

Supporting Emergence or Reference Drought Tolerance Phenotyping Centers - Drought Phenotyping Network



Organized at Embrapa Maize and Sorghum, Rodovia MG 424 km 45
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EDAFO-CLIMATE CHARACTERISTICS OF TERESINA (PI) SPECIFIC SITE – EMBRAPA MID-NORTH

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LOCALIZATION AND CLIMATE CHARACTERISTICS

The Teresina, PI, specific site is located at Embrapa Mid-North, with the following geographical coordinates 05° 05" South latitude, 42° 48' West longitude, and presenting an altitude of 74.4 m. A series of climatic data, from 1980 to 2005 (25 years), was used to compute the annual averages of the main climatic elements and the hydrological soil water balance in this specific site, according to Thornthwaite and Matter method (Sentelhas et al., 1999) (Figure 2.5). It can be verified a remarkable water deficit during the second semester of the year. The annual average precipitation is 1200 mm, and air temperature and air relative humidity are 29.6°C and 71.9 %, respectively.

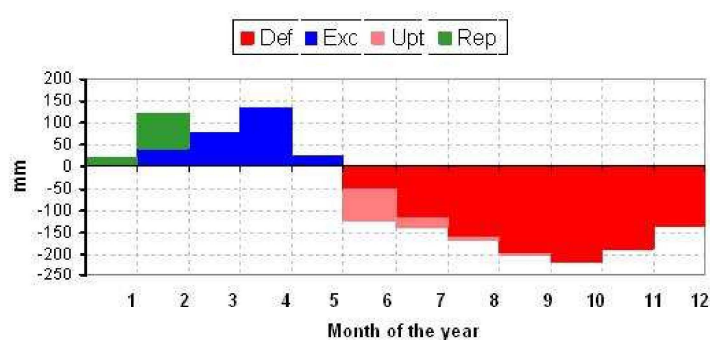


Figura 2.5. Monthly hydrological soil water balance variation, considering 100 mm of total soil water availability until 1 m depth, for a time climatic series database of 25 years (1980 to 2005) at Teresina, PI, specific site, Embrapa Mid-North.

According to the classification of Köeppen, the typical Teresina climate is Aw, that is, of tropical with dry winter and medium air temperature of the coldest month of 23.1°C (BASTOS et al., 2002). The Penman-

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Monteith average annual reference evapotranspiration (ET_o) is about 5.0 mm/day. It was installed an automatic weather station in the Teresina site.

SOIL CHEMICAL, PHYSICAL, AND HYDRIC ATTRIBUTES

The soil of the Teresina site is a Yellow Clay soil, with a loam sandy texture. Tables 1 and 2 illustrate the Teresina soil physical and chemical characteristics.

Table 1. Teresina, PI, specific site soil physics characteristics and textural classification, according to the soil profile horizons.

Soil horizon Depth	Particle size (g kg ⁻¹)			Density (g cm ⁻³)	Textural classification
	Sand	Silt	Clay		
AP 0 – 0,15m	799,0	85,0	116,0	1,39	Sandy loam
AB 0,15 0,45m	627,0	127,0	246,0	1,33	Clay-sandy loam
Bt 0,45 – 0,70m	627,5	96,5	276,0	1,32	Clay-sandy loam
C > 0,70m	550,0	144,0	306,0	1,27	Clay-sandy loam

Table 2. Teresina, PI, specific site soil chemical characteristics.

Soil horizon Depth	pH	P	K ⁺	Ca ²⁺	Mg ²⁺	Na ⁺	H ⁺ Al ³⁺	CTC	V
	(H ₂ O)	mg dm ⁻³	cmol _c dm ⁻³						%
AP 0–0,15m	5,86	26,40	0,15	2,08	0,86	0,27	2,01	5,37	62,53
AB 0,15–0,45m	4,61	2,20	0,04	1,76	0,71	0,10	4,57	7,18	36,35
Bt 0,45–0,70m	4,30	1,70	0,02	0,45	0,68	0,07	3,91	5,13	23,78
C > 0,70m	4,28	1,10	0,02	0,83	0,72	0,08	2,59	4,24	38,91

The soil moisture retention curve for the Teresina site was determined and adjusted based on VAN GENUCHTEN's (1980) model equation (Figure 5). Considering the 0 to 0.45 m soil layer, the value of the soil field capacity (-10 kPa), , was 21,2 % and the permanent wilting point was (-1,500 kPa) 9.05 %.

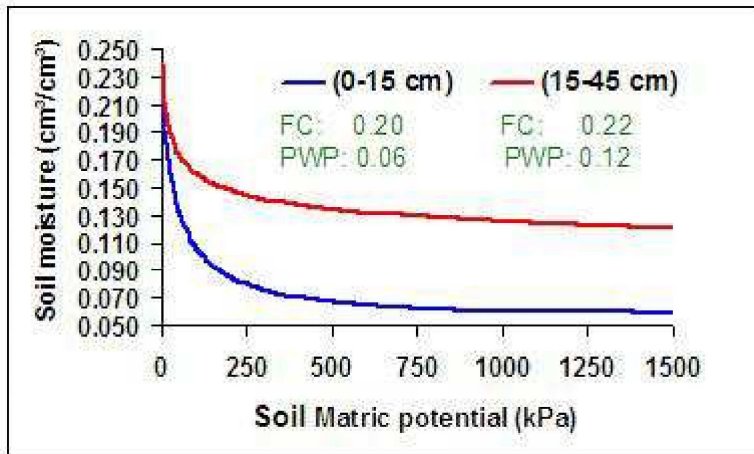


Figure 5. Soil moisture retention curve for the Teresina specific site (FC - Field Capacity; PWP - Permanent Wilting Point).

EDAFO-CLIMATE CHARACTERISTICS OF PLANALTINA (DF) AND PASSO FUNDO (RS) SPECIFIC SITES – EMBRAPA WHEAT AND SAVANNAHS

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LOCALIZATION AND CLIMATE CHARACTERISTICS

The specific site of Passo Fundo, RS, performed only in vitro wheat phenotyping at the Laboratories of Embrapa Wheat. In the field, the wheat drought tolerance phenotyping was carried out in Planaltina specific site, DF, located at Embrapa Savannahs. The geographic coordinates are the following: latitude 15° 35' 30" S, longitude 47° 42' 00" W, and altitude of 1175 m.

The climatic classification of the specific site of Planaltina, DF, is AW Tropical megathermic savannah, according to Köppen. This means that is a savannah type of climate with dry winter and wet raining summer. During out of season cropping system ("safrinha") period, the total precipitation, considering the historical average, is about 800 mm, but if wheat is planted at the end of February, this amount of rainfall water would reduce to 350 mm. However, the precipitation changes in different years (Figure 1).

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