

## Integrated Commodity Management — Session Summary

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The concept of Integrated Commodity Management (ICM) should be intuitive for most scientists and technologists concerned with the practical implementation of protection technologies in the storage of durable food products. Stored-product protection techniques are only effective and sustainable when they are formulated and implemented within the context of the total post-harvest management of the food commodity. Reality often falls short of the concept: e.g. although fumigation specialists are well aware of the essential need for sufficiently gas-tight enclosures, they are often faced with leaky bulk store designs, or with bag stores that have cracked or unsealed floors. In practice, the best approach to ICM is as an optimising strategy for moving from narrow pest-centred technologies to wider food management systems, so there was a place in the ICM Session for papers relating to initial moves in this direction as well as those describing well-developed ICM systems.

The keynote paper by Robin Wilkin and John Mumford set the scene for the future of ICM, and especially of Decision Support Systems (DSS), in the context of: current widespread political and economic trends; the introduction of Total Quality Management (TQM) procedures for commodity management in many developed countries; and the fundamental influence of the GATT agreement on global trade in commodities over the next few years.

In total, 21 posters were displayed under the ICM heading, and 15 of these were presented orally. The papers fell into three main categories, which were grouped together for the oral presentations and discussions. The first group of papers was concerned with small-scale, on-farm storage in the tropics. This section was dominated by several studies in sub-Saharan Africa, though there was a poster presentation on small-farm improvements in Honduras. During a full hour of lively discussion, the most contentious issue was the advisability of supporting the use of phosphine for on-farm pest control in developing countries. There is considerable evidence of misuse and abuse arising from the easy availability of this fumigant in many countries. The moral dilemma for development projects is whether to refuse to make recommendations on fumigant use on-farm on health and safety grounds or to accept the *status quo* and implement improvements that will reduce the risk of poisoning and increase the likelihood of effective use. This dilemma is especially problematic for projects funded from developed countries that themselves ban the use of phosphine on-farm.

Not surprisingly, the larger grain borer *Prostephanus truncatus* was also a major topic of discussion in this first section, especially in relation to its ecology and behaviour in non-storage habitats and the implications for our understanding of management options. On wider issues, there was a useful discussion of the problems of sustainable uptake of improved storage technologies. The consensus seemed to be that long-term project horizons of 10 years or more were needed for ultimate success: the more usual three or five year project-funding horizons do not encourage sufficient long-term planning of development goals, even if longevity is eventually achieved by succession, roll-over or extension of projects.

The second section was on large-scale storage, physical control and bulk handling. The papers and posters covered a wide variety of topics within this area, including (amongst others) the economics of value-added processing, the effects of cleaning augers on insect and mite infestation in grain, and the management of liposcelids in rice stores. A paper on the introduction of a total quality management operation by GRAINCO in Queensland illustrated how an integrated approach to commodity management can rapidly reduce pest problems and improve grain

quality. In the discussion period, questioners showed a particular interest in the details of the 'Grainsafe' extension project in Queensland and New South Wales. One of the technical cornerstones of this project is the promotion of sealed silos for on-farm fumigation or controlled-atmosphere storage. Several members of the audience were interested in the economics of making existing silos gas-tight, compared with the purchase of new sealed silos; others sought information on the linkages between uptake of the extension messages and changes in grain marketing and technical regulation.

The third section concentrated on policy issues and decision-support systems. Two of the five orally-presented papers were concerned with external influences on the post-harvest sector in developing countries: the first in relation to distortions caused by non-emergency food aid, the second concerning interventions in the form of post-harvest development projects. The other three papers described decision-support systems being developed in the USA, China and Australia: live demonstrations of these had been given in the earlier Workshop on Expert Systems. In the discussion, there was considerable interest in the present and future availability of the software for these expert systems and in their potential use as training aids. Comments were also made on some limitations of the current models and on the prospects for refining them (eg. to take account of peak temperatures as well as averages). The section finished with a brief but lively discussion of the effects of food aid on the economies and agricultural production of developing countries.