O.22 - Decision support systems for diseases in horticultural crops: tendencies, bottlenecks and next steps

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Abstract

Data survey on several DSSs for diverse crop/disease systems was conducted and many of them were presented at the pan-European workshop held in Flakkebjerg, Denmark in March, 2008. Data are available from six countries (Austria, France, Germany, Hungary, Netherlands and Slovakia) for several horticultural crops.These DSSs were developed and are disseminated under different socio-economic environments, reacting to the needs of farmers adjusted for local conditions. Thus, they vary both in terms of their technical operation, long-term development and their uptake by end-users. Nevertheless, some common tendencies could be identified as a result of the workshop, such as:

- a rapid switch can be seen from individual PC-based systems to web-based services, however, the co-existence of DSS generations is present up to now,
- the newest developed DSSs often include an environmental impact assessment module, which was not typical some years ago,
- a concentration of services is going on, i.e. some developers have appeared with complex systems offering DSSs for various crops as well as models for farm economic analysis,
- the development of DSSs fits well the tendencies of research on precision agriculture.A possible next step may be to work out a common validation protocol for those models that have the potential for being used at a European level.

Current tendencies:

Data survey on several DSS for diverse crop/disease systems was conducted and many of them were presented at the pan-European workshop held in Flakkebjerg, Denmark in March, 2008. Data are available from six countries (Austria, France, Germany, Hungary, Netherlands, Slovakia) for several horticultural crops:

Country of DSS origin	Crop
Austria (presented by Hungary)	apple, vine grape + minor crops
France	apple, vine grape, onion, melon, olive tree, celery
Germany	apple, pear, peach, cherry, onion
Hungary	vine grape
Netherlands	onion, celery, carrot, strawberry, leek + minor crops
Slovakia	vine grape

These DSS were developed and are disseminated under different socio-economic environments, reacting on the needs of farmers adjusted to local conditions. Thus, they vary both in terms of their technical operation, long-term development and their uptake by end users. Nevertheless, some common tendencies could be identified as a result of the workshop, such as:

(i) A rapid switch can be seen from individual PC-based systems to web-based services, however, the co-existence of different DSS generations is present up to now.

(ii) The most newly developed DSS often include environmental impact assessment modules, which was not typical some years ago.

(iii) A concentration of services is going on, i.e. some developers appear with complex systems offering DSS for various crops as well as models for farm economic analysis.

(iv) The development of DSS fits well the tendencies of research on precision agriculture.

Bottlenecks:

Considering the input side of a well-working DSS, it can be concluded that research institutions provide the experimental input for model-making, that is freely available information. However, in some cases models are intellectual properties, which limits their access and in many of the cases, data input for the model run must be paid for (i.e. weather data).

Models vary in terms of interpretation of the output towards end users. Some of the models broadcast ready-to-use messages, such as recommendations for products to use, in other cases recommendations are limited to active ingredients and/or risk alerts. In most cases end users are advisors and farmers.

Hardly any information is available on the comparative societal context of DSS implementation in Europe, and in only a few cases are professionals yet involved in the knowledge transfer and uptake of DSS innovations in practice.

Next steps:

Although diseases in horticultural crops represent a wide range of topics, at this stage of development it is probably better not to split up into smaller groups – according to the consultation among subgroup participants. It seems a possible way to follow is that one or two major crops are chosen that are of economic interest in most countries concerned. Thereafter, a common model validation procedure would be worked out by the participants of the subgroup. Cooperation among representatives of developers from different countries could also result in additional scientific value.