

# INSECTICIDAL TRANSGENIC CROPS (PIP - PLANT INCORPORATED PROTECTANTS)

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A “transgenic” crop is a cultivar or variety that expresses a trait or traits derived from genetic sources (transgenes) that are not inherent in the plant. An insecticidal transgenic crop produces toxic components to insects, but these materials supposedly have no impact on other organisms. To date, all insecticidal transgenic crops have resulted from transgenes (referred to as cry transgenes) derived from the insect pathogenic bacteria *Bacillus thuringiensis* (Bt), which produces protein (referred to as Cry toxins) that is lethal to certain insects. Different Cry toxins are highly lethal to specific insects and have little or no toxicity to others. Cry toxins are not considered to be broad spectrum insecticides. It is important to understand which cry transgenes are present in a crop cultivar and whether or not the Cry toxin(s) that the plant

produces has high toxicity to a target pest of interest. The Environmental Protection Agency registers and regulates insecticidal transgenes and the Cry protein toxin that is produced by the transgene, and together these are called Plant Incorporated Protectants (PIP). Currently, sweet corn, potato, field corn, and cotton have PIP registrations (see table). Note that herbicide resistant transgenes and others are not regulated by EPA since they do not produce toxins. Most transgenic crops have multiple transgenes (one or more insecticidal or herbicidal transgenes) present and there is a loose terminology associated with these plants that express more than one transgenic trait. Transgenic crops that possess multiple transgenes are termed either “stacked gene” or “pyramided gene” crops.

**Current & Previously Registered Section 3 PIP Registrations** (Table modified from U.S. Environmental Protection Agency: Pesticides: Regulating Pesticides, [http://www.epa.gov/opbppd1/biopesticides/pips/pip\\_list.htm](http://www.epa.gov/opbppd1/biopesticides/pips/pip_list.htm). Revised by EPA on 11/30/11.) Note that several PIP registrations have expired, they are included in the table to provide an historical perspective of PIP utilization.

PLANT-INCORPORATED PROTECTANT	REGISTRANT	DATE REGISTERED	DATE EXPIRES
Bt potato Cry 3A	Monsanto 524-474	May 1995	No expiration date
Bt corn Event 176 with Cry1Ab	Mycogen 68467-1	August 1995	April 1, 2001
Bt corn Event 176 with Cry1Ab (2 products--field corn, popcorn)	Syngenta 66736-1	August 1995 March 1998	June 30, 2001
Bt cotton Cry 1Ac (Bollgard)	Monsanto 524-478	October 1995	<b>Voluntarily cancelled</b> September 15, 2010
Bt corn Event MON 801 with Cry1Ab	Monsanto 524-492	May 1996	<b>Voluntarily cancelled</b> May 8, 1998
Bt corn Event BT11 with Cry 1Ab (field corn– AgriSure CB and sweet corn – Attribute – no refugia for sweet corn) (PDF) (253 pp, 1.34 mb) Reregistration Terms and Conditions (PDF) (238 pp, 1.12 mb)	Syngenta field corn 67979-1 sweet corn 65268-1	August 1996 February 1998	September 30, 2015
Bt corn Event MON 810 Cry1Ab (YieldGard) (PDF)(253 pp, 1.34 mb) Reregistration Terms and Conditions (PDF) (238 pp, 1.12 mb)	Monsanto 524-489	December 1996	September 30, 2015
Bt corn Cry 9C (domestic field corn for feed and non-food uses) (StarLink)	Aventis 264-669	May 1998	<b>Voluntarily cancelled</b> October 2000
Bt corn Event TC1507 with plant-optimized (PO) Cry1F (Herculex I) (PDF) (253 pp, 1.34 mb) Reregistration Terms and Conditions (PDF) (238 pp, 1.12 mb)	Dow/Mycogen 68467-2	May 2001	September 30, 2015
Bt corn Event TC1507 with POCry1F (Herculex I) (PDF)(253 pp, 1.34 mb) Reregistration Terms and Conditions (PDF) (238 pp, 1.12 mb)	Pioneer/Dupont 29964-3	May 2001	September 30, 2015
Bt cotton Cry2Ab2 in combination with Cry1Ac (Bollgard II)	Monsanto 524-522	December 2002	No expiration date
Bt corn Event MON863 with Cry3Bb1 (YieldGard RW) Reregistration Terms and Conditions (PDF) (238 pp, 1.12 mb)	Monsanto 524-522	February 2003	September 30, 2010

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<b>PLANT-INCORPORATED PROTECTANT</b>	<b>REGISTRANT</b>	<b>DATE REGISTERED</b>	<b>DATE EXPIRES</b>
Bt corn stack Events MON863 + MON810 with Cry3Bb1 + Cry1Ab (YieldGard Plus) Reregistration Terms and Conditions (PDF) (238 pp, 1.12 mb)	Monsanto 524-545	October 31, 2003	September 30, 2010
Bt cotton Cry1Ac + Cry1F (WideStrike) (PDF) (94 pp,777 K)	Dow AgroSciences 68467-3	September 30, 2004	No expiration date
Bt corn Event DAS-06275-8 with MOCry1F (Mycogen Brand B.t. Cry1F Event DAS-06275-8 corn) (253 pp, 1.34 mb) Reregistration Terms and Conditions (PDF) (238 pp, 1.12 mb)	Dow AgroSciences 68467-4	May 27, 2005	September 30, 2015
Bt corn Event DAS-591227-7 with Cry34Ab1 + Cry35Ab1 (Herculex RW (PDF) (205 pp, 1.19 mb) Reregistration Terms and Conditions (PDF) (238 pp, 1.12 mb)	Dow AgroSciences 68467-5	August 31, 2005	September 30, 2015
Bt corn Event DAS-59122-7 with Cry34Ab1 + Cry35Ab1 (Herculex RW) (PDF) (253 pp, 1.34 mb) Reregistration Terms and Conditions (PDF) (205 pp, 1.12 mb)	Pioneer/Dupont 29964-4	August 31, 2005	September 30, 2015
Bt corn Events DAS-59122-7 + TC1507 with Cry34Ab1 + Cry35Ab1 + PO Cry1F (Herculex Xtra) (205 pp, 1.19 mb) Reregistration Terms and Conditions (PDF) (238 pp, 1.12 mb)	Dow AgroSciences 68467-6	October 27, 2005	September 30, 2015
Bt corn Events DAS-59122-7 + TC1507 with Cry34Ab1 + Cry35Ab1 + PO Cry1F (Herculex Xtra) Reregistration Terms and Conditions (PDF) (205 pp, 1.19 mb)	Pioneer/Dupont 29964-5	October 27, 2005	September 30, 2015
Bt cotton Event MON531 with Cry1Ac (breeding nursery use only)	Monsanto 524-555	September 1, 2005	No expiration date
Bt cotton Event MON15947 with Cry2Ab2 (breeding nursery use only)	Monsanto 524-556	September 1, 2005	No expiration date
Bt corn Event MON88017 with Cry3Bb1 (YieldGard VT RW) (PDF) (234 pp, 978k) Reregistration Terms and Conditions (PDF) (238 pp, 1.12 mb)	Monsanto 524-551	December 13, 2005	September 30, 2015
Bt corn Events MON88017 + MON 810 with Cry1AB + Cry3Bb (YieldGard VT Plus (PDF) (234 pp, 978k) Reregistration Terms and Conditions (PDF) (238 pp, 1.12 mb)	Monsanto 524-552	December 13, 2005	September 30, 2015
Bt corn Event MIR 604 with modified Cry3A (Agrisure RW)(PDF) (234 pp, 978k) Reregistration Terms and Conditions (PDF) (171 pp, 578k)	Syngenta 67979-5	October 3, 2006	September 30, 2015
Bt corn Events MIR 604 + Bt11 with modified Cry3A + Cry1Ab (Agrisure CB/RW)(PDF) (234 pp, 978k) Reregistration Terms and Conditions (PDF) (171 pp, 578k)	Syngenta 67979-8	January 24, 2007	September 30, 2015
Bt corn Event Mon 89034 With Cry1A.105 + CryAb2 (PDF) (166 pp, 826k) Reregistration Terms and Conditions (PDF) (171 pp, 578k)	Monsanto 524-575	June 10, 2008	September 30, 2015
Bt corn Events Mon 89034 + Mon 88017 With Cry1A.105 + Cry2Ab2 + Cry3Bb1 (PDF) (166 pp, 826k) Reregistration Terms and Conditions (PDF) (171 pp, 578k)	Monsanto 524-576	June 10, 2008	September 30, 2015

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<b>PLANT-INCORPORATED PROTECTANT</b>	<b>REGISTRANT</b>	<b>DATE REGISTERED</b>	<b>DATE EXPIRES</b>
Bt cotton Vip3Aa19 plus Modified Cry1Ab	Syngenta 67979-9	June 26, 2008	September 30, 2015
Bt corn Vip3Aa20 (MIR162)	Syngenta 67979-14	November 26, 2008	December 31, 2011
Bt corn Bt Cry 1Ab (Bt11) + Vip 3Aa 20 (MIR 162)	Syngenta 67979-12	February 13, 2009	December 31, 2011
Bt corn Bt Cry 1Ab (Bt11) + Vip 3Aa 20 (MIR 162) + modified Cry3A (MIR 604)	Syngenta 67979-13	February 13, 2009	December 31, 2011
(SmartStax) Bt Corn Events MON 89034 x TC1507 x MON 88017 x DAS-59122-7 (PDF) (19 pp, 79k)	Monsanto Company 524-581 Mycogen Seeds c/o Dow AgroSciences LLC 68467-7	July 20, 2009	November 30, 2013
(SmartStax) Bt Corn Events MON 89034 x TC1507 x MON 88017 x DAS-59122-7 Seed Blend (PDF) (42 pp, 899k)	Monsanto Company 524-595 Mycogen Seeds c/o Dow AgroSciences LLC 68467-16	April 8, 2011	November 30, 2013
Bt corn Optimum AcreMax 1 (OAM 1) Seed Blend of Herculex Xtra + Herculex I (PDF) (23 pp, 164k) Reregistration Terms and Conditions (PDF) (171 pp, 578k)	Pioneer/Dupont 29964-6	April 30, 2010	September 30, 2012
Bt corn Optimum AcreMax RW (OAM RW) Seed Blend of Herculex RW + Non-Bt corn (PDF) (23 pp, 164k) Reregistration Terms and Conditions (PDF) (171 pp, 578k)	Pioneer/Dupont 29964-6	April 30, 2010	September 30, 2012
Bt corn 1507 (PO Cry1F) x MON 810 (PO Cry1Ab)	Pioneer/Dupont 29964-7	February 24, 2010	October 31, 2010
Bt corn 1507 (PO Cry1F) x 59122 (PO Cry34Ab1 + Cry35Ab1) x MON 810 (PO Cry1Ab)	Pioneer/Dupont 29964-8	February 24, 2010	October 31, 2010
Bt corn 59122 (PO Cry34Ab1 + Cry35Ab1) x MON 810 (PO Cry1Ab)	Pioneer/Dupont 29964-9	February 24, 2010	October 31, 2010
Bt Cry1Ac Soybean MON-87701-2 (PDF) (39 pp, 197k)	Monsanto 524-594	September 9, 2010	September 30, 2013