iSPI: Integrated System for Pest Identification

Friesen, Benjamin

Pest infestation is a major problem for greenhouse growers worldwide. In the United States it is estimated that insect pests damage between 4% and 21% of all crops. In greenhouse settings, yellow sticky cards are used to attract, and subsequently monitor the concentration of insect pests. Growers currently rely on entomologists to use these cards to catch, identify and count the pest species, and then determine a control strategy. This method is time consuming, costly and provides the grower with feedback only when an entomologist is on site, which is typically once a week. The device developed here, called the Integrated System for Pest Identification (iSPI), photographs these yellow sticky traps every 24 hours and uses an original object detection algorithm to identify and count three common greenhouse pests. The program then communicates the results to the greenhouse grower through a variety of methods, (Email, Twitter, Dropbox, etc.). The iSPI system currently identifies these pests with an accuracy of 82% when compared to counts executed by an entomologist. The increased frequency of data collection (daily versus weekly) allows the grower to implement a more efficient pest control strategy. Detecting and targeting pests early in their development can potentially reduce crop damage and significantly lower the volume and cost of pesticides required for pest control. These cameras are inexpensive, need no configuration, are easy to install and require only a single cable. Moreover, iSPI virtually eliminates the costs associated with hiring entomologists while reducing the volume and cost of pesticides required.

Awards Won: