FLOUR MILL FUMIGATIONS: ACTION THRESHOLDS, EFFICACY AND REBOUND

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Methyl bromide is still widely used in flour mills for the suppression of stored-product insect pests; primarily the red flour beetle *Tribolium castaneum*. Development and adoption of alternative control tactics, such as sulfuryl fluoride or heat, has been made more difficult due to the extremely limited published field data on action thresholds, efficacy, and rate of population rebound. Here, we evaluate the impact of multiple methyl bromide fumigations performed in several flour mills on red flour beetle populations. Red flour beetle population levels were assessed using either direct counts of insects from product samples, direct counts of insects sieved from the product stream (i.e., tailings samples), or from pheromone baited trap captures. From this data, average levels at time of treatment, percent decrease in number following treatment, rate of rebound, time to return to level prior to treatment, and time to return to average level prior to treatment were determined. Seasonal impacts on efficacy and rebound were also evaluated. Limited data from other treatments such as sulfuryl fluoride fumigation and aerosol treatments with DDVP will also be presented for comparison. Each facility and fumigation is unique, but from the compilation of large datasets of monitoring data we can begin to develop a better understanding of the impact of methyl bromide fumigation and the level of pest management needed to adequately replace this compound. This data will also be useful in improving the selection, timing and application of pest suppression tactics in flour mills.