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FIELD CORN: *Zea mays* L., '(DKC62-95)'

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Western Bean Cutworm (WBC): *Striacosta albicosta* (Smith)

Corn (hybrid, maize, sweet) | *Zea mays*

The western bean cutworm (WBC) is an important pest of corn and dry beans. In addition to yield loss due to direct feeding on developing kernels in the ear, WBC infestation can also lead to secondary fungal infections. This study was conducted within the historic range of WBC in western Nebraska; however, it has undergone a rapid range expansion into the eastern Corn Belt within the last 16 years. This field trial was established to evaluate the efficacy of a single application of foliar insecticides against this pest to prevent feeding damage to non-Bt corn ears. The trial was located at the University of Nebraska-Lincoln's Stumpf International Wheat Center in Perkins County, Nebraska, USA (40.856805° N, −101.701594° W). A RCB design with 10 treatments (including an untreated check) and 4 replications was used. Each plot was eight rows by 35 ft. The trial was planted on 13 May using a small plot research planter at 32,000 seeds/acre at an approximate depth of 1.4–1.75 inch in 30 inch rows. The hybrid planted was DKC62-95 (Monsanto Company, St. Louis, MO) non-Bt with RR2 herbicide tolerance. The plots received irrigation, fertilization, and weed management inputs following standard agronomic practices for the region, with no insecticide applications other than the experimental treatments.

The plots were scouted weekly for the presence of WBC eggs and larvae following the onset of moth flight on 27 Jun. The economic threshold was reached on 21 Jul with >9% of plants being infested by egg masses or early instar larvae. Foliar insecticide treatments were applied 25 Jul using a backpack sprayer with an 8.3 ft handheld

Table 1

Treatment/formulation (AI)	Rate (fl oz/acre)	Mean feeding damage to aborted kernels (cm^2)	Mean feeding damage to harvestable kernels (cm^2)	% of ears infested with WBC larvae	% of ears with fungal infection
Untreated check	–	1.96 a	2.21 a	63	55
Hero EC (Bifenthrin	2.6	0.99 b	0.61 b	33	38
+ Zeta-Cypermethrin)	5.0	0.58 bc	0.38 b	28	70
Mustang Maxx EC	1.76	0.47 bc	1.37 ab	23	48
(Zeta-Cypermethrin)	2.5	0.98 b	1.19 ab	35	35
	4.0	0.97 b	0.84 b	28	15
Steward EC (Indoxacarb)	4.6	0.58 bc	0.55 b	23	13
	6.7	0.36 bc	0.36 b	20	33
	9.2	0.23 c	0.09 b	10	5
Brigade 2EC (Bifenthrin)	3.0	0.58 bc	0.61 b	18	13

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boom. Insecticides were delivered at 15 gpa carrier volume through six TeeJet AIXR 11002 Yellow nozzles 20 inches apart with 30 psi pressure maintained with a CO_2 propellant. Applications were made to the middle four rows of each plot with a single pass.

On 29 Aug, 10 ears from the central 2 rows and interior 22 ft of each plot were randomly chosen and removed along with the husks. The ears were husked and examined in the laboratory to determine feeding damage to aborted kernels at the ear tip and harvestable kernels. The presence of WBC larvae and secondary fungal infection in the ears was also recorded. The data was analyzed using PROC MIXED with mean separation by least square means ($P = 0.05$) in SAS version 9.4.

In the untreated check, 63% of corn ears were infested with WBC larvae. Mean feeding damage for the untreated check ranged from 0.0 to 9.0 cm^2 with a mean of 1.96 cm^2 for aborted ear tip kernels and 0.0–21.3 cm^2 with a mean of 2.21 cm^2 for harvestable kernels. All foliar insecticide treatments significantly reduced ear feeding damage to aborted ear tip kernels when compared to the untreated check (Table 1); feeding damage to aborted kernels was significantly lower at the highest rate of Steward compared to two rates of Mustang Maxx and the lower rate of Hero. For harvestable kernels, all products provided significant reduction in damage except the two lower rates of Mustang Maxx, which provided numerically lower damage than the untreated check. The best performance in terms of reduction in ear tip and harvestable kernel feeding, percent ear infestation, and percent of ears with secondary fungal infections was with the highest rate of Steward.