

Reducing dam evaporation: Grasping the Holy Grail

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Water is becoming an increasingly valuable commodity and the source of much debate. With losses due to evaporation accounting for one third to a half of the water lost on Queensland farms, Queensland Department of Natural Resources and Mines has funded a project to evaluate the effectiveness and viability of commercially available products for reducing evaporation from rural water storages.

The Rural Water Use Efficiency Initiative — Evaporation Control Project aims to evaluate various products which claim to reduce water losses due to evaporation as well as assess the effect on water quality, the economic benefits and mechanical integrity of the products.

The National Centre for Engineering in Agriculture was awarded the contract to conduct the trials and expressions of interest were sought earlier this year from individuals or businesses with products and ideas for controlling evaporation. A technical panel selected products from five companies for evaluation. The products selected were:

EvapCaps/Darling Downs Tarpaulins

A lightweight, impervious, black and white, polyethylene 'bubble wrap' style of floating plastic cover.

Netpro

A 300 gram per square metre, black, monofilament shade cloth that is suspended from a high tensile, webbed cable structure secured with screw anchors around the perimeter of the storage.

Fabtech SA

A lightweight, floating plastic cover that forms a complete seal over the surface of the storage and is ballasted to keep the cover taught and aid in the collection of rainwater.

Ondeo Nalco (Water\$aver)

A chemical solution that is self spreading and forms a thin mono-layer of a fatty alcohol across the water surface. The product has been designated as environmentally sound technology by the United Nations international environment program.

Ciba Specialty Chemicals

A smaller scale trial will be undertaken to evaluate the effectiveness of polyacrylamide (PAM) in reducing evaporation

The project has trials at a range of sites situated in various climatic areas on storages varying



Methods are being developed to measure evaporation and seepage losses.

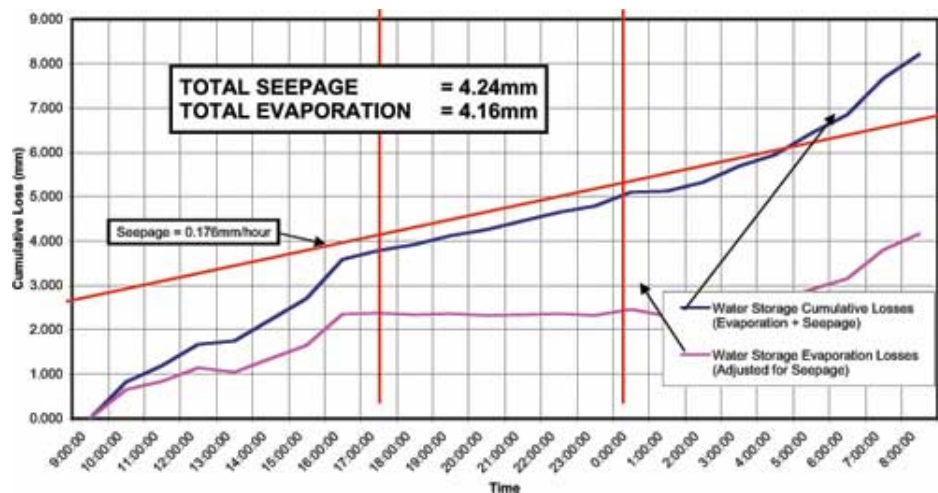


FIGURE 1: Water storage losses over 24 hours

from 10 metre diameter ring tanks to storages of well over 100 hectares. The opportunity to test these products on such a large scale is a direct result of Queensland Department of Natural Resources funding and significant contributions from product suppliers and landholders.

One of the difficulties in evaluating the various evaporation control techniques is obtaining an accurate figure on evaporation losses with and without the products installed. As part of the project, a method for measuring evaporation and seepage losses from water storages is being developed.

This technique involves the accurate measurement of water height in the storage and allows the user to delineate between evaporation and seepage (Figure 1). This allows daily calculations of seepage and evaporation losses and, when coupled with a detailed land or hydrographic survey, enables the landholder to determine the actual volume of water 'lost' through evaporation and seepage.

Testing and evaluation of the evaporation control products will occur over the next 12 months and will allow for analysis under a variety of weather conditions and evaporation rates. It is anticipated that the final report (due in December 2004) will provide guidance on the viability of evaporation control technologies.

Suppliers of evaporation control products will also receive constructive feedback to improve and develop their products to suit varying situations and raise the awareness of evaporation losses and the economic benefits of evaporation control.

Landholders and interested parties should also gain a useful aid in assessing the benefits of installing various evaporation control products and their applicability and suitability to a variety of farming and municipal enterprises.

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