AVOINFO: A COMPUTERISED AVOCADO INFORMATION SYSTEM

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Abstract

AVOINFO is a computerised multi-media style database that is designed to provide commercial avocado producers, researchers, extension staff and consultants with easy and intuitive access to a wide range of relevant literature and information.

The AVOINFO system comprises two distinct modules. A reference database contains bibliographic details of popular and technical literature on avocados sourced from international journals. Where available, abstracts and in some cases entire papers are also included. Customised search facilities aid rapid location of specific references.

A diagnostic system comprising text, high quality graphical images and digital videos is useful for identifying specific problems or conditions which can affect avocados. A hierarchical keyword system is employed to logically subdivide the database according to symptom or subject categories. These categories include identification of pests and disorders affecting various parts of the tree. Descriptive text accompanies each image in the database. Typically this text includes information about the problem itself as well as suggested remedial strategies.

Additional index words: software, reference database, diagnostic database

1. Introduction

A large amount of literature exists on avocados but much of this information is scattered and remains difficult and time consuming to locate. Literature searches tend to be tedious tasks for scientists and much useful information is unknown or beyond the reach of the average producer. A new electronic information system called AVOINFO has been developed to provide a comprehensive collection of global avocado literature. AVOINFO also incorporates a diagnostic database for identifying pests, diseases and other disorders affecting avocados. Full advantage is made of multi-media technology to deliver the information in many forms including text, colour images, digital video and sound.

AVOINFO is designed for use by avocado growers, researchers, extension staff and agribusiness professionals. It is also suitable for use by the wider community through libraries and educational institutions. The language used throughout AVOINFO is English. AVOINFO is part of a larger project which includes the AVOMAN farm management software (figure 1).

2. The program

2.1. Reference database

The purpose of the AVOINFO reference module is to provide the widest possible collection of avocado literature in one database and to allow this information to be quickly and easily accessed. There are over four thousand references in the latest prototype, each of which includes bibliographic details and in most cases abstracts. Where abstracts are not available, short summaries are included. In some cases complete articles are reproduced.

The bibliographic details recorded are:

• reference number
• title
• author(s)
• address
• source (journal)
• year of publication
• language of publication
• keywords.

A typical reference database screen showing the bibliographic details of one reference is shown in figure 2. The abstract associated with this reference can be viewed by selecting the "Abstract" tab on the screen.

The program allows the user to search for references using one or more database fields as selection criteria. For example, apart from keywords, a search can be based on title, author(s), journal, reference number and abstract contents. The power and flexibility of the search mechanism is further enhanced by the inclusion of AND/OR join clauses linking up to two search strings per database field. In addition to the search facility, all references can be sorted by either number, title, senior author, journal or year of publication. A facility to print field bibliographic records including the abstract for each reference is also provided.

To qualify for inclusion in the AVOINFO database, the word "avocado" must appear in either the title or as a keyword in the reference. No restrictions are imposed on the basis of language or publication date and abstracts of articles published in foreign languages are translated into English before inclusion. In addition to technical papers from international scientific journals, articles are also being included from conference proceedings, year books and other bulletins. All references included in AVOINFO appear with the permission of respective copyright holders.

2.2. Diagnostic database

The primary purpose of the diagnostic database is to provide a tool to assist in the identification of avocado disorders. The database uses text, full colour images and digital video to help avocado growers identify a wide range of problems affecting avocado production. These include insect pests, diseases, nutrient deficiencies, nutrient toxicities and pre- and postharvest

fruit disorders. Figure 3 shows the result of a typical search with the "Pictures" tab selected. Text is arranged according to topics such as symptoms, cause, function and management. The information displayed for each of these topics can be selected using the appropriate tab on the computer screen.

The diagnostic database is equipped with a system which allows the user to quickly and intuitively identify solutions. Solutions are found by starting with broad symptoms/subjects then selecting more specific criteria. In each case the user is presented with a short list of choices from which the desired option can be quickly selected. An example of how a user might search for information on shotholes in leaves is shown below.

- select affected plant part (options include leaf, fruit, flower, branch, root or whole tree), in this case select "leaf"
- select the "search by symptom" option
- select an option from the list of broad symptoms (these include holes, burn, chlorosis, rot etc), in this case select "holes"
- select an option from the list of specific symptoms (these include shotholes between leaf veins and large holes across leaf veins), in this case select "shotholes between leaf veins"

Each stage narrows the range of possibilities, however images and supportive text of all scenarios can be viewed at any stage of the identification process.

The diagnostic database is equipped with facilities to print any of the images and supporting text.

3. Discussion

The global pool of avocado knowledge is constantly growing and in order for AVOINFO to remain useful it must be updated regularly. The frequency with which this is done will depend on how quickly new avocado literature and information becomes available. One advantage of using a computerised system is that it is relatively easy and inexpensive to maintain and update.

Apart from regular updating, accessibility and ease of use are also essential to the effectiveness of the package. AVOINFO is therefore designed to run on IBM compatible personal computers using the popular Microsoft® Windows™ operating system.

Due to the size of the database it is envisaged that AVOINFO will be distributed on compact disc (CD-ROM), but with increasing international use of the world wide web (internet) consideration may also be given to using this medium as a delivery mechanism.

AVOINFO will be a potentially valuable resource for people working in or affiliated with the avocado industry when the first version is released in 1997.
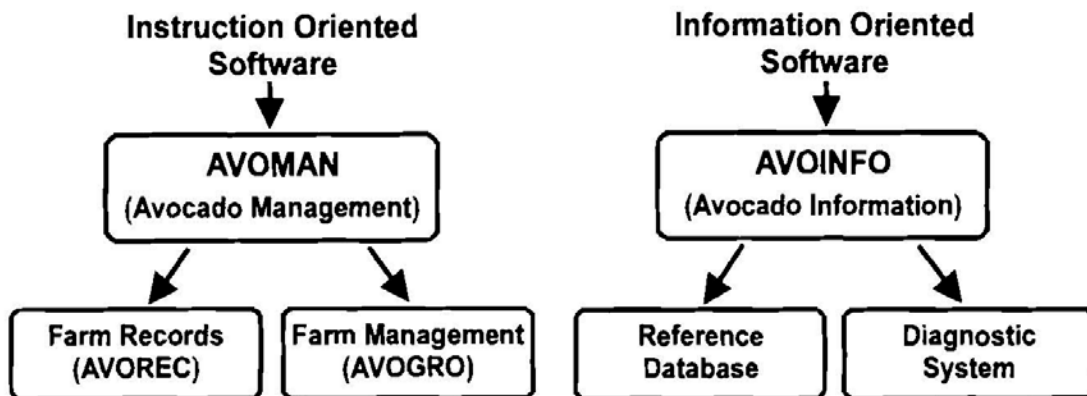
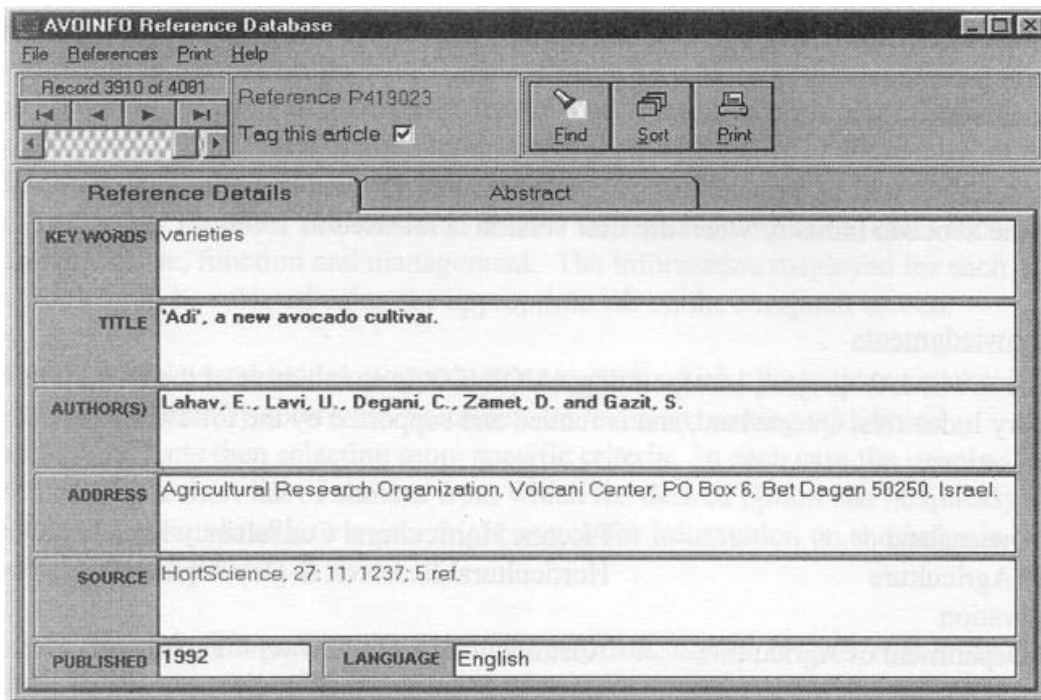Figure 1 Software products to emerge from the AVOMAN project

Figure 2 - A typical screen from the reference database showing the
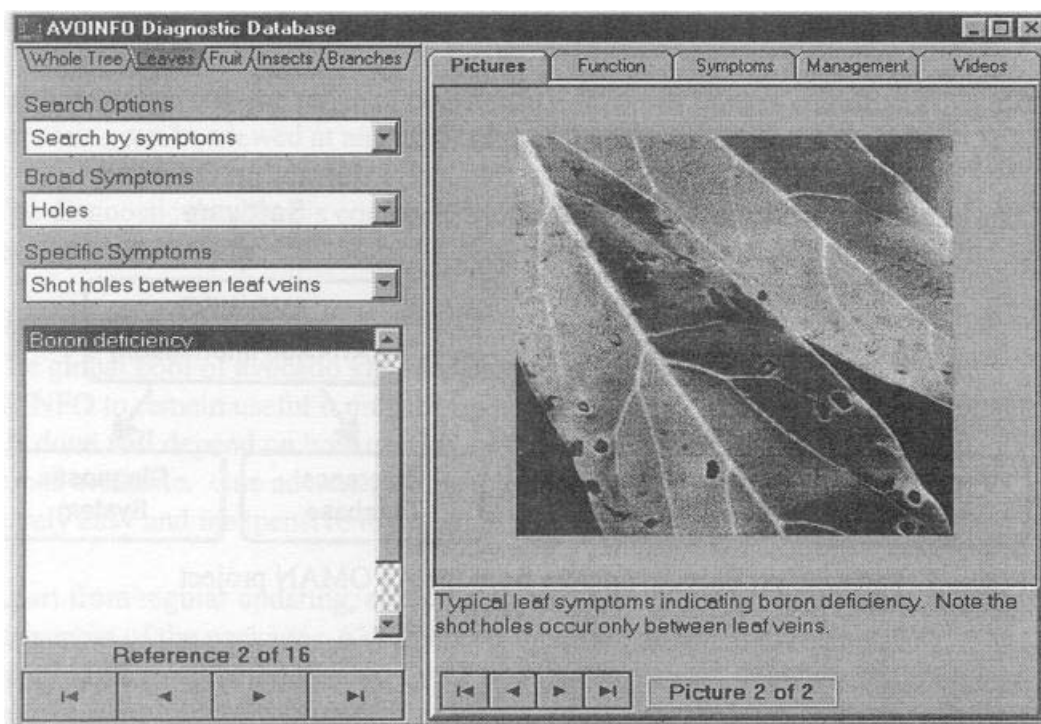bibliographic details.

Figure 3 - A typical screen from the diagnostic database showing the result of
an inquiry.