

The Commercial Acceptance of Non-Fumigant Alternatives

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Cardinal Professional Products

As a supplier of fumigants and related post-harvest pest management products, we have been attending the Methyl Bromide Alternatives Outreach Conference for many years so we can have the opportunity to evaluate the various research projects presented and determine if there is commercial viability. Our job is to take the research, transfer the technology to the end user and make evaluations on the potential for commercial viability of the alternatives.

Over the years, Cardinal Professional Products has presented information at MBO on cylinderized phosphine (ECO₂FUME® & VAPORPH₃OS®), as well as sulfuryl fluoride (ProFume®), which have proven to be effective alternatives to methyl bromide, however we feel it is necessary to present the commercial success we are experiencing with non-fumigant alternatives such as fogging insecticides (dichlorvos, pyriproxyfen), and mating disruption technology (CIDETRAK® IMM). We have implemented many programs using these products in the food processing industry in California with excellent success.

Dichlorvos (Card-O-Vap 8)

A California walnut processor began initiating a fogging program using Card-O-Vap 8 (8% dichlorvos, ready-to-use) as part of their pest management program. They inserted Confused flour beetle insects into walnut meal bioassays and evaluated control after the application. After application, complete control of the insects were observed, even in bioassays containing over 1 inch of meal.

A recent paddy rice warehouse infested with straw itch mites (*Pyemotes tritici*) are often very difficult to control with phosphine fumigants, and would have historically been treated using methyl bromide, but an application of dichlorvos proved to be successful in suppressing the population in order for a fumigation crew to enter the warehouse to set up and apply sulfuryl fluoride successfully.

Over the last ten years, many Card-O-Vap 8 users have found that regular applications of dichlorvos suppresses the pest population to the point that fumigations have decreased significantly. We have observed this with dried plums, dried beans, almonds, walnuts, and rice.

Pyriproxyfen (NyGuard®)

A California rice mill began applying NyGuard® in areas where they historically observed issues with *Tribolium* insects. Here is a quote from the Sanitation Manager:

“There has been a substantial decrease of red flour beetle activity in several areas of the facility. Most notable is the MCC room on the 2nd floor of the mill. Because of the location of that room to the whiteners and the bran dust they create as well as the feed screws running along the ceiling, and the tight spaces created by the wall size electrical panels and the inherent difficulty of cleaning around energized panels, we had problems for years. The following year after beginning the use of NyGuard® the population decreased to effectively none.”

We have observed similar results in many of our clients that are using NyGuard® across a wide variety of commodities.

Mating Disruption (CIDETRAK® IMM)

In 2010, Trecé received the California registration of CIDETRAK® IMM mating disruption pheromone for use in various post-harvest applications. In 2011, we have approximately 40 installations of CIDETRAK® in almonds, walnuts, dried plums, raisins, dried beans, and other commodity storage/processing facilities. One facility, a mid-size almond processor, has records of Indian meal moth pheromone trap counts dating back to 2008. In April of 2010, they installed CIDETRAK® in several of their warehouses, and received a dramatic decrease in trap counts as seen in Tables 1-4 below.

Table 1
Total Trap Count = 376

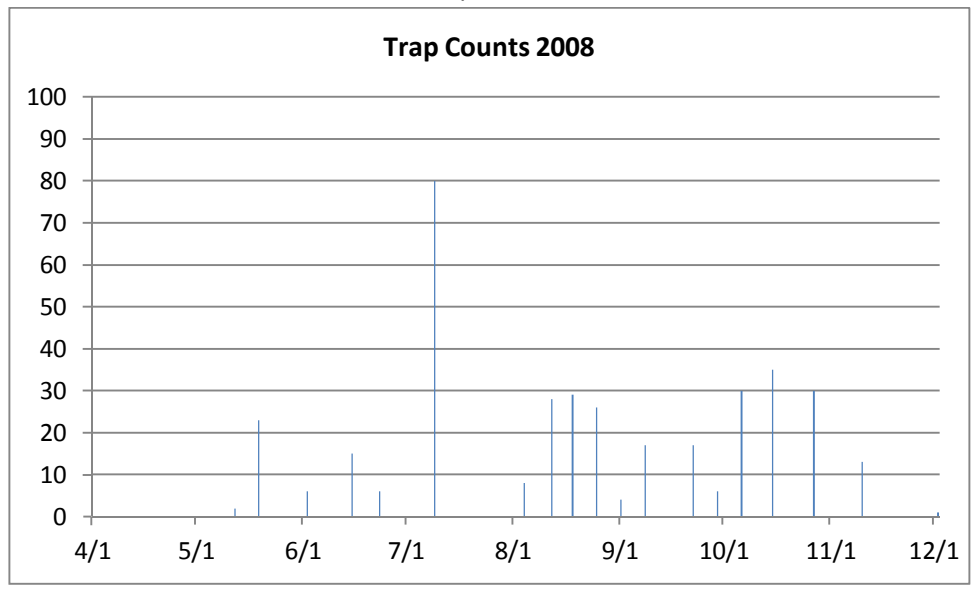


Table 2
Total Trap Count = 381

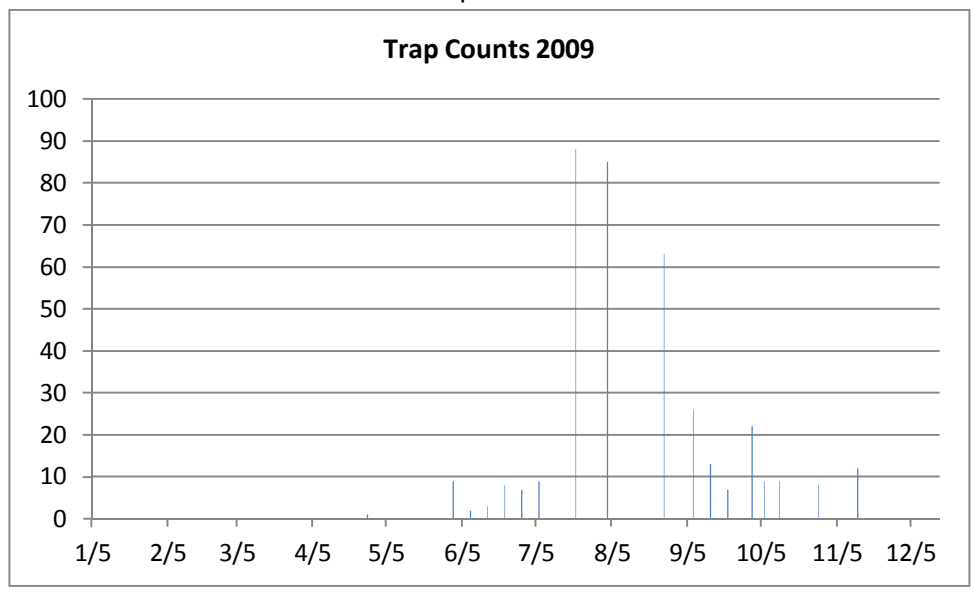


Table 3
Total Trap Count = 45

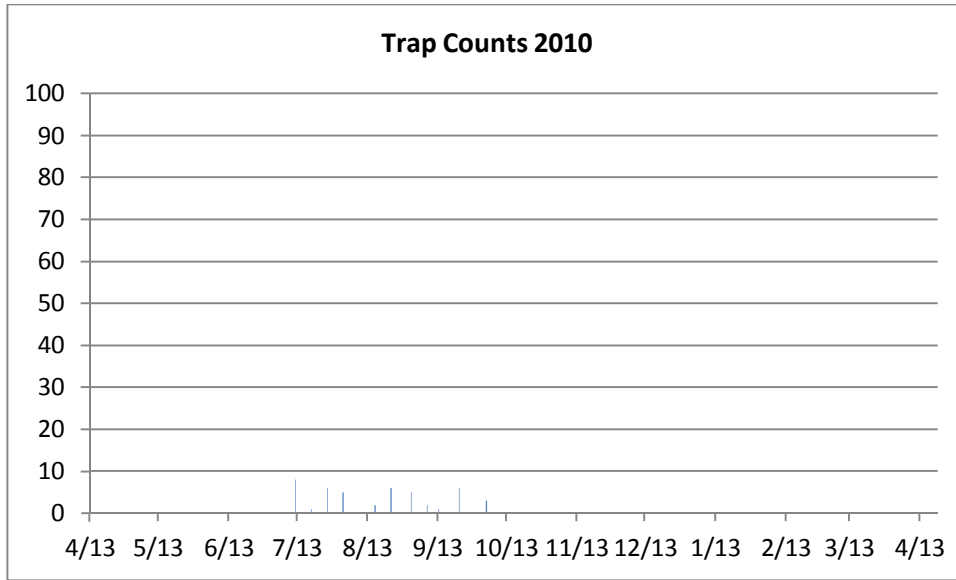
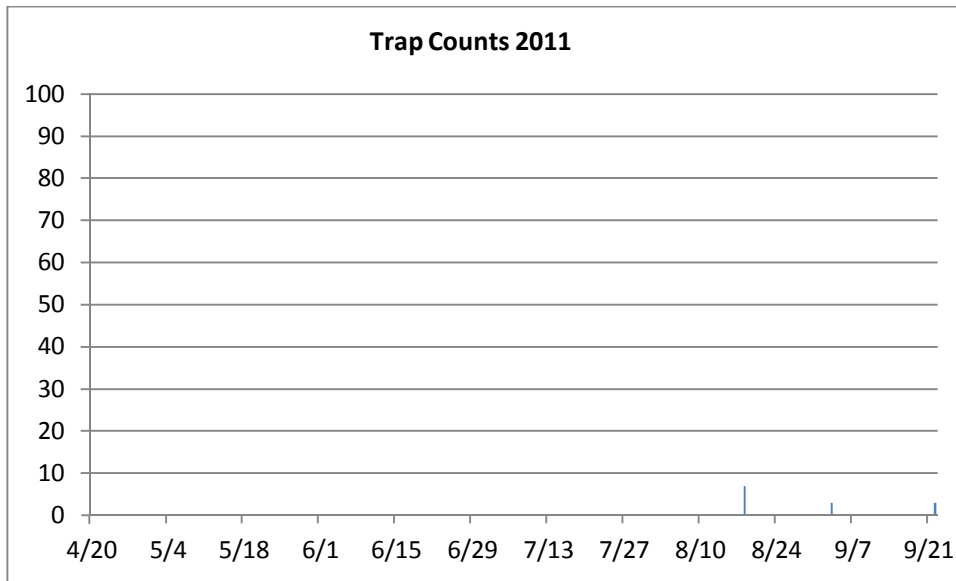


Table 4
Total Trap Count = 13



In November of 2009, a dried fruit facility fumigated their warehouse containing bulk bins of dried fruit with ProFume®, which in the past had been treated annually with methyl bromide. The following spring, they initiated a CIDETRAK® IMM installation, and monitored pheromone trap counts to evaluate the treatment throughout the remainder of the year. Normally, during the summer months, this facility would typically treat the warehouse with approximately 7 applications of fogging insecticides, but in the summer 2010, the pheromone traps counts remained so low, that fogging applications were not necessary until late fall. This population suppression is attributed to a successful ProFume® fumigation followed with a mating disruption program.

In summary, we have found that the proper use of fogging insecticides, insect growth regulators and mating disruption pheromones have successfully suppressed stored product insect populations to the point where fumigations have declined, and the reliance on methyl bromide has been reduced drastically. These are not total replacements for methyl bromide, but when used in conjunction with other Integrated Pest Management techniques, the industry has found alternative products that are becoming commercially acceptable.