

Title            Areawide integrated pest management program for commercial grain stores.

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#### **Abstract**

A decision support system, Stored Grain Advisor Pro, was developed to conduct risk analysis of large concrete commercial elevator facilities. A vacuum-probe sampler was used to take ten 3-kg wheat grain samples in the top 12 m of each bin at grain elevators in Kansas and Oklahoma, USA. After the insect species and numbers were determined for each sample, the data were entered into the risk analysis software. The program uses a model to predict future risk based on current insect density, grain temperature and moisture. The information was presented as a bin board layout to the manager. Recommended treatment strategies and an economic analysis were also presented to the manager. Stored Grain Advisor correctly predicted for 71-80% of bins whether they were either safe or at high risk. In only 2 of 399 bins in Kansas and in zero bins in Oklahoma, the programme predicted that the bins were safe when, in fact, they became infested 6 weeks later. Elevator operators using the program tended to fumigate only the bins with high insect densities, rather than fumigating all the bins. This resulted in better grain management because treating bins only when insect densities exceed economic thresholds and treating only the bins that need to be treated minimizes the risk of economic losses from unexpected insect problems, and reduces the cost of pest management and the use of fumigant.