

**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 2012)

The Association of Official Seed Certifying Agencies (AOSCA) National Sunflower Variety Review Board (NSFVRB), reviewed the following varieties on April 26, 2012, 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,

Ronald Larson, Chairman
National Sunflower Variety Review Board

**2012 AOSCA SUNFLOWER NVRB
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OI2468B

- OI2468B is a high oleic IMI resistant maintainer oilseed line derived from the pedigree CN7479B*2/OIN757B. CN7479B and OIN757B are proprietary Mycogen Seeds parent lines used for development and selection of OI2468B for high oleic and imidazolinone herbicide resistance by conventional pedigreed breeding method. OI2468B is derived from a bulk of a BC1F8 family tracing to a single BC1F7 plant homozygous for high oleic and imidazolinone resistance. The male-sterile component of OI2468B, named OI2468A, uses the Cms PET 1 [*H. petiolaris* (French)] cytoplasm.
- Hybrids utilizing OI2468B are adapted to the major sunflower growing regions of North America and Europe, and will be used primarily for vegetable oil.
- Flowering (relatively early, medium, or late?): Medium
Physiological maturity (relatively early, medium, or late?): Medium
Height (relatively short, medium or tall?): Medium
Stem branching: No
Leaf shape: Cordate Leaf margins: Coarsely serrate
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:

OI2468B is a medium height, medium maturing inbred – approximately 16 cm taller than HA89, and 5 days later to flower and maturity. Leaves are of average width and length and high in number to exhibit a full canopy. Leaves have deep serrations and obvious ridging to cause wavy edges. Seed is nearly solid black and of larger than average size for an oilseed inbred. In some environments, up to 15% of plants may express basal branching

- OI2468B is resistant to imidazolinone herbicides. It does not appear to have qualitative resistance to major diseases or insects.
- Breeder seed increases are maintained by Mycogen Seeds under cloth bagged heads in nursery rows or in isolation cages. Up to two generations beyond breeder's seed are allowed for increase by open pollination in isolated fields for production of Foundation Seed. Isolation and other requirements will be according to the Seed Certification regulations of the state where seed is grown.
- Certified seed of hybrids using this variety may be made available for the 2013 season. Please do not publish certified acreage.
- It is not anticipated that a PVP application will be made on this variety.



OIN608R

- OIN608R is a high oleic IMI resistant oilseed restorer line derived from the backcross pedigree ONN608R*5/CIN117R. The recurrent and donor parents ONN608R and CIN117R are proprietary Mycogen Seeds parent lines used for development and selection of OIN608R for high oleic fatty acid and imidazolinone herbicide resistance. OIN608R is derived from a bulk of a BC4F7 family tracing to a single BC4F6 plant homozygous for high oleic and imidazolinone resistance. OIN608R has the male sterile inducing cytoplasm from PET1 [*H. petiolaris* (French)] and gene conferring fertility restoration.
- Hybrids utilizing OIN608R are adapted to the major sunflower growing regions of North America and Europe, and will be used primarily for vegetable oil.
- Flowering (relatively early, medium, or late?): Medium
Physiological maturity (relatively early, medium, or late?): Medium
Height (relatively short, medium or tall?): Medium
Stem branching: Fully branched
Leaf shape: Cordate Leaf margins: Medium serrate
Leaf attitude: Descending Leaf surface: Crinkled
Leaf color: Green
Ray flowers: Present Ray flower color: Yellow
Disk flower color: Yellow Stigma anthocyanin: Present strong
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: Narrowly ovate
Seed cross-section: Curved

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

OIN608R is a medium height, medium maturing inbred – approximately 7 cm taller than RHA274, and 5 and 6 days later to flower and maturity. Petioles and branches appear longer than average therefore more descending than average. Likewise, the main head is more descending than observed on most inbreds.

- OIN608R is resistant to imidazolinone herbicides. It does not appear to have qualitative resistance to major diseases or insects.
- Breeder seed increases are maintained by Mycogen Seeds under cloth bagged heads in nursery rows or in isolation cages. Up to two generations beyond breeder's seed are allowed for increase by open pollination in isolated fields for production of Foundation Seed. Isolation and other requirements will be according to the Seed Certification regulations of the state where seed is grown.
- Certified seed of hybrids using this variety may be made available for the 2013 season. Please do not publish certified acreage.
- It is not anticipated that a PVP application will be made on this variety.



ZN1479B

1. ZN1479B is a high oleic maintainer oilseed line derived from the backcross pedigree ON7479B*3/ON1982. The recurrent and donor parents ON7479B and ON1982 are proprietary Mycogen Seeds parent lines used for development and selection of ZN1479B having oleic acid content greater than 93%. ZN1479B is derived from a bulk of a BC2F6 family tracing to a single BC2F5 plant homozygous for high oleic. The male-sterile component of ZN1479B, named ZN1479A, uses the Cms PET 1 [*H. petiolaris* (French)] cytoplasm.
2. Hybrids utilizing ZN1479B are adapted to the major sunflower growing regions of North America and Europe, and will be used primarily for vegetable oil.
3. Flowering (relatively early, medium, or late?): Medium
 Physiological maturity (relatively early, medium, or late?): Medium
 Height (relatively short, medium or tall?): Medium
 Stem branching: No
 Leaf shape: Cordate Leaf margins: Medium serrate
 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:

ZN1479B is a medium height, medium maturing inbred - it is approximately 21 cm taller than HA89, and 5 days later to flower and maturity. Ray flowers are noticeably short and narrow, and sparse in number. Leaves are smaller than average making a narrow leaf canopy. In some environments, up to 15% of plants may express basal branching.

4. ZN1479B does not appear to have obvious qualitative genetic resistance to major diseases, insects, or herbicides.
5. Breeder seed increases are maintained by Mycogen Seeds under cloth bagged heads in nursery rows or in isolation cages. Up to two generations beyond breeder's seed are allowed for increase by open pollination in isolated fields for production of Foundation Seed. Isolation and other requirements will be according to the Seed Certification regulations of the state where seed is grown.
6. Certified seed of hybrids using this variety may be made available for the 2013 season. Please do not publish certified acreage.
7. It is not anticipated that a PVP application will be made on this variety.



ZN7321R

1. ZN7321R was developed by Mycogen Seeds. It is a high oleic oilseed restorer derived from the backcross pedigree ON7321R*3/ON1982. The recurrent and donor parents ON7321R and ON1982, respectively, are proprietary Mycogen Seeds parent lines used for development and selection of ZN7321R having oleic acid content greater than 92.5%. ZN7321R is derived from a bulk of a BC2F6 family tracing to a single BC2F5 plant homozygous for high oleic, and recessive branching. ZN7321R has the male sterile inducing cytoplasm from PET1 [*H. petiolaris* (French)] and gene conferring fertility restoration.
2. Hybrids utilizing ZN7321R are adapted to the major sunflower growing regions of North America and Europe, and will be used primarily for vegetable oil.
3. Flowering (relatively early, medium, or late?): Early
Physiological maturity (relatively early, medium, or late?): Early
Height (relatively short, medium or tall?): Short
Stem branching: Fully branched
Leaf shape: Cordate Leaf margins: Finely serrate
Leaf attitude: Descending Leaf surface: Slightly crinkled
Leaf color: Green
Ray flowers: Present Ray flower color: Yellow
Disk flower color: Yellow Stigma anthocyanin: Present weak
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: Narrowly ovate
Seed cross-section: Curved

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

ZN7321R is a medium short fully branched R-line with relatively sparse number of leaves of approximately 21 per plant. The leaf petioles exhibit a brown streak along its center for at least half its length. Anthocyanin is weakly expressed in stigmas and pappi. Leaves have a more droopy appearance than observed in most sunflower varieties.

4. ZN7321R does not appear to have obvious qualitative resistance to major diseases or insects.
5. Breeder seed increases are maintained by Mycogen Seeds under cloth bagged heads in nursery rows or in isolation cages. Up to two generations beyond breeder's seed are allowed for increase by open pollination in isolated fields for production of Foundation Seed. Isolation and other requirements will be according to the Seed Certification regulations of the state where seed is grown.
6. Certified seed of hybrids using this variety may be made available for the 2013 season. Please do not publish certified acreage.
7. It is not anticipated that a PVP application will be made on this variety.



ZND163R

1. ZND163R was developed by Mycogen Seeds. It is a high oleic oilseed restorer derived from the backcross pedigree HO817114R*5/ON1982. The recurrent and donor parents HO817114R and ON1982, respectively, are proprietary Mycogen Seeds parent lines used for development and selection of ZND163R having oleic acid content greater than 93%, and the P17 gene for downy mildew resistance. ZND163R is derived from a bulk of a BC4F6 family tracing to a single BC4F5 plant homozygous for high oleic, P17, and recessive branching. ZND163R has the male sterile inducing cytoplasm from PET1 [*H. petiolaris* (French)] and gene conferring fertility restoration.
2. Hybrids utilizing ZND163R are adapted to the major sunflower growing regions of North America and Europe, and will be used primarily for vegetable oil.
3. Flowering (relatively early, medium, or late?): Medium
Physiological maturity (relatively early, medium, or late?): Medium
Height (relatively short, medium or tall?): Medium
Stem branching: Fully branched
Leaf shape: Cordate Leaf margins: Medium serrate
Leaf attitude: Descending Leaf surface: Slightly crinkled
Leaf color: Green
Ray flowers: Present Ray flower color: Yellow
Disk flower color: Yellow Stigma anthocyanin: Present strong
Pollen color: Yellow Pappi color: Rust
Receptacle shape: Convex Head (neck) attitude: Descending
Seed outer pericarp color: Brown Seed middle pericarp color: White
Stripe appearance: Narrow white marginal stripes Seed shape: Narrowly ovate
Seed cross-section: Curved

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

ZND163R is 3 and 4 days later flowering and maturing than RHA274. ZND163R has rust colored pappi, a strong expression of stigma anthocyanin, and ray flower length approximately 2 mm shorter than RHA274. Only a few rows of disk flowers emerge on a daily basis after R5.1, extending the flowering period of the main head up to approximately 10 days. ZND163R is approximately 8 cm taller in height with larger leaves compared to RHA274. Seeds of ZND163R are short, plump, and brown with fine white marginal stripes.

4. ZND163R is resistant to downy mildew races 730, 733, and 770. It does not appear to have obvious qualitative resistance to other major diseases or insects.
5. Breeder seed increases are maintained by Mycogen Seeds under cloth bagged heads in nursery rows or in isolation cages. Up to two generations beyond breeder's seed are allowed for increase by open pollination in isolated fields for production of Foundation Seed. Isolation and other requirements will be according to the Seed Certification regulations of the state where seed is grown.
6. Certified seed of hybrids using this variety may be made available for the 2013 season. Please do not publish certified acreage.
7. It is not anticipated that a PVP application will be made on this variety.



B0505HG

1. B0505HG is an Express® resistant, oleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross B0408HG*2/B0389LG. B0408HG and B0389LG are both Pioneer proprietary lines. Selections were made for fatty acid, oil content, Express® resistance and recurrent parent traits. The backcross and pedigree methods were used in the development of B0505HG. It is a bulk of BC1F5 seed tracing back to a single BC1F4 selection. The sterile analog derives from the CMS PET1 cytoplasm following 3 generations of backcrossing. It is homozygous dominant for single heads.
2. Hybrids utilizing B0505HG are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Flowering (relatively early, medium, or late?): Late
 Physiological maturity (relatively early, medium, or late?): Late
 Height (relatively short, medium or tall?): Medium
 Stem branching: None
 Leaf shape: Cordate Leaf margins: Finely Serrate
 Leaf attitude: Ascending Leaf surface: Crinkled
 Leaf color: Green
 Ray flowers: Broad 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: Marginal and Lateral Narrow Seed shape: Narrowly Ovate
 Dark-Grey Stripping
 Seed cross-section: Curved

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

Compared to the public line HA89, B0505HG blooms 10 days later and matures 7 days later. It is about 14 cm taller than HA89, and the cordate leaves are longer than HA89. The broadly ovate, yellow ray flowers are longer and wider than HA89. The seed is narrowly ovate, heavier and longer, than HA89. B0505HG has seed that are nearly solid black with grey lateral and marginal stripes. Hypocotyl anthocyanin is absent.

4. This variety is resistant to tribenuron-methyl herbicide. It does not appear to exhibit qualitative resistance to the common sunflower diseases and insect pests.
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 2013. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



B0610LM

1. B0610LM is an Express® resistant, linoleic oil type, restorer line developed by Pioneer Hi-Bred International that derives from the cross D966MLM*4/SU7M. D966MLM and SU7M are Pioneer proprietary lines. Selections were made for Express® resistance and recurrent parent traits. The backcross and pedigree methods were used in the development of B0610LM. It is a bulk of BC3F9 seed tracing back to a single BC3F8 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing B0610LM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Flowering (relatively early, medium, or late?): Early
Physiological maturity (relatively early, medium, or late?): Early
Height (relatively short, medium or tall?): Short
Stem branching: Top Branching with Central Head
Leaf shape: Cordate Leaf margins: Finely Serrate
Leaf attitude: Horizontal Leaf surface: Crinkled
Leaf color: Green
Ray flowers: Fusiform Ray flower color: Yellow
Disk flower color: Yellow Stigma anthocyanin: Weakly Present
Pollen color: Yellow Pappi color: Green
Receptacle shape: Convex Head (neck) attitude: Descending
Seed outer pericarp color: Medium 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:

Compared to the public line RHA274, B0610LM blooms 2 days earlier and matures 2 days earlier. It is about 4 cm shorter than RHA274, and the cordate leaves are longer than RHA274. The fusiform yellow ray flowers are longer and narrower than RHA274. The seed is narrowly ovate and medium brown with no stripes, longer and lighter than RHA274. Hypocotyl anthocyanin is weakly present.

4. This variety is resistant to tribenuron-methyl herbicide. It does not appear to exhibit qualitative resistance to the common sunflower diseases and insect pests.
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 2013. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



B0617LM

1. B0617LM is an Express® resistant, linoleic oil type, restorer line developed by Pioneer Hi-Bred International that derives from the cross J9756LM*2/B0336HM. J9756LM and B0336HM are both Pioneer proprietary lines. Selections were made for Express® resistance and recurrent parent traits. The backcross and pedigree methods were used in the development of B0617LM. It is a bulk of BC1F10 seed tracing back to a single BC1F9 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing B0617LM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Flowering (relatively early, medium, or late?): Early
Physiological maturity (relatively early, medium, or late?): Early
Height (relatively short, medium or tall?): Short
Stem branching: Fully Branching with Central Head
Leaf shape: Cordate Leaf margins: Entire
Leaf attitude: Horizontal Leaf surface: Crinkled
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: Lateral and Marginal Narrow dark grey stripes Seed shape: Broadly Ovate
Seed cross-section: Curved

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

Compared to the public line RHA274, B0617LM blooms 6 days earlier and matures 6 days earlier. It is about 60 cm shorter than RHA274, and the cordate leaves are longer than RHA274. The narrowly ovate, yellow ray flowers are the same length as RHA274 but narrower. The seed is broadly ovate, black with grey stripes both lateral and marginal, and longer and lighter than RHA274. Hypocotyl anthocyanin is absent.

4. This variety is resistant to tribenuron-methyl herbicide. It does not appear to exhibit qualitative resistance to the common sunflower diseases and insect pests.
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 2013. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



B0620LM

1. B0620LM is an Express[®] resistant, linoleic oil type, restorer line developed by Pioneer Hi-Bred International that derives from the cross PK79M*3/B0317LM. PK79M and B0317LM are both Pioneer proprietary lines. Selections were made for Express[®] resistance and recurrent parent traits. The backcross and pedigree methods were used in the development of B0620LM. 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 B0620LM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Flowering (relatively early, medium, or late?): Medium
 Physiological maturity (relatively early, medium, or late?): Medium
 Height (relatively short, medium or tall?): Short
 Stem branching: Top Branching with Central Head
 Leaf shape: Cordate Leaf margins: Finely Serrate
 Leaf attitude: Ascending Leaf surface: Crinkled
 Leaf color: Green
 Ray flowers: Fusiform 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: Medium 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:

Compared to the public line RHA274, B0620LM blooms 2 days later and matures 2 days later. It is about 30 cm shorter than RHA274, and the cordate leaves are longer than RHA274. The fusiform yellow ray flowers are longer and narrower than RHA274. The seed is oblong, longer and heavier than RHA274. B0620LM has seed that are medium brown with no stripes. Hypocotyl anthocyanin is absent.

4. This variety is resistant to tribenuron-methyl herbicide. It does not appear to exhibit qualitative resistance to the common sunflower diseases and insect pests
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 2013. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



B0622LM

1. B0622LM is an Express® resistant, linoleic oil type, restorer line developed by Pioneer Hi-Bred International that derives from the cross S9856LM*5/B0344LM. S9856LM and B0344LM are both Pioneer proprietary lines. Selections were made for Express® resistance and recurrent parent traits. The backcross and pedigree methods were used in the development of B0622LM. 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 B0622LM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.
3. Flowering (relatively early, medium, or late?): Late
 Physiological maturity (relatively early, medium, or late?): Late
 Height (relatively short, medium or tall?): Short
 Stem branching: Fully Branching with Central Head
 Leaf shape: Cordate Leaf margins: Medium Serrate
 Leaf attitude: Horizontal Leaf surface: Crinkled (Ridged)
 Leaf color: Green
 Ray flowers: Narrowly Ovate and Flat Ray flower color: Yellow
 Disk flower color: Yellow Stigma anthocyanin: Weakly Present
 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:

Compared to the public line RHA274, B0622LM blooms 19 days later and matures 9 days later. It is about 23 cm shorter than RHA274, and the cordate leaves are longer than RHA274. The narrowly ovate, yellow ray flowers are shorter and narrower than RHA274. The seed is narrowly ovate and black without stripes, longer and lighter than RHA274. Hypocotyl anthocyanin is absent.

4. This variety is resistant to tribenuron-methyl herbicide. It does not appear to exhibit qualitative resistance to the common sunflower diseases and insect pests.
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 2013. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



F0704LG

1. F0704LG is a linoleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross S9801LG/U9605LG. S9801LG and U9605LG are both Pioneer proprietary lines. Selections were made for earlier flowering, shorter plant stature, oil content and yield, as assessed in hybrid combination. The pedigree method was used in the development of F0704LG. 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 F0704LG are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.
3. Flowering (relatively early, medium, or late?): Medium
Physiological maturity (relatively early, medium, or late?): Late
Height (relatively short, medium or tall?): Tall
Stem branching: None
Leaf shape: Cordate Leaf margins: Finely Serrate
Leaf attitude: Horizontal Leaf surface: Slightly Crinkled
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: Marginal and Lateral Narrow Dark-Grey Stripping Seed shape: Oblong
Seed cross-section: Curved

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

Compared to the public line HA89, F0704LG blooms 4 days later and matures 12 days later. It is about 42 cm taller than HA89, and the cordate leaves are shorter than HA89. The narrowly ovate, yellow ray flowers are narrower than HA89. The seed is oblong, longer and heavier than HA89. F0704LG has seed that are nearly solid black with grey stripes on and between margins. Hypocotyl anthocyanin is absent.

4. This variety does not appear to exhibit qualitative resistance to any herbicides or to the common sunflower diseases and insect pests.
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 2012. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



F0956LM

1. F0956LM is a linoleic oil type, restorer line developed by Pioneer Hi-Bred International that derives from the cross F0001LM/U9612LM. F0001LM and U9612LM are both Pioneer proprietary lines. Selections were made for oil content, shorter plant stature and yield, as assessed in hybrid combination. The pedigree method was used in the development of F0956LM. It is a bulk of F8 seed tracing back to a single F7 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing F0956LM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.
3. Flowering (relatively early, medium, or late?): Medium
 Physiological maturity (relatively early, medium, or late?): Medium
 Height (relatively short, medium or tall?): Medium
 Stem branching: Fully branched with central head
 Leaf shape: Cordate Leaf margins: Medium Serrate
 Leaf attitude: Horizontal Leaf surface: Slightly Crinkled
 Leaf color: Green
 Ray flowers: Broadly Ovate and Flat Ray flower color: Yellow
 Disk flower color: Yellow Stigma anthocyanin: Strongly Present
 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: Broadly Ovate
 Seed cross-section: Curved

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

Compared to the public line RHA274, F0956LM blooms 11 days later and matures 5 days later. It is about 2 cm shorter than RHA274, and the cordate leaves are longer than RHA274. The broadly ovate and flat, yellow ray flowers are shorter than RHA274. The seed is narrowly ovate, longer and lighter than RHA274. F0956LM has seed that are brown. Hypocotyl anthocyanin is weakly present.

4. This variety does not appear to exhibit qualitative resistance to any herbicides or to the common sunflower diseases and insect pests.
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 2013. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



F0968LM

1. F0968LM is a linoleic oil type, restorer line developed by Pioneer Hi-Bred International that derives from the cross S9867LM/U01P6LM. S9867LM and U01P6LM are both Pioneer proprietary lines. Selections were made for oil content, shorter plant stature and yield, as assessed in hybrid combination. The pedigree method was used in the development of F0968LM. It is a bulk of F8 seed tracing back to a single F7 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.

2. Hybrids utilizing F0968LM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Flowering (relatively early, medium, or late?): Medium
 Physiological maturity (relatively early, medium, or late?): Medium
 Height (relatively short, medium or tall?): Medium
 Stem branching: Fully branched with central head.
 Leaf shape: Cordate Leaf margins: Medium Serrate
 Leaf attitude: Horizontal Leaf surface: Slightly Crinkled
 Leaf color: Green
 Ray flowers: Fusiform Ray flower color: Yellow
 Disk flower color: Yellow Stigma anthocyanin: Weakly Present
 Pollen color: Yellow Pappi color: Green
 Receptacle shape: Flat Head (neck) attitude: Descending
 Seed outer pericarp color: Striped Black Seed middle pericarp color: White
 Stripe appearance: Marginal and lateral Dark-Gray Stripe Seed shape: Narrowly Ovate
 Seed cross-section: Curved

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

Compared to the public line RHA274, F0968LM blooms 4 days later and matures 5 days later. It is about 8 cm shorter than RHA274, and the cordate leaves are longer than RHA274. The fusiform, yellow ray flowers are narrower than RHA274. The narrowly ovate seed is black with grey stripes on both the margins and between margins and is longer and lighter than RHA274. Hypocotyl anthocyanin is weakly present.

4. This variety does not appear to exhibit qualitative resistance to any herbicides or to the common sunflower diseases and insect pests.

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 2013. Please do not publish certified seed production acreage.

7. Application for protection under the Plant Variety Protection Act will not be made.



F09AMLM

1. F09AMLM is a linoleic oil type, restorer line developed by Pioneer Hi-Bred International that derives from the cross E9730LM/LC1066R/U9612LM. E9730LM and U9612LM are both Pioneer proprietary lines. LC1066R is a line developed by the Fundulea Institute in Romania and licensed for use by Pioneer. Selections were made for oil content, self fertility, shorter plant stature, and yield, as assessed in hybrid combination. The pedigree method was used in the development of F09AMLM. 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 F09AMLM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Flowering (relatively early, medium, or late?): Medium
 Physiological maturity (relatively early, medium, or late?): Medium
 Height (relatively short, medium or tall?): Medium
 Stem branching: Top Branching with Central Head
 Leaf shape: Cordate Leaf margins: Finely Serrate
 Leaf attitude: Ascending Leaf surface: Slightly Crinkled
 Leaf color: Green
 Ray flowers: Narrowly Ovate and flat Ray flower color: Yellow
 Disk flower color: Yellow Stigma anthocyanin: Weakly Present
 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: Broadly Ovate
 Seed cross-section: Curved

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

Compared to the public line RHA274, F09AMLM blooms 2 days later and matures 5 days later. It is about 18 cm shorter than RHA274, and the cordate leaves are longer than RHA274. The narrowly ovate and flat, yellow ray flowers are narrower than RHA274. The seed is broadly ovate, longer and lighter than RHA274. F09AMLM has seed that are black with no stripes. Hypocotyl anthocyanin is weakly present.

4. This variety does not appear to exhibit qualitative resistance to any herbicides or to the common sunflower diseases and insect pests.

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 2013. Please do not publish certified seed production acreage.

7. Application for protection under the Plant Variety Protection Act will not be made.



PH5035R

1. PH5035R is an Express® resistant, linoleic oil type, restorer line developed by Pioneer Hi-Bred International that derives from the cross F0143LM*8/B0644LM. F0143LM and B0644LM are both Pioneer proprietary lines. Selections were made for Express® resistance and recurrent parent traits. The backcross and pedigree methods were used in the development of PH5035R. It is a bulk of BC7F5 seed tracing back to a single BC7F4 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing PH5035R are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Flowering (relatively early, medium, or late?): Late
 Physiological maturity (relatively early, medium, or late?): Late
 Height (relatively short, medium or tall?): Medium
 Stem branching: Fully branched with central head
 Leaf shape: Cordate Leaf margins: Entire
 Leaf attitude: Ascending Leaf surface: Smooth
 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: Flat Head (neck) attitude: Descending
 Seed outer pericarp color: Brown Seed middle pericarp color: White
 Stripe appearance: Marginal and Lateral Narrow Seed shape: Oblong
White Stripes
 Seed cross-section: Curved

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

Compared to the public line RHA274, PH5035R blooms 19 days later and matures 11 days later. It is about 10 cm shorter than RHA274, and the cordate leaves are longer than RHA274. The broadly ovate and flat, yellow ray flowers are shorter and narrower than RHA274. The broadly oblong seed is brown with white lateral and marginal stripes, longer and lighter than RHA274. Hypocotyl anthocyanin is absent.

4. This variety is resistant to tribenuron-methyl herbicide. It does not appear to exhibit qualitative resistance to the common sunflower diseases and insect pests.
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 2013. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



T0268SA1LM

1. T0268SA1LM is an Express® resistant, linoleic oil type, restorer line developed by Pioneer Hi-Bred International that derives from the cross T0268LM*3/B0520LM. T0268LM and B0520LM are both Pioneer proprietary lines. Selections were made for Express® resistance and recurrent parent traits. The backcross and pedigree methods were used in the development of T0268SA1LM. It is a bulk of BC2F5 seed tracing back to a single BC2F4 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing T0268SA1LM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Flowering (relatively early, medium, or late?): Medium
 Physiological maturity (relatively early, medium, or late?): Medium
 Height (relatively short, medium or tall?): Medium
 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: 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: Medium 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:

Compared to the public line RHA274, T0268SA1LM blooms 7 days later and matures 7 days later. It is about 32 cm shorter than RHA274, and the cordate leaves are longer than RHA274. The narrowly ovate and flat, yellow ray flowers are longer and narrower than RHA274. The oblong seed is medium brown with no stripes and is the same length as RHA274, but lighter. Hypocotyl anthocyanin is absent.

4. This variety is resistant to tribenuron-methyl herbicide. It does not appear to exhibit qualitative resistance to the common sunflower diseases and insect pests.
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 2013. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



T0592HM

1. T0592HM is an oleic oil type, restorer line developed by Pioneer Hi-Bred International that derives from the cross LSW022QM/T9885QM. LSW022QM and T9885QM are all Pioneer proprietary line. Selections were made for oil content, fatty acid content, shorter plant stature and yield, as assessed in hybrid combination. The pedigree method was used in the development of T0592HM. 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 T0592HM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Flowering (relatively early, medium, or late?): Medium
 Physiological maturity (relatively early, medium, or late?): Medium
 Height (relatively short, medium or tall?): Medium
 Stem branching: Top branching with central head
 Leaf shape: Lanceolate Leaf margins: Medium Serrate
 Leaf attitude: Ascending Leaf surface: Slightly Crinkled
 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: Marginal and Lateral Narrow dark-gray stripes Seed shape: Narrowly Ovate
 Seed cross-section: Curved

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

Compared to the public line RHA274, T0592HM blooms 7 days later and matures 5 days later. It is about 31 cm shorter than RHA274, and the lanceolate leaves are longer than RHA274. The narrowly ovate and flat, yellow ray flowers are narrower than RHA274. The seed is narrowly ovate and lighter than RHA274. T0592HM has seed that are striped black, with grey stripes. Hypocotyl anthocyanin is absent.

4. This variety does not appear to exhibit qualitative resistance to any herbicides or to the common sunflower diseases and insect pests.
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 2013. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



T0929HG

1. T0929HG is an oleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross T00A8HG/T00D3HG. T00A8HG and T00D3HG are both Pioneer proprietary lines. Selections were made for earlier flowering, shorter stature, fatty acid & oil content and yield, as assessed in hybrid combination. The pedigree method was used in the development of T0929HG. 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 T0929HG are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Flowering (relatively early, medium, or late?): Medium
 Physiological maturity (relatively early, medium, or late?): Late
 Height (relatively short, medium or tall?): Tall
 Stem branching: None
 Leaf shape: Cordate Leaf margins: Finely Serrate
 Leaf attitude: Erect Leaf surface: Slightly Crinkled
 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: Concave Head (neck) attitude: Descending
 Seed outer pericarp color: Striped Black Seed middle pericarp color: White
 Stripe appearance: Marginal Narrow Dark-Grey Stripping Seed shape: Oblong
 Seed cross-section: Curved

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

Compared to the public line HA89, T0929HG blooms 6 days later and matures 11 days later. It is about 27 cm taller than HA89, and the cordate leaves are longer than HA89. The narrowly ovate, yellow ray flowers are narrower than HA89. The seed is oblong and longer than HA89. T0929HG has seed that are nearly solid black with grey strips on margins. Hypocotyl anthocyanin is weakly present.

4. This variety does not appear to exhibit qualitative resistance to any herbicides or to the common sunflower diseases and insect pests.

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 2013. Please do not publish certified seed production acreage.

7. Application for protection under the Plant Variety Protection Act will not be made.



T0954LM

1. T0954LM is a linoleic oil type, restorer line developed by Pioneer Hi-Bred International that derives from the cross LSW022QM/T0075LM. LSW022QM and T0075LM are both Pioneer proprietary lines. Selections were made for oil content, self fertility, shorter plant stature and yield, as assessed in hybrid combination. The pedigree method was used in the development of T0954LM. It is a bulk of F8 seed tracing back to a single F7 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing T0954LM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Flowering (relatively early, medium, or late?): Medium
 Physiological maturity (relatively early, medium, or late?): Medium
 Height (relatively short, medium or tall?): Short
 Stem branching: Fully Branching with Central Head
 Leaf shape: Cordate Leaf margins: Medium Serrate
 Leaf attitude: Ascending Leaf surface: Smooth
 Leaf color: Green
 Ray flowers: Fusifiform Ray flower color: Yellow
 Disk flower color: Yellow Stigma anthocyanin: Weakly Present
 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:

Compared to the public line RHA274, T0954LM blooms 6 days later and matures 5 days later. It is about 47 cm shorter than RHA274, and the cordate leaves are longer than RHA274. The fusiform, yellow ray flowers are shorter than RHA274. The seed is oblong and dark brown, longer and heavier than RHA274. Hypocotyl anthocyanin is weakly present.

4. This variety does not appear to exhibit qualitative resistance to any herbicides or to the common sunflower diseases and insect pests.
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 2013. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



T1074LM

1. T1074LM is a linoleic oil type, restorer line developed by Pioneer Hi-Bred International that derives from the cross T0267LM/T0456LM. T0267LM and T0456LM are both Pioneer proprietary lines. Selections were made for oil content, shorter plant stature, earlier flowering and yield, as assessed in hybrid combination. The pedigree method was used in the development of T1074LM. It is a bulk of F8 seed tracing back to a single F7 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing T1074LM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.
3. Flowering (relatively early, medium, or late?): Medium
 Physiological maturity (relatively early, medium, or late?): Medium
 Height (relatively short, medium or tall?): Medium
 Stem branching: Fully branched with central head
 Leaf shape: Cordate Leaf margins: Medium Serrate
 Leaf attitude: Descending Leaf surface: Smooth
 Leaf color: Dark 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: Medium Brown Seed middle pericarp color: White
 Stripe appearance: Absent Seed shape: Broadly Ovate
 Seed cross-section: Curved

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

Compared to the public line RHA274, T1074LM blooms 9 days later and matures 9 days later. It is about 13 cm shorter than RHA274, and the cordate leaves are longer than RHA274. The broadly ovate, yellow ray flowers are narrower than RHA274. The broadly ovate seed is medium brown, longer and lighter than RHA274. Hypocotyl anthocyanin is weakly present.

4. This variety does not appear to exhibit qualitative resistance to any herbicides or to the common sunflower diseases and insect pests.
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 2013. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



T1078LM

1. T1078LM is a linoleic oil type, restorer line developed by Pioneer Hi-Bred International that derives from the cross T0455LM/Pegasol//PHA232. T0455LM and PHA232 are both Pioneer proprietary lines. Pegasol is a hybrid from Dekalb that was purchased for use. Selections were made for oil content, self fertility, recessive branching, shorter plant stature, earlier flowering and yield, as assessed in hybrid combination. The pedigree method was used in the development of T1078LM. It is a bulk of F8 seed tracing back to a single F7 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing T1078LM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.
3. Flowering (relatively early, medium, or late?): Medium
Physiological maturity (relatively early, medium, or late?): Medium
Height (relatively short, medium or tall?): Medium
Stem branching: Fully branching with central head
Leaf shape: Cordate Leaf margins: Medium Serrate
Leaf attitude: Ascending Leaf surface: Smooth
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: Brown Seed middle pericarp color: White
Stripe appearance: Absent Seed shape: Broadly Ovate
Seed cross-section: Curved

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

Compared to the public line RHA274, T1078LM blooms 5 days later and matures 5 days later. It is about 29 cm shorter than RHA274, and the cordate leaves are longer than RHA274. The narrowly ovate and flat, yellow ray flowers are narrower than RHA274. The broadly ovate seed is medium brown with no stripes, longer and lighter than RHA274. Hypocotyl anthocyanin is weakly present.

4. This variety does not appear to exhibit qualitative resistance to any herbicides or to the common sunflower diseases and insect pests.
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 2013. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



T1097HM

1. T1097HM is an oleic oil type maintainer line developed by Pioneer Hi-Bred International that derives from the cross W9721QM/T02C6HM. W9721QM and T02C6HM are both Pioneer proprietary lines. Selections were made for earlier flowering, shorter plant stature, fatty acid & oil content and yield, as assessed in hybrid combination. The pedigree method was used in the development of T1097HM. It is a bulk of F7 seed tracing back to a single F6 selection.

2. Hybrids utilizing T1097HM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Flowering (relatively early, medium, or late?): Late
 Physiological maturity (relatively early, medium, or late?): Medium
 Height (relatively short, medium or tall?): Medium
 Stem branching: Fully branched with central head
 Leaf shape: Cordate with rounded apex Leaf margins: Finely Serrate
 Leaf attitude: Ascending Leaf surface: Smooth
 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: Flat Head (neck) attitude: Descending
 Seed outer pericarp color: Medium Brown Seed middle pericarp color: White
 Stripe appearance: Absent Seed shape: Broadly Ovate
 Seed cross-section: Curved

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

Compared to the public line RHA274, T1078LM blooms 12 days later and matures 12 days later. It is about 14 cm shorter than RHA274, and the cordate leaves are longer than RHA274. The broadly ovate and flat, yellow ray flowers are narrower than RHA274. The broadly ovate seed is medium brown with no stripes and lighter than RHA274. Hypocotyl anthocyanin is weakly present.

4. This variety does not appear to exhibit qualitative resistance to any herbicides or to the common sunflower diseases and insect pests.

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 2013. Please do not publish certified seed production acreage.

7. Application for protection under the Plant Variety Protection Act will not be made.



U09MJLM

1. U09MJLM is a linoleic oil type, restorer line developed by Pioneer Hi-Bred International that derives from the cross N06GELM/U06VAHM. N06GELM and U06VAHM are both Pioneer proprietary lines. Selections were made for oil content, shorter plant stature, earlier flowering and yield, as assessed in hybrid combination. The pedigree method was used in the development of U09MJLM. It is a bulk of F9 seed tracing back to a single F8 selection. It is homozygous for dominant fertility restoration of the CMS PET 1 cytoplasm.
2. Hybrids utilizing U09MJLM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.
3. Flowering (relatively early, medium, or late?): Medium
 Physiological maturity (relatively early, medium, or late?): Medium
 Height (relatively short, medium or tall?): Tall
 Stem branching: Fully Branched with Central Head
 Leaf shape: Broad Triangular Leaf margins: Coarsely Serrate
 Leaf attitude: Ascending Leaf surface: Smooth
 Leaf color: Light Green
 Ray flowers: Narrowly Ovate and Flat Ray flower color: Yellow
 Disk flower color: Yellow Stigma anthocyanin: Weakly Present
 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: Lateral and Marginal Brown Stripes Seed shape: Narrowly Ovate
 Seed cross-section: Flat

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

Compared to the public line RHA274, U09MJLM blooms 6 days later and matures 4 days later. It is about 48 cm taller than RHA274, and the broad triangular leaves are longer than RHA274. The narrowly ovate and flat, yellow ray flowers are narrower than RHA274. The seed is narrowly ovate, longer and lighter than RHA274. U09MJLM has seed that are striped black, with brown stripes. Hypocotyl anthocyanin is weakly present.

4. This variety does not appear to exhibit qualitative resistance to any herbicides or to the common sunflower diseases and insect pests.
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 2013. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



U11TAIMLM

1. **U11TAIMLM** is a linoleic oil type, restorer line developed by Pioneer Hi-Bred International that derives from the cross U06SPLM/B0642LM//SANAY. U06SPLM and B0642LM are both Pioneer proprietary lines. Sanay is a Syngenta hybrid that was purchased and used to cross. Selections were made for imidazilinone resistance, oil content, shorter plant stature, earlier flowering and yield, as assessed in hybrid combination. The pedigree method was used in the development of U11TAIMLM. 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 U11TAIMLM are adapted to the growing regions of the Northern Plains of the U.S. and Central, Eastern, and Western Europe.

3. Flowering (relatively early, medium, or late?): Medium
 Physiological maturity (relatively early, medium, or late?): Medium
 Height (relatively short, medium or tall?): Medium
 Stem branching: Apical branching with Central Head
 Leaf shape: Cordate Leaf margins: Medium Serrate
 Leaf attitude: Ascending Leaf surface: Smooth
 Leaf color: Light Green
 Ray flowers: 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: Marginal Grey Stripes Seed shape: Narrowly Ovate
 Seed cross-section: Flat

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

U11TAIMLM is a linoleic type, imidazilinone resistant restorer line. Compared to the public line RHA274, U11TAIMLM blooms 1 day later and matures 2 days later. It is about 4 cm taller than RHA274, and the cordate leaves are about 5 cm longer than RHA274. The fusiforme, yellow ray flowers are longer and narrower than RHA274. The seed is narrowly ovate, longer and lighter than RHA274. U11TAIMLM has seed that are striped black, with grey, marginal stripes. Hypocotyl anthocyanin is absent.

4. This variety is resistant to imidazolinone herbicide. It does not appear to exhibit qualitative resistance to the common sunflower diseases and insect pests.
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 2013. Please do not publish certified seed production acreage.
7. Application for protection under the Plant Variety Protection Act will not be made.



SA434R

1. SA434R is a Seeds 2000 Inc. non-oilseed, imidazolinone resistant restorer derived from the cross 1831R/428R. 1831R is a proprietary, non-oilseed restorer. 428R is a proprietary, non-oilseed restorer resistant to imidazolinone herbicide. SA434R is homozygous for dominant fertility restoration of CMS PET 1 cytoplasm. The pedigree method of selection was used for the development of SA434R. It is a bulk of F6 plants derived from a single F5 plant. Selection was for uniform plant type, self-compatibility, and resistance to imidazolinone herbicide.

2. Hybrids utilizing SA434R are adapted to major sunflower growing regions of North America and have been tested in North and South Dakota and will be marketed in those states. Hybrids utilizing SA434R will be used primarily for human consumption.

Flowering (relatively early, medium, or late?):	Relatively late
Physiological maturity (relatively early, medium, or late?):	Relatively late
Height (relatively short, medium or tall?):	Medium
Stem branching:	Present
Leaf shape:	Cordate
Leaf margins:	Medium serrate
Leaf attitude:	Horizontal
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:	Flat
Head (neck) attitude:	Ascending
Seed outer pericarp color:	Striped brown
Seed middle pericarp color:	White
Stripe appearance:	Narrow white
Seed shape:	Broadly ovate
Seed cross-section:	Not curved

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

4. SA434R is resistant to imidazolinone herbicide
5. Breeder's seed will be maintained by Seeds 2000 in nursery rows under bags, or by open pollination in isolated fields. Up to two generations beyond breeder's seed will be allowed for production of foundation seed. Isolation and other requirements will be according to the seed certification regulations of the state where seed is grown
6. Certified seed will first be offered for sale in 2103. Please do not publish acreage.
7. Application for PVP will not be made.



SA4391R

1. SA4391R is a Seeds 2000, Inc. high oleic (89.9%), imidazolinone herbicide resistant, oilseed restorer derived from the cross SA439R/RHA801CLHA+. SA439R is a proprietary restorer previously described to and approved by the NSVRB. RHA801CLHA+ is a proprietary restorer containing genes for CLHA+ imidazolinone herbicide resistance licensed for use by Seeds 2000 from BASF. SA4391R is homozygous for dominant fertility restoration of CMS PET 1 cytoplasm. The pedigree method of selection was used for the development of SA4391R. It is a bulk of F6 plants tracing to a single F5 plant. Selection was for uniform plant type, self-compatibility, high oleic fatty acid content, and resistance to imidazolinone herbicide
2. Hybrids utilizing SA4391R are adapted to major sunflower growing regions of North and South America and have been tested in North and South Dakota and Argentina and will be marketed in those states and countries. Hybrids utilizing SA4391R will be used primarily for vegetable oil.
3. Flowering (relatively early, medium, or late?): Relatively late
Physiological maturity (relatively early, medium, or late?): Relatively late
Height (relatively short, medium or tall?): Medium
Stem branching: Present
Leaf shape: Cordate Leaf margins: Medium serrate
Leaf attitude: Horizontal 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: Striped black Seed middle pericarp color: White
Stripe appearance: Narrow dark grey Seed shape: Broadly ovate
Seed cross-section: Not curved

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

4. SA4391R is resistant to imidazolinone herbicide
5. Breeder's seed will be maintained by Seeds 2000 in nursery rows under bags, or by open pollination in isolated fields. Up to two generations beyond breeder's seed will be allowed for production of foundation seed. Isolation and other requirements will be according to the seed certification regulations of the state where seed is grown
6. Certified seed will first be offered for sale in 2013. Please do not publish acreage.
7. Application for PVP will not be made



SA4861

1. SA4861 is a Seeds 2000, Inc. high oleic (88.1%), imidazolinone resistant, oilseed maintainer selected from the cross SA486B/HA89B-CLHA+. SA486 is a proprietary, high oleic maintainer previously described to and approved by the NSVRB. HA89B-CLHA+ is a proprietary oilseed maintainer with genes for CLHA + imidazolinone herbicide resistance licensed for use by Seeds 2000 from BASF. The pedigree method of selection was used for the development of SA4861. It is a bulk of F5 plants derived from a single F4 plant. Selection was for uniform plant type, self-compatibility, high oleic fatty acid content, and resistance to imidazolinone herbicide.
2. Hybrids utilizing SA4861 are adapted to major sunflower growing regions of North and South America and have been tested in North and South Dakota and Argentina and will be marketed in those states and countries. Hybrids utilizing SA4861 will be used primarily for vegetable oil.
3. Flowering (relatively early, medium, or late?): Relatively late
Physiological maturity (relatively early, medium, or late?): Relatively late
Height (relatively short, medium or tall?): Relatively tall
Stem branching: Absent
Leaf shape: Cordate Leaf margins: Medium serrate
Leaf attitude: Horizontal 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: Flat 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: Not curved

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

4. SA4861 is resistant to imidazolinone herbicide
5. Breeder's seed will be maintained by Seeds 2000 in nursery rows under bags, or by open pollination in isolated fields. Up to two generations beyond breeder's seed will be allowed for production of foundation seed. Isolation and other requirements will be according to the seed certification regulations of the state where seed is grown.
6. Certified seed will first be offered for sale in 2013. Please do not publish acreage.
7. Application for PVP will not be made.



SA7852R

1. SA7852R is a Seeds 2000, Inc. linoleic, imidazolinone herbicide resistant, race 734 downy mildew resistant restorer line developed by the pedigree method of selection from the cross SA578R/6356R. It is a bulk of F6 plants tracing to a single F5 plant. Selection was for uniform plant type, self compatibility, imidazolinone herbicide resistance, and race 734 downy mildew resistance. SA7852R is homozygous for dominant fertility restoration of CMS PET1 cytoplasm.

2. Hybrids utilizing SA7852R are adapted to major sunflower growing regions of North and South America and have been tested in North and South Dakota and Argentina and will be marketed in those states and countries. Hybrids utilizing SA7852R will be used primarily for vegetable oil.

3. Flowering (relatively early, medium, or late?): Late
 Physiological maturity (relatively early, medium, or late?): Late
 Height (relatively short, medium or tall?): Short
 Stem branching: Top branching
 Leaf shape: Cordate Leaf margins: Medium serrate
 Leaf attitude: Ascending 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: Ascending
 Seed outer pericarp color: Solid black Seed middle pericarp color: White
 Stripe appearance: None Seed shape: Broadly ovate
 Seed cross-section: Curved

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

SA7852R is a linoleic, imidazolinone herbicide resistant, race 734 downy mildew resistant restorer line developed by the pedigree method of selection. Compared to the public line RHA274, SA7852R is 8 days later to flower and reach physiological maturity and 25 cm shorter. Leaves of SA7852R are similar in size and color to leaves of RHA274. SA7852R has fewer leaves than RHA274. Heads of SA7852R are larger and are held in a more upright position than heads of RHA274. Seed of SA7852R is similar in color, but shorter in length than seed of RHA274.

4. SA7852R is resistant to imidazolinone herbicide and race 734 of downy mildew.

5. Breeder's seed will be maintained by Seeds 2000 in nursery rows under bags, or by open pollination in isolated fields. Up to two generations beyond breeder's seed will be allowed for production of foundation seed. Isolation and other requirements will be according to the seed certification regulations of the state where seed is grown.

6. Hybrid certified seed produced with this line will first be offered for sale in 2013. Please do not publish acreage.

7. Application for PVP will not be made.

