Enhancing Grasslands Education With Decision Support Tools

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Introduction We have successfully used Decision Support Tools (DST) relevant to the management of grazing enterprises to enhance problem solving skills of undergraduates in Australia. Tools such as GrassGro™ (Moore *et al*., 1997) and GrazFeed™ (Freer *et al*., 1997) are accessed from a central server by authorised users at many widely dispersed Universities across Australia using remote access to thin-client technology via an Internet portal. This has been supplemented with training for lecturers. Experience in developing appropriate teaching and learning materials and the reliable delivery of simulation software to many clients has enhanced learning outcomes at tertiary level. We are also trialling the use of DST to other learning sectors.

Materials and methods Support from the Australian government's Department of Education Training and Youth Affairs, and Australian woolgrowers through Australian Wool Innovation Ltd have been used to extend and consolidate the use of thin-client technology for distributing grazing models to undergraduate students at institutions around Australia on request from their lecturers on a fee-for-service basis. In collaboration with CSIRO, we have trained over 30 lecturers in the use of these DST and their application in tertiary education programs such as rural science, agricultural economics and natural resource management. A Decision Support Specialist provides assistance to lecturers in the development of training materials based on the grazing management DST, GrassGro™, and the grazing ruminant nutrition DST, GrazFeed™. Registered lecturers and students log on to the eD-Serve portal (http://ed-serve.une.edu.au) to access a range of DST and other customised relevant information (Daily *et al*., 2003a). We are piloting approaches to create awareness of grazing management decision support tools amongst wool producers and secondary school agriculture students.

Results We have increased the awareness of key profit drivers, risk management and the role of DST in decision making in the grazing industries, particularly the wool industry in Australia over 5 years. Students from 11 campuses of 8 Australian universities have accessed grazing DST through eD-Serve, and a survey of lecturers using these DST in their teaching provided evidence of their support for the system, and the benefit it provided to their teaching. Student surveys have revealed that they recognise that the acquisition of skills with these commercially available DST is especially relevant training for their future employment. Climate datasets for other international localities are currently being assembled so that simulations related to a range of international sites can be conducted by students, thus broadening their global perspective. This thin-client delivery system is also being developed for accessing other legacy software related to applications across the agricultural industries.

Conclusions This e-learning project using DST has demonstrated that excellent grasslands science can be readily acquired by undergraduate students and others interested in learning about complex grassland ecosystems through the use of DST in education. The exercises are tailored to explore scientific principles, illustrate profit drivers and/or test risk management in grazing enterprises, and overall, to develop problem solving skills and "systems" thinking in students (Daily *et al*., 2000). Internet access to DST widens the experience of students and will increasingly provide opportunities for collaboration across Australia and internationally.

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