

C22-P

EFFECTS OF INSECTICIDE DEPOSIT PATTERNS ON BIOLOGICAL EFFICACY AND FEEDING BEHAVIOR OF FALL ARMYWORM, *Spodoptera frugiperda* (J.E. Smith) (Lepidoptera: Noctuidae)

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Pesticide delivery systems can effect deposition on canopies and resultant biological effects of a toxicant at any given point throughout the canopy. The present study assessed the effects of two insecticides (cypermethrin and spinosad) provided by different nozzles on biological efficacy and feeding behavior, applied to three different canopies (tomato, corn, and soybean), using different nozzles and the Capstan pulsing system. Biological efficacy was estimated using second larvae instar of fall armyworm on corn and soybean. Six replicates were used for each combination of insecticide, application rates, nozzles, canopies, and plant sections. Results showed that the total deposit from each nozzle and resulting mortality was higher on the top followed by middle, and bottom sections for both canopies. The larvae showed avoidance behavior on cypermethrin treated leaf disks. The implications of the development of resistance in each presentation scenario are reported elsewhere. The effects of nozzles flow rates, canopy, sections, insecticides, and hours post treatment on mortality and consumption rates showed that all main factors had a significant effect on mortality. The effect of hours post treatment accounted for the greatest portion of the variability. The results suggest that using different application equipment on various canopy architectures can present significant differences in deposit patterns and resulting biological efficacy.