

# STORAGE DAM

## EVAPORATION CONTROL

CRC Irrigation Futures, National Program for Sustainable Irrigation



### Structural & Management Techniques

**Reducing the surface area will reduce the evaporation losses**

**Windbreaks reduce the wind speed across the evaporating surface**

**Floating or emergent vegetation does not provide an effective evaporation barrier**

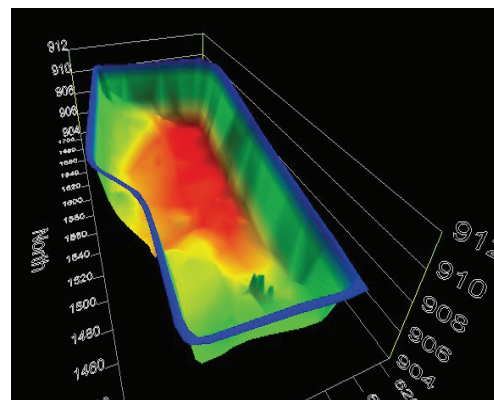
Water storages may be constructed or altered to proportionally reduce the evaporation rates by reducing the surface area exposed to evaporation or by reducing the rate of evaporation. Methods used to do this include deeper storages with smaller surface areas, cellular construction which divides large storages into smaller cells to reduce wind action and allows water depth to be maximised by shifting water between cells and using windbreaks around the storage.

Benefits of these methods are easily quantified based on exposed area and reduced wind speed. Disadvantages of this method are that it is generally easier to build a new storage, when site selection can be altered rather than retrofitting into an existing storage.

Wind breaks on the surface of the dam or constructed around the outer edges could reduce evaporation by altering the wind speed across the evaporating surface.

While planting trees along the bank of the storage will provide an effective wind break, as the vegetations roots seek out water they can threaten the integrity of the embankment. In addition, vegetation in close proximity to an embankment will make routine embankment access or maintenance difficult.

It has been suggested that floating or emergent vegetation could be used to reduce the surface area exposed to open evaporation. However any vegetation either floating on the surface or emergent deep rooted, will actively transpire and therefore water loss will continue to occur. Also the vegetation will enhance the surface roughness of the water and may enhance water vapour transfer rates compared to the smooth surface of open water.



When more than one storage is owned, different management methods can reduce total evaporation. Water can be pumped between storages to minimise surface area per unit volume of water stored. Storages kept full by bores or overland flow will increase the total volume without significant increase in surface area. Water circulation could also reduce water surface temperature and decrease the rate of evaporation.

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