Fumigation and Controlled Atmosphere – Session Summary

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There are only two universally available fumigants left namely methyl bromide and phosphine and yet each of these has its own limitations. Methly bromide is facing a phase-out in the year 2005 and, according to the Montreal Protocol, will be available only for quarantine or pre-shipment fumigations in developed countries For other countries the phase-out is slightly delayed

As far as phosphine is concerned, it is a very useful fumigant but, unlike methyl bromide, it acts slowly and insects in different countries have developed resistance.

In a keynote paper given by Dr Banks, the limited use of controlled atmospheres was highlighted This technology has a specific niche such as for organic foods and special treatments where the use of other fumigants is unacceptable

In this session 47 papers were presented which were associated with a total of 83 posters. Amongst them 11 were on new fumigants. These papers are a clear indication that the phase-out of methyl bromide has been taken seriously On the list of presentations were sulfuryl fluoride, carbonyl sulfide, carbon disulfide, ethyl formate, ozone, methyl iodide and essential oils of botanical origin. All these have been shown as possible alternatives to methyl bromide and phosphine. Some are more promising and some are at a more advanced stage in their development. However, none of them, with the exception of sulfuryl fluoride have widespread registration for stored products.

Attention was also given to the application of controlled atmospheres and modified atmospheres. There were biological studies on the effects of controlled atmospheres, one paper on mites and two on moths The balance of the papers was on application technologies

The bulk of the papers (27) were related to phosphine and related fumigation treatments. This reflects the importance of phosphine. There were 7 papers dealing with dosage schedules of phosphine treatments. These papers showed the variability of the effects of phosphine over a range of insect species and treatment conditions This poses a difficulty when trying to recommend standard dosage schedules for phosphine treatment

Nowhere are standard dosage schedules more useful than in determining whether resistance/tolerance occurs to phosphine. Discussion on resistance led to the production of 10 of the papers. There is no doubt that resistance to phosphine exists. These papers elaborated ideas on how we should detect the resistance and proposed strategies to deal with the problem

Although resistance exists, the other 10 presentations show that with proper treatment and fumigation procedure, it is possible to continue to use phosphine successfully