WHATEVER HAPPENED TO GOSSYM?

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Abstract

It took about 20 years to develop GOSSYM, the mechanistic cotton crop simulation model. By late 1980s, it had become a success story, especially when coupled with its expert system component, COMAX. Its popularity and widespread use across the US Cotton belt has caused the development of an extension unit known as the GOSSYM-COMAX Information Unit (GCIU). This was effected by concerns of the USDA-ARS administrators that the scientists associated with the project were being pulled away from their primary duties of conducting research. With this move, GOSSYM underwent further improvement to make it user-friendly, with the incorporation of a graphical user interface (GUI). By 1994, more than 600 registered producers, researchers and extension agents were using GOSSYM to monitor field cotton crop production. Then a business decision was made to privatize GCIU and, for the first time, GOSSYM was sold as a cotton simulation model. It took barely two years for the company to close due to a combination of lack of both customers and technical support for users' problems. However, research work continues to further improve the simulation of physiological processes in GOSSYM. Studies conducted at Mississippi State University (MSU) over the years have kept GOSSYM further updated to include the effects of temperature and CO_2 enhancements in anticipation of global climate change. This current version of GOSSYM--coupled with geographic information system--has been used both at Texas A&M university and at Mississippi State University as a component of their precision agriculture research.

What does this version of GOSSYM look like? One version is called WINGOS, the C version, which was jointly developed with French scientists from CIRAD in Montpellier. The other version, the developmental version still maintained at MSU, is in FORTRAN. This version has been used in global climate change studies and has also served as an educational tool. However, this version is not user-friendly and needs a GUI. The USDA-ARS Alternate Crops and Systems Laboratory in Beltsville, MD, has developed an all-purpose GUI for crop models, called GUICS (url: www.arsusda.gov/acsl/current.html). It requires that all inputs and outputs be written in free formats and defined in script files. These script files, together with the executable file, are added in the GUICS software literally and the corresponding directory trees are created within the GUICS system. The input files can then be created within the system. Furthermore, GUICS can display the results/outputs in tabular form, reports or graphical form. This paper will present this new GUICS-GOSSYM.