

Title Sorption of carbonyl sulfide by stored products.
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Abstract

As a consequence of a search for an alternative to methyl bromide for the fumigation of stored products, carbonyl sulfide (COS) was patented for its fumigant properties. While the toxicity of this gas to insects is well documented, the behaviour of COS on commodities needed to be investigated. The sorption of COS by a diverse range of commodities - cereals (wheat, barley, oats, maize, rice and sorghum), pulses (field peas, red kidney beans, lupins, soyabeans, mung beans and chickpeas), oil seeds (rape, safflower, linola, fuzzy cottonseed and sunflower seeds), dried fruits (apricots, peaches, pears and sultanas), spices (chillies and cardamom), almonds, cocoa beans and coffee beans - has been assessed under a set of comparable conditions. Red kidney beans and sunflower seeds were highly sorptive and may not be suitable for fumigation with COS. The role of moisture content, age of commodity and history of previous fumigation with COS were investigated. Increasing moisture content increases the rate of sorption whereas increased storage time appears to reduce the rate of sorption, as does the number of times that a commodity has been previously fumigated with COS.