Alberta Irrigation Management Model (AIMM)

The Alberta Irrigation Management Model (AIMM) is a Windows based software application to aid irrigators in making their irrigation scheduling decisions. The model requires as input: field size, irrigation system type, crop being grown, planting date, meteorological inputs, soil texture information, root zone of the crop, manageable allowed depletion, and daily irrigation amounts. Outputs can be displayed in graphical or tabular formats for either printing or export data as .txt or .csv files.

The model uses the ASCE standardized evapotranspiration equation for calculating reference evapotranspiration. The meteorological data for determining evapotranspiration can either be obtained from the nearest ACIS meteorological station or a user may enter their own meteorological data.

Available water holding capacity is based on the soil bucket concept with the root zone divided into two storage compartments. During an irrigation or rainfall event, the upper half of the root zone fills before input water moves into the lower half of the root zone. Once the entire root zone profile is filled to field capacity, the excess input moisture is considered lost to deep percolation.

Soil Hydrologic properties (field capacity, willing point, available water hold capacity) are based on soil texture. Site-specific values for soil hydrologic properties can be used when available. Root zone soil textural layers can be entered with incremental resolutions as fine as the data permits.

Field runoff can occur during rainfall events when rainfall intensity exceeds the steady state infiltration rate of the soil. Steady state infiltration rate is determined from pedo-transfer functions using near surface soil texture. No field runoff is generated from irrigation events. The assumption being that the irrigation system is designed to apply water at or below the steady state infiltration rate of the soil.

System requirements: Windows 7 through Windows 11. AIMM requires SAP Crystal Reports Viewer (https://www.sap.com/products/technology-platform/crystal-reports.html#visual-studio) to operate properly. Check your system properties to see whether you are running a 64-bit or 32-bit processor and then download the appropriate Crystal Reports Viewer for your system.

Highlighted Outputs:

1. Graphical and tabular reports of year-to-date soil moisture conditions, evapotranspiration (crop-water-use), climate data, irrigation application amounts, for any number of fields and sample sites within fields.
2. Predictive assessment on crop water requirements and irrigation timing for designated near-future time periods.