Supplemental Table S1. Treatments and hybrids used in Experiment 1 in both years.

Treatment	Group	Hybrid	Bt treatment[a]	Bt toxins
T1	1	Dekalb DKC 6694	None	None
T2	1	Dekalb DKC 6697	Genuity VT Double PRO	Cry1A.105 + Cry2Ab2
T3	1	DKC 6694 - 80% / DKC 6697 - 20%	VT2P – 20%RIB	Cry1A.105 + Cry2Ab2
T4	2	Dekalb DKC 6205	None	
T5	2	Dekalb DKC 6208	Genuity SmartStax	Cry1A.105 + Cry2Ab2 + Cry1Fa2
T6	2	DKC 6205 - 80% / DKC 6208 - 20%	SStax – 20%RIB	Cry1A.105 + Cry2Ab2 + Cry1Fa2
T7	3	Dekalb DKC 6694	None	None
T8	3	Dekalb DKC 6629	Genuity Trecepta	Cry1A.105 + Cry2Ab2 + Vip3Aa20
T9	3	DKC 6694 - 80% / DKC 6629 - 20%	TRE1 – 20%RIB	Cry1A.105 + Cry2Ab2 + Vip3Aa20
T10	4	Dekalb DKC 6824	None	None
T11	4	Dekalb DKC 6799	Genuity Trecepta	Cry1A.105 + Cry2Ab2 + Vip3Aa20
T12	4	DKC 6824 - 80% / DKC 6799 - 20%	TRE2 – 20%RIB	Cry1A.105 + Cry2Ab2 + Vip3Aa20

[a]RIB = refuge in a bag or blended refuge.

Supplemental Table S2. Treatments and hybrids used in Experiment 2 in four years.

			Hybrids and Blends			
Treatment	Bt Product	Bt toxins	2019	2020	2021	2022
T1	Non-Bt	None	DKC 6694 100%	DKC 6694 100%	DKC 6770 100%	DKC 6593 100%
T2	Genuity VT Double PRO	Cry1A.105 + Cry2Ab2	DKC 6697 – 100%	DKC 6697 – 100%	DKC 6772 – 100%	DKC 6592 – 100%
T3	Genuity Trecepta No RIB	Cry1A.105 + Cry2Ab2 + Vip3Aa20	DKC 6629 – 100%	DKC 6629 – 100%	DKC 6629 – 100%	DKC 6599 – 100%
T4	Genuity Trecepta – 10%RIB	Cry1A.105 + Cry2Ab2 + Vip3Aa20	DKC 6629 – 90% / DKC 6694 – 10%	DKC 6629 – 90% / DKC 6694 – 10%	DKC 6794 – 90% / DKC 6770 – 10%	DKC 6599 – 90% / DKC 6593 – 10%
T5	Genuity Trecepta – 20%RIB	Cry1A.105 + Cry2Ab2 + Vip3Aa20	DKC 6629 – 80% / DKC 6694 – 20%	DKC 6629 – 80% / DKC 6694 – 20%	DKC 6794 – 80% / DKC 6770 – 20%	DKC 6599 – 80% / DKC 6593 – 20%
T6	Genuity Trecepta – 30%RIB	Cry1A.105 + Cry2Ab2 + Vip3Aa20	DKC 6629 – 70% / DKC 6694 – 30%	DKC 6629 – 70% / DKC 6694 – 30%	DKC 6794 – 70% / DKC 6770 – 30%	DKC 6599 – 70% / DKC 6593 – 30%

[a]RIB = refuge in a bag or blended refuge.

Supplemental Table S3. Mean (±SEM) fall armyworm percent infested plants and damage rating at stage V5-V7 of non-blended and blended Bt corn in Experiment 1 in 2021[a]

Treatment	Bt treatment[b]	Bt toxins	Precent infested plants	Mean damage rating of total plants
T1	None	None	0	0
T2	VT Double PRO	Cry1A.105 + Cry2Ab2	0.32 ± 0.32	0.007 ± 0.007
T3	VT Double PRO – 20%RIB	Cry1A.105 + Cry2Ab2	0	0
T4	None	None	1.03 ± 1.03	0.018 ± 0.018
T5	SmartStax	Cry1A.105 + Cry2Ab2 + Cry1F	0	0
T6	SmartStax – 20%RIB	Cry1A.105 + Cry2Ab2 + Cry1F	0	0
T7	None	None	0	0
T8	Trecepta1	Cry1A.105 + Cry2Ab2 + Vip3Aa20	0	0
T9	Trecepta1 – 20%RIB	Cry1A.105 + Cry2Ab2 + Vip3Aa20	0	0
T10	None	None	0	0
T11	Trecepta2	Cry1A.105 + Cry2Ab2 + Vip3Aa20	0	0
T12	Trecepta2 – 20%RIB	Cry1A.105 + Cry2Ab2 + Vip3Aa20	0	0
F (df = 11, 33)			0.93	0.92
P			0.5240	0.5307

Means within columns with the same letters are not significantly different (Tukey's HSD test, α = 0.05).

[a]No fall armyworm were present in 2019.

[b]RIB = refuge in a bag or blended refuge

Supplemental Table S4. Mean (±SEM) fall armyworm percent infested plants of non-blended and blended Bt corn in Experiment 2 over four years.

Treatment	Bt treatment	Bt toxins	Percent Infested Plants			
			2019	2020	2021	2022
T1	Non-Bt	None	2.53 ± 0.42	3.06 ± 1.23a	2.21 ±1.23	0.16 ± 0.16
T2	Genuity VT Double PRO	Cry1A.105 + Cry2Ab2	0.69 ± 0.27	0.14 ± 0.14c	0.44 ±0.15	0.94 ± 0.54
T3	Genuity Trecepta - No RIB[a]	Cry1A.105 + Cry2Ab2 + Vip3Aa20	0.14 ± 0.14	0.14 ± 0.14c	0	0
T4	Genuity Trecepta – 10% RIB	Cry1A.105 + Cry2Ab2 + Vip3Aa20	1.11 ± 0.67	0.42 ± 0.27bc	0.44 ± 0.15	0.16 ± 0.16
T5	Genuity Trecepta – 20% RIB	Cry1A.105 + Cry2Ab2 + Vip3Aa20	2.08 ± 0.47	0.42 ± 0.27bc	0.59 ± 0.24	0.16 ± 0.16
T6	Genuity Trecepta – 30% RIB	Cry1A.105 + Cry2Ab2 + Vip3Aa20	2.30 ± 0.08	1.81± 0.47b	0.44 ± 0.15	0.16 ± 0.16
F (df = 5, 15)			2.30	4.88	2.50	1.75
P			0.0882	0.0009	0.0778	0.1743

Means with columns with the same letters are not significantly different (Tukey's HSD test, $\alpha = 0.05$);

[a]RIB = refuge in a bag or blended refuge.

Supplemental Table S5. Mean (±SEM) fall armyworm damage rating per plant of non-blended and blended Bt corn in Experiment 2 over four years.

Treat-ment	Bt treatment	Bt toxins	Damage rating / plant			
			2019	2020	2021	2022
T1	Non-Bt	None	0.042 ± 0.016	0.634 ± 0.213a	0.006 ± 0.004	0.001 ± 0.001
T2	Genuity VT Double PRO	Cry1A.105 + Cry2Ab2	0.014 ± 0.007	0.018 ± 0.018b	0.003 ± 0.002	0.021 ± 0.016
T3	Genuity Trecepta - No RIB[a]	Cry1A.105 + Cry2Ab2 + Vip3Aa20	0.003 ± 0.003	0.021 ± 0.021b	0	0
T4	Genuity Trecepta – 10% RIB	Cry1A.105 + Cry2Ab2 + Vip3Aa20	0.031 ± 0.019	0.60 ± 0.038b	0.005 ± 0.005	0.004 ± 0.004
T5	Genuity Trecepta – 20% RIB	Cry1A.105 + Cry2Ab2 + Vip3Aa20	0.064 ± 0.029	0.056 ± 0.035b	0.006 ± 0.003	0.001 ± 0.001
T6	Genuity Trecepta – 30% RIB	Cry1A.105 + Cry2Ab2 + Vip3Aa20	0.037 ± 0.028	0.260 ± 0.070b	0.009 ± 0.002	0.001 ± 0.001
F (df = 5, 15)			1.23	8.55	1.15	1.40
P			0.3392	0.0005	0.3728	0.2706

Means with columns with the same letters are not significantly different (Tukey's HSD test, $\alpha = 0.05$);

[a]RIB = refuge in a bag or blended refuge.

Supplemental Table S6. Mean (±SEM) grain yield of non-blended and blended Bt corn in Experiment 2 over four years.

Treat-ment	Bt treatment	Bt toxins	Grain yield (kg/ha)			
			2019	2020	2021	2022
T1	Non-Bt	None	10,922 ± 139 bc	10,410 ± 268 a	12,793 ± 282 a	12,078 ± 320 a
T2	Genuity VT Double PRO	Cry1A.105 + Cry2Ab2	10,545 ± 304 c	11,822 ± 289 a	12,789 ± 245 a	12,775 ± 274 a
T3	Genuity Trecepta - No RIB[a]	Cry1A.105 + Cry2Ab2 + Vip3Aa20	12,052 ± 696 ab	12,332 ± 370 a	13,662 ± 675 a	12,794 ± 685 a
T4	Genuity Trecepta – 10% RIB	Cry1A.105 + Cry2Ab2 + Vip3Aa20	12,181 ± 523 ab	12,522 ± 305 a	13,654 ± 337 a	12,664 ± 428 a
T5	Genuity Trecepta – 20% RIB	Cry1A.105 + Cry2Ab2 + Vip3Aa20	12,259 ± 202 a	12,245 ± 332 a	13,924 ± 442 a	12,007 ± 516 a
T6	Genuity Trecepta – 30% RIB	Cry1A.105 + Cry2Ab2 + Vip3Aa20	11,857 ± 604 ab	12,237 ± 267 a	12,535 ± 228 a	11,985 ± 590 a
F (df = 5, 15)			2.94	2.80	1.60	2.66
P			0.0479	0.0569	0.2203	0.0649

Means with columns with the same letters are not significantly different (Tukey's HSD test, $\alpha = 0.05$);

[a]RIB = refuge in a bag or blended refuge.