The TexasET Network and Website
http://texaset.tamu.edu

User's Manual

By

Charles Swanson and Guy Fipps[1]

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Texas AgriLIFE Extension Service
Texas A&M System

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[1]Extension Program Specialist; and Professor & Extension Agricultural Engineer, Director, Irrigation Technology Program

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TexasET Network and Website

The TexasET Network and Website access and displays daily weather and ETo (potential evapotranspiration) data from over 30 weather stations across the State of Texas. The web address is http://texaset.tamu.edu. In addition to daily weather and ETo data, the website also displays weather parameters useful for crop management, including:

- heat units for cotton, corn, and sorghum
- heat units in terms of 50, 55 and 60 degrees
- daily wind run (miles per day)
- dew point temperature

Users can display sums of weather date over any date range desired and calculate irrigation runtimes.

The website also has interactive, easy to use calculators that allow users to determine the irrigation water requirements of crops and landscapes with drop down menus of Texas High Plains and all FAO crop coefficients. Users can also sign up for automatic email notifications of customized weather data and irrigation recommendations to be sent anytime from once a week to every day. Other tools allow users to download weather and ETo data as well.

The website offers many features at users can access such as:

- Long-term averages of weather data and ETo for 19 locations in Texas
- Bulletin 6019 of Texas crop consumptive water data (useful for certain water planning and permitting activities)
- Weather station maintenance and wiring guidelines

TexasET Network and Website was established in 1994 by Guy Fipps to support agricultural and landscape irrigation in the State of Texas. TexasET is a program of the Irrigation Technology Program and the Texas AgriLife Extension Service administered through the Biological and Agricultural Engineering Department at Texas A&M University in College Station, Texas.

What is Evapotranspiration?

Evapotranspiration (ET) is a measurement of the total amount of water needed to grow plants and crops. This term comes from the words _evaporation_ (i.e., evaporation of water from the soil) and _transpiration_ (i.e., transpiration of water by plants). Different plants have different water requirements, so they have different ET rates.

To simplify the calculation of ET rates for individual plants and crops, the website reports the **potential Evapotranspiration, ETo** or **PET** (note: the potential evapotranspiration is referred to as both _ETo_ and _PET_). ETo is the water requirements for a cool season grass growing 4-inches

tall under well-watered conditions. Crop and plant coefficients are then used along with ETo to determine the actual irrigation requirement (i.e., the "ET") of specific crops and plants.   The technical term for this is the **"Potential Evapotranspiration of a Grass Reference Crop"** or *"ETo"* for short.

The TexasET website uses the standardized Penman-Monteith method to calculate ETo from the weather station data. This is one of a number of methods that can be used to determine ETo and ET.   Several organizations, such as the International Committee on Irrigation and Drainage, the FAO (Food and Agricultural Organization) of the United Nations, and the American Society of Civil Engineers, have proposed establishing the Penman-Monteith method as a world-wide standard. Such a standard would help facilitate the sharing of ETo data and development of crop coefficients.

ETo depends on the climate and varies from location to location. Special weather stations are used to collect the climatic data for calculating ETo, including temperature, dew point temperature (relative humidity), wind speed, and solar radiation.

The water requirements of specific crops and turf grasses can be calculated as a fraction of the ETo. This "fraction" is the called the crop coefficient (Kc) or turf coefficient (Tc). Crop coefficients vary depending on the type of plant and its stage of growth. Detailed information on crop and turf coefficients and how to use them is presented at other locations on this Web Site.

Using the TexasET Website
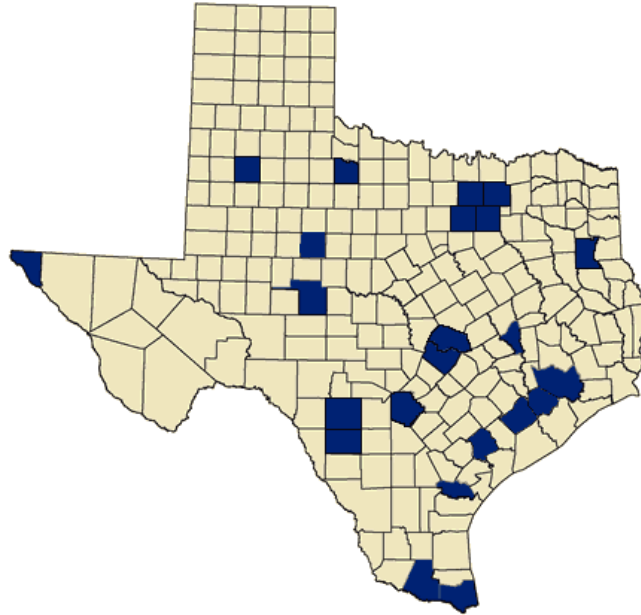
Viewing the ET and Weather Data

Step 1. To Access the daily ET and Weather nearest to you click on the County (highlighted blue) nearest to you or use the **Current Stations** drop down menu.

Step 2. Some counties contain multiple weather stations. In this case a second map will appear for you to choose from. Once you have chosen a station, click on the name.

Step 3. After you have clicked on a weather station, a 7 day ETo and weather summary will be displayed.

Other day summary periods such as 3 day, 5 day and 7 day can be selected using the link under the weather summary.

Step 4. By clicking on **Detailed Weather and Heat Units** under the weather summary, the following table comes up which gives detailed information on heat units and other weather data.

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Weslaco Annex Farm Weather Station

Date	ETo PET (in)	Temp (F) Avg	DewPoint (F) Max	Min	Heat Units (F) Corn	Cotton	Sorghum	50 degree	55 degree	60 degree	Wind Run miles per day
2013-08-27	0.18	82	77	66	30	23	28	33	28	23	84
2013-08-28	0.20	83	77	65	30	24	29	34	29	24	68
2013-08-29	0.18	82	77	67	30	23	28	33	28	23	67
2013-08-30	0.23	83	76	65	29	24	29	34	29	24	78
2013-08-31	0.27	84	75	64	30	25	30	35	30	25	116
2013-09-01	0.28	85	75	66	30	26	31	36	31	26	137
2013-09-02	0.20	83	75	66	31	25	30	35	30	25	105
7 Day Summary	**1.54**	**83**	**76**	**66**	**210**	**170**	**205**	**240**	**205**	**170**	**655**

3 day summary | 5 day summary | 7 day summary | other day range

Using the Irrigation Scheduling Tools

Step 1. To use the Crop Irrigation Scheduling Tool, Click on the **Crop Irrigation** Button displayed above each weather summary.

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Weslaco Annex Farm Weather Station
Station Sponsored by : Texas AgriLife Research

Date	ETo PET (in)	Tmax (F)	Tmin (F)	RHmin (%)	Solar (MJm2)	Rain (in)	Wind 4am (mph)	Wind 4pm (mph)
2013-08-27	0.18	91	75	52	17.49	0.26	0.63	6.74
2013-08-28	0.20	94	73	45	20.23	0.00	0.63	5.76
2013-08-29	0.18	92	74	54	18.62	0.00	0.63	5.34
2013-08-30	0.23	96	73	40	23.59	0.00	0.63	6.60
2013-08-31	0.27	97	74	37	23.61	0.00	0.68	6.59
2013-09-01	0.28	97	75	39	23.89	0.00	1.42	9.76
2013-09-02	0.20	94	76	47	17.27	0.08	2.24	7.81
7 Day Summary	**1.54**	**94**	**74**	**45**	**20.67**	**0.34**	**0.98**	**6.94**

Note: Reported are the average hourly values, not the absolute highs and lows.

3 day summary | 5 day summary | 7 day summary | other day range

Detailed Weather and Heat Units

The Crop Water Requirement Calculator will appear. (Note: to continue viewing the weather data click on **Show Weather Data** above the calculator). The calculator will automatically contain the total ETo for the last 14 days or the period chosen (i.e. 3 day summary, 7 day summary).

Weslaco Annex Farm Weather Station
Station Sponsored by : Texas AgriLife Research
Show Weather Data

Crop Water Requirement Calculator

ETo(pet)

1. ETo value from weather data   `1.54`   (in)

Crop Selection

2. Select a crop coefficient

   FAO Coefficients   `Select a crop... ▼`

   Or

   Texas High Plains Coefficients   `Select a crop... ▼`

Growth Stage

3. Select a crop growth stage   `Please select a crop above... ▼`

Crop Coefficient

4. Crop coefficient from growth stage   Crop Coefficient = `     `

System Efficiency

5. Enter your system efficiency   System Efficiency = `100`   (%)

Effective Rainfall

6. Effective Rainfall   Effective Rainfall = `0.34`   (in)

Calculate your total watering requirement

7. `Compute`   Total Water Requirement (ET) = `     `   (in)

	Precipitation Rate	`0`	(in/hr)
`Calculate Run Time`	Total Run Time	`0`	(min)
	Irrigations/Week	`1`	(count)
	Run Time/Irrigation	`0`	(min)

Step 2 . The next step is to select the crop that you are irrigating. The TexasET Website offers a variety of crop coefficients compiled by the Food and Agriculture Organization (FAO) as well as a short list of crop coefficients developed in the Texas High Plains.

Step 3. Once the crop is selected, choose the growth stage of the crop. In this example we will use Full Season Corn from the Texas High Plains Coefficients at the tassel stage of growth.

Step 4. After selection of the stage of growth, the crop coefficient appears in the calculator.

Step 5. Next enter the efficiency of your irrigation system. Some common efficiencies can be found by clicking on **system efficiency.**

Step 6. For our example we will use an efficiency of 90%. To calculate the total watering requirement, click on the **Compute** button. The Total Water Requirement for our crop is 1.71 inches.

 The Crop Water Requirement Calculator will also calculate the run time for your irrigation system. To calculate your systems run time enter the Precipitation Rate (in inches per hour) and the number of irrigation per week you will perform; then click the **Calculate Run Time** button and the Total Run Time and Run Time Per Irrigation will be Calculated.

Frequent TexasET Users

Frequent TexasET Users have the ability to create a profile to setup multiple sites to have the option to receive automated emails with personalized watering recommendations.
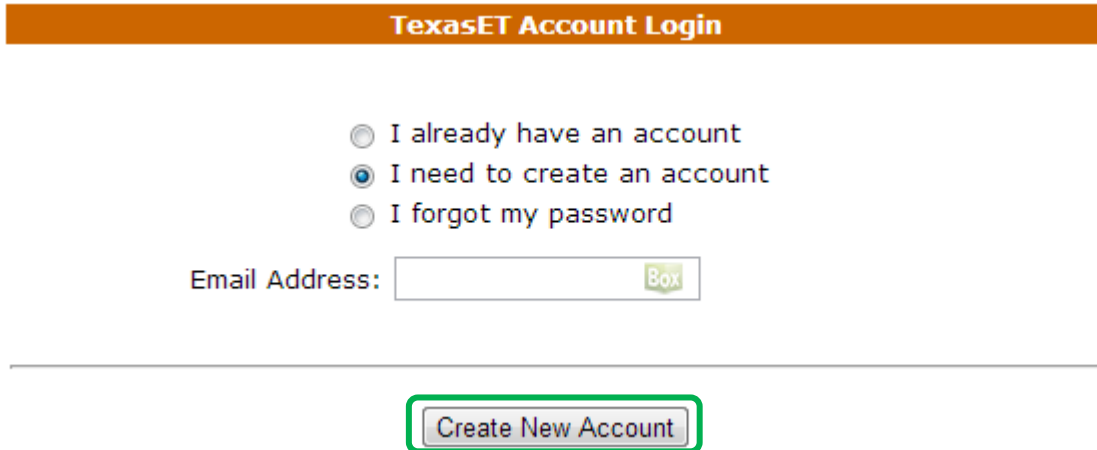
Creating a Login Profile

T o create a profile, click on Login on the left menu of the TexasET website.

Step 1. Select the option I need to create an account, the next screen will ask for an email address. Enter your email address and click Create New Account.

Step 2. If your email address is accepted, the following information is required.

Your email has been accepted.

Step 3. Once you have entered all the user information and clicked that Agriculture box, Submit the information. The following box will appear. Go ahead and click on add site to continue.

modify your user profile

Agriculture Sites - add site

Step 4. To Create an Ag Site, enter-select the criteria for your site. The criteria are the same for using the online scheduling tools. Once everything is entered, click on Add Site and you will begin receiving emails on your selected days.

Below is an example of the email you will receive.

Contacts

If you have any questions about the TexasET Network contact:

Charles Swanson
Extension Program Specialist
Texas AgriLife Extension
2117 Texas A&M University
College Station, TX 77843
Phone: (979) 845-5614
clswanson@ag.tamu.edu

Dr. Guy Fipps
Professor & Extension Specialist - Irrigation
Department of Biological and Agricultural Engineering
Texas A&M University
College Station, TX 77843-2117
(979)845-7454
g-fipps@tamu.edu