

MULTIMEDIA / HYPERMEDIA SYSTEMS IN AGRICULTURE

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Introduction

Multimedia systems are products that use more than one medium for communication purpose, like text, still images, motion sequences, audio, graphics and animation in various combinations. Hypermedia systems are multimedia systems which use the technique of 'hypertext' for organizing information. The hypertext technique enables a large body of information to be broken down into manageable units called 'nodes' which are linked together in the computer according to their semantic relationships by means of 'links'.

Multimedia / Hypermedia systems offer primarily three advantages :

- they integrate text, sound and visuals in one package.
- integrate information / knowledge from multiple sources, and
- offer different levels of interaction.

These merits make them ideal packages for repackaging and delivery of information in agriculture, because information in agriculture is largely visual and scattered in a variety of sources and the user group ranges widely from farmers to scientists.

Application in Agriculture

Retrieval tools

A variety of information storage and retrieval systems such as bibliographies, trade catalogues and compilations of regulations, policies, subsidies, etc. can be developed for full text searching and associative links among documents.

Training tools

Multimedia packages can be excellent tutorial packages facilitating individualized, interactive and active learning. Instruction can take place at the pace of the learner and can be integrated with assessment. Such packages are particularly helpful in showing situations that are season / location dependent.

Presentation tools

Versatile presentation packages can be developed

using multimedia technology, as they can use all the communication media, the text, audio and visuals. These are especially important in agricultural communication which requires repeated presentations at remote and geographically scattered locations. It is far more easier to carry a single system integrating all the functions, than carrying a range of bulky systems.

Decision support systems

Agriculture domains call for greater decision support, as they involve several variable and uncertain factors. Timely advice and help are required at geographically scattered sites. Decision support systems can also be used to test alternative strategies for problem solving by novice practitioners.

Documentation systems

With the current emphasis on indigenous farming systems, sustainable agriculture and farmer participatory methods of agricultural extension, multimedia systems offer tremendous scope for appropriately documenting farming practices, events and case studies, incorporating video recordings, commentaries and background material. They can also be used for documenting and evaluating programme / project implementation.

Survey of Systems Developed

Several systems have been developed in the field of agriculture using a combination of text and graphics, but use of audio and video is a relatively new development. Following are descriptions of some of the systems developed for agricultural domains.

Ornamental Horticulture Multimedia CD-ROM

The Ornamental Horticulture Multimedia CD-ROM integrates text, images, audio, database, and expert advisory systems related to ornamental horticulture in a single product. The product is being developed by the U.S. National Agricultural Library. The library's ornamental horticulture database is enhanced by the addition of images of the complete plant and portions selected for highlighting, descriptive texts, garden designs, etc. Another enhancement, an expert system will guide users through the thicket of information. Audio portions of the disc will provide correct pronunciation of the plant name as well as in explaining operation of the disc.

IVPSB

'The International Veterinary Pathology Slide Bank Videodisc' (IVPSB) gives descriptive information related to the IVPSB Videodisc and provides access to 12,000 images, synthesized speech and motion picture sequences on normal anatomy, gross and histology lesions and cytology. It also includes a glossary of terms and a self test utility. The system is implemented as a HyperCard database and can be updated by any user.

About Cows

'About Cows' is a CD-ROM product giving information on bovine husbandry. Its contents include bovine facts, history, nostalgia and folklore, anecdotes from farmers, cheese makers, veterinarians, etc. It contains the full text version of the book by the same name.

Ovins en Afrique

'Ovins en Afrique' is a multimedia CD-ROM and is both a pedagogic tool and a bibliographic guide for veterinary students and faculty. It covers in five chapters, all production and health aspects of ovines in the Sudan- Sahelian region. It also includes a simulation of feed ratios, a diagnostic decision support system and calculation of exponential costs.

Electronic Compendium for Crop Protection

The 'Electronic Compendium for Crop Protection' prototype is a product of CABI (Centre for Biosciences International) and contains information about crops, crop pests, pest control, pesticides and natural enemies of pests ; and pictures, maps and abstracts of scientific literature. It facilitates guided identification of pests through identification keys and has links to other information systems like CABI key for identifying Tephritid fruit flies.

The National CD-ROM Sampler

'The National CD-ROM Sampler : an Extension Reference Library' is a multimedia CD-ROM product containing 14,540 documents, 900 graphics, 71 comprehensive collections, 65 individual computer programs and over fourteen minutes of audio. This was developed through a cooperative agreement among the U.S. National Agricultural Library, Extension Services - USDA, Interactive Design and Development at Virginia Tech, and the University of Minnesota.

CIARL-BRS

'The Compact International Agricultural Research Library - Basic Retrospective Set 1962-1986' (CIARL-BRS) is a 17-disc (CD-ROM) and contains complete texts of 2000 selected documents (books,

field guides, abstracts, annual reports, research highlights, workshop proceedings, reports, manuals, newsletters etc.) of 20 CGIAR and associated agricultural research centres. Over 50,000 monochrome images and 1900 color images are included.

Multimedia Systems developed in India

The National Institute of Agricultural Extension Management (MANAGE) at Hyderabad has developed two multimedia packages- 'Watershed Management for Rainfed Areas' and 'Rice seed to seed' for training agricultural extension officers. These learning packages have been developed under the Multimedia Interactive Training in Agriculture (MITRA), a sub project of Ministry of Agriculture, Govt. of India, funded by World Bank and implemented by MANAGE with CMC Limited as consultants. Several other products are being developed at various academic and research institutes, but a majority of them are using only a combination of text and pictures. Development of true multimedia systems is currently being limited by the following constraints :

- lack of awareness and potential benefits
- lack of expertise
- lack of hardware standards
- expensive to develop

Strategies for promoting development and use of multimedia packages

Development and use of multimedia packages can be promoted by addressing the above mentioned constraints. Awareness can be improved by demonstrations, short-term training programmes and work shops.

Since development of multimedia packages requires sophisticated equipment and input from a large number of people - subject matter specialists, script writers, videographers, audio recorders, graphic artists, computer programmers, hardware specialists etc, the job of developing multimedia packages may be taken up as a job contract or as consultancy.

Conclusion

With growing awareness and availability of hardware and software support and emerging standards, multimedia systems are gaining popularity as presentation and learning aids. Development of well designed packages, appropriate market strategies and innovative initiatives will promote development and use of multimedia information systems.