

APSIM

Agricultural Production Systems simulator

What is APSIM?

APSIM was developed to simulate biophysical processes in farming systems, particularly as it relates to the economic and ecological outcomes of management practices in the face of climate risk.

APSIM is structured around plant, soil and management modules. These modules include a diverse range of crops, pastures and trees, soil processes including water balance, N and P transformations, soil pH, erosion and a full range of management controls.

APSIM resulted from a need for tools that provided accurate predictions of crop production in relation to climate, genotype, soil and management factor while addressing the long-term resource management issues.

The APSIM System

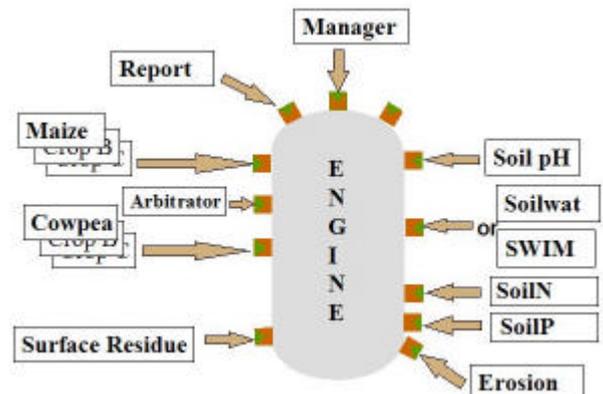
The APSIM modelling framework is made up of the following components:

1. A set of biophysical modules that simulate biological and physical processes in farming systems.
2. A set of management modules that allow the user to specify the intended management rules that characterise the scenario being simulated and that control the simulation.
3. Various modules to facilitate data input and output to and from the simulation.
4. A simulation engine that drives the simulation process and facilitates communication between the independent modules.

In addition to the science and infrastructure elements of the APSIM simulator, the framework also includes:

1. Various user interfaces for model construction, testing and application
2. Various interfaces and association database tools for visualisation and further analysis of output.
3. Various model development, testing and documentation tools.
4. A web based user and developer support facility that provides documentation, distribution and defect/change request tracking.

The elements of the APSIM framework are illustrated below:



Who is using APSIM?

APSIM has been used in a broad range of applications including:

- support for on-farm decision making,
- farming systems design for production or resource management,
- assessment of the value of seasonal climate forecasting,
- analysis of supply chain issues in agribusiness,
- development of waste management guidelines,
- risk assessment for policy making and
- as a guide for research and educational activities.

One of the main benefits of APSIM is the ability to integrate models derived in fragmented research efforts. This enables research from one discipline or domain to be transported to the benefit of some other discipline or domain. It also facilitates comparison of models or sub-models on a common platform.

For further information

More details can be found at www.apsim.info/apsim/

A recent search for reports of APSIM applications identified 107 items published over the 1996 to 2001 period. This list of citations is available on the APSIM web site

<http://www.apsru.gov.au/apsru/Products/publicat1.htm>. The applications extend from highly practical use in on-farm decision making through to more research focused applications in which current and alternative farming systems designs have been explored. Both production and resource management issues have been featured prominently in model application.