

has made promising steps at the high school and young adult education level to provide IT proficiency - to the extent that farmer's capabilities (as system graduates) are not a limiting factor in innovation implementation. These steps include the provision of schools with computer supported production facilities and curriculum adjustments; 25 high schools have computerized greenhouses, 15 have computerized dairy farms and all have computing facilities.

Integrated decision support systems in the United States

An impression of a guest lecture of
Dr. S.Harch in Wageningen

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R. de Mol

Institute of Agricultural
Engineering (IMAG-DEO)
P.O. Box 43
6700 AA Wageningen
The Netherlands

A many-sided person lectured to the department of farm management of the Agricultural University in Wageningen on april 23th. Dr. S. Harsh of the Michigan State university, the person in question, is occupied with research, extension and teaching, tasks which are spread over university, institutes and extension services in Dutch circumstances. The subject of his talk was: Integrated decision support systems in the United States - Current situation and future prospects, OK?

Prior developments in the use of computer technology in agriculture led to the following observations:

- most projects proved to be useful;
- decision makers should be involved in the use of the system;
- some systems became obsolete due to advancing computer technology;
- the systems had some limitations (integration capabilities, closed systems).

Information systems can be classified by: TPS (Transaction Processing Systems), MIS, DSS and IDSS (Integrated DSS). The components of a DSS as shown in the figure, where DBMS means Data Base Management System and MBMS Model Base Management System. The prefix 'integrated' in IDSS emphasizes the multi-disciplinary aspects and the need for external communication.

Many DSS have been developed in the United States:

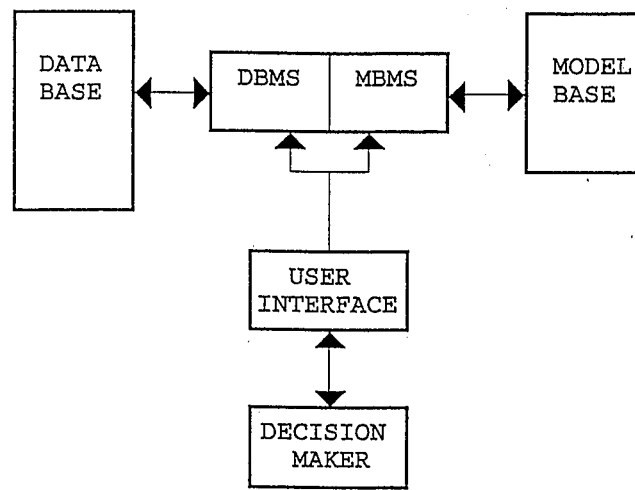
- Systems for specific problems: e.g. alternative cropping systems, soybean marketing;
- Function related systems: finance systems, greenhouse control;
- Systems for evaluating systems performance: plant growth models;
- Enterprise based systems: corn, wheat, dairy and so on;
- Whole farm systems: e.g. AIMS of the Michigan State University;

Furthermore there are related topics: networks and GIS systems.

The work of the home basis (AIMS) is explained more fully, AIMS is an on-farm IDSS developed in an inter-disciplinary project. The experiences showed the need of a good educational program, an underestimated aspect.

Following a study in Ohio about 25% of the commercial farms had computers, mostly the larger farms with younger and better educated operators. The use of computer technology will be encouraged by many factors: more regulatory measures, international competition, increasing education levels, market demands, cheaper computer technology and others. There are many database and modelbase developments: environmental aspects, expert systems, risk management, run-time control.

A relatively new area is the linking between modelbase and database. The discussion focused on similarities and distinctions between the Dutch and the American situation. In both countries there is a tendency towards integrated DSS and a competition between commercial software developers and researchers. But the Dutch efforts are more directed towards operational problems whereas the Americans concentrate on tactical and strategic problems, OK?



Agro Informatics in Spain

M. Diaz Torres

Servicio de Extension Agraria (S.E.A.)
 FUNDESCO
 Corazon de Maria, 8
 28002 Madrid
 Spain

Agro Informatics in Spain, is slowly taking its first steps forward. A great deal of effort is required if it is to be fully introduced, because it should not be forgotten that Agriculture is a traditionally conservative sector, in which the farmer, especially the landowner who has small and medium-sized extensions of land, is reluctant to use new technologies in agricultural management.

If one were to carry out a survey of the software in use in the Agricultural Departments of the different Regional Autonomies in Spain, one would find that most of it is reserved for internal use: means for managing different aids for the farmer (Compensation in Hill-Farming and Farming in Mountainous Areas, Improvement in the Efficiency of Agricultural Management as set out in Royal Decree 808/87, etc), for the monitoring of the vaccination

programmes being carried out in livestock management, etc).

Some Regional Autonomies have promoted the setting up of companies devoted to software development; this is the case with the Basque Government, with the company I.K.T., S.A., and La Rioja, with S.A.I.C.A.R. (Software Company for the Autonomous Region of La Rioja, S.A.).

Some Autonomous Communities such as I.K.T., S.A. have developed programmes of a technical nature - not only for the production of vegetables, but also for livestock - and technical-economic activity, the latter designed primarily for the livestock sector. Some of these are concerned with technical-economic management of the following species: rabbits, dairy sheep, dairy cows, livestock for beef and pork, etc., and they issue monthly and annual reports

concerning management as a whole, and classifying it.

In Navarre, the following institutions are worth mentioning:

- The 'Instituto Técnico y de Gestión de Vacuno' (Technical Institute for Cattle Management), with sanitation programmes for sheep and cattle, and for genetic improvement and technical-economic management for dairy cows, beef cattle and sheep. All these provide reports, both individual and/or general, to the member-farmers.
- The 'Instituto Técnico y de Gestión del Porcino' (Technical Institute for Pig Management), with programmes for the technical-economic management of pigs and rabbits, providing management rates to the farmer.