

The Handy Bt Trait Table for U.S. Corn Production

Updated mid-March 2025

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The most up-to-date version and related extension materials are free online at: www.texasinsects.org/bt-corn-trait-table.html
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Several formatting changes for 2025

Resistance to Bt proteins continues to be a major theme for 2025. Localized populations of southwestern corn borer (SWCB) and European corn borer (ECB) have been found which survive one or more of the Bts labeled for their control (except VIP for SWCB). Both species developed resistance in isolated regions, often where single-trait hybrids were still being planted. For SWCB, this was in corn production on irrigated pivots in the southern New Mexico. For ECB, this was in small production areas outside of the corn belt in the Canadian Maritime provinces, Quebec, and Connecticut.

With the increase in species surviving Bts, the table was redesigned to eliminate a separate resistance column. That information is now captured in the control column. An 'x' means a trait package is effective against that insect. Resistance to all Bts in a package is indicated by 'R' if it is common or 'RL' if only in localized areas.

All single-trait packages were moved from Table 2 to Table 1 (below), the 'time capsule' of older products. Single-trait hybrids increase the chance of resistance development and thus were supposed to be phased out after introduction of seed-blend refuge fourteen years ago. In 2025, single trait hybrids are still listed in some seed catalogs. Moving single traits out of the main trait table draws attention to the problem of their continued availability.

ABBREVIATIONS & TERMS used in the TRAIT TABLE

Insect Pests

- BCW black cutworm
- CEW corn earworm
- ECB European corn borer
- FAW fall armyworm
- NCR northern corn rootworm
- SB stalk borer
- SCB sugarcane borer
- SWCB southwestern corn borer
- TAW true armyworm
- WBC western bean cutworm
- WCR western corn rootworm

Herbicide Tolerance

- GLY glyphosate/Roundup-Ready
- LL glufosinate/Liberty Link
- LL* check bag tag for LL status
- Enlist 2,4-D & fops/Enlist trait

Refuge: Unless specified as a seed blend, percentages in table assume a separate 'structured' refuge planted in strips, blocks, borders, or in an adjacent field

TABLE 1: TIME CAPSULE Trait packages phased out by industry & single- traits in limited supply	letter code	Proteins in trait package ***** Font type denotes target: caterpillar or rootworm	Insects controlled: One or more Bts in package still effective (x) Resistance to Bts in package: common (R) or localized (RL)											Refuge, northern states (higher in the south)	Herbicide tolerance	
			B	C	E	F	S	S	T	W	N	W				
			C	E	C	A	C	C	A	B	C	C	R			
AcreMax1	AM1	Cry1F <i>Cry34/35Ab1</i>	x		RL	R	x	x	RL			R	RL	R	10% blend 20% ECB	GLY LL
AcreMax RW	AMRW	<i>Cry34/35Ab1</i>											RL	R	10% blend	GLY LL
AcreMax TR1sect	AMT	Cry1Ab Cry1F <i>mCry3A</i>	x	R	RL	R	x	x	RL			R	x	R	10% blend	GLY LL
Agrisure 3010 (Agrisure GT/CB/LL)	3010	Cry1Ab		R	RL			x	RL						20%	GLY LL
Agrisure 3000GT	3000GT	Cry1Ab <i>mCry3A</i>		R	RL			x	RL				x	R	20%	GLY LL
Agrisure RW or GT/RW	-	<i>mCry3A</i>											x	R	20%	GLY (if GT)
Herculex I	HXI	Cry1F	x		RL	R	x	x	RL			R			20%	GLY LL
Herculex RW	HXRW	<i>Cry34/35Ab1</i>											RL	R	20%	GLY LL
Herculex XTRA	HXX	Cry1F <i>Cry34/35Ab1</i>	x		RL	R	x	x	RL			R	RL	R	20%	GLY LL
Intrasect TR1sect	CYHR	Cry1Ab Cry1F <i>mCry3A</i>	x	R	RL	R	x	x	RL			R	x	R	20%	GLY LL
Intrasect Xtra	YXR	Cry1Ab Cry1F <i>Cry34/35Ab1</i>	x	R	RL	R	x	x	RL			R	RL	R	20%	GLY LL
Intrasect Xtreme	CYXR	Cry1Ab Cry1F <i>Cry34/35Ab1 mCry3A</i>	x	R	RL	R	x	x	RL			R	x	R	5%	GLY LL
TR1sect	CHR	Cry1F <i>mCry3A</i>	x		RL	R	x	x	RL			R	x	R	20%	GLY LL
VT Triple PRO	VT3P	Cry1A.105 Cry2Ab2 <i>Cry3Bb1</i>		R	RL	x	x	x	RL				RL	R	20%	GLY
YieldGard Corn Borer	YGCB	Cry1Ab		R	RL			x	RL						20%	GLY
YieldGard Rootworm	YGRW	<i>Cry3Bb1</i>											RL	R	20%	GLY
YieldGard VT Triple	VT3	Cry1Ab <i>Cry3Bb1</i>		R	RL			x	RL				RL	R	20%	GLY

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TABLE 2 Principal trait packages available in the U.S. (alternate names in parentheses)	letter code	Proteins in trait package ***** Font type denotes target: caterpillar or rootworm	Insects controlled											Refuge, northern states (higher in the south)	Herbicide tolerance (* = check the bag tag)
			One or more Bts in package still effective (x) Resistance to Bts in package: common (R) or localized (RL)												
			B C W	E C W	E C B	F A W	S B	S C B	S W C B	T A W	W B C	N C R	W C R		
AcreMax	AM	Cry1Ab Cry1F	x	R	RL	R	x	x	RL		R			5% blend	GLY LL
AcreMax Leptra	AML	Cry1Ab Cry1F Vip3A	x	x	RL	x	x	x	x	x	x			5% blend	GLY LL
AcreMax Xtra	AMX	Cry1Ab Cry1F <i>Cry34/35Ab1</i>	x	R	RL	R	x	x	RL		R	RL	R	10% blend	GLY LL
AcreMax Xtreme	AMXT	Cry1Ab Cry1F <i>Cry34/35Ab1 mCry3A</i>	x	R	RL	R	x	x	RL		R	x	R	5% blend	GLY LL
Agrisure Above (Agrisure3120EZ) AA Refuge Renew (Agrisure3120)	AA	Cry1Ab Cry1F	x	R	RL	R	x	x	RL		R			5% blend Renew: 5%	GLY LL*
Agrisure Total (Agrisure3122EZ) AT Refuge Renew (Agrisure3122)	AT	Cry1Ab Cry1F <i>Cry34/35Ab1 mCry3A</i>	x	R	RL	R	x	x	RL		R	x	R	5% blend Renew: 5%	GLY LL*
Agrisure Viptera 3110	3110	Cry1Ab Vip3A	x	x	RL	x	x	x	x	x	x			20%	GLY LL
Agrisure Viptera 3111	3111	Cry1Ab Vip3A <i>mCry3A</i>	x	x	RL	x	x	x	x	x	x	x	R	20%	GLY LL
Duracade (Agrisure5122EZ) D Refuge Renew (Agrisure5122)	D	Cry1Ab Cry1F <i>eCry3.1Ab mCry3A</i>	x	R	RL	R	x	x	RL		R	x	R	5% blend Renew: 5%	GLY LL*
Duracade Viptera (Agrisure5222EZ) DV Refuge Renew (Agrisure 5222)	DV	Cry1Ab Cry1F Vip3A <i>eCry3.1Ab mCry3A</i>	x	x	RL	x	x	x	x	x	x	x	R	5% blend Renew: 5%	GLY LL*
Duracade Viptera Z3 (Agrisure5332EZ) DVZ Refuge Renew (Agrisure5332)	DVZ	Cry1Ab Cry1A.105 Cry2Ab2 Vip3A <i>eCry3.1Ab mCry3A</i>	x	x	RL	x	x	x	x	x	x	x	R	5% blend Renew: 5%	GLY LL*
Intrasect	YHR	Cry1Ab Cry1F	x	R	RL	R	x	x	RL		R			5%	GLY LL
Leptra	VYHR	Cry1Ab Cry1F Vip3A	x	x	RL	x	x	x	x	x	x			5%	GLY LL
PowerCore Refuge Adv.	PWRA	Cry1A.105 Cry2Ab2 Cry1F	x	R	RL	x	x	x	RL		R			5% blend	GLY LL
PowerCore Enlist or Enlist Refuge Advanced	PWE PCE	Cry1A.105 Cry2Ab2 Cry1F	x	R	RL	x	x	x	RL		R			5% Adv 5% blend	GLY LL Enlist
PowerCore Ultra Enlist or Ultra Enlist Refuge Advanced	PWUE PCUE	Cry1A.105 Cry2Ab2 Cry1F Vip3A	x	x	RL	x	x	x	x	x	x			5% Adv 5% blend	GLY LL Enlist
QROME	Q	Cry1Ab Cry1F <i>Cry34/35Ab1 mCry3A</i>	x	R	RL	R	x	x	RL		R	x	R	5% blend	GLY LL
SmartStax or Genuity SS	SS SX	Cry1A.105 Cry2Ab2 Cry1F <i>Cry3Bb1 Cry34/35Ab1</i>	x	R	RL	x	x	x	RL		R	RL	R	5%	GLY LL
SmartStax Enlist SS Enlist Refuge Advanced	SSE	Same as SmartStax	x	R	RL	x	x	x	RL		R	RL	R	5% Adv 5% blend	GLY LL Enlist
SmartStax Refuge Advanced SmartStax RIB Complete	SXRA	Same as SmartStax	x	R	RL	x	x	x	RL		R	RL	R	5% blend	GLY LL
SmartStax PRO	SSPro	Cry1A.105 Cry2Ab2 Cry1F <i>Cry3Bb1 Cry34/35Ab1 dvSnf7</i>	x	R	RL	x	x	x	RL		R	x	x	5%	GLY LL
SmartStax PRO Enlist SSPro Enlist Refuge Advanced	SSPro	Same as SmartStax Pro	x	R	RL	x	x	x	RL		R	x	x	5% Adv 5% blend	GLY LL Enlist
SmartStax PRO Refuge Advanced RIB Complete or w/RNAi Tech	SSPro	Same as SmartStax Pro	x	R	RL	x	x	x	RL		R	x	x	5% blend	GLY LL
Trecepta RIB Complete	TRERIB	Cry1A.105 Cry2Ab2 Vip3A	x	x	RL	x	x	x	x	x	x			5% blend	GLY
Viptera (Agrisure3220EZ) Vip Refuge Renew (Agrisure3220)	V	Cry1Ab Cry1F Vip3A	x	x	RL	x	x	x	x	x	x			5% blend Renew: 5%	GLY LL*
Viptera Z3 (Agrisure3330EZ) VZ Refuge Renew (Agrisure3330)	VZ	Cry1Ab Cry1A.105 Cry2Ab2 Vip3A	x	x	RL	x	x	x	x	x	x			5% blend Renew: 5%	GLY LL*
Vorceed Enlist	V	Cry1A.105 Cry2Ab2 Cry1F <i>Cry3Bb1 Cry34/35Ab1 dvSnf7</i>	x	R	RL	x	x	x	RL		R	x	x	5% blend	GLY LL Enlist
Vorceed Enlist Structured - Expected in 2026	VS	Cry1A.105 Cry2Ab2 Cry1F <i>Cry3Bb1 Cry34/35Ab1 dvSnf7</i>	x	R	RL	x	x	x	RL		R	x	x	5%	GLY LL Enlist
VT Double PRO	VT2P	Cry1A.105 Cry2Ab2		R	RL	x	x	x	RL					5%	GLY
VT2 PRO RIB Complete	VT2PRIB	Cry1A.105 Cry2Ab2		R	RL	x	x	x	RL					5% blend	GLY
VT3 PRO RIB Complete	VT3PRIB	Cry1A.105 Cry2Ab2 <i>Cry3Bb1</i>		R	RL	x	x	x	RL			RL	R	10% blend	GLY
VT4 PRO w/RNAi Technology	VT4PRO	Cry1A.105 Cry2Ab2 Vip3A <i>Cry3Bb1 dvSnf7</i>	x	x	RL	x	x	x	x	x	x	x	x	5% blend	GLY