

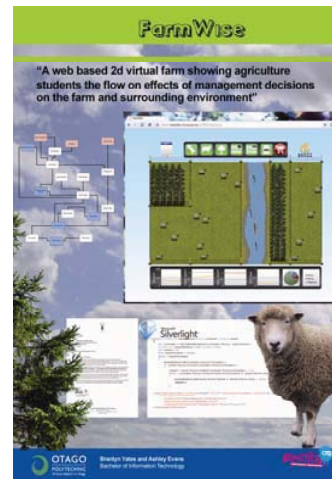
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# Farmwise: agricultural simulation

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This poster paper describes FarmSim: A web-based 2D virtual farm showing agriculture students the flow on effects of management decisions on the farm and surrounding environment

FarmSim is a deceptively simple but most engaging 2D farm game that models the effects of management decisions on farm operations. It was developed in partnership with the Centre for the Study of Agriculture, Food and Environment of the University of Otago.

The technical complexity of FarmSim includes:

- Underlying computational model incorporating real and theoretical data
- Computation engine using linear, quadratic and sigmoidal transforms to simulate agricultural system
- Full Silverlight 3 implementation allowing immediate cross-platform deployment for universal access

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Select individual animals, clusters of trees and also click and drag to create a selection box for selecting groups of animals. The selected items can then be moved to different positions on the farm – hence varying stocking rates - or drop in the sale cart to gain money for the farm.

The game has no start, end or pause. So, while there is no financial cost of exploring every variable before making a decision, the seasons relentlessly pass while the player is exploring– simulating the imperfect decision conditions of the real land manager.

Choose the percentage of each variety of tree available and the density trees to be placed in a paddock. By rolling over each paddock in the farm the user will be shown how much it will cost to fill that paddock (if they can't afford it they will be given feedback at which point they can cancel the purchase).

Paddock and stock health visually represented

Trees show maturity level of each variety in the cluster, total carbon sequestration levels of each variety and biodiversity level. The biodiversity is shown by the varieties of birds and a count showing the number of each kind in the cluster.

From given unit and total cost information, the user can select how many animals to. If the user confirms they can then place the purchased animals in a single paddock.

The user can place new fence posts throughout the farm to create a new paddock. This paddock becomes a new object, inheriting the soil and vegetation characteristics of the original paddock, but now able to follow a different model trajectory.

Farm bank balance

Selected proportions of fertiliser components and application rate (kg/metre) for cost per paddock size.

Detailed information for each paddock available on rollover. Includes biodiversity measures not otherwise represented.

Farm dashboard: Moisture levels; stock health; stream health; total feed.

Water health and biodiversity levels. Are shown graphically with the varieties of fish and insects with a count corresponding to each variety.

