

Title            Interaction of ethyl formate (EtF) with stored products.  
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#### **Abstract**

The phase-out of methyl bromide has created a need for alternative fumigants for the treatment of stored products. One such alternative, ethyl formate (EtF), is already widely used for treatment of dried fruits in Australia. To be a viable treatment for other stored products, an allowance for the loss of EtF from the headspace during fumigation must be made to develop efficacious treatment schedules. There is little data on the fate of EtF during fumigation of stored products, or the mechanism of the loss from the headspace. Therefore, the fate of EtF during treatment of a number of cereals (wheat, rice, barley, oats), oilseeds (rape, sunflower, cotton), legumes (field peas, kidney beans), dried fruits (sultanas, apricots), and oaten hay was followed during fumigation under laboratory conditions at both 25 and 10 deg C. A similar study was carried out on seven rice-milling fractions. Fumigation with EtF at 25 deg C promises to be an efficacious pest control measure in commodities where concentrations could be maintained at 60-70 g/m<sup>3</sup> for a period of 24 h. The high rate of loss of EtF from the headspace of fumigated paddy rice, fuzzy cotton seed, sunflower seed, and kidney beans would require the application of very high dosages of fumigant to achieve headspace concentrations that would allow effective insect control in these commodities. Dried fruits, oats and wheat, field peas, oaten hay and milled rice were more promising candidates for EtF treatment. Headspace concentrations during fumigation of dried fruits were higher than during treatment of other commodities. EtF shows potential as a chemical for the protection of products that interact similarly with EtF contained in their headspace and to which the product can be applied in a similar fashion.