: nearly solid black Seed middle pericarp color: white  
Stripe appearance: Narrow dark-gray, marginal Seed shape: narrowly ovate  
Seed cross-section: curved

State expected variants or other varietal traits that will assist in identification in the field:

Very uniform in blooming and all the other traits; medium short plant height; very good lodging and broken neck resistance; the head is large, convex and ascending at maturity; seeds are black with narrow dark-gray marginal stripes, narrowly ovate and long.

4. 25044 is resistant to downy mildew (races 730).
5. Advanta Pacific, LLC is fully responsible for the respective sunflower inbred line maintenance and multiplication, preserving its genetic purity identity and seed quality. The multiplication procedure comprises 3 generations (stages): 1. Breeder seed (produced under bags - direct Sunflower Breeder supervision), and 2. Foundation, and Basic seed is produced under cages or in isolated plots.
6. If 25044 is accepted by official certifying agencies, certified seed will be first offered for sale in 2010. Advanta US, Inc. does not want the acreage certified each year to be published by AOSCA and the certifying agencies.
7. For present, application will not be made for P.V.P.



## 25046

- 25046 is an IMI herbicide tolerant, high-oleic, downy-mildew (race 730) resistant B line, developed by Advanta-US, Inc. from an IMI, high oleic, downy mildew (race730) resistance B-line population (3Donor90). The population 3Donor90 resulted from the cross IMISUN-1 / Pervenet // 24290HO)-4-4-45-3-3. IMISUN-1 is a public B line released by USDA, Pervenet is an old Russian variety, and 24290HO)-4-4-45-3-3 is an Advanta proprietary B line.  
Pedigree method was followed along with selection for IMI tolerance, high-oleic percentage, downy mildew resistance (race 730), good agronomics, earliness, oil content, and PET1 sterility maintenance. The general and specific combining abilities were tested in F5 and F6, respectively. 25046 is the B line of the female 15046 (CMS PET1), which produces early and mid-early hybrids, adapted to short and mid season growing areas in the U.S. and Canada.
- 25046 and most of its hybrids are recommended for short and mid season sunflower growing areas of the North Central U.S. and Canada, especially for weedy areas. They were tested in Mapleton, ND; Cooperstown, ND; Lisbon, ND, and Portage, MB. The primary uses of the hybrids produced with 25046 are mid-oleic (Nusun) and high-oleic oils.
- Maturity (relatively early, medium or late?): early  
Height (relatively short, medium or tall?): short  
Stem branching: no branching  
Leaf shape: cordate Leaf margins: Finely serrate  
Leaf attitude: horizontal Leaf surface: smooth  
Leaf color: green  
Ray flowers: present Ray flower color: yellow  
Disk flower color: yellow Stigma anthocyanin: absent  
Pollen color: yellow Pappi color: green  
Receptacle shape: convex Head (neck) attitude: ascending  
Seed outer pericarp color: nearly solid black Seed middle pericarp color: white  
Stripe appearance: Narrow dark-gray, marginal Seed shape: narrowly ovate  
Seed cross-section: curved

State expected variants or other varietal traits that will assist in identification in the field:

25046 is very uniform in blooming and all the other traits; medium short plant height; very good lodging and broken neck resistance; the head is large, convex and ascending at maturity; seeds are black with narrow dark-gray marginal stripes, narrowly ovate and long.

- 25046 is an IMI herbicide tolerant sunflower line, resistant to downy mildew (race 730).
- Advanta Pacific, LLC is fully responsible for the respective sunflower inbred line maintenance and multiplication, preserving its genetic purity identity and seed quality. The multiplication procedure comprises 3 generations (stages): 1. Breeder seed (produced under bags - direct Sunflower Breeder supervision), and 2. Foundation, and Basic seed is produced under cages or in isolated plots.
- If 25046 is accepted by official certifying agencies, certified seed will be first offered for sale in 2010. Advanta US, Inc. does not want the acreage certified each year to be published by AOSCA and the certifying agencies.
- For present, application will not be made for P.V.P.



## 29803

1. Sunflower inbred line 29803 is a high stearic, mid – high oleic type line. It was developed by the Advanta breeding and biotechnology program at Balcarce (Argentina). 29803 is an F8 maintainer line, advanced by pedigree selection from the cross of two Advanta lines: MBB08 / BHS-Ja-2-1-6-5-1. The line MBB08 is a mid - high oleic line (>75% of oleic acid) and BHS-Ja-2-1-6-5-1 is a high stearic line (>18% of stearic acid). In F2 generation, only those plants with the desired fatty acid composition (selected by gas chromatography analysis) were chosen. Selection for high stearic and higher level of oleic fatty acids, as well as for the main desired plant traits was performed each generation until 2004/05 season. At F8 generation the line showed very good stability for all traits and it was increased in bulk for the first time. 29803 is the B line (maintainer) of the sterile A line 19803 (cms PET1).
2. 29803 and its hybrids are adapted to mid season sunflower growing areas of Argentina and North Central of the U.S. The line and its hybrids were tested in Balcarce and Buenos Aires (Argentina) in 2007/08, in Balcarce and Buenos Aires (Argentina) in 2008/09, and in Fargo, ND (USA) in 2008. The primary uses of the hybrids produced with 29803 are high stearic-high or mid oleic oils (specialty oils).
3. Maturity (relatively early, medium or late?): medium  
Height (relatively short, medium or tall?): short  
Stem branching: no branching  
Leaf shape: cordate Leaf margins: medium serrate  
Leaf attitude: horizontal Leaf surface: medium crinkled  
Leaf color: green  
Ray flowers: present Ray flower color: Yellow - orange  
Disk flower color: yellow Stigma anthocyanin: absent  
Pollen color: yellow Pappi color: green  
Receptacle shape: convex Head (neck) attitude: vertical  
Seed outer pericarp color: dark brown Seed middle pericarp color: white  
Stripe appearance: absent Seed shape: narrowly ovate  
Seed cross-section: curved

State expected variants or other varietal traits that will assist in identification in the field:

Very uniform in blooming and all the other traits; medium - short plant height; the head is large – very large, convex and vertical at maturity; seeds are dark brown, narrowly ovate and long.

4. 29803 has moderate resistance to *Verticillium dahliae* and is susceptible to white rust (Albugo) and downy mildew (race 730).
5. Advanta Pacific, LLC is fully responsible for the respective sunflower inbred line maintenance and multiplication, preserving its genetic purity identity and seed quality. The multiplication procedure comprises 3 generations (stages): 1. Breeder seed (produced under bags - direct Sunflower Breeder supervision), and 2. Foundation, and Basic seed is produced under cages or in isolated plots.
6. If 29803 is accepted by official certifying agencies, certified seed will be first offered for sale in 2010. Advanta US, Inc. does not want the acreage certified each year to be published by AOSCA and the certifying agencies.
7. For present, application will not be made for P.V.P.



## 29809

1. Sunflower inbred line 29809 is a high stearic, mid oleic type line. It was developed by the Advanta breeding and biotechnology program at Balcarce (Argentina). 29809 is originated from the backcross of the Advanta proprietary B line 20033 to the F2 population of the cross MBB08 / BHS-Ja-2-1-6-5-1. The line MBB08 of the donor population is a mid - high oleic line (>75% of oleic acid), and the line BHS-Ja-2-1-6-5-1 is a high stearic line (>18% of stearic acid). In each backcross and selfing generation plants with desirable fatty acids composition and other main traits were selected. At the stage of BC2F4, in the winter nursery at Oran, Salta, 2006, the line 29809 was considered stable for all characteristics and it was increased in bulk for the first time. The line 29809 and its hybrids were tested in Fargo, ND, USA in 2008. The line 29809 is the B line of the female 19809 (cms PET1).
2. 29809 and its hybrids are considered mid-early, so adapted to mid season sunflower growing areas of Argentina and North Central of the U.S. The primary uses of the hybrids produced with 29809 are high stearic-high oleic oils (specialty oils).
3. Maturity (relatively early, medium or late?): mid-early  
Height (relatively short, medium or tall?): short  
Stem branching: no branching  
Leaf shape: cordate Leaf margins: medium serrate  
Leaf attitude: horizontal Leaf surface: medium crinkled  
Leaf color: dark green  
Ray flowers: present Ray flower color: Yellow - orange  
Disk flower color: yellow Stigma anthocyanin: absent  
Pollen color: yellow Pappi color: green  
Receptacle shape: flat Head (neck) attitude: vertical  
Seed outer pericarp color: dark gray Seed middle pericarp color: white  
Stripe appearance: Light gray, lateral and marginal Seed shape: broadly ovate  
Seed cross-section: curved

State expected variants or other varietal traits that will assist in identification in the field:

Very uniform in blooming and all the other traits; medium - short plant height; the head is large – very large, flat and horizontal at maturity; seeds are dark gray with light-gray marginal and lateral stripes, broadly ovate and long.

4. 29809 is susceptible to *Verticillium dahliae* and white rust (Albugo).
5. Advanta Pacific, LLC is fully responsible for the respective sunflower inbred line maintenance and multiplication, preserving its genetic purity identity and seed quality. The multiplication procedure comprises 3 generations (stages): 1. Breeder seed (produced under bags - direct Sunflower Breeder supervision), and 2. Foundation, and Basic seed is produced under cages or in isolated plots.
6. If 29809 is accepted by official certifying agencies, certified seed will be first offered for sale in 2010. Advanta US, Inc. does not want the acreage certified each year to be published by AOSCA and the certifying agencies.
7. For present, application will not be made for P.V.P.



## 35057

1. 35057 is an oil (traditional) type sunflower restorer inbred line, developed by Advanta-US, Inc. It was derived from the cross of two Advanta lines: R551 / 35026. The line R551 is very resistant to Sclerotinia root rot, Verticillium, and stalk lodging restorer. 35026 is a very early, root lodging resistant restorer line. Pedigree method was followed, along with selection for pollen fertility restoration, high oil content, and desired agronomics. Selection was performed each generation. This line is a recessive branched restorer, homozygous for the Rf1 gene in PET1 sterile cytoplasm.
2. 35057 and its hybrids are considered early and mid-early, so adapted and recommended for merchandising in short and mid season sunflower growing areas of the North Central U.S. and Canada. 35057 was tested in Mapleton, ND (2005-2006) for lodging, neck breakage and Phomopsis reaction. Its hybrids were tested in trials in Mapleton, ND; Cooperston, ND; Lisbon, ND, and Portage, MB. The primary uses of the hybrids produced with 35057 are high linoleic (traditional) and mid-oleic (Nusun) oils.
3. Maturity (relatively early, medium or late?): early  
Height (relatively short, medium or tall?): short  
Stem branching: fully branched (with central head)  
Leaf shape: Narrow triangular to broad triangular Leaf margins: medium serrate  
Leaf attitude: ascending Leaf surface: medium crinkled  
Leaf color: green  
Ray flowers: present Ray flower color: yellow  
Disk flower color: yellow Stigma anthocyanin: absent  
Pollen color: yellow Pappi color: green  
Receptacle shape: convex Head (neck) attitude: ascending  
Seed outer pericarp color: nearly solid black Seed middle pericarp color: white  
Stripe appearance: narrow dark gray striping Seed shape: Narrowly ovate  
Seed cross-section: curved

State expected variants or other varietal traits that will assist in identification in the field:

35057 is a fully branched (with central head) restorer line, very uniform in blooming and all the other traits; of short plant height, with very good lodging and broken neck resistance, the main head is convex and ascending at maturity, seeds nearly solid black, with narrow dark gray striping.

4. 35057 shows good resistance to Phomopsis.
5. Advanta Pacific, LLC is fully responsible for the respective sunflower inbred line maintenance and multiplication, preserving its genetic purity identity and seed quality. The multiplication procedure comprises 3 generations (stages): 1. Breeder seed (produced under bags - direct Sunflower Breeder supervision), and 2. Foundation, and Basic seed is produced under cages or in isolated plots.
6. If 35057 is accepted by official certifying agencies, certified seed will be first offered for sale in 2010. Advanta US, Inc. does not want the acreage certified each year to be published by AOSCA and the certifying agencies.
7. For present, application will not be made for P.V.P.



## 35062

1. 35062 is an Advanta Clearfield (IMI tolerant) sunflower restorer line. It was developed by incorporating IMI (imidazolinone) tolerance from the public line IMISUN-2, released by USDA, into the Advanta restorer line F4501DM4 R. The line F4501DM4 R is an early, oil (traditional) type, downy mildew (race 730) resistant restorer. The conversion was finalized after four backcross generations, followed by three selfing and selection generations. A single BC4F3 selected plant was selfed to produce the first Breeder seed of 35062. This line is a recessive fully branched with central head restorer, homozygous for the Rf1 gene in Pet 1 cytoplasm.
2. 35062 and its hybrids are considered early and mid-early, so adapted and recommended for merchandising in short and mid season sunflower growing areas of the North Central U.S. and Canada. They were tested in Mapleton, ND (2004-2005) for Phomopsis, lodging and % neck breakage resistance; Fargo, ND for IMI tolerance and greenhouse (Fargo, ND) for downy-mildew screening (2004-2005); Greenhouse Downy Mildew (Race 4) resistance: Fargo, ND 2005-2006; The hybrids were tested in trials in Mapleton, ND; Cooperston, ND; Lisbon, ND, and Portage, MB. The primary uses of the hybrids produced with 35062 are high linoleic (traditional) and mid-oleic (Nusun) oils.

3. Maturity (relatively early, medium or late?): medium  
Height (relatively short, medium or tall?): short  
Stem branching: fully branched (with central head)  
Leaf shape: cordate Leaf margins: Finely serrate  
Leaf attitude: ascending Leaf surface: smooth  
Leaf color: green  
Ray flowers: present Ray flower color: yellow  
Disk flower color: yellow Stigma anthocyanin: absent  
Pollen color: yellow Pappi color: green  
Receptacle shape: flat Head (neck) attitude: ascending  
Seed outer pericarp color: solid dark gray Seed middle pericarp color: white  
Stripe appearance: absent Seed shape: oblong  
Seed cross-section: curved

State expected variants or other varietal traits that will assist in identification in the field:

35062 is a fully branched (with central head) restorer line, very uniform in blooming and all the other traits; medium short plant height; very good lodging and broken neck resistance. The main head is flat and ascending at maturity; seeds are solid dark gray and oblong. It is tolerant to the IMI herbicide.

4. 35062 is resistance to downy-mildew (races 730), it is IMI tolerant, and is more resistant to Phomopsis.
5. Advanta Pacific, LLC is fully responsible for the respective sunflower inbred line maintenance and multiplication, preserving its genetic purity identity and seed quality. The multiplication procedure comprises 3 generations (stages): 1. Breeder seed (produced under bags - direct Sunflower Breeder supervision), and 2. Foundation, and Basic seed is produced under cages or in isolated plots.
6. If 35062 is accepted by official certifying agencies, certified seed will be first offered for sale in 2010. Advanta US, Inc. does not want the acreage certified each year to be published by AOSCA and the certifying agencies.
7. For present, application will not be made for P.V.P.



## 39811

1. Sunflower inbred line 39811 is a high stearic, mid oleic type line. It was developed by the Advanta breeding and biotechnology program at Balcarce (Argentina). 39811 is an F8 pollen fertility restorer line, advanced by pedigree selection from the cross of two Advanta restorer lines: 37014 / M3453RHS-702-1-2. The line 37014 is of oil (traditional) type, and M3453RHS-702-1-2 is mid - high oleic (>75% of oleic acid), high stearic (>18% of stearic acid) line. In F2 generation, only those plants with the desired fatty acid composition (selected by gas chromatography analysis) were chosen. Selection for high stearic and higher level of oleic fatty acids, as well as for the main desired plant traits, was performed each generation, until 2005 season. The first Breeder seed was produced in F8 generation by bulk pollination, at Oran, Salta, in 2005. This line is a recessive branched restorer, homozygous for the Rf1 gene in PET1 sterile cytoplasm.
2. 39811 and its hybrids are considered early and mid-early, so adapted to short and mid season sunflower growing areas of Argentina, North Central of the U.S. and Canada. The line and its hybrids were tested in Balcarce, Buenos Aires – Argentina in 2007/08 and 2008/09, and in Fargo, ND, USA, in 2008. The primary uses of the hybrids produced with 39811 are high stearic-mid oleic oils (specialty oils).
3. Maturity (relatively early, medium or late?): early  
Height (relatively short, medium or tall?): short  
Stem branching: top and central branching with central head.  
Leaf shape: cordate Leaf margins: medium serrate  
Leaf attitude: horizontal Leaf surface: medium crinkled  
Leaf color: green  
Ray flowers: present Ray flower color: yellow  
Disk flower color: yellow Stigma anthocyanin: absent  
Pollen color: yellow Pappi color: green  
Receptacle shape: convex Head (neck) attitude: descending  
Seed outer pericarp color: black Seed middle pericarp color: white  
Stripe appearance: light gray striping Seed shape: narrowly ovate  
Seed cross-section: not curved

State expected variants or other varietal traits that will assist in identification in the field:

39811 shows top and central branching with central head, it is very uniform in blooming and all the other traits; of short plant height, with very good lodging and broken neck resistance, the main head is convex and descending at maturity, seed is black, with light gray striping.

4. No resistance to plant diseases, insects or herbicides has been noted.
5. Advanta Pacific, LLC is fully responsible for the respective sunflower inbred line maintenance and multiplication, preserving its genetic purity identity and seed quality. The multiplication procedure comprises 3 generations (stages): 1. Breeder seed (produced under bags - direct Sunflower Breeder supervision), and 2. Foundation, and Basic seed is produced under cages or in isolated plots.
6. If 39811 is accepted by official certifying agencies, certified seed will be first offered for sale in 2010. Advanta US, Inc. does not want the acreage certified each year to be published by AOSCA and the certifying agencies.
7. For present, application will not be made for P.V.P.



## 65343

1. 65343 is an F6 fertility restorer confection sunflower restorer line advanced by pedigree selection from the cross 65101 / F9509CFR // POP-CHI-10-99. The lines 65101 and F9509CFR are Advanta elite, long and large seeded, recessive branched restorer lines. POP-CHI-10-99 is a very large, long seeded, one-headed restorer population, also developed by Advanta. Subsequent selections were performed for seed size, shape and color, Phomopsis reaction, and good agronomics. A single F6 selected plant was selfed to produce the first Breeder seed of 65343. This line is a recessive top branched restorer, homozygous for the Rf1 gene in Pet 1 cytoplasm. It is a very good combiner for producing very large, long seeded confection hybrids.
2. 65343 and its hybrids are considered early and mid-early confection hybrids, well adapted to short and mid season sunflower growing areas of the North Central U.S. and Canada. The line 65343 was tested in Mapleton, ND (2004-2005) for Phomopsis, lodging and % neck breakage resistance, and in the greenhouse (Fargo, ND) for downy-mildew screening (2004-2005). Its hybrids were tested in: Fargo, ND, Lisbon, ND, Carrington, ND, and Morden, MB. The primary uses of the hybrids produced with 65343 are v. long, large confectionary seeds.
3. Maturity (relatively early, medium or late?): early  
Height (relatively short, medium or tall?): medium  
Stem branching: top branched (with central head)  
Leaf shape: narrow triangular to broad triangular Leaf margins: finally serrate  
Leaf attitude: ascending Leaf surface: smooth  
Leaf color: light green  
Ray flowers: present Ray flower color: sulfur yellow  
Disk flower color: yellow Stigma anthocyanin: absent  
Pollen color: yellow Pappi color: green  
Receptacle shape: flat Head (neck) attitude: descending  
Seed outer pericarp color: Gray with white edge Seed middle pericarp color: white  
Stripe appearance: narrow white Seed shape: oblong  
Seed cross-section: curved

State expected variants or other varietal traits that will assist in identification in the field:

65343 is a top branched (with central head) confection restorer line, very uniform in blooming and all the other traits; of a medium plant height, with very good lodging and broken neck resistance, the main head is flat and descending at maturity, seeds are gray with white edge.

4. 65343 is resistant to downy-mildew (races 2) and Phomopsis
5. Advanta Pacific, LLC is fully responsible for the respective sunflower inbred line maintenance and multiplication, preserving its genetic purity identity and seed quality. The multiplication procedure comprises 3 generations (stages): 1. Breeder seed (produced under bags - direct Sunflower Breeder supervision), and 2. Foundation, and Basic seed is produced under cages or in isolated plots.
6. If 65343 is accepted by official certifying agencies, certified seed will be first offered for sale in 2010. Advanta US, Inc. does not want the acreage certified each year to be published by AOSCA and the certifying agencies.
7. For present, application will not be made for P.V.P.



## 65344

- 65344 is a confection sunflower restorer line, developed by Advanta-US, Inc. from a cross of three proprietary very large and long seeded confection population. Pedigree method was used. Subsequent selections were performed for seed size, shape and color, Phomopsis reaction, good agronomics. A single F5 selected plant was selfed to produce the first Breeder seed of 65344. This line is a recessive top branched restorer, homozygous for the Rf1 gene in Pet 1 cytoplasm. It is a very good combiner. Due to its very good plant uniformity, outcrosses produced by pollen contamination, and seed mixtures can be easily identified.
- 65344 and its hybrids are considered early and mid-early confection hybrids, well adapted to short and mid season sunflower growing areas of the North Central U.S. and Canada. The line 65344 was tested in Mapleton, ND (2004-2005) for Phomopsis, Verticillium, lodging and % of neck breakage, and in the greenhouse (Fargo, ND) for downy-mildew screening (2004-2005). Its hybrids were tested in: Fargo, ND, Lisbon, ND, Carrington, ND, and Morden, MB. The primary uses of the hybrids produced with 65344 are v. long, large confectionary seeds.
- Maturity (relatively early, medium or late?): Medium early  
Height (relatively short, medium or tall?): tall  
Stem branching: top branched (with central head)  
Leaf shape: narrow triangular to broad triangular Leaf margins: finally serrate  
Leaf attitude: ascending Leaf surface: smooth  
Leaf color: light green  
Ray flowers: present Ray flower color: sulfur yellow  
Disk flower color: yellow Stigma anthocyanin: absent  
Pollen color: yellow Pappi color: green  
Receptacle shape: flat Head (neck) attitude: horizontal  
Seed outer pericarp color: light brown with narrow white edge Seed middle pericarp color: white  
Stripe appearance: marginal, narrow white Seed shape: oblong  
Seed cross-section: curved

State expected variants or other varietal traits that will assist in identification in the field:

65344 is a top branched (with central head) confection restorer line, very uniform in blooming and all the other traits, tall, with very good lodging and broken neck resistance, the main head is flat and horizontal at maturity, seeds are light brown with white edge.

- 65344 is resistant to downy-mildew (races 2) and Phomopsis
- Advanta Pacific, LLC is fully responsible for the respective sunflower inbred line maintenance and multiplication, preserving its genetic purity identity and seed quality. The multiplication procedure comprises 3 generations (stages): 1. Breeder seed (produced under bags - direct Sunflower Breeder supervision), and 2. Foundation, and Basic seed is produced under cages or in isolated plots.
- If 65344 is accepted by official certifying agencies, certified seed will be first offered for sale in 2010. Advanta US, Inc. does not want the acreage certified each year to be published by AOSCA and the certifying agencies.
- For present, application will not be made for P.V.P.



## B42DMHO-12

1. The origin of B42DMHO-12 maintainer line is derived from the cross of two maintainer lines, BE78078/B42DM. One is an Argentinean DeKalb line (B42DM) and the other a French DeKalb line (BE78078). The Downy Mildew (PL6) character was obtained from the Argentinean line (B42DM) and the High Oleic character was obtained from the France Line (BE78078). We use conventional breeding with hand pollination. The selection method was "Pedigree" method without backcrossing. The Downy Mildew (PL6) character was obtained from the Argentinean line and the High Oleic character was obtained from the France line. The original cross was made in 2001 in Camet Station by hand pollinations by Monsanto breeders. The A line or CMS line) was stabilized after 6 generations of backcrosses.
2. Widely adapted to Northern Europe, and Northern USA. Primarily for the NuSun market in the USA.
3. Maturity (relatively early, medium or late?): early  
Height (relatively short, medium or tall?): short  
Stem branching: No branching  
Leaf shape: Cordate Leaf margins: Coarsely serrate  
Leaf attitude: Horizontal Leaf surface: crinkled  
Leaf color: green  
Ray flowers: present Ray flower color: orange yellow  
Disk flower color: yellow Stigma anthocyanin: absent  
Pollen color: yellow Pappi color: green  
Receptacle shape: convex Head (neck) attitude: descending  
Seed outer pericarp color: Black with grey stripe Seed middle pericarp color: white  
Stripe appearance: Light grey stripe Seed shape: Broadly ovate  
Seed cross-section: curved

State expected variants or other varietal traits that will assist in identification in the field: none

4. Good downy mildew resistance, susceptible to rust, verticillium, phoma, and white rust.
5. Maintained by Monsanto, has been licensed to Croplan Genetics.  
Breeder seed produced from single head selections from Monsanto Breeder in Argentina. Harvested as individual heads.  
Gen 1 seed planted head to row, any problem rows are rejected, harvested in Bulk.  
Gen 2 seed planted 2:1 ration of A:B lines, rouged and harvested as bulk seed.  
Gen 2 seed used for F1 hybrid production.  
All parent seed production is done by Monsanto Parent seed groups.
6. The anticipated first year of certified seed sales is 2009
7. Monsanto currently has no plans to PVP this line.



## OIN807B

- OIN807B is an imidazolinone resistant high oleic oilseed maintainer developed by Mycogen Seeds that is derived from the cross CIN807B/ON1224B. CIN807B and ON1224B are Mycogen Seeds proprietary near isogenic lines contributing imidazolinone resistance and high oleic traits, respectively. The pedigree method was used in the development of OIN807B. It is a bulk of F5 plants tracing back to a single F4 plant. The male-sterile component of OIN807B, named OIN807A, uses the Cms PET 1 [*H. petiolaris* (French)] cytoplasm.
- OIN807B hybrids are adapted for oilseed markets in the northern plains and late plantings in the southern plains of the U.S.
- Maturity (relatively early, medium or late?): Relatively early  
Height (relatively short, medium or tall?): Relatively short  
Stem branching: none  
Leaf shape: Cordate Leaf margins: Medium serrated  
Leaf attitude: Descending Leaf surface: Crinkled  
Leaf color: Green  
Ray flowers: Present Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Nearly solid black Seed middle pericarp color: White  
Stripe appearance: Narrow dark-gray striping Seed shape: Broadly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

OIN807B is similar in appearance to its near isogenic parent CIN807B, but flowers 4 days earlier and has ray flower lengths approximately 12 mm longer. It has longer and wider ray flowers, and approximately 6 cm more height than HA89. Days to flower and maturity are approximately 4 and 2 days earlier than HA89, head attitude and size are similar. OIN807B's oil content is consistently higher than HA89 by 3-4%.

- OIN807B has genetic resistance to imidazolinone herbicides. This variety does not appear to have obvious qualitative genetic resistance to major diseases and insects.
- Mycogen Seed Co. is responsible for maintenance of all seed stocks. Foundation seed will be produced in open-pollinated increases in isolation according to standards in the state where it is produced. A maximum of two generations beyond breeder seed will be permitted. Breeder seed will originate from cage isolations or controlled bagging in a nursery. No licensing agreements are anticipated.
- Certified seed of hybrids using this variety may be made available for the 2010 season. Please do not publish certified acreage.
- It is not anticipated that a PVP application will be made on this variety.



## OIN809B

1. OIN809B is an imidazolinone resistant high oleic oilseed maintainer developed by Mycogen Seeds that is derived from the cross CIN809B/ON1225B. CIN809B and ON1225B are Mycogen Seeds proprietary near isogenic lines contributing imidazolinone resistance and high oleic traits, respectively. The pedigree method was used in the development of OIN809B. It is a bulk of F6 plants tracing back to a single F5 plant.
2. OIN809B hybrids are adapted for oilseed markets in the northern plains and late plantings in the southern plains of the U.S.
3. Maturity (relatively early, medium or late?): Relatively early  
Height (relatively short, medium or tall?): Relatively short  
Stem branching: none  
Leaf shape: Cordate Leaf margins: Medium serrated  
Leaf attitude: Descending Leaf surface: Crinkled  
Leaf color: Green  
Ray flowers: Present Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Horizontal  
Seed outer pericarp color: Nearly solid black Seed middle pericarp color: White  
Stripe appearance: Narrow dark-gray striping Seed shape: Broadly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

OIN809B is similar in appearance to its near isogenic parent CIN809B, but is slightly shorter in height, and longer and wider ray flowers. OIN809B is a few days earlier in flowering and maturity relative to HA89. It is approximately 5 cm shorter than HA89 with similar leaf length and width. Ray flowers are only slightly longer but similar in width as HA89; and seed size of OIN809B is obviously larger.

4. OIN809B has genetic resistance to imidazolinone herbicides. This variety does not appear to have obvious qualitative genetic resistance to major diseases and insects.
5. Mycogen Seed Co. is responsible for maintenance of all seed stocks. Foundation seed will be produced in open-pollinated increases in isolation according to standards in the state where it is produced. A maximum of two generations beyond breeder seed will be permitted. Breeder seed will originate from cage isolations or controlled bagging in a nursery. No licensing agreements are anticipated.
6. Certified seed of hybrids using this variety may be made available for the 2010 season. Please do not publish certified acreage.
7. It is not anticipated that a PVP application will be made on this variety.



# OND687R

1. OND687R is a downy mildew resistant high oleic oilseed restorer line developed by Mycogen Seed Co. derived from the backcross pedigree ONN687R[3]/629347.1R. ONN687R and 629347.1R are Mycogen proprietary oilseed restorers used as the high oleic recurrent parent and downy mildew resistant donor parent, respectively. The backcross pedigree method was used in the development of OND687R. It is a bulk of BC3F5 plants tracing back to a single BC3F4 plant. OND687R has the Cms PET 1 [*H. petiolaris* (French)] cytoplasm and is homozygous for fertility restoration, confirmed by male flower fertility.
2. OND687R hybrids are adapted for oilseed markets in the northern plains and late plantings in the southern plains of the U.S.
3. Maturity (relatively early, medium or late?): Relatively early  
Height (relatively short, medium or tall?): Relatively short  
Stem branching: Fully branched  
Leaf shape: Cordate Leaf margins: Coarsely serrated  
Leaf attitude: Descending Leaf surface: Crinkled  
Leaf color: Green  
Ray flowers: Present Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Present – weak expression  
Pollen color: Yellow Pappi color: Red  
Receptacle shape: Convex Head (neck) attitude: Horizontal  
Seed outer pericarp color: Nearly solid black Seed middle pericarp color: White  
Stripe appearance: Narrow dark grey Seed shape: Narrowly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

OND687R is a fully branching high oleic restorer line resistant to all known North American races of downy mildew. OND687R's phenotype is very similar to the recurrent parent ONN687R. Days to flower and maturity are approximately 3 and 5 days later than RHA801, respectively. It has rust colored pappi and weak expression of stigma anthocyanin. Its short plant height can be characterized as dwarf in stature. Ray flower petals are longer and wider than RHA801. Seed length is noticeably short with nearly solid black outer pericarp.

4. OND687R is resistant to all known races of downy mildew in North America.
5. Mycogen Seed Co. is responsible for maintenance of all seed stocks. Foundation seed will be produced in open-pollinated increases in isolation according to standards in the state where it is produced. A maximum of two generations beyond breeder seed will be permitted. Breeder seed will originate from cage isolations or controlled bagging in a nursery. No licensing agreements are anticipated.
6. Certified seed of hybrids using this variety may be made available for the 2010 season. Please do not publish certified acreage.
7. It is not anticipated that a PVP application will be made on this variety.



## OND947R

1. OND947R is a downy mildew resistant high oleic oilseed restorer line developed by Mycogen Seed Co. derived from the backcross pedigree ONN947R[3]/629347.1R. ONN947R and 629347.1R are Mycogen proprietary oilseed restorers used as the high oleic recurrent parent and downy mildew resistant donor parent, respectively. The backcross pedigree method was used in the development of ONN947R. It is a bulk of BC3F5 plants tracing back to a single BC3F4 plant. OND947R has the Cms PET 1 [*H. petiolaris* (French)] cytoplasm and is homozygous for fertility restoration, confirmed by male flower fertility.
2. OND947R hybrids are adapted for oilseed markets in the northern and southern plains of the U.S., and most east and west European sunflower growing regions.
3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Relatively short  
Stem branching: Fully branched  
Leaf shape: Cordate Leaf margins: Medium serrated  
Leaf attitude: Descending Leaf surface: Crinkled  
Leaf color: Green  
Ray flowers: Present Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Red – weak expression  
Receptacle shape: Convex Head (neck) attitude: Horizontal  
Seed outer pericarp color: Nearly solid black Seed middle pericarp color: White  
Stripe appearance: Narrow dark grey Seed shape: Narrowly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

OND947R's phenotype is very similar to the recurrent parent ONN947R except having no visible expression of stigma anthocyanin. OND947R is later than RHA801, flowering and maturing 6 and 9 days later. It has a similar weaker expression of rust colored pappi compared to RHA801, but no visible stigma anthocyanin compared to obvious expression of RHA801. Its short plant height can be characterized as dwarf in stature (13 cm shorter than RHA801). Leaves and ray petal width are similar in size to RHA801, but ray flower length is noticeably shorter by approximately 8 mm. Seed length is obviously short with nearly solid black outer pericarp.

4. OND947R is resistant to the metalaxyl resistant downy mildew races of North America (races 730, 733, and 770).
5. Mycogen Seed Co. is responsible for maintenance of all seed stocks. Foundation seed will be produced in open-pollinated increases in isolation according to standards in the state where it is produced. A maximum of two generations beyond breeder seed will be permitted. Breeder seed will originate from cage isolations or controlled bagging in a nursery. No licensing agreements are anticipated.
6. Certified seed of hybrids using this variety may be made available for the 2010 season. Please do not publish certified acreage.
7. It is not anticipated that a PVP application will be made on this variety.



## CI1701B

1. CI1701B is an imidazolinone resistant conventional oilseed maintainer developed by Mycogen Seeds that is derived from the cross CN1701B[4]/IMISUN-1.5XB. CN1701B is a Mycogen proprietary line used as the recurrent parent. IMISUN-1.5XB is a imidazolinone resistant donor parent released by the USDA-ARS in 1998. The backcross pedgree method was used in the development of CI1701B. It is a bulk of BC4F5 plants tracing back to a single BC4F4 plant. The male-sterile component of CI1701B, named CI1701A, uses the Cms PET 1 [*H. petiolaris* (French)] cytoplasm.
2. CI1701B hybrids are adapted for oilseed markets in the northern and southern plains of the U.S.
3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium-tall  
Stem branching: none  
Leaf shape: Cordate Leaf margins: Medium serrated  
Leaf attitude: Descending Leaf surface: Crinkled  
Leaf color: Green  
Ray flowers: Present Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Present  
Pollen color: Yellow Pappi color: Rust  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Nearly solid black Seed middle pericarp color: White  
Stripe appearance: Narrow dark-gray striping Seed shape: Broadly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

CI1701B is similar in appearance to its recurrent parent CN1701B, except that it is approximately 10 cm taller, has stronger stigma anthocyanin expression, and slightly longer and wider ray flowers. CI1701B also has rust colored pappi which is absent in HA89 (stigma anthocyanin also absent in HA89). CI1701B is approximately 40 cm taller than HA89 and 4 days later flowering. Leaf width and length is similar to HA89. Head/neck bend is more excessive to about 125-130° from the vertical stem.

4. CI1701B has genetic resistance to imidazolinone herbicides. This variety does not appear to have obvious qualitative genetic resistance to major diseases and insects.
5. Mycogen Seed Co. is responsible for maintenance of all seed stocks. Foundation seed will be produced in open-pollinated increases in isolation according to standards in the state where it is produced. A maximum of two generations beyond breeder seed will be permitted. Breeder seed will originate from cage isolations or controlled bagging in a nursery. No licensing agreements are anticipated.
6. Certified seed of hybrids using this variety may be made available for the 2010 season. Please do not publish certified acreage.
7. It is not anticipated that a PVP application will be made on this variety.



## CN1703B

1. CN1703B is a conventional oilseed maintainer developed by Mycogen Seeds that is derived from the cross H535B/H1028B. Both H535B and H1028B are Mycogen Seeds proprietary lines. The pedigree method was used in the development of CN1703B. It is a bulk of F7 plants tracing back to a single F6 plant. The male-sterile component of CN1703B, named CN1703A, uses the Cms PET 1 [*H. petiolaris* (French)] cytoplasm.
2. CN1703B hybrids are adapted for oilseed markets in the northern and southern plains of the U.S.
3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium  
Stem branching: none  
Leaf shape: Cordate                      Leaf margins: Medium serrated  
Leaf attitude: Descending              Leaf surface: Crinkled  
Leaf color: Green  
Ray flowers: Present                      Ray flower color: Yellow  
Disk flower color: Yellow                      Stigma anthocyanin: absent  
Pollen color: Yellow                      Pappi color: Green  
Receptacle shape: Convex                      Head (neck) attitude: Descending  
Seed outer pericarp color: Dark gray                      Seed middle pericarp color: White  
Stripe appearance: Narrow dark-gray striping                      Seed shape: Broadly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

CN1703B's overall appearance is similar to HA89. However, CN1703B days to flower and maturity are approximately 4 and 5 days later; it has more leaves and shorter internodes; and ray flowers approximately 5 mm shorter. CN1703B does not have anthocyanin in stigmas or pappi, similar to HA89. Outer seed pericarp is more dark gray than black.

4. CN1703B does not appear to have obvious qualitative genetic resistance to major diseases and insects.
5. Mycogen Seed Co. is responsible for maintenance of all seed stocks. Foundation seed will be produced in open-pollinated increases in isolation according to standards in the state where it is produced. A maximum of two generations beyond breeder seed will be permitted. Breeder seed will originate from cage isolations or controlled bagging in a nursery. No licensing agreements are anticipated.
6. Certified seed of hybrids using this variety may be made available for the 2009 season. Please do not publish certified acreage.
7. It is not anticipated that a PVP application will be made on this variety.



## OI1153B

- OI1153B is a imidazolinone resistant high oleic confection maintainer developed by Mycogen Seeds that is derived from the backcross pedigree ON1153B[3]/OI1601B. ON1153B and OI1601B are Mycogen Seeds proprietary recurrent and IMI donor inbred parents, respectively. The backcross pedigree method was used in the development of OI1153B. It is a bulk of BC3F6 plants tracing back to a single BC3F5 plant. The male-sterile component of OI1153B, named OI1153A, uses the Cms PET 1 [*H. petiolaris* (French)] cytoplasm.
- OI1153B hybrids are adapted for the in-shell confection markets in major sunflower growing regions of North and South America.
- Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Relatively short  
Stem branching: none  
Leaf shape: Cordate Leaf margins: Medium serrated  
Leaf attitude: Descending Leaf surface: Crinkled  
Leaf color: Green  
Ray flowers: Present Ray flower color: Orange yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Broad gray striped Seed middle pericarp color: White  
Stripe appearance: Narrow white Seed shape: Broadly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

Noticable distinguishing features relative to HA292 are shorter plant height and reduced internode length. Late emerging plants can grow 25-30 cm taller than earlier emerged plants under high plant populations, which are sometimes mistakenly interpreted as genetic height segregation or off type plants.

- OI1153B has genetic resistance to imidazolinone herbicides. This variety does not appear to have obvious qualitative genetic resistance to major diseases and insects.
- Mycogen Seed Co. is responsible for maintenance of all seed stocks. Foundation seed will be produced in open-pollinated increases in isolation according to standards in the state where it is produced. A maximum of two generations beyond breeder seed will be permitted. Breeder seed will originate from cage isolations or controlled bagging in a nursery. No licensing agreements are anticipated.
- Certified seed of hybrids using this variety may be made available for the 2010 season. Please do not publish certified acreage.
- It is not anticipated that a PVP application will be made on this variety.



## OI7443B

1. OI7443B is a high oleic, imidazolinone resistant oilseed maintainer developed by Mycogen Seeds that is derived from the cross CN2343B[3]/OI1601B. CN2343B and OI1601B are Mycogen Seeds proprietary recurrent and Oleic/IMI donor inbred parents, respectively. The backcross pedigree method was used in the development of OI7443B. It is a bulk of BC3F5 plants tracing back to a single BC3F4 plant. The male-sterile component of OI7443B, named OI7443A, uses the Cms PET 1 [*H. petiolaris* (French)] cytoplasm.
2. OI7443B hybrids are adapted for oilseed markets in the northern and southern plains of the U.S.
3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium  
Stem branching: none  
Leaf shape: Cordate Leaf margins: Medium serrated  
Leaf attitude: Descending Leaf surface: Crinkled  
Leaf color: Green  
Ray flowers: Present Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Absent  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Nearly solid black Seed middle pericarp color: White  
Stripe appearance: Narrow dark-gray striping Seed shape: Less Broadly ovate than HA89  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

OI7443B is similar in appearance to its recurrent parent CN2343B with no obvious distinguishable characteristics between them except for the high oleic and imidazolinone traits acquired by the donor parent. OI7443B has height approximately 18 cm taller than HA89. Ray flowers are obviously longer and wider, and days to flower and maturity about 4 and 6 later than HA89. Head attitude and leaf size are similar.

4. OI7443B has genetic resistance to imidazolinone herbicides. This variety does not appear to have obvious qualitative genetic resistance to major diseases and insects.
5. Mycogen Seed Co. is responsible for maintenance of all seed stocks. Foundation seed will be produced in open-pollinated increases in isolation according to standards in the state where it is produced. A maximum of two generations beyond breeder seed will be permitted. Breeder seed will originate from cage isolations or controlled bagging in a nursery. No licensing agreements are anticipated.
6. Certified seed of hybrids using this variety may be made available for the 2010 season. Please do not publish certified acreage.
7. It is not anticipated that a PVP application will be made on this variety.



## OID687R

1. OID687R is a downy mildew and imidazolinone resistant high oleic oilseed restorer line developed by Mycogen Seed Co. derived from the cross OIN587R/OND687R. OIN587R and OND687R are Mycogen proprietary oilseed restorer isoline parents of OID687R contributing imidazolinone and downy mildew resistance, respectively. The pedigree method was used in the development of OID687R. It is a bulk of F5 plants tracing back to a single F4 plant. OID687R has the Cms PET 1 [*H. petiolaris* (French)] cytoplasm and is homozygous for fertility restoration, confirmed by male flower fertility.
2. OID687R hybrids are adapted for oilseed markets in the northern plains and late plantings in the southern plains of the U.S.
3. Maturity (relatively early, medium or late?): Relatively early  
Height (relatively short, medium or tall?): Relatively short  
Stem branching: Fully branched  
Leaf shape: Cordate Leaf margins: Medium serrated  
Leaf attitude: Descending Leaf surface: Crinkled  
Leaf color: Green  
Ray flowers: Present Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Present – good expression  
Pollen color: Yellow Pappi color: Red – strong expression  
Receptacle shape: Convex Head (neck) attitude: Horizontal  
Seed outer pericarp color: Nearly solid black Seed middle pericarp color: White  
Stripe appearance: Narrow dark grey Seed shape: Narrowly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

OID687R's phenotype is very similar to the Mycogen isoline OND687R except that it is slightly earlier and taller; shows stronger expression of anthocyanin in its stigmas and pappi; and has shorter and narrower ray flower petals. Days to flower and maturity are approximately 2 and 4 days later than RHA801, respectively. Its short plant height can be characterized as dwarf in stature. Ray flower petals are only slightly longer and wider than RHA801. Seed length is noticeably short with nearly solid black outer pericarp.

4. OID687R is resistant to the metalaxyl resistant downy mildew races of North America (races 730, 733, and 770).
5. Mycogen Seed Co. is responsible for maintenance of all seed stocks. Foundation seed will be produced in open-pollinated increases in isolation according to standards in the state where it is produced. A maximum of two generations beyond breeder seed will be permitted. Breeder seed will originate from cage isolations or controlled bagging in a nursery. No licensing agreements are anticipated.
6. Certified seed of hybrids using this variety may be made available for the 2010 season. Please do not publish certified acreage.
7. It is not anticipated that a PVP application will be made on this variety.



## B0560HG

1. B0560HG is an Express resistant, oleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross B0387HG/B0383LG. B0387HG and B0383LG are both Pioneer proprietary lines. The pedigree method was used in the development of B0560HG. It is a bulk of F6 seed tracing back to a single F5 selection. The sterile analog derives from the CMS PET1 cytoplasm following 4 generations of backcrossing. It is homozygous dominant for single heads.
2. Hybrids utilizing B0560HG are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium  
Stem branching: Single headed, w/  
occasional basal branch  
Leaf shape: Cordate Leaf margins: Medium serrations, w/ intermediate  
indentations  
Leaf attitude: Ascending Leaf surface: Slight blistering  
Leaf color: Green  
Ray flowers: Broadly ovate and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Striped black Seed middle pericarp color: White  
Stripe appearance: Grey, both marginal & lateral Seed shape: Narrowly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

Hypocotyl anthocyanin is absent.

4. B0560HG is resistant to tribenuron-methyl.
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## B0646LG

1. B0646LG is an Express resistant, linoleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross B0535LG/B0504LG. B0535LG and B0504LG are both Pioneer proprietary lines. The pedigree method was used in the development of B0646LG. It is a bulk of F6 seed tracing back to a single F5 selection. The sterile analog derives from the CMS PET1 cytoplasm following 4 generations of backcrossing. It is homozygous dominant for single heads.
2. Hybrids utilizing B0646LG are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium-tall  
Stem branching: None  
Leaf shape: Cordate Leaf margins: Fine, shallow serrations  
Leaf attitude: Ascending Leaf surface: Slight blistering  
Leaf color: Green  
Ray flowers: Narrowly ovate and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: None  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Striped black Seed middle pericarp color: White  
Stripe appearance: Grey, both marginal and lateral Seed shape: Narrowly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

It has a medium intensity of hypocotyl anthocyanin

4. B0646LG is resistant to tribenuron-methyl.
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## F05BPLG

1. F05BPLG is a conventional, linoleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross PHA246/FXT006LG. PHA246 and FXT006LG are both Pioneer proprietary lines. The pedigree method was used in the development of F05BPLG. It is a bulk of F7 seed tracing back to a single F6 selection. The sterile analog derives from the CMS PET1 cytoplasm following 5 generations of backcrossing. It is homozygous dominant for single heads.
2. Hybrids utilizing F05BPLG are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium  
Stem branching: Absent  
Leaf shape: Cordate Leaf margins: Medium serrations w/ intermediate indentations  
Leaf attitude: Ascending Leaf surface: Slight blistering  
Leaf color: Light green  
Ray flowers: Fusiforme and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Flat Head (neck) attitude: Ascending slightly  
Seed outer pericarp color: Striped black Seed middle pericarp color: White  
Stripe appearance: Grey, both marginal & lateral Seed shape: Oblong  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

Hypocotyl anthocyanin is absent.

4. None
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## F05CTLG

1. F05CTLG is a conventional, linoleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross PHA018/AEV004LG. PHA018 is a Pioneer selection of the South African line, HS52-9-1-1. AEV004LG is a Pioneer proprietary line. The pedigree method was used in the development of F05CTLG. It is a bulk of F7 seed tracing back to a single F6 selection. The sterile analog derives from the CMS PET1 cytoplasm following 5 generations of backcrossing. It is homozygous dominant for single heads.
2. Hybrids utilizing F05CTLG are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Medium-late  
Height (relatively short, medium or tall?): Medium  
Stem branching: Absent  
Leaf shape: Cordate Leaf margins: Medium serrations w/ intermediate indentations  
Leaf attitude: Horizontal Leaf surface: Slight blistering  
Leaf color: Light green  
Ray flowers: Fusiforme and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Striped black Seed middle pericarp color: White  
Stripe appearance: Grey, both marginal & lateral Seed shape: Narrowly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

It has weak intensity of hypocotyl anthocyanin.

4. None
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## F0514HG

1. F0514HG is a conventional, oleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross MMW001QG/T9677QG. MMW001QG and T9677QG are both Pioneer proprietary lines. The pedigree method was used in the development of F0514HG. It is a bulk of F8 seed tracing back to a single F7 selection. The sterile analog derives from the CMS PET1 cytoplasm following 6 generations of backcrossing. It is homozygous dominant for single heads.
2. Hybrids utilizing F0514HG are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium-short  
Stem branching: None  
Leaf shape: Cordate Leaf margins: Medium serrations w/ intermediate indentations  
Leaf attitude: Ascending Leaf surface: Slight blistering  
Leaf color: Green  
Ray flowers: Narrowly ovate and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: None  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Striped black Seed middle pericarp color: White  
Stripe appearance: Faint grey, marginal and lateral Seed shape: Narrowly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

It has a strong intensity of hypocotyl anthocyanin.

4. None
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## H0514LG

1. H0514LG is a conventional, linoleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross W96B5QG/FXT006LG. W96B5QG and FXT006LG are both Pioneer proprietary lines. The pedigree method was used in the development of H0514LG. It is a bulk of F8 seed tracing back to a single F7 selection. The sterile analog derives from the CMS PET1 cytoplasm following 6 generations of backcrossing. It is homozygous dominant for single heads.
2. Hybrids utilizing H0514LG are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe
3. Maturity (relatively early, medium or late?): Medium-early  
Height (relatively short, medium or tall?): Medium-short  
Stem branching: None

Leaf shape:	<u>Cordate</u>	Leaf margins:	<u>Medium serrations w/ intermediate indentations</u>
Leaf attitude:	<u>Horizontal</u>	Leaf surface:	<u>Slight blistering</u>
Leaf color:	<u>Green</u>		
Ray flowers:	<u>Fusiforme and undulated</u>	Ray flower color:	<u>Yellow</u>
Disk flower color:	<u>Yellow</u>	Stigma anthocyanin:	<u>Absent</u>
Pollen color:	<u>Yellow</u>	Pappi color:	<u>Green</u>
Receptacle shape:	<u>Convex</u>	Head (neck) attitude:	<u>Descending</u>
Seed outer pericarp color:	<u>Striped black</u>	Seed middle pericarp color:	<u>White</u>
Stripe appearance:	<u>Grey, lateral and marginal</u>	Seed shape:	<u>Narrowly ovate</u>
Seed cross-section:	<u>Curved</u>		

State expected variants or other varietal traits that will assist in identification in the field:

Hypocotyl anthocyanin is absent.

4. None
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## PH1001B

1. PH1001B is an Express resistant, linoleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross B0306LG/4\*B0504LG. B0306LG and B0504LG are both Pioneer proprietary lines.  
The backcross and pedigree methods were used in the development of PH1001B. It is a bulk of BC3F8 seed tracing back to a single BC3F7 selection. The sterile analog derives from the CMS PET1 cytoplasm following 6 generations of backcrossing. It is homozygous dominant for single heads.
2. Hybrids utilizing PH1001B are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.
3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium-short  
Stem branching: Absent  
Leaf shape: Cordate Leaf margins: Fine serrations w/shallow indentations  
Leaf attitude: Ascending Leaf surface: Slight blistering  
Leaf color: Light green  
Ray flowers: Narrowly ovate and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Striped black Seed middle pericarp color: White  
Stripe appearance: Grey, both marginal & lateral Seed shape: Broadly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

Hypocotyl anthocyanin is absent.

4. PH1001B is resistant to tribenuron-methyl.
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## PH1003B

1. PH1003B is an Express resistant, linoleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross E0012LG/3\*B0504LG. E0012LG and B0504LG are both Pioneer proprietary lines. The backcross and pedigree methods were used in the development of PH1003B. It is a bulk of BC2F8 seed tracing back to a single BC2F6 selection. The sterile analog derives from the CMS PET1 cytoplasm following 6 generations of backcrossing. It is homozygous dominant for single heads.
2. Hybrids utilizing PH1003B are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.
3. Maturity (relatively early, medium or late?): Medium-early  
Height (relatively short, medium or tall?): Medium  
Stem branching: Absent

Leaf shape:	<u>Cordate</u>	Leaf margins:	<u>Fine serrations w/ shallow indentations</u>
Leaf attitude:	<u>Ascending</u>	Leaf surface:	<u>Slight blistering</u>
Leaf color:	<u>Green</u>		
Ray flowers:	<u>Fusiforme and flat</u>	Ray flower color:	<u>Yellow</u>
Disk flower color:	<u>Yellow</u>	Stigma anthocyanin:	<u>Absent</u>
Pollen color:	<u>Yellow</u>	Pappi color:	<u>Green</u>
Receptacle shape:	<u>Convex</u>	Head (neck) attitude:	<u>Descending</u>
Seed outer pericarp color:	<u>Striped black</u>	Seed middle pericarp color:	<u>White</u>
Stripe appearance:	<u>Grey, both lateral and marginal</u>	Seed shape:	<u>Narrowly ovate</u>
Seed cross-section:	<u>Curved</u>		

State expected variants or other varietal traits that will assist in identification in the field:

Hypocotyl anthocyanin is absent.

4. PH1003B is resistant to tribenuron-methyl.
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## PH1004B

1. PH1004B is an Express resistant, linoleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross T0001LG/6\*33301TG. T0001LG and 33301TG are both Pioneer proprietary lines. The backcross and pedigree methods were used in the development of PH1004B. It is a bulk of BC5F8 seed tracing back to a single BC5F7 selection. The sterile analog derives from the CMS PET1 cytoplasm following 6 generations of backcrossing. It is homozygous dominant for single heads.
2. Hybrids utilizing PH1004B are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.
3. Maturity (relatively early, medium or late?): Medium late  
Height (relatively short, medium or tall?): Medium  
Stem branching: Absent  
Leaf shape: Cordate Leaf margins: Entire  
Leaf attitude: Ascending Leaf surface: Smooth  
Leaf color: Green  
Ray flowers: Fusifforme and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Vertical  
Seed outer pericarp color: Striped black Seed middle pericarp color: White  
Stripe appearance: Grey, both marginal & lateral Seed shape: Oblong  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

Hypocotyl anthocyanin is absent.

4. PH1004B is resistant to tribenuron-methyl.
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## PH1005B

1. PH1005B is an Express resistant, linoleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross RXT004LG/2\*HR19171050. RXT004LG and HR19171050 are both Pioneer proprietary lines. The backcross and pedigree methods were used in the development of PH1005B. It is a bulk of BC1F7 seed tracing back to a single BC1F6 selection. The sterile analog derives from the CMS PET1 cytoplasm following 5 generations of backcrossing. It is homozygous dominant for single heads.
2. Hybrids utilizing PH1005B are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium  
Stem branching: Absent  
Leaf shape: Cordate Leaf margins: Medium serrations w/ intermediate indentations  
Leaf attitude: Ascending Leaf surface: Slight blistering  
Leaf color: Green  
Ray flowers: Narrowly ovate and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Weak presence  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Black Seed middle pericarp color: White  
Stripe appearance: Absent Seed shape: Narrowly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

It has a medium intensity of hypocotyl anthocyanin.

4. PH1005B is resistant to tribenuron-methyl.
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## PH1008B

1. PH1008B is an Express resistant, linoleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross B0306LG/5\*B0504LG. B0306LG and B0504LG are both Pioneer proprietary lines.  
The backcross and pedigree methods were used in the development of PH1008B. It is a bulk of BC4F7 seed tracing back to a single BC4F6 selection. The sterile analog derives from the CMS PET1 cytoplasm following 5 generations of backcrossing. It is homozygous dominant for single heads.
2. Hybrids utilizing PH1008B are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium  
Stem branching: Absent  
Leaf shape: Cordate Leaf margins: Fine serrations w/ shallow indentations  
Leaf attitude: Horizontal Leaf surface: Slight blistering  
Leaf color: Light green  
Ray flowers: Narrowly ovate and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Striped black Seed middle pericarp color: White  
Stripe appearance: Grey, both marginal & lateral Seed shape: Broadly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

Hypocotyl anthocyanin is absent.

4. PH1008B is resistant to tribenuron-methyl.
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.





## PH1010B

1. PH1010B is an Express resistant, linoleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross E0205LG/6\*B0504LG. E0205LG and B0504LG are both Pioneer proprietary lines. The backcross and pedigree methods were used in the development of PH1010B. It is a bulk of BC5F6 seed tracing back to a single BC5F5 selection. The sterile analog derives from the CMS PET1 cytoplasm following 4 generations of backcrossing. It is homozygous dominant for single heads.
2. Hybrids utilizing PH1009B are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.
3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium  
Stem branching: Absent  
Leaf shape: Cordate Leaf margins: Medium serrations w/ shallow indentations  
Leaf attitude: Horizontal Leaf surface: Smooth  
Leaf color: Green  
Ray flowers: Broadly ovate and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Vertical  
Seed outer pericarp color: Striped black Seed middle pericarp color: White  
Stripe appearance: Grey, both marginal & lateral Seed shape: Broadly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

Hypocotyl anthocyanin is absent.

4. PH1010B is resistant to tribenuron-methyl.
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## T0637HG

1. T0637HG is a conventional, oleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross W96B3QG/T9819QG. W96B3QG and T9819QG are both Pioneer proprietary lines. The pedigree method was used in the development of T0637HG. It is a bulk of F8 seed tracing back to a single F7 selection. The sterile analog derives from the CMS PET1 cytoplasm following 6 generations of backcrossing. It is homozygous dominant for single heads.
2. Hybrids utilizing T0637HG are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe
3. Maturity (relatively early, medium or late?): Medium-early  
Height (relatively short, medium or tall?): Medium-short  
Stem branching: None  
Leaf shape: Cordate Leaf margins: Deep, coarse serrations  
Leaf attitude: Horizontal Leaf surface: Slight blistering  
Leaf color: Green  
Ray flowers: Broadly ovate and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: None  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Striped black Seed middle pericarp color: White  
Stripe appearance: Grey, both marginal and lateral Seed shape: Narrowly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

Hypocotyl anthocyanin is absent.

4. None
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## T0718LG

1. T0718LG is a conventional, linoleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross T9704LG/T9933LG. T9704LG and T9933LG are both Pioneer proprietary lines. The pedigree method was used in the development of T0718LG. It is a bulk of F8 seed tracing back to a single F7 selection. The sterile analog derives from the CMS PET1 cytoplasm following 6 generations of backcrossing. It is homozygous dominant for single heads.
2. Hybrids utilizing T0718LG are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.
3. Maturity (relatively early, medium or late?): Medium-early  
Height (relatively short, medium or tall?): Medium  
Stem branching: None  
Leaf shape: Cordate Leaf margins: Deep, coarse serrations  
Leaf attitude: Horizontal Leaf surface: Slight blistering  
Leaf color: Light green  
Ray flowers: Narrowly ovate and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Striped black Seed middle pericarp color: White  
Stripe appearance: Grey, both lateral and marginal Seed shape: Broadly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

It has a medium intensity of hypocotyl anthocyanin.

4. None
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.





## T0739HG

1. T0739HG is a conventional, oleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross T9819QG/U9826LG//VK816G. T9819QG, U9826LG, and VK816G are all Pioneer proprietary lines. The pedigree method was used in the development of T0739HG. It is a bulk of F8 seed tracing back to a single F7 selection. The sterile analog derives from the CMS PET1 cytoplasm following 6 generations of backcrossing. It is homozygous dominant for single heads.
2. Hybrids utilizing T0739HG are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Medium-early  
Height (relatively short, medium or tall?): Medium  
Stem branching: None  
Leaf shape: Cordate Leaf margins: Medium serrations w/ intermediate indentations  
Leaf attitude: Ascending Leaf surface: Medium blisters  
Leaf color: Green  
Ray flowers: Narrowly ovate and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Vertical  
Seed outer pericarp color: Striped black Seed middle pericarp color: White  
Stripe appearance: Grey, both lateral and marginal Seed shape: Narrowly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

Hypocotyl anthocyanin is absent.

4. None
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## U0257LG

1. U0257LG is a conventional, linoleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross U9605LG/00UL7344. U9605LG and 00UL7344 are both Pioneer proprietary lines. The pedigree method was used in the development of U0257LG. It is a bulk of F7 seed tracing back to a single F6 selection. The sterile analog derives from the CMS PET1 cytoplasm following 5 generations of backcrossing. It is homozygous dominant for single heads.
2. Hybrids utilizing U0257LG are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Early  
Height (relatively short, medium or tall?): Medium-short  
Stem branching: None  
Leaf shape: Cordate Leaf margins: Medium serrations w/ intermediate indentations  
Leaf attitude: Descending Leaf surface: Heavy blistering  
Leaf color: Green  
Ray flowers: Narrowly ovate and undulating Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Striped black Seed middle pericarp color: White  
Stripe appearance: Grey, both marginal and lateral Seed shape: Narrowly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

It has a medium intensity of hypocotyl anthocyanin.

4. None
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## U0881BG

1. U0881BG is a birdseed striped, linoleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross J9848BG/U0456LG/HXU049. J9848BG, U0456LG and HXU049 are all Pioneer proprietary lines. The pedigree method was used in the development of U0881BG. It is a bulk of F6 seed tracing back to a single F5 selection. The sterile analog derives from the CMS PET1 cytoplasm following 4 generations of backcrossing. It is homozygous dominant for single heads.
2. Hybrids utilizing U0881BG are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Medium-early  
Height (relatively short, medium or tall?): Medium  
Stem branching: None  
Leaf shape: Cordate Leaf margins: Medium serrations w/ intermediate indentations  
Leaf attitude: Descending Leaf surface: Slight blistering  
Leaf color: Dark green  
Ray flowers: Fusiforme and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Striped black Seed middle pericarp color: White  
Stripe appearance: White, both marginal & lateral Seed shape: Narrowly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

It has a medium intensity of hypocotyl anthocyanin.

4. None
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## B0643LM

1. B0643LM is an Express resistant, linoleic oil type restorer line developed by Pioneer Hi-Bred International that derives from the cross B0531LM/B0423LM. B0531LM and B0423LM are both Pioneer proprietary lines. The pedigree method was used in the development of B0643LM. It is a bulk of F6 seed tracing back to a single F5 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing B0643LM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.
3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium  
Stem branching: Fully branched

Leaf shape:	<u>Cordate</u>	Leaf margins:	<u>Medium serrations w/ intermediate indentations</u>
Leaf attitude:	<u>Horizontal</u>	Leaf surface:	<u>Medium blistering</u>
Leaf color:	<u>Dark green</u>		
Ray flowers:	<u>Narrowly ovate and flat</u>	Ray flower color:	<u>Yellow</u>
Disk flower color:	<u>Yellow</u>	Stigma anthocyanin:	<u>Weak intensity</u>
Pollen color:	<u>Yellow</u>	Pappi color:	<u>Green</u>
Receptacle shape:	<u>Convex</u>	Head (neck) attitude:	<u>Slightly descending</u>
Seed outer pericarp color:	<u>Black</u>	Seed middle pericarp color:	<u>White</u>
Stripe appearance:	<u>None</u>	Seed shape:	<u>Oblong</u>
Seed cross-section:	<u>Curved</u>		

State expected variants or other varietal traits that will assist in identification in the field:

It has a medium intensity of hypocotyl anthocyanin

4. B0643LM is resistant to tribenuron-methyl.
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## D0250LM

1. D0250LM is a conventional, linoleic oil type restorer line developed by Pioneer Hi-Bred International that derives from the cross E9602LM/CNW047QM. E9602LM and CNW047QM are both Pioneer proprietary lines. The pedigree method was used in the development of D0250LM. It is a bulk of F10 seed tracing back to a single F9 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing D0250LM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.
3. Maturity (relatively early, medium or late?): Early  
Height (relatively short, medium or tall?): Medium-short  
Stem branching: Fully branched

Leaf shape:	<u>Triangular</u>	Leaf margins:	<u>Medium serrations w/ deep indentations</u>
Leaf attitude:	<u>Descending</u>	Leaf surface:	<u>Weak blistering</u>
Leaf color:	<u>Green</u>		
Ray flowers:	<u>Narrowly ovate and flat</u>	Ray flower color:	<u>Yellow</u>
Disk flower color:	<u>Yellow</u>	Stigma anthocyanin:	<u>Absent</u>
Pollen color:	<u>Yellow</u>	Pappi color:	<u>Green</u>
Receptacle shape:	<u>Convex</u>	Head (neck) attitude:	<u>Vertical</u>
Seed outer pericarp color:	<u>Striped black</u>	Seed middle pericarp color:	<u>White</u>
Stripe appearance:	<u>Grey, both marginal &amp; lateral</u>	Seed shape:	<u>Oblong</u>
Seed cross-section:	<u>Curved</u>		

State expected variants or other varietal traits that will assist in identification in the field:

It has a weak intensity of hypocotyl anthocyanin

4. None
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## U08TSLM

1. U08TSLM is a conventional, linoleic oil type restorer line developed by Pioneer Hi-Bred International that derives from the cross U01P6LM/U05SPLM. U01P6LM and U05SPLM are both Pioneer proprietary lines. The pedigree method was used in the development of U08TSLM. It is a bulk of F6 seed tracing back to a single F5 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing U08TSLM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium-short  
Stem branching: Top-branched  
Leaf shape: Cordate Leaf margins: Fine, shallow serrations  
Leaf attitude: Horizontal Leaf surface: Slight blistering  
Leaf color: Green  
Ray flowers: Fusiforme and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Striped Black Seed middle pericarp color: White  
Stripe appearance: Faint grey, both marginal and lateral Seed shape: Oblong  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

It has a weak intensity of hypocotyl anthocyanin.

4. None
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## PH5000R

1. PH5000R is an Express resistant, linoleic oil type restorer line developed by Pioneer Hi-Bred International that derives from the cross H0560LM/2\*B0644LM. H0560LM and B0644LM are Pioneer proprietary lines. The backcross and pedigree methods were used in the development of PH5000R. It is a bulk of BC1F7 seed tracing back to a single BC1F6 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing PH5000R are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium  
Stem branching: Fully branched  
Leaf shape: Cordate Leaf margins: Fine serrations, w/ intermediate indentations  
Leaf attitude: Ascending Leaf surface: Slight blistering  
Leaf color: Green  
Ray flowers: Broadly ovate and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Dark brown Seed middle pericarp color: White  
Stripe appearance: Absent Seed shape: Oblong  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

Hypocotyl anthocyanin is absent.

4. PH5000R is resistant to tribenuron-methyl.
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## PH5001R

1. PH5001R is an Express resistant, linoleic oil type restorer line developed by Pioneer Hi-Bred International that derives from the cross U9612LM/3\*[B0604LM/B0349LM]. U9612LM, B0604LM and B0349LM are all Pioneer proprietary lines. The backcross and pedigree methods were used in the development of PH5001R. It is a bulk of BC2F6 seed tracing back to a single BC2F5 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing PH5001R are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium  
Stem branching: Fully branched  
Leaf shape: Cordate Leaf margins: Fine serrations with shallow indentations  
Leaf attitude: Horizontal Leaf surface: Smooth  
Leaf color: Light green  
Ray flowers: Broadly ovate and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Present, weak  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Brown Seed middle pericarp color: White  
Stripe appearance: Absent Seed shape: Oblong  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

It has a medium intensity of hypocotyl anthocyanin.

4. PH5001R is resistant to tribenuron-methyl.
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## PH5002R

1. PH5002R is an Express resistant, linoleic oil type restorer line developed by Pioneer Hi-Bred International that derives from the cross U01P6LM/3\*B0642LM. U01P6LM and B0642LM are both Pioneer proprietary lines. The backcross and pedigree methods were used in the development of PH5002R. It is a bulk of BC2F6 seed tracing back to a single BC2F5 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing PH5002R are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Late  
Height (relatively short, medium or tall?): Medium  
Stem branching: Fully branched  
Leaf shape: Cordate Leaf margins: Fine serrations, w/ intermediate indentations  
Leaf attitude: Ascending Leaf surface: Smooth  
Leaf color: Green  
Ray flowers: Fusiforme and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Vertical  
Seed outer pericarp color: Striped Black Seed middle pericarp color: White  
Stripe appearance: Grey, both marginal & lateral Seed shape: Elliptic  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

Hypocotyl anthocyanin is absent.

4. PH5002R is resistant to tribenuron-methyl.
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## PH5003R

1. PH5003R is an Express resistant, linoleic oil type restorer line developed by Pioneer Hi-Bred International that derives from the cross F0009LM/3\*B0642LM. F0009LM and B0642LM are both Pioneer proprietary lines. The backcross and pedigree methods were used in the development of PH5003R. It is a bulk of BC2F8 seed tracing back to a single BC2F7 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing PH5003R are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Late  
Height (relatively short, medium or tall?): Medium  
Stem branching: Top branching  
Leaf shape: Cordate Leaf margins: Medium serrations w/ intermediate indentations  
Leaf attitude: Asecending Leaf surface: Slight blistering  
Leaf color: Light green  
Ray flowers: Fusiforme and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Vertical  
Seed outer pericarp color: Solid black Seed middle pericarp color: White  
Stripe appearance: Absent Seed shape: Oblong  
Seed cross-section: Curved.

State expected variants or other varietal traits that will assist in identification in the field:

It has a medium intensity of hypocotyl anthocyanin.

4. PH5003R is resistant to tribenuron-methyl.
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## PH5004R

1. PH5004R is an Express resistant, linoleic oil type restorer line developed by Pioneer Hi-Bred International that derives from the cross T0162LM/5\*B0520LM. T0162LM and B0520LM are both Pioneer proprietary lines. The backcross and pedigree methods were used in the development of PH5004R. It is a bulk of BC4F6 seed tracing back to a single BC4F5 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing PH5004R are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.
3. Maturity (relatively early, medium or late?): Early  
Height (relatively short, medium or tall?): Medium  
Stem branching: Fully branched

Leaf shape:	<u>Cordate</u>	Leaf margins:	<u>Medium serrations, w/ intermediate indentations</u>
Leaf attitude:	<u>Horizontal</u>	Leaf surface:	<u>Medium intensity blistering</u>
Leaf color:	<u>Green</u>		
Ray flowers:	<u>Fusiforme and flat</u>	Ray flower color:	<u>Yellow</u>
Disk flower color:	<u>Yellow</u>	Stigma anthocyanin:	<u>Present, weak</u>
Pollen color:	<u>Yellow</u>	Pappi color:	<u>Green</u>
Receptacle shape:	<u>Concave</u>	Head (neck) attitude:	<u>Vertical</u>
Seed outer pericarp color:	<u>Striped Dark Brown</u>	Seed middle pericarp color:	<u>White</u>
Stripe appearance:	<u>Tan-brown, marginal &amp; lateral</u>	Seed shape:	<u>Oblong</u>
Seed cross-section:	<u>Curved</u>		

State expected variants or other varietal traits that will assist in identification in the field:

It has a strong intensity of hypocotyl anthocyanin.

4. PH5004R is resistant to tribenuron-methyl.
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## PH5005R

1. PH5005R is an Express resistant, linoleic oil type restorer line developed by Pioneer Hi-Bred International that derives from the cross TRU016LM/B0531LM//B0423LM. TRU016LM, B0531LM and B0423LM are all Pioneer proprietary lines. The pedigree method was used in the development of PH5005R. It is a bulk of F6 seed tracing back to a single F5 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing PH5005R are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium-tall  
Stem branching: Fully branched  
Leaf shape: Triangular Leaf margins: Fine serrations w/ shallow indentations  
Leaf attitude: Horizontal Leaf surface: Slight blistering  
Leaf color: Green  
Ray flowers: Fusiforme and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Black Seed middle pericarp color: White  
Stripe appearance: Absent Seed shape: Oblong  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

It has a strong intensity of hypocotyl anthocyanin.

4. PH5005R is resistant to tribenuron-methyl.
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## PH5006R

1. PH5006R is an Express resistant, linoleic oil type restorer line developed by Pioneer Hi-Bred International that derives from the cross F0143LM/B0644LM. F0143LM and B0644LM are both Pioneer proprietary lines. The pedigree method was used in the development of PH5006R. It is a bulk of F6 seed tracing back to a single F5 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing PH5006R are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium  
Stem branching: Fully branched  
Leaf shape: Cordate Leaf margins: Medium serrations w/ intermediate indentations  
Leaf attitude: Ascending Leaf surface: Smooth or virtually no blistering  
Leaf color: Green  
Ray flowers: Narrowly ovate and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Striped black Seed middle pericarp color: White  
Stripe appearance: Brown, both marginal and lateral Seed shape: Oblong  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

Hypocotyl anthocyanin is absent.

4. PH5006R is resistant to tribenuron-methyl.
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## PH5007R

1. PH5007R is a conventional, linoleic oil type restorer line developed by Pioneer Hi-Bred International that derives from the cross F0003LM/5\*RHA340. F0003LM is a Pioneer proprietary line. RHA340 is a USDA released line. The backcross and pedigree methods were used in the development of PH5007R. It is a bulk of BC4F6 seed tracing back to a single BC4F5 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing PH5007R are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.
3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Tall  
Stem branching: Top-branched  
Leaf shape: Cordate Leaf margins: Fine, intermediate depth serrations  
Leaf attitude: Ascending Leaf surface: Slight blistering  
Leaf color: Green  
Ray flowers: Fusiforme and undulated Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Vertical  
Seed outer pericarp color: Striped black Seed middle pericarp color: White  
Stripe appearance: Grey, both marginal & lateral Seed shape: Oblong  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

Hypocotyl anthocyanin is absent.

4. None
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## T0595HM

1. T0595HM is an oleic oil type restorer line developed by Pioneer Hi-Bred International that derives from the cross S9877QM/PHA305. S9877QM and PHA305 are both Pioneer proprietary lines. The pedigree method was used in the development of T0595HM. It is a bulk of F6 seed tracing back to a single F5 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing T0595HM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Medium-early  
Height (relatively short, medium or tall?): Medium  
Stem branching: Top-branched  
Leaf shape: Triangular Leaf margins: Finely serrated with shallow indentations  
Leaf attitude: Ascending Leaf surface: Slight blistering  
Leaf color: Green  
Ray flowers: Longitudinally recurved Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Present, weak  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Black Seed middle pericarp color: White  
Stripe appearance: Grey, both marginal & lateral Seed shape: Narrowly ovate  
Seed cross-section: Curved.

State expected variants or other varietal traits that will assist in identification in the field:

It has a weak intensity of hypocotyl anthocyanin.

4. None
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## U08SCLM

1. U08SCLM is a conventional, linoleic oil type restorer line developed by Pioneer Hi-Bred International that derives from the cross LC1093A//U04T6LM/U01P6LM. LC1093A is a female developed by Fundulea in Romania and licensed for use by Pioneer. U04T6LM and U01P6LM are both Pioneer proprietary lines. The pedigree method was used in the development of U08SCLM. It is a bulk of F6 seed tracing back to a single F5 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing U08SCLM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium-short  
Stem branching: Top-branched  
Leaf shape: Cordate Leaf margins: Medium serrations w/ intermediate indentations  
Leaf attitude: Horizontal Leaf surface: Slight blistering  
Leaf color: Green  
Ray flowers: Fusiforme and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Black Seed middle pericarp color: White  
Stripe appearance: Absent Seed shape: Oblong  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

It has a medium intensity of hypocotyl anthocyanin.

4. None
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



# U08SDLM

1. U08SDLM is a conventional, linoleic oil type restorer line developed by Pioneer Hi-Bred International that derives from the cross U04T6LM/U00P8QM//U04T6LM. U04T6LM and U00P8QM are both Pioneer proprietary lines. The pedigree method was used in the development of U08SDLM. It is a bulk of F6 seed tracing back to a single F5 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing U08SDLM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium-short  
Stem branching: Fully branched  
Leaf shape: Triangular Leaf margins: Medium serrations w/ intermediate indentations  
Leaf attitude: Ascending Leaf surface: Slight blistering  
Leaf color: Green  
Ray flowers: Fusiforme and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: Absent  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Striped black Seed middle pericarp color: White  
Stripe appearance: Grey, marginal Seed shape: Oblong  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

It has a weak intensity of hypocotyl anthocyanin

4. None
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



## B0392LG

1. B0392LG is an IMI resistant, linoleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross U9605LG/3\*R0057LG. U9605LG and R0057LG are both Pioneer proprietary lines. The backcross and pedigree methods were used in the development of B0392LG. It is a bulk of BC2F6 seed tracing back to a single BC2F5 selection. The sterile analog derives from the CMS PET1 cytoplasm following 4 generations of backcrossing. It is homozygous dominant for single heads.
2. Hybrids utilizing B0392LG are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Maturity (relatively early, medium or late?): Medium  
Height (relatively short, medium or tall?): Medium-tall  
Stem branching: None  
Leaf shape: Cordate Leaf margins: Medium serrations w/ intermediate indentations  
Leaf attitude: Horizontal Leaf surface: Slight blistering  
Leaf color: Green  
Ray flowers: Narrowly ovate and flat Ray flower color: Yellow  
Disk flower color: Yellow Stigma anthocyanin: None  
Pollen color: Yellow Pappi color: Green  
Receptacle shape: Convex Head (neck) attitude: Descending  
Seed outer pericarp color: Striped Black Seed middle pericarp color: White  
Stripe appearance: Grey, both marginal and lateral Seed shape: Narrowly ovate  
Seed cross-section: Curved

State expected variants or other varietal traits that will assist in identification in the field:

It has a weak intensity of hypocotyl anthocyanin

4. B0392LG is resistant to imidazolinone herbicides
5. Pioneer Hi-Bred International will be responsible for the maintenance of all seed stocks. Foundation seed will be produced in open pollinated field increases in isolation as prescribed by the state where the seed is grown. A maximum of two generations beyond breeder seed will be allowed. Breeder seed will originate from cage isolations or, on occasion, from controlled bagging in nursery rows.
6. Certified seed is first expected to be available in 2010. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.











