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2012 *Bt* Corn Products for the Southeastern United States

David Buntin, University of Georgia and
Kathy Flanders, Alabama Cooperative Extension System

Most corn hybrids now contain several transgenic traits for insect control and herbicide tolerance. Currently all transgenic insect control traits are various proteins derived from the bacterium called *Bacillus thuringiensis* (*Bt)*. *Bt* corn traits can be divided into two categories, those that target above ground caterpillar (lepidopteran) pests such as corn borers, and those that target below ground or soil inhabiting corn rootworms. The table on the next page summarizes the currently available *Bt* corn products for the southern region. The table lists the specific *Bt* proteins and events, herbicide resistance traits, and relative efficacy of traits for controlling specific target insect pests.

Insecticide resistance management (IRM) is required for all *Bt* traits in corn and includes structured refuge of non-*Bt* corn. Refuge requirements are different for the northern corn-belt and the southern cotton-growing areas of the United States. Refuge requirements also differ among hybrids with one or more *Bt* traits. Single above-ground trait products require a 50% non-*Bt* refuge. Most multiple above-ground trait products require a 20% non-*Bt* corn refuge. Details concerning the placement and arrangement of refuges also vary among *Bt* corn products.[5] The table lists the size of the non-*Bt* corn refuge. Starting in 2012, seed bag tags will have details about product IRM requirements, refuge amount and refuge placement options.

Herbicide Traits

GT, Glyphosate tolerant

LL, Liberty Link (glufosinate tolerant)

RR2, Roundup Ready 2 (glyphosate tolerant)

Target Above-Ground Insect Pests

Black cutworm

Lesser cornstalk borer[3]

Fall armyworm

Corn borers[2]

Corn earworm

Target Below-Ground (in soil) Insect Pest

Western corn rootworm[4]

Footnotes:

[2]European corn borer, Southwestern corn borer, sugarcane borer, and others. [3]Lepidopteran *Bt* traits do not specifically list lesser cornstalk borer as a target pest. [4]*Bt* rootworm traits target the western corn rootworm larvae, which occurs in areas such as north Alabama and north Georgia. These traits are not effective against southern corn rootworm. [5]See product Insect Resistance Management (IRM) documentation from the seed companies for more details.

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Bt Corn Products for the Southeastern United States, version 2012

Product Trade Name (Abbreviation)	*Bt* protein(s)	Amount of Insect Control[1]						Herbicide tolerance	Refuge Requirement in the South[5]	Event(s)
		Corn Earworm (ear)	Fall armyworm (whorl)	Corn Borers[2] (stalk)	Black Cutworm (seedling)	LCB[3] (seedling)	CRW[4] (roots)			
		----------Above-ground ----------					In soil			
Agrisure Products										
Agrisure CB/LL	Cry1Ab	F	G	E	P	G	--	LL	50%	Bt11
Agrisure CB/LL/RW	Cry1Ab mCry3a	F	G	E	P	G	F-G	LL	50%	Bt11, MIR604
Agrisure RW	mCry3A	--	--	--	--	--	F-G	--	20%	MIR604
Agrisure 3000GT	Cry1Ab mCry3A	F	G	E	P	G	F-G	GT LL	50%	Bt11, MIR604, GA21
Agrisure Viptera 3110	Vip3Aa20 Cry1Ab	E	E	E	G	G	--	GT LL	20%	MIR162, Bt11, GA21
Agrisure Viptera 3111	Vip3Aa20 Cry1Ab mCry3A	E	E	E	G	G	F-G	GT LL	20%	MIR162, Bt11, MIR604, GA21
Agrisure Viptera 3220	Vip3Aa20 Cry1Ab Cry1F	E	E	E	VG	VG	--	GT LL	20%	MIR162, Bt11, TC 1507, GA21
Herculex Products										
Herculex I (HX1)	Cry1F	P	VG	E	G	G	--	LL	50%	TC 1507
Herculex RW (HXRW)	Cry34Ab1/Cry35Ab1	--	--	--	--	--	E	LL	20%	DAS-59122-7
Herculex XTRA (HXX)	Cry1F Cry34Ab1/Cry35Ab1	P	VG	E	G	G	E	LL	50%	TC 1507, DAS-59122-7
Optimum Products										
Optimum Intrasect	Cry1F Cry1Ab	F-G	VG	E	VG	VG	--	LL RR2	20%	TC 1507, MON810
Optimum Intrasect XTRA	Cry1F Cry1Ab Cry34Ab1/Cry35Ab1	F-G	VG	E	VG	VG	E	LL RR2	20%	TC 1507, MON810, DAS-59122-7
YieldGard Products										
YieldGard Corn Borer (YGCB)	Cry1Ab	F	G	E	P	G	--	--	50%	MON810
YieldGard VT Rootworm / RR2 (VTRR2)	Cry3Bb1	--	--	--	--	--	E	RR2	20%	MON88017
YieldGard VT Triple (VT3)	Cry1Ab Cry3Bb1	F	G	E	P	G	E	RR2	50%	MON810, MON88017
Genuity/SmartStax Products										
Genuity VT Double PRO (GENVT2P)	Cry1A.105 Cry2Ab2	G-VG	E	E	P	VG	--	RR2	20%	MON89034, NK603
Genuity VT Triple PRO (GENVT3P)	Cry1A.105 Cry2Ab2 Cry3Bb1	G-VG	E	E	P	VG	E	RR2	20%	MON89034, MON88017
SmartStax (SSX, Dow) or Genuity SmartStax (GENSS, Monsanto)	Cry1A.105 Cry2Ab2 Cry1F Cry3Bb1 Cry34Ab1/Cry35Ab1	VG	E	E	G	VG	E	LL RR2	20%	MON89034, TC 1507, MON88017, DAS-59122-7

[1] E = excellent, VG = very good, G = good, F = fair, P = poor. Excellent usually means better than 95 percent control. Poor means less than about 30% control; Footnotes 2-5: see page 1.