Information Transfer and Adoption –
Session Summary

Conveners: Barry Longstaff and Robin Wilkin

The session organisers and co-ordinators, on behalf of all the participants in this session, would like to thank the Conference organisers for their encouragement, assistance and support in promoting this important topic. The driving force behind the theme of ‘Information Transfer and Adoption’ can be found in the question ‘what is the value of applied research without appropriate routes to ensure the fruits of research reach the end user?’ It is apparent that the computer will play an increasingly prominent role in this field, providing innovative alternatives to human resources and this was reflected in the papers. In developed countries, the extension worker is already an endangered species and one of the challenges taken up by Session 12 was to provide ideas on plugging this gap with technological developments.

Twelve papers were presented, supplemented by a number of posters and some demonstrations during the Session. The first keynote address was given by Dr Paul Flinn of the USA. He explained his approach to the development of the decision support system for stored grain that is currently in use in parts of the US. He made the important point that the development process is lengthy and that any system must be validated by end users before it can be released more widely. He also commented on the increasing pressure for high quality that can only be met by close attention to detail during storage. A decision support system can be used to ensure that farmers and storekeepers have access to the latest information and advice and are encouraged to implement storage strategies based on an integrated approach. In this way quality can be improved.

The second keynote paper was given by Dr Mulyo Sidik from Indonesia. He pointed out that storage losses were high in the ASEAN region and that increasing production was no longer the easiest method of countering these losses. Better storage systems must be implemented and improved information transfer is seen as the key issue in achieving this. However, there is also a need for political intervention in the form of price support and incentives for quality to stimulate the uptake and implementation of improved storage. A programme of targeted research is also needed to solve some individual or local problems where current data does not fully answer all the questions.

Dr Dirk Maier from the USA made the very important point that economics are the ultimate factor that will control the adoption of new or improved methodology. He also pointed out that costs must be calculated on a proper basis so that fumigation, for example, is not just the cost of chemicals but must include labour, gas monitoring, safety equipment, staff training, liability insurance, etc. He presented details of a computer-based economic model that encourages the use of proper costings so that the real values of innovations can be calculated and compared to current or alternative options.

Dr Barry Longstaff from Australia gave details of a computer-assisted learning system that was being used to improve the quality of grain storage in some ASEAN countries. The system was designed to counter the lack of information at all levels by assisting and supporting decision making. He made the point that, whilst computers have a vital role in this, they will only be acceptable if they have a friendly, easy to use interface. Given this, they become an important training aid and the inclusion of video clips means that key messages can be reinforced long after formal training has ended.

The next three papers were presented by scientists from the People’s Republic of China. Jian Pu reported on the development of a storage encyclopaedia. This provided a multi-media database of storage information that could be used by storekeepers to support their actions and to help train new staff. Qin Zonglin described a decision support system that assisted in the identification and management of stored grain pests. This incorporated a key to pests with colour pictures and population growth models for some species of insect. Shi Lin gave details of a new sensor designed to record moisture content of grain. It worked on the capacitance principle and consisted of a small, robust probe that could be buried in a grain bulk.

Francis Fleurat-Lessard of France discussed problems associated with grading grain quality, pointing out that over the past ten years quality standards have moved only upwards. He described a computerised system that assessed quality, potential end use and then gave advice on actions needed to maintain quality during storage. It uses a model based on current commercial grading methods to estimate the value of grain and its end use. The user is invited to input a whole range of variables and these are weighted according to importance and accuracy. Despite being based on a complex modelling process, the user interface is simple.
and easy to understand.

Zhang Yih of the People's Republic of China described an integrated sensing system for monitoring grain during storage and for activating some management and control actions. This system stemmed from the need to reduce storage losses of grain in China and will improve and speed up data acquisition so that potential damage is detected at a very early stage. The system is designed to allow inter-store and inter-site communication using the Internet.

Justin Tumambong of the Philippines explained how advances in computer technology had simplified complex modelling tasks. However, he also warned that any model is only as good as the experimental data on which it is based and that the range of inputs must be kept within reasonable bounds. He had used this philosophy to develop a decision support system to assess the performance of fluidised-bed dryers and coolers. This can be used to check the performance of existing systems and to assist in the design of new equipment.

The last two speakers were from the People's Republic of China. Zhang Yaozhu described an automated system for a large grain silo. This controlled equipment used to fill and empty the silo, kept a stock inventory and had safety features to protect staff. It offered high reliability, simplified silo management and was very easy to use. Perhaps this is the grain store of the future! Finally, Zhu Zesheng described a new approach to the design of a computerised management system for stored grain. All inputs are reduced to numeric values expressed as graphs. The interaction of a series of graphs is used to predict future developments and thus advise on management actions. This approach reduces computer resources needed to model the variables affecting storage.

Clearly, this brief summary does not do justice to the high quality presentations offered during the Session. However, hopefully it provides an important insight into current thinking and future developments in the field of information transfer. The theme of this conference is stored product protection into the new century and perhaps this session offers a peephole into the future. Computers have already changed our lives and the way we work. However, the rate of technological development of the tools we have at our disposal in this field is intense and we must appreciate that many of today's novel ideas will be outdated before the next Conference. It is up to those working on information transfer to meet this challenge by not only making use of the latest technology but by trying to anticipate innovation or even to drive it forward with our own demands.

This is a field that has always been important to me and I have been involved with the development of decision support systems for 15 years. I did not foresee the changes that have occurred particularly in relation to the power of computers and changes in software. However, I did dream of what might be possible and in this case dreams come true. Delegates at this conference should continue to dream and to press to ensure that their dreams are also fulfilled.