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APPENDIX A.1

Table 1. Location, acres in production, markets and European corn borer (ECB) and corn earworm (CEW) pest pressure for each farm included in the on-farm study in Objective 1.

Farm	State	Acres of Vegetables	Acres of Corn	Markets	ECB- Yearly Average Flight / Night			CEW- Yearly Average Flight / Night		
					1999	2000	2001	1999	2000	2001
Applefield	Central MA	30	6	Farmstand	1.9	6.5	4.7	20.6	4.5	1.9
Brookfield	Western MA CT River Valley	18	4	CSA	2.6	3.0	2.6	3.2	3.2	0.6
Coolwater	Western MA CT River Valley	38	4.5	Wholesale	6.6	10.5	NA	1.0	0.2	NA
Goranson	Maine	36	2	Wholesale	1.5	0.8	2.4	8.5	5.5	0.7
Kestrel	Southern VT CT River Valley	50	12	Wholesale Farmstand	5.9	15.7	15.4	2.0	0.7	0.2
The Upper Forty	Central CT CT River Valley	22	1	Farmstand Farmer's Markets	1.3	1.2	1.8	2.2	0.9	0.5
Walker	Southern VT CT River Valley	30	10	Farmstand	1.6	7.6	5.0	2.7	0.9	0.3
Wishing Stone	Rhode Island	16	2.5	Wholesale Farmstand CSA	3.8	5.8	4.5	14	12.8	8.3

Table 2. Mean total number of corn earworm (CEW), level of tip damage, total number of European corn borers (ECB), side and found on each treatment day compared to untreated ears for ten treatment days in 2000 and 2001.

Day of application	CEW per ear		ECB per ear		Tip damage per ear		Side damage per ear		Husk damage per ear	
	2000 ^z	2001	2000	2001	2000	2001	2000	2001	2000	2001
0	0.17	0.21	0.83	0.32	1.09	0.86	0.84	0.67	0.52	0.22
3	0.02* ^y	0.02*	0.15*	0.04*	0.14*	0.12*	0.49	0.22	0.34	0.13
4	0.03*	0.06*	0.12*	0.11*	0.12*	0.22*	0.37	0.27	0.28	0.15
5	0.04*	0.05*	0.13*	0.17	0.15*	0.17*	0.38	0.27	0.31	0.14
6	0.02*	0.11	0.14*	0.10*	0.18*	0.34*	0.41	0.64	0.35	0.18
7	0.02*	0.06*	0.13*	0.12*	0.12*	0.25*	0.38	0.53	0.24*	0.17
8	0.04*	0.04*	0.12*	0.18	0.23*	0.45*	0.47	0.52	0.27*	0.26
9	0.03*	0.13	0.09*	0.14	0.19*	0.48*	0.51	0.81	0.23*	0.27
10	0.04*	0.05*	0.13*	0.11*	0.15*	0.34*	0.64	0.51	0.32	0.19
11	0.07*	0.11	0.13*	0.10*	0.27*	0.44*	0.72	0.70	0.28	0.24
Early mean ^x	0.06	0.05	0.16	0.13	0.29	0.27	0.21	0.30	0.23	0.14
Late mean	0.03	0.12	0.23	0.14	0.24	0.46	0.83	0.72	0.39	0.25
PLT	NS	NS	NS	NS	NS	NS	*	NS	NS	NS
TRT	**	**	**	*	**	**	NS	**	NS	NS
PLT*TRT	NS	NS	NS	**	**	*	NS	NS	NS	*
Linear ^w	0.0190	NS	NS	NS	NS	0.0017	NS	0.0002	NS	0.0072
Quadr	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cubic	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

^zn=100 (Early and late plantings are combined.).

^y*Indicates significance at P < 0.05 for a two-tailed Dunnett's test comparing each treatment day (day 3 - day 11) to Day 0 (no oil applied).

^xn=1000. Mean across all days (including day 0) for each year.

^wDay 0 is not included in the regression analysis.

Table 3. The percent of unfilled kernels at the tip (cone tip) found per ear for the ten treatment levels, averaged over

both planting dates in 2000 and 2001 and for each planting date (early and late) in both years.

Day of application	Percent cone tip (%)					
	2000 ^z	2001	2000	2001	2001	2001
			Early ^y	Late	Early	Late
0	2.62	0.53	1.60	3.65	0.19	0.86
3	15.59 ^{*x}	13.69 [*]	11.05 [*]	20.14 [*]	15.43 [*]	11.95 [*]
4	16.21 [*]	9.38 [*]	13.49 [*]	18.92 [*]	10.92 [*]	7.83 [*]
5	15.48 [*]	7.37 [*]	12.32 [*]	18.65 [*]	7.70 [*]	7.04 [*]
6	12.92 [*]	8.26 [*]	10.89 [*]	14.56 [*]	11.17 [*]	5.34
7	11.13 [*]	2.56	9.82 [*]	12.45 [*]	2.00	3.12
8	9.71 [*]	2.27	8.52 [*]	10.89 [*]	1.39	3.14
9	8.07 [*]	1.42	7.61 [*]	8.53	1.87	0.99
10	6.26	1.05	6.85 [*]	5.66	0.41	1.68
11	5.59	1.62	4.68	6.51	0.76	2.78
PLT	*	NS	--	--	--	--
TRT	**	**	**	**	**	**
PLT x TRT	*	NS	--	--	--	--
Regression ^w						
Linear	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	NS
Quadr	NS	NS	NS	NS	0.0365	NS
Cubic	NS	NS	NS	NS	NS	NS

^zn = 200. ^yn = 100.

^x*Indicates significance at P < 0.05 for a two-tailed Dunnett's test comparing treatment day 3 through day 11 to treatment day 0.

^wtreatment day 0 is not included in the regression analysis.

Table 4. Statistical analysis for the number of live corn earworm and the level of damage in sweet corn treated with oil, Bt, oil + Bt, and an untreated control, averaged over the six days that larvae were applied, in 2000 and 2001.

Treatment Analysis	<u>No. of live corn earworm</u> (n = 288)		<u>Level of damage</u> (n = 288)	
	<u>2000</u>	<u>2001</u>	<u>2000</u>	<u>2001</u>
Oil	**	**	**	**
Bt	**	**	**	**
Time	**	**	*	*
Oil x Bt	*	*	**	**
Oil x Time (n=48)	NS	NS	*	*
Day 7	-	-	NS	NS
Day 10	-	-	NS	NS
Day 13	-	-	*	*
Day 16	-	-	*	*
Day 19	-	-	*	*
Day 22	-	-	*	*
Bt x Time (n=48)	*	**	NS	NS
Day 7	NS	NS	-	-
Day 10	NS	*	-	-
Day 13	*	*	-	-
Day 16	*	*	-	-
Day 19	*	*	-	-
Day 22	*	*	-	-
Oil x Bt x Time	NS	NS	NS	NS

^zNS, *, **Non-significant or significant by F-test at P = 0.05 or 0.01, respectively.

Table 5. Percent cone tip and the percent of marketable ears in sweet corn treated with oil, Bt, oil + Bt in 2000 and 2001. Ears were harvested on day 22 after first silk and at the milk stage. Cone tip was not used as a criterion for marketability.

Treatment	2000 ^z	Cone tip (%) (n = 48)		Marketable (%) (n = 48)	
		2001	2000	2001	2001
Untreated	--	0.01b	73b	43c	
Oil	--	6.49a	96a	98a	
Bt	--	0.32b	88a	83b	
Oil + Bt	--	9.1a	96a	100a	
Analysis ^y					
Oil		**	*	*	
Bt	-	NS	*	*	
Time	-	-	-	-	
Oil x Bt	-	*	*	*	

^zAll ears showed some physiological abnormality at the tip in 2000, which we believe was due to cold, wet conditions during silking.

^yNS, *, **Non-significant or significant by F-test at P = 0.05 or 0.01, respectively. All other interactions not shown did not pertain to this test. Mean separation by Duncan's multiple range test at P ≤ 0.05.