

## **Implementation, participation and evaluation of a voluntary water quality protection program for grazingland owners and managers**

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**Introduction** In 1990, California's range livestock industry began working with the state's water quality regulatory agency to develop a voluntary producer participation programme to protect water quality on privately owned grazinglands. In 1995 they implemented a voluntary programme of surface water protection supported by extension education and technical assistance conducted by University of California and USDA Natural Resources Conservation Service. Past studies have shown that education programmes are crucial to voluntary pollution control programmes in agriculture (EPA 1990) and that ranchers will change grazing management practices in response to extension education programmes (Richards and George 1996). The objective of this project was to conduct an extension education programme that facilitated water quality planning and implementation of water quality protection practices by range livestock producers.

**Materials and methods** To facilitate completion of water quality protection plans a Ranch Water Quality Planning Short Course was developed, tested and improved from 1994-96. Beginning in 1997 this short course was conducted for private grazingland owners throughout California. During the short course ranchers learned about (1) non-point source pollution associated with ranching, (2) state and federal water quality regulations and regulatory agencies, (4) basin water quality assessments, (5) self-assessment of pollution sources on their own property, (6) practices that protect water quality, (7) cost-share programmes, and (8) how to monitor pollution sources and practice effectiveness. Plans developed during the short course included: ranch descriptions, ranch goals, ranch maps, basin water quality status, pollution source self-assessments, existing and planned water quality protection practices and monitoring procedures. The short course curricula can be reviewed and downloaded from <http://californiarangeland.ucdavis.edu>. In 2002-2003 producers who participated in the short course were surveyed to determine their water quality protection activities following the short course.

**Results** From 1997 to 2004 more than 1000 producers attended 60 short courses in 31 counties. Two-thirds of those attending short courses completed water quality plans for their ranches totalling more than 500,000 ha. Two-thirds of the short course participants who completed the survey implemented water quality protection practices. There was a significant relationship ( $p < 0.001$ ) between plan completion and practice implementation. Ninety percent of those who implemented water quality protection practices had completed ranch water quality plans. The majority of the respondents managed ranches less than 2000 ha in size. Half of the respondents raised beef cattle. We found that personal funds invested in water quality protection practices exceeded cost-share funds until costs exceeded \$2000. The survey revealed that initially respondents took the course to avoid regulation, but upon short course completion, became more proactively involved in controlling non-point source pollution because they found pollution sources during their self-assessments. Fewer respondents implemented a monitoring programme than implemented water quality protection practices.

**Conclusions** These results indicate that the range livestock industry initiated voluntary program supported by education, was an effective means for helping grazingland owners and managers to voluntarily address non-point source pollution on their properties.

### **References**

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