Process Crop Models: GLYCIM

Description	GLYCIM is a dynamic soybean simulation model with hourly time steps. It predicts growth and yield of a soybean crop in response to climate, soil, and management practices by deterministic simulation of organ-level processes such as photosynthesis, transpiration, carbon partitioning, and organ growth and development.
Appropriate Use	Farmers use GLYCIM for pre-plant planning decisions like the selection of cultivar/soil type combination, planting date, and row spacing, and post-plant decisions like irrigation scheduling, harvest timing, and yield prediction. The use of the model for crop management, decision making, and input optimization shows promise in increasing profits to growers and improvements to environment and groundwater quality. Amendable to the testing of management adjustments to climate variation.
Scope	All locations; agricultural sector; site-specific.
Key Output	Plant height, water stress, nitrogen stress, stages of maturity, water content data, yield, and yield components.
Key Input	Requires daily maximum and minimum temperature, precipitation, and solar radiation data as input. Soil data are also required to execute the model (e.g., soil horizons, organic matter, and nitrogen content).
Ease of Use	GLYCIM demands more data inputs than many crop models, but once data input requirements are met at the user level, it is simple to use.
Training Required	Requires some knowledge about agronomy and soil science.
Training Available	Mississippi State University can provide training.
Computer Requirements	Requires an IBM-compatible 486, with 4K of RAM and 80MB.
Documentation	http://dino.wiz.uni_kassel.de/model_db/mdb/glycim.html.
Applications	Currently being used by farmers and several extension services in nine states in the U.S.
Contacts for Tools, Documentation, Technical Assistance	Dr. James McKinion, USDA-ARS, Crop Simulation Unit, PO Box 536, Mississippi State, MS 39762 USA; Tel: +1.601.324.4375; Fax: +1.601.324.4371; e-mail: mckinion@csrumsu.ars.ag.gov.
Cost	Can be downloaded free from website (see Documentation above).
References	http://wizard.arsusda.gov/rsml/accomp2.html.