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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 traits 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	Traits in the package ***** Font type denotes target: caterpillar or <i>rootworm</i>		Expected control by traits in the package *one or more remain effective (x) *resistance to all, widespread (R) / localized(RL)												Refuge in northern states (higher in the south)	Weed control trait
				B C W	C E 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			
AcreMax1	AM1	Cry1F	<i>Cry34/35Ab1</i>	x		RL	RL	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 TRIssect	AMT	Cry1Ab	Cry1F	<i>mCry3A</i>	x	R	RL	RL	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
Herculex I	HXI	Cry1F			x		RL	RL	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	RL	x	x	RL		R	RL	R		20%	GLY LL
Intrasect TRIssect	CYHR	Cry1Ab	Cry1F	<i>mCry3A</i>	x	R	RL	RL	x	x	RL		R	x	R	20%	GLY LL
Intrasect Xtra	YXR	Cry1Ab	Cry1F	<i>Cry34/35Ab1</i>	x	R	RL	RL	x	x	RL		R	RL	R	20%	GLY LL
Intrasect Xtreme	CYXR	Cry1Ab	Cry1F	<i>Cry34/35Ab1</i>	x	R	RL	RL	x	x	RL		R	x	R	5%	GLY LL
			<i>mCry3A</i>														
TRIssect	CHR	Cry1F	<i>mCry3A</i>	x		RL	RL	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	Traits in the package ***** Font type denotes target: caterpillar or rootworm	Expected control by traits in the package *one or more remain effective (x) *resistance to all, widespread (R) / localized(RL)												Refuge in northern states (higher in the south)	Weed control Trait *check bag tag
			B C W	C E 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	RL	x	x	RL		R			5% blend	GLY LL	
AcreMax Leptra	AML	Cry1Ab Cry1F Vip3A	x	x	RL	x	x	x	x	x				5% blend	GLY LL	
AcreMax Xtra	AMX	Cry1Ab Cry1F Cry34/35Ab1	x	R	RL	RL	x	x	RL		R	RL	R	10% blend	GLY LL	
AcreMax Xtreme	AMXT	Cry1Ab Cry1F Cry34/35Ab1 mCry3A	x		RL	RL	x	x	RL		R	x	R	5% blend	GLY LL	
Agrisure Above (Agrisure3120EZ) AA Refuge Renew (Agrisure3120)	AA	Cry1Ab Cry1F	x	R	RL	RL	x	x	RL		R			5% blend Renew: 5%	GLY LL*	
Agrisure Total (Agrisure3122EZ) AT Refuge Renew (Agrisure3122)	AT	Cry1Ab Cry1F Cry34/35Ab1 mCry3A	x	R	RL	RL	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				20%	GLY LL	
Agrisure Viptera 3111	3111	Cry1Ab Vip3A mCry3A	x	x	RL	x	x	x	x	x	x	x	R	20%	GLY LL	
Duracade (Agrisure5122EZ) D Refuge Renew (Agrisure5122)	D	Cry1Ab Cry1F eCry3.1Ab mCry3A	x	R	RL	RL	x	x	RL		R	x	R	5% blend Renew: 5%	GLY LL*	
Duracade Viptera (Agrisure5222EZ) DV Refuge Renew (Agrisure 5222)	DV	Cry1Ab Cry1F Vip3A eCry3.1Ab mCry3A	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 eCry3.1Ab mCry3A	x	x	RL	x	x	x	x	x	x	x	R	5% blend Renew: 5%	GLY LL*	
Intrasect	YHR	Cry1Ab Cry1F	x	R	RL	RL	x	x	RL		R			5%	GLY LL	
Leptra	VYHR	Cry1Ab Cry1F Vip3A	x	x	RL	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				5% Adv 5% blend	GLY LL Enlist	
QROME	Q	Cry1Ab Cry1F Cry34/35Ab1 mCry3A	x	R	RL	RL	x	x	RL		R	x	R	5% blend	GLY LL	
SmartStax or Genuity SS	SS SX	Cry1A.105 Cry2Ab2 Cry1F Cry3Bb1 Cry34/35Ab1	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 Cry3Bb1 Cry34/35Ab1 dvSnf7	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				5% blend	GLY	
Viptera (Agrisure3220EZ) Vip Refuge Renew (Agrisure3220)	V	Cry1Ab Cry1F Vip3A	x	x	RL	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				5% blend Renew: 5%	GLY LL*	
Vorceed Enlist	V	Cry1A.105 Cry2Ab2 Cry1F Cry3Bb1 Cry34/35Ab1 dvSnf7	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 Cry3Bb1 Cry34/35Ab1 dvSnf7	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 Cry3Bb1		R	RL	x	x	x	RL			RL	R	10% blend	GLY	
VT4 PRO w/RNAi Technology	VT4PRO	Cry1A.105 Cry2Ab2 Vip3A Cry3Bb1 dvSnf7	x	x	RL	x	x	x	x	x	x	x	x	5% blend	GLY	