

Table 1. Cry 3Bb Expression Levels in Various Corn Plant Tissues in Contrast to the Expression Levels of Previously Approved "High Dose" Bt Corn Events

Bt Protein and Event	Leaf Tissues: Early (ug/g)	Pollen (ug/g)	Grain (ug/g)	Mature Roots (ug/g)	Whole Plant (ug/g)
Cry 3Bb Mon 863					
Average Level	81	62	70	41	37
Range 4 sites	65 - 93	30 - 93	49 - 86	25 - 56	24 - 45
NPTII Mon 863					
Average Level	0.98				
Range 4 sites	0.74 - 1.4		<0.076		
Cry 1Ab Mon 810	10.34	0.05	0.3		4.65
		<.09	.19 - .39		
Bt11 Cry1Ab	3.3	0.05	1.4	21	
Range		<.09		2.2 - 37	
Cry 1Ab Event 176	4.4	7.1	0.001	0.08	0.6
Range			<.005		
Cry 1Ac DeKalb/Mon	2.04	0.0115	1.62	0.125	
Cry 9C StarLink	44	0.24	18.6	25.9	250
Ratios					
Cry 3Bb level compared to --					
Cry 1 Ab Mon 810	7.8	1,240	233		8.0
Bt11 Cry1Ab	24.5	1,240	50.0	2.0	
Cry 1Ab Event 176	18.4	8.7	70,000	512.5	61.7
Cry 1Ac DeKalb/Mon	39.7	5,391	43.2	328.0	
Cry 9C StarLink	1.8	258.3	3.8	1.6	0.1

Sources: Cry 3Bb expression levels from Monsanto submission; other Cry protein and event levels from EPA documents, in particular, Table A2, "Cry Protein Tissue Expression," Chapter 2, Science Assessment, Bt-Plant-Pesticides Biopesticides Registration Action Document.

Table 2. Percent National Corn Acres Treated with Insecticides by Target Pest ("ECB" is the European corn borer) [Cells are percents; 1.62 is 1.62%]

Active Ingredient	1971	1982	1991	1995	1998	1999
ECB Control						
carbaryl	1.62	0.17				
diazinon	2.5	0.18	0.2			
lambda-cyhalothrin					2	3
malathion	0.2					
methomyl		0.4				
methoxychlor	0.08					
permethrin			2	4	2	3
Subtotal ECB	4.39	0.75	2.20	4.00	4.00	6.00
One-quarter Acreage Treated with "ECB & Other Control" Products						
	0.70	1.23	3.06	2.75	2.63	2.10
Total % Acreage Treated for ECB	5.1	1.99	5.26	6.75	6.63	8.10
Rootworm Control						
aldrin	10.18162					
bifenthrin	5.975289					
bufencarb (RE-5353)	4.965229	6.658993	3	2	1	1
carbofuran	0.719735					
chlordane						
chlorethoxyfos					1	1
cyfluthrin					3	2
DDT	0.005401					
endrin	0.101276					
ethoprophos		0.835391				
fipronil					1	1
flucythrinate			0.15			
fonofos		6.88474	4	1	1	
heptachlor	2.567011					
isofenphos		1.147704				
phorate	4.527716	4.567616	2	1	0.5	
tebupirimphos					3	2
tefluthrin			2	5	5	7
terbufos		9.399106	8	6	6	5
toxaphene	0.189049	0.371857				
trimethacarb			0.17			
Subtotal Rootworm	29.2	29.9	19.3	15.0	21.5	19.0
One-half Acreage Treated with "ECB & Other Control" Products						
	1.4	2.5	6.1	5.5	5.3	4.2
Total % Acreage Treated for Rootworm	30.6	32.3	25	20.5	26.8	23.2
ECB & Other Control						
bifenthrin			0.34	1	2	2
chlorpyrifos		4.125004	9	7	6	5
dimethoate		0.004837	0.28		1	0.11
disulfoton	0.69813	0.007242				
esfenvalerate			0.44			0.15
fenvalerate		0.067629				
monocrotophos		0.069484				
oxydemeton-methyl		0.473058				
parathion	2.05793					
parathion-methyl	0.063466	0.185095	2	3	1	1
propargite			0.18		0.5	0.12
Subtotal ECB & Other	2.8	4.9	12.2	11	11	8.38
Sum of % Acres Treated with All Insecticides, All Pests*	36.4	35.6	33.8	30.0	36.0	33.4

* Total percent acres treated with all insecticides overstates the percent of total national corn acreage to a small degree since some acres are treated with an insecticide targeted for ECB control as well as a rootworm insecticide.

Source: Compiled by Benbrook Consulting Services from field crop agricultural chemical use data, National Agricultural Statistics Service, USDA, multiple years.

Table 3. Pounds Applied of Corn Insecticides by Year and Target Pest

Active Ingredient	1971	1982	1991	1995	1998	1999
ECB Control						
carbaryl	1,649,000	166,027				
diazinon	1,991,000	174,034	116,000			
lambda-cyhalothrin					23,000	52,000
malathion	114,000					
methomyl		155,181				
methoxychlor	92,000					
permethrin			207,000	237,000	129,000	180,000
Subtotal ECB Only	3,846,000	495,241	323,000	237,000	152,000	232,000
One-quarter Pounds Applied ECB & Other	414,000	1,045,601	1,944,500	1,398,750	1,203,250	1,131,250
Total Pounds Applied for ECB	4,260,000	1,540,843	2,267,500	1,635,750	1,355,250	1,363,250
Rootworm Control						
aldrin	7,759,000					
bufencarb (RE-5353)	3,575,000					
carbofuran	2,681,000	5,205,320	2,278,000	946,000	542,000	772,000
chlordane	842,000					
chlorethoxyfos					122,000	89,000
cyfluthrin					12,000	5,000
DDT	4,000					
endrin	30,000					
ethoprophos		675,705				
fipronil					63,000	110,000
flucythrinate			6,000			
fonofos		5,101,382	2,890,000	786,000	499,000	
heptachlor	1,104,000					
isofenphos		1,329,418				
phorate	2,661,000	3,777,715	1,306,000	750,000	158,000	
tebupirimfos					249,000	129,000
tefluthrin			244,000	286,000	368,000	510,000
terbufos		8,660,113	5,986,000	4,277,000	5,043,000	3,588,000
toxaphene	182,000	601,335				
trimethacarb			121,000			
Subtotal Rootworm	18,838,000	25,350,988	12,831,000	7,045,000	7,056,000	5,203,000
One-half Pounds Applied ECB and Other	828,000	2,091,202	3,889,000	2,797,500	2,406,500	2,262,500
Total Pounds Applied for Rootworm	19,666,000	27,442,190	16,720,000	9,842,500	9,462,500	7,465,500
ECB and Other Control						
bifenthrin			14,000	40,000	113,000	93,000
chlorpyrifos		3,885,190	6,716,000	4,531,000	4,008,000	3,921,000
dimethoate		1,916	78,000		244,000	36,000
disulfoton	312,000	4,917				
esfenvalerate			12,000			5,000
fenvalerate		8,505				
monocrotophos		60,172				
oxydemeton-methyl		193,615				
parathion	1,329,000					
parathion-methyl	15,000	28,090	812,000	1,024,000	275,000	388,000
propargite			146,000		173,000	82,000
Subtotal ECB and Other	1,656,000	4,182,405	7,778,000	5,595,000	4,813,000	4,525,000
Pounds Applied for All Chemicals, All Target Pests	24,340,000	30,028,634	20,932,000	12,877,000	12,021,000	9,960,000

Source: Compiled by Benbrook Consulting Services from field crop agricultural chemical use data, National Agricultural Statistics Service, USDA, multiple years.