2 Automated monitoring traps for detection of western bean cutworm (*Striacosta albicosta*)

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Abstract: Western bean cutworm (*Striacosta albicosta,* Smith) is a growing pest of maize over the past fifteen years. Range expansion to the eastern corn-growing regions, the larvae's gregarious nature, and a resistance to engineered plant traits has made control difficult. Reliable monitoring can make a significant difference and technologies that can be implemented as part of a management program could help these efforts. Spensa Technologies' Z-trap is an automated monitoring device, providing real-time information about a target pest. It has not been tested against *S. albicosta,* so we sought to discover the relationship between the trap's classifier and true counts of the moth. Additionally, we sought insight on: 1) The accuracy of the Hanson simple degree-day model for predicting timing of seasonal population flights, 2) Distribution of nightly moth flights, and 3) Count data for predicting field infestation levels. *S. albicosta* accounted for 73% of all insects collected by the trap. The classifier correlated well with trends in moth flight ($p = 0.68$). Nightly flight data was normally-distributed with peak flight occurring between 12 and 1 am. The simple degree-day model trailed behind the true flight progression by 5-12 days. While there was only a weak, linear relationship between trap events and in-field infestations, fields with significant numbers of infested plants ($> 5\%$) tended to have higher weekly moth counts than fields below threshold values. This information would be helpful in identifying fields to target for human scouting. We discuss the value of automated traps for integrated pest management (IPM) programs.