CLEMSON
PRECISION AGRICULTURE

Precision Ag Newsletter January 2016

Should I Rent This Field or Not?

Andrew Warner, Area Agronomic Agent

With the 2015 Harvest Season coming to an end means that rent payments for property are due. This also can mean that rental land may be changing hands, land that was fallow last year may be coming available for farmers, or new ground may be up for rent. This time of year provides a great opportunity for farmers to let go of property that may not have been as productive in past seasons or increase the size of their farming operation. But with 2015 season not being a great year for area farmers and margins looking very close with 2016's commodity prices every acre counts making renting new acres very risky.

So a question I have been asked is: How do you decide if you want to rent this piece of property or not when you know nothing about it? My best suggestion for this is to ask the farmer who farmed the property before you, a local crop consultant who may have scouted the property, or an area extension agent for information on the property. Usually farmers, consultants, and/or extension agents have the best information about the property from past experiences. However, in some cases like when you are trying to rent new ground or land that has been fallow for many years there may not be any information. In this situation I would suggest using the US Department of Agriculture Soil Survey for the county in which the field is located. The Soil Survey for the county can be found either online or at your local USDA/NRCS office.

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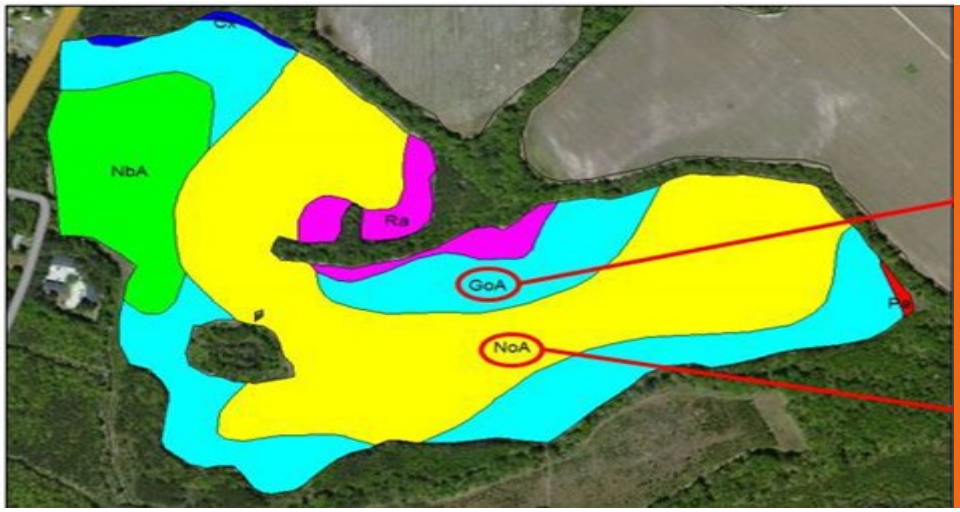

Shows a soil map from the US Department of Agriculture Soil Survey Handbook.

In This Issue

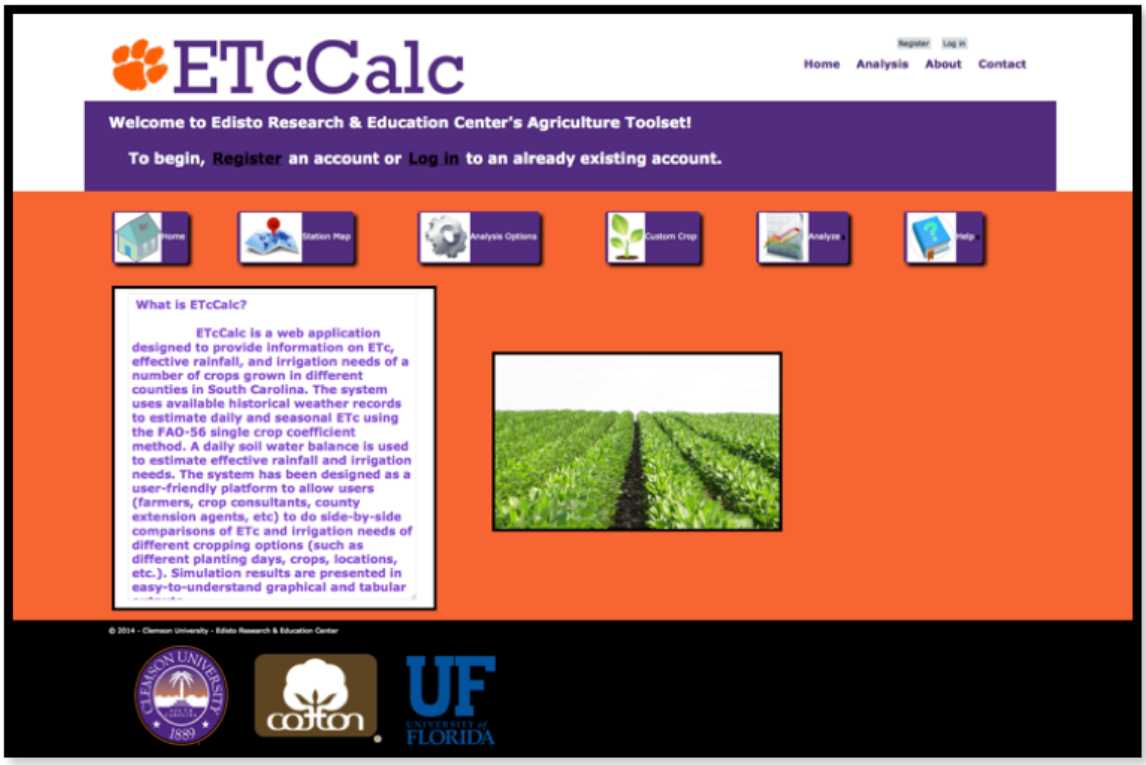

Fig. 1. Screenshot of ***ETcCalc*** **website.**

How much water is needed to grow a crop in South Carolina?

Dr. Jose Payero, Irrigation Specialist, Edisto Research and Education Center

How much water is needed to growth a crop is an important question for both large-scale watershed water resource planning and for on-farm irrigation water management. Currently, South Carolina is developing water availability assessment models for the different river basins in the state. Accurate information about the water used by local crops is an important and critical input to these basin-scale simulation models. At the farm level, knowing the daily and seasonal irrigation needs of crops is important for day-to-day irrigation management and for irrigation system design. However, knowing how much irrigation water is needed to growth a crop is complicated since it depends on many factors, such as the crop type, the crop growth stage, the local weather conditions, and the local rainfall patterns. Some of these factors can vary considerably from place to place, from day to day and from season to season.

Despite these variations, it is often useful to know the average daily and seasonal crop water use, expected rain, and irrigation requirements of a given crop planted at a given time in a particular location. This type of local information, however, is often difficult to obtain. Crop water use, also known as crop evapotranspiration (ETc), can be calculated from weather data collected by weather station networks that cover most of the USA. However, even thought daily weather data is abundant and relatively easy to obtain, local ETc information for specific crops is hard to find.

At the Edisto Research and Education Center we have recently developed an interactive online tool called ETcCalc (available at *etccalc.com*) that facilitates calculation of daily and seasonal crop water use, effective rainfall, and irrigation needs for crops in South Carolina (**Fig. 1**).

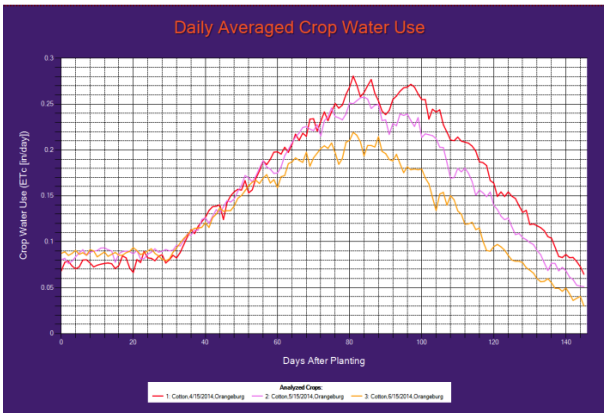

Fig. 2 (a). Daily evapotranspiration for cotton planted on mid April, May, or June).

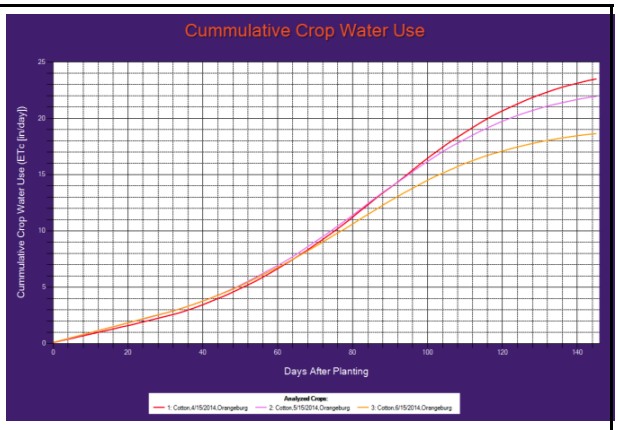

Fig. 2 (b). Cummulative daily evapotranspiration for cotton planted on mid April, May, or June).

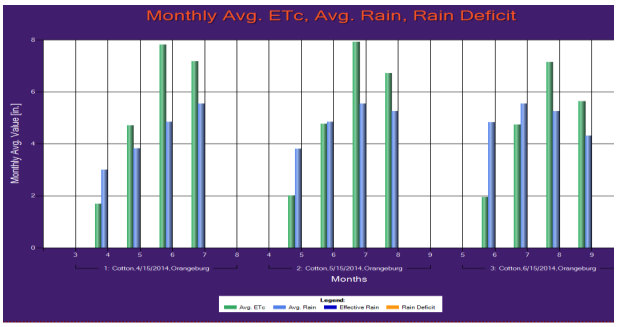

Fig. 2 (c). Monthly evapotranspiration and effective rain for cotton planted on mid April, May, or June).

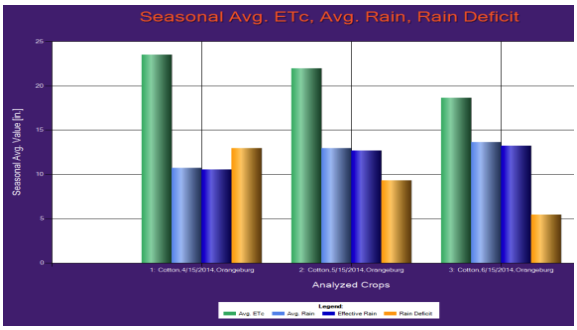

Fig. 2 (d). Seasonal evapotranspiration (green), total rain (light blue), effective rain (dark blue), and rain deficit (yellow) for cotton planted on mid April, May, or June).

The system uses available historical weather records to estimate daily and seasonal ETc. A daily soil water balance is used to estimate effective rainfall (rainfall that is available for the crop) and irrigation needs. The system has been designed as a user-friendly platform to allow users (farmers, crop consultants, or county extension agents) to do side-by-side comparisons of ETc and irrigation needs of different cropping options. The users can select the weather station location from a map and can specify the crop, soil type, and planting day. The combination of location, crop, soil type, and planting date constitutes a *cropping option*. The system allows the user to select and compare many cropping options simultaneously. Results of calculations are presented in easy-to-understand graphical and tabular outputs.

As an example, **Fig. 2** shows the type of graphical outputs produced by *ETcCalc*. These outputs represent the water requirements for cotton planted either on April 15th, May 15th, or June 15th near Orangeburg, and include the average daily evapotranspiration [**Fig. 2(a)**] and cumulative daily evapotranspiration [**Fig. 2(b)**] as a function of days after planting. Also, **Fig. 2(c)** shows the monthly evapotranspiration and effective rain for every month during the growing season, and **Fig. 2(d)** summarizes the crop evapotranspiration, total rain, effective rain, and rain deficit (irrigation required) for the whole growing season. Questions about *ETcCalc* or any irrigation-related issue can be directed to Jose Payero (jpayero@clemson.edu; tel. 803-508-1617).

Rent cont.

Andrew Warner, Area Agronomic Agent

The Soil Survey provides farmers with reasonably accurate soil maps and information on yields harvested from defined soil types within the county. The use of programs like ArcGIS or farm mapping software can aid in creating maps that show the different soils and estimate the acreage for each soil type. Once the soil types have been defined estimate potential yield can be calculated by multiplying total acres of each soil type by the average yield for that soil type (the average yields provided in the Soil Survey Handbook under the table covering: Land Capacity and Yield per Acre of Crops and Pastures the Soil Survey Handbook). Once you have an estimated yield total for each soil type add them together and divide by the total acres of the field, and this will give you an average yield per acre for the field. The average yield can then be added into an Enterprise Budget where cost per acre of the crop can be adjusted to better fit the farmer's management program. Clemson Extension Enterprise Budgets can be found at **http://www.clemson.edu/extension/aes/budgets/**. If the Enterprise Budget shows no profit to be made in the 2016 growing year and/or there is no long term agreement which would allow you to rent the field for more than just that year than I would not rent the property. If there is profit to be made it would be up to the individual farmer to decide if it is worth it.

For assistance on determining if you should or should not rent a field, or help for creating soil type maps please contact Andrew Warner at the Hampton County Extension Office at 803-943-3427.

Contact Us

If you would like more information on a topic discussed in this issue please contact me.

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Upcoming Events

SC Cotton Growers Meeting
January 26,2016
Santee Conference Center

SC Peanut Meeting
January 28, 2016
Santee Conference Center