

An Overview of **Moisture Management and Irrigation Scheduling 2020** **(MoisMis 2020)**

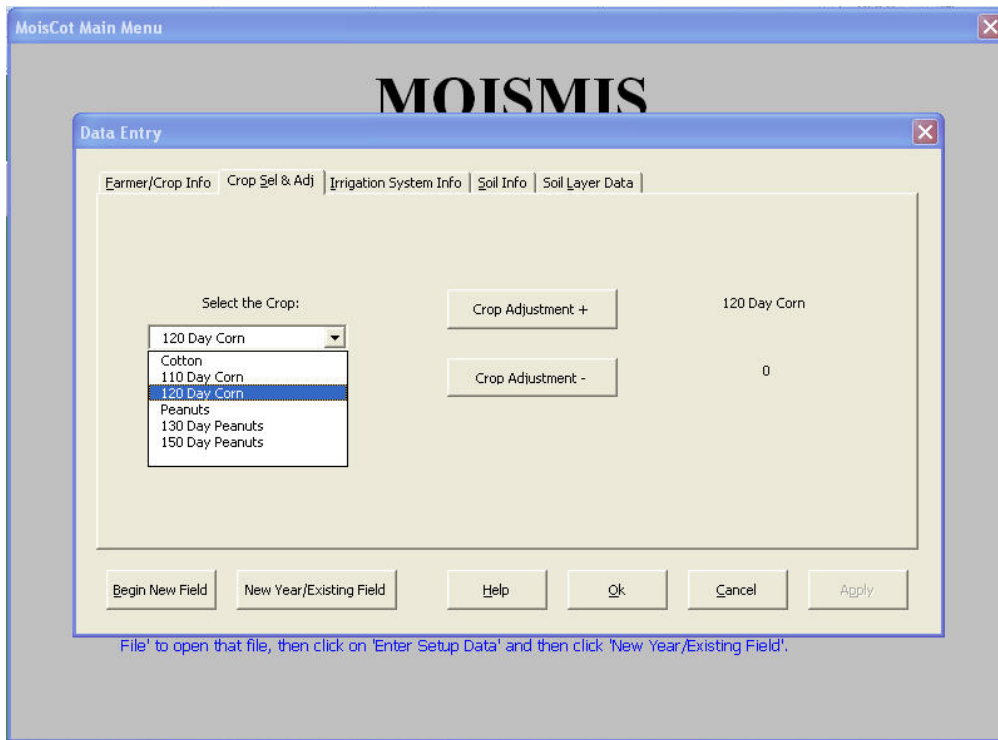


General Description

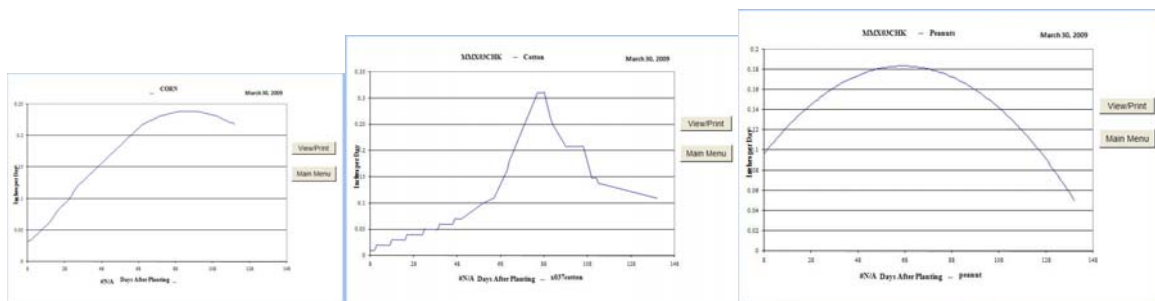
This publication presents an overview of MoisMis 2020. MoisMis 2020 is an irrigation management/scheduling program developed for Alabama corn, cotton, and peanuts over more than 20 years of field irrigation experience by Auburn University extension engineers in both north and south Alabama. The program should also work in neighboring Southeastern states of the United States. MoisMIS 2020 is an Xcel spreadsheet and workbook that operates in Xcel 2007 but is also compatible with Xcel 97-2003. Mud files (field files generated by the program) from either version of Xcel are not compatible the other Xcel versions.

The program uses Daily Data inputs of rainfall, irrigation, and soil moisture tension (SMT) @ 9" and 18" with crop water use curves to schedule irrigation up to 5 days in the future. Rainfall and SMT inputs are needed only 2 times per week (3-4 days apart). Use a wedge-shaped rain gauge with a 1 inch+ opening and mineral oil to prevent evaporation between rainfall events and gauge reading. Electric resistance sensors with portable handheld meters have proven more reliable in farmer situations for program input than tensiometers. Soil moisture sensor feedback works best when sensors are installed within 30 days after planting.

Basic irrigation system, crop, and soil Setup Data must be entered ONCE at the beginning of the season. Moismis 2020 can schedule irrigation for Cotton, 110 Day Corn, 120 Day Corn, Peanuts, 130 Day Peanuts, or 150 Day Peanuts.



Crop water use curves for these crops project water needs based on observed crop growth stage and existing soil moisture. A “CropADJUST” feature allows adjusting these curves in 3 day increments to match actual growth stage. To operate the program, select (point with cursor and ‘click’) the desired button.



Reports and graphs of Typical Daily Soil Water Use, Soil Moisture Deficit, Soil Water Sources, Soil Moisture Meter Readings, and GR/NET Water Distribution are available from the opening screen.

Descriptions/explanations of the ‘Operating Buttons’ on the Moismis 2020 opening screen follow:

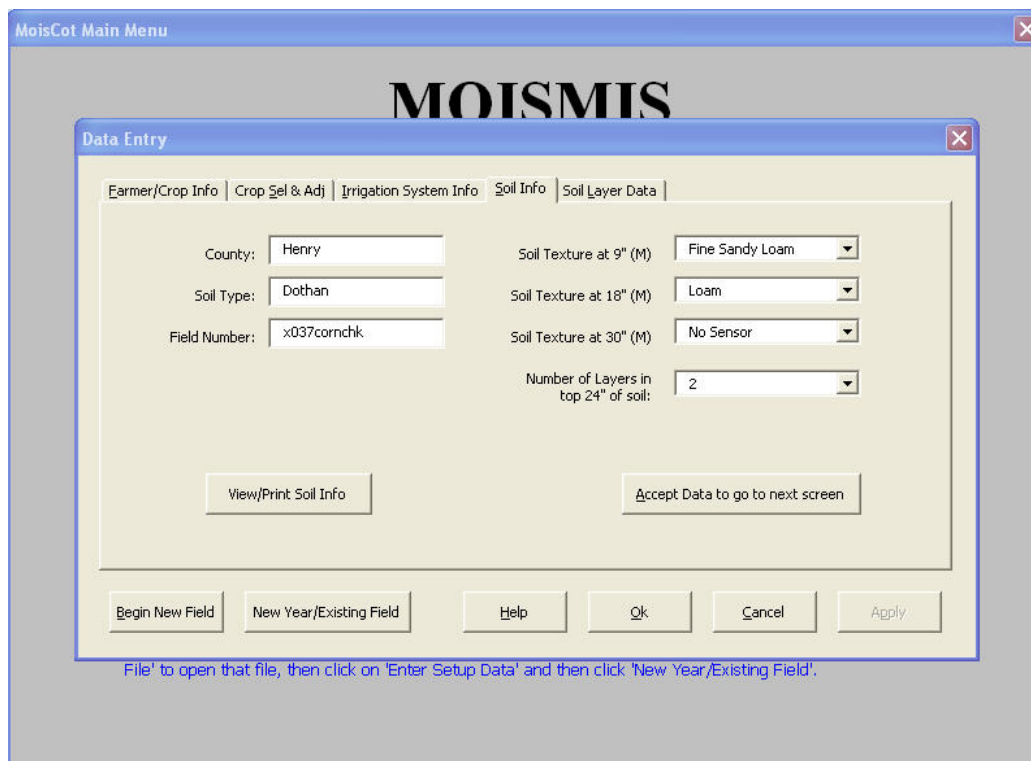
Open Existing Files - ‘Open Existing File’ allows selection of any previously saved field for further use or inspection by Moismis 2020.

Enter Setup Data - ‘Enter Setup Data’ is the place for entry of farmer ID, info phone #, crop and field ID, predominant soil type (where sensors are/should be installed) and irrigation system type, size and GPM. All this field specific information is entered here in five windows, which are displayed when the ‘Enter

Setup Data' button is selected. Moismis 2020 uses this basic information to schedule irrigation. This field-specific information for each field to be irrigated should not change (except possibly for Crop Adjust) throughout the irrigation season.

The five windows for 'Enter Setup Data' include:

- 1) Farmer/Crop Info (Field I.D. and planting date);
- 2) Crop Selection and Crop Adjustment (where the expected crop water use is adjusted to match observed crop growth stage using 'Crop Adjustment+' and 'Crop Adjustment-'. This must be done anytime during the season to match actual crop stage with crop stage on the irrigation report);
- 3) Irrigation System Info (select system type, then click 'View/Enter Irrigation Information' to enter system parameters, i.e., size/length, GPM flow rate, and soil moisture sensor installation date. Make sure to click 'Calculate' when you complete entering Irrigation Information, then 'OK' to close sub-screen);
- 4) Soil Info (county, soil type and texture @ 9" and 18" depths, and number of soil texture layers in top 24" of soil. Make sure to click 'Accept Data' when you complete the sub-screen);



- 5) Soil Layer Data (soil layer depths, minimum and maximum water holding capacities and top soil layer permeability). For any Peanuts crop, be sure to check 'Field Has History of SoilBorne Disease' if white mold, etc. has been a problem in the field in the past. Click 'Calculate Soil Data' when you complete this sub-screen.

All the soil data you need for using this program can be found in your county Natural Resources Conservation Services (NRCS) soil survey. You may also be able to access the NRCS WEB Soil Survey at <http://websoilsurvey.nrcs.usda.gov/app/>. Soil texture is found in the "Engineering Properties and Classifications" table; Minimum and maximum soil moisture holding capacities (inch/inch) can be found in the "Physical and Chemical Properties of Soils" table. All of this soil data will also be on the NRCS Soil

Interpretation Record (BLUE SHEET) for each soil in the field. Remember to use soil information for the location you chose for soil sensor installation. The local NRCS office can help identify these.

Enter Daily Data - 'Enter Daily Data' is chosen to allow entry of daily rainfall, irrigation and soil moisture sensor readings. ENTER SENSOR READINGS <=0 AS 1. Daily Data cannot be entered for a future date.

Generate Report - 'Generate Report' allows selection of any day in the season (except a future day) for a report of soil moisture status and recommended irrigation amount and date up to five (5) days in the future. Once the report is viewed, the operator can choose to print it or return to the Main Menu.

View/Print Report		View/Print Raw Data		Change Report Date		Main Menu		
WREC SDI DEMO Fld #: SDICom09		Daily Report for 6/13/2009		50 Days after planting on		4/24/2009		
CORN	Date	***** Soil Moisture ***** Inputs				Soil Moisture Sensor Readings		Irrigation Call
Approximate Growth Stage		Deficit				9"	18"	
		Rain	Irr	Program	Meter			
7	6/6/2009	0	0	0.00	0.00	0	0	
	6/7/2009	0	0	0.15	0.00	0	0	
8 to 9 Leaf	6/8/2009	0	0	0.29	0.00	0	0	
	6/9/2009	0	0	0.44	0.00	0	0	
	6/10/2009	0	0	0.60	0.00	0	0	
	6/11/2009	0	0	0.75	0.00	0	0	
	6/12/2009	0.05	0	0.86	0.00	0	0	
10 to 12 Leaf	6/13/2009	0	0	1.02	0.00	0	0	
	6/14/2009	0	0	1.18	0.00	0	0	IRR
	6/15/2009	0	0	1.35	0.00	0	0	IRR
	6/16/2009	0	0	1.52	0.00	0	0	IRR
	6/17/2009	0	0	1.69	0.00	0	0	IRR
13th Leaf	6/18/2009	0	0	1.87	0.00	0	0	IRR
	6/19/2009	0	0	2.05	0.00	0	0	IRR
9	6/20/2009	0	0	2.23	0.00	0	0	IRR
Days Crop Adjusted	0	Field Deficit Limit = 0.63			Check Soil Moisture Again 6/14/2009			
%Timer @	19.00	Irrigate to Apply 0.79			Begin 6/14/2009			

Graphs - 'Graphs' allows viewing graphs of Typical Daily Soil Water Use, Soil Moisture Deficit, Soil Water Sources, Soil Moisture Meter Readings, or GR/NET Water Distribution.

Save - 'Save' will save all field specific information in a MoisMIS 2020 Field File (.mud) by field number. This must be done before exiting MoisMIS 2020 to save the field file. Operator chooses where (the folder) on his/her computer to save mud files for later reference.

Exit - 'Exit' closes the program. The spreadsheet should be closed using the "X" in the upper right hand corner. If you are prompted to "Save", choose no. Each field has already been saved using the "Save" button within the MoisMIS 2020 program.

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