



AGROMETEOROLOGICAL BULLETIN

September 2019
2nd 10-day period

- Temperature
- Relative Humidity
- Soil Temperature
- Sunshine Duration
- Precipitation
- Evaporation
- Growing Degrees
- Reference Evapotranspiration
- Accumulated Rainfall from the beginning of wet period
- Accumulated Reference Evapotranspiration
- Number of dry days



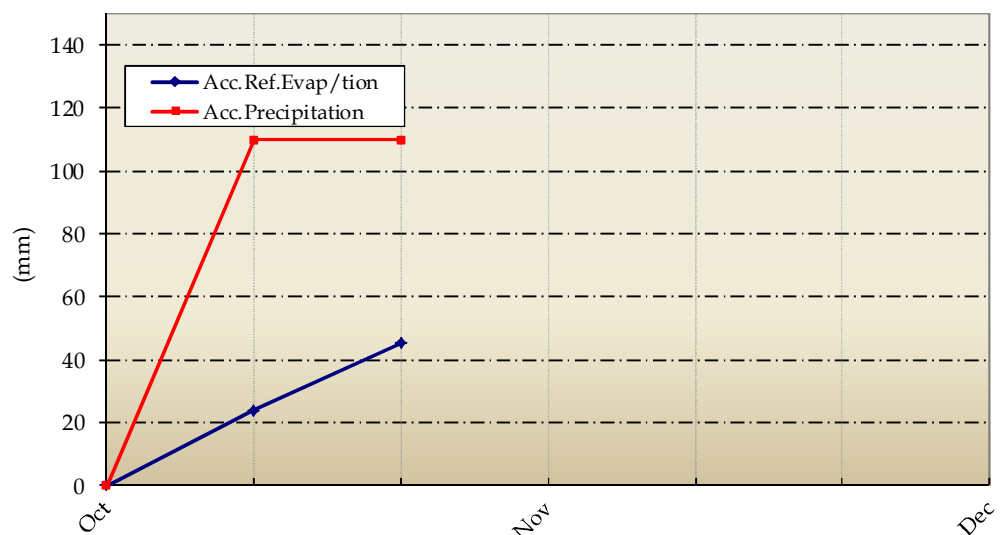
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2nd 10-day period (11-20/10/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.4	24.4	25.6	26.6	24.0	22.4	22.6	23.8	22.6	24.0	24.1	22.0	20.8
	Min	18.0	15.6	12.0	10.0	10.2	11.6	12.8	10.8	11.4	10.6	12.3	13.5	10.8
Relative Humidity	Max	94	77	93	95	95	93	95	97	95	95	93	81	-
	Min	48	38	41	30	50	57	62	52	63	57	50	53	-
Soil Temperature at 10 cm	06 UTC	19.0	17.4	16.4	16.4	16.6	17.0	17.4	16.4	17.0	16.8	17.0	18.4	15.2
	12 UTC	21.2	21.6	21.2	21.8	21.4	21.2	19.6	21.2	21.0	21.6	21.2	19.4	18.0
Sunshine Duration		2.2	9.7	9.8	9.8	9.5	8.4	3.8	7.8	8.0	8.2	7.7	3.9	5.9
Precipitation													9.2	15.0
Evaporation		3.7	1.7	5.0	5.0	2.6	3.5	3.3	1.6	1.0	3.6	31.0	34.4	42.1
Growing Degrees	5	16.7	15.0	13.8	13.3	12.1	12.0	12.7	12.3	12.0	12.3	132.2	127.5	107.7
	10	11.7	10.0	8.8	8.3	7.1	7.0	7.7	7.3	7.0	7.3	82.2	77.5	58.4

2nd 10-day period (11-20/10/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	21.4	21.2	22.7
Precipitation - Reference Evapotranspiration	-21.4	-12.0	-7.7
Number of Rainy Days	0.0	1.0	1.9
Number of Dry Days	12.0	17.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

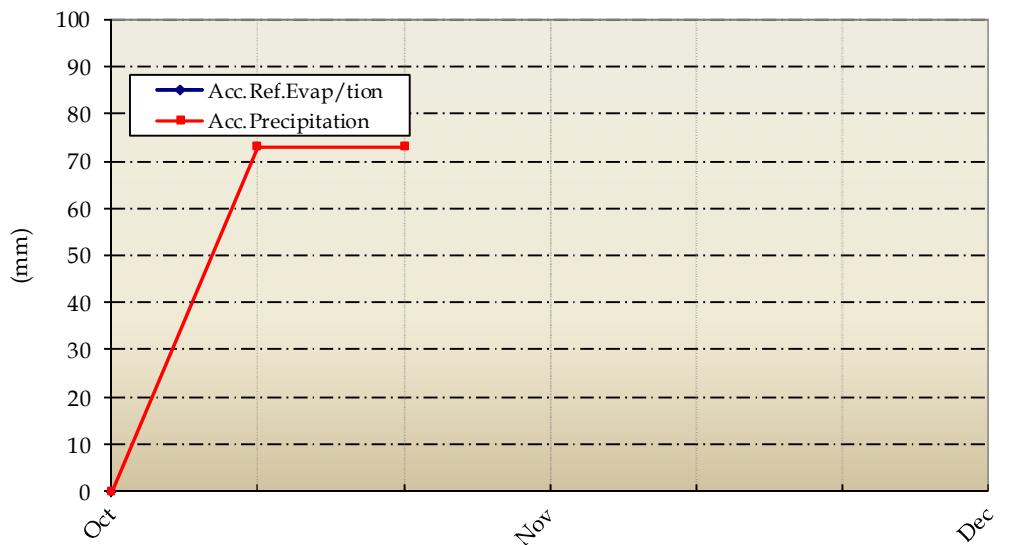


2nd 10-day period (11-20/10/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.1	29.2	26.7	26.7	25.5	25.5	25.1	25.3	25.4	24.4	26.1	25.9	24.1
	Min	15.3	15.4	14.2	13.0	15.5	15.3	15.6	15.4	13.6	13.4	14.7	12.5	13.2
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	100	100	88	-
	Min	62	46	42	45	66	64	57	59	52	54	55	35	-
Soil Temperature at 10 cm	06 UTC	21.5	21.8	21.6	21.2	21.4	21.0	21.2	20.8	21.0	20.6	21.2	19.7	18.6
	12 UTC	22.8	23.6	24.2	22.8	22.8	23.0	22.7	22.8	23.0	22.6	23.0	23.7	21.5
Sunshine Duration		8.9	8.6	8.3	8.8	7.8	8.5	8.7	7.5	8.4	9.1	8.5	8.7	7.1
Precipitation														23.9
Evaporation		1.6	2.0	4.0	4.2	3.0	1.2	3.6	3.5	1.4	1.2	25.7	45.7	36.4
Growing Degrees	5	16.2	17.3	15.5	14.9	15.5	15.4	15.4	15.4	14.5	13.9	153.8	142.0	136.6
	10	11.2	12.3	10.5	9.9	10.5	10.4	10.4	10.4	9.5	8.9	103.8	92.0	86.6

2nd 10-day period (11-20/10/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	23.8	22.5
Precipitation - Reference Evapotranspiration	-	-23.8	1.4
Number of Rainy Days	0.0	0.0	2.6
Number of Dry Days	10.0	12.0	-

The missing info in the tables and the graph are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

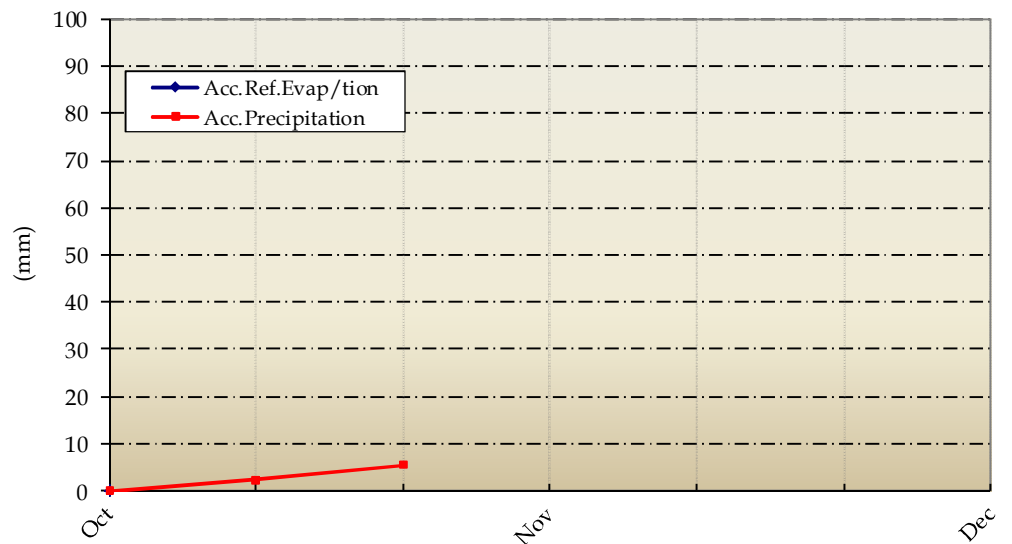


2nd 10-day period (11-20/10/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.2	24.8	24.4	24.6	24.4	25.0	25.0	25.0	24.0	24.2	24.8	23.0	24.0
	Min	20.0	19.0	21.2	15.8	16.4	16.8	17.0	18.4	17.8	17.8	18.0	19.0	17.1
Relative Humidity	Max	94	92	79	91	93	91	90	94	92	96	91	88	-
	Min	67	71	60	65	65	64	66	62	70	72	66	74	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		4.2	8.3	9.4	9.8	9.3	9.2	9.3	0.1	4.4	7.7	7.2	6.3	6.5
Precipitation									1.3	1.8		3.1	0.0	12.5
Evaporation		1.7	5.5	1.4	2.6	2.9	2.8	1.2	2.6	2.5	1.6	24.8	31.4	49.3
Growing Degrees	5	18.1	16.9	17.8	15.2	15.4	15.9	16.0	16.7	15.9	16.0	163.9	159.8	155.9
	10	13.1	11.9	12.8	10.2	10.4	10.9	11.0	11.7	10.9	11.0	113.9	109.8	105.9

2nd 10-day period (11-20/10/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	23.9	-
Precipitation - Reference Evapotranspiration	-	-23.9	12.5
Number of Rainy Days	2.0	0.0	1.7
Number of Dry Days	9.0	21.0	-

The missing info in the tables and the graph are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

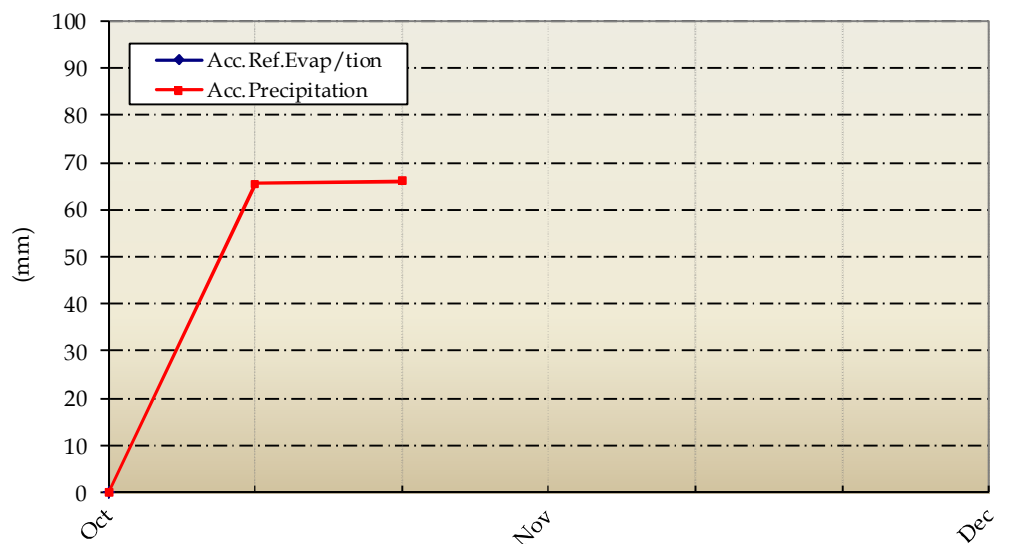


2nd 10-day period (11-20/10/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.4	26.8	25.6	26.6	25.6	24.7	24.0	23.6	23.8	23.0	24.8	23.7	20.6
	Min	13.0	11.6	10.2	11.6	10.2	11.2	9.0	8.4	8.4	6.2	10.0	8.7	8.9
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	100	100	87	-
	Min	57	53	51	46	52	53	53	51	54	45	52	38	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	14.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	16.3
Sunshine Duration		5.8	6.9	6.0	6.5	6.5	5.7	5.4	4.5	4.8	5.5	5.8	7.4	5.3
Precipitation		0.6										0.6		37.1
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	30.1
Growing Degrees	5	13.7	14.2	12.9	14.1	12.9	13.0	11.5	11.0	11.1	9.6	124.0	111.7	98.7
	10	8.7	9.2	7.9	9.1	7.9	8.0	6.5	6.0	6.1	4.6	74.0	61.7	49.1

2nd 10-day period (11-20/10/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	17.6
Precipitation - Reference Evapotranspiration	-	-	19.5
Number of Rainy Days	1.0	0.0	3.4
Number of Dry Days	0.0	12.0	-

The missing info in the tables and the graph are due to the absence of data.

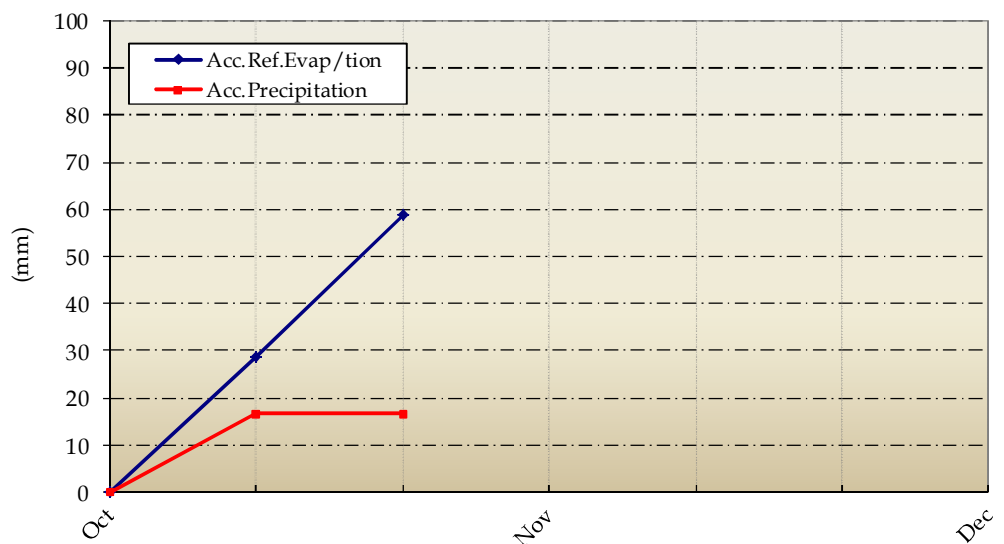
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/10/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.3	27.6	26.6	26.3	27.2	28.6	26.6	26.2	26.4	26.2	27.0	25.9	24.7
	Min	17.4	16.0	14.8	15.8	15.8	15.2	15.8	14.0	13.9	12.5	15.1	13.8	13.1
Relative Humidity	Max	85	88	90	90	90	91	89	91	90	84	89	84	-
	Min	32	43	46	56	48	40	48	46	45	43	45	38	-
Soil Temperature at 10 cm	06 UTC	21.0	21.4	21.5	21.6	22.2	21.8	22.0	21.5	21.2	21.0	21.5	19.6	18.6
	12 UTC	24.5	23.4	24.8	23.4	24.0	23.8	24.0	23.6	22.6	23.2	23.7	21.5	20.9
Sunshine Duration		3.3	9.6	8.9	9.0	9.0	9.5	9.4	9.2	9.1	11.2	8.8	7.8	6.8
Precipitation													0.0	24.4
Evaporation		4.0	2.4	6.2	7.2	5.2	4.5	3.5	1.8	7.0	3.2	45.0	50.0	39.0
Growing Degrees	5	17.9	16.8	15.7	16.1	16.5	16.9	16.2	15.1	15.2	14.4	160.6	148.4	138.6
	10	12.9	11.8	10.7	11.1	11.5	11.9	11.2	10.1	10.2	9.4	110.6	98.4	88.6

2nd 10-day period (11-20/10/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	29.9	28.2	24.3
Precipitation - Reference Evapotranspiration	-29.9	-28.2	0.1
Number of Rainy Days	0.0	0.0	2.7
Number of Dry Days	10.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

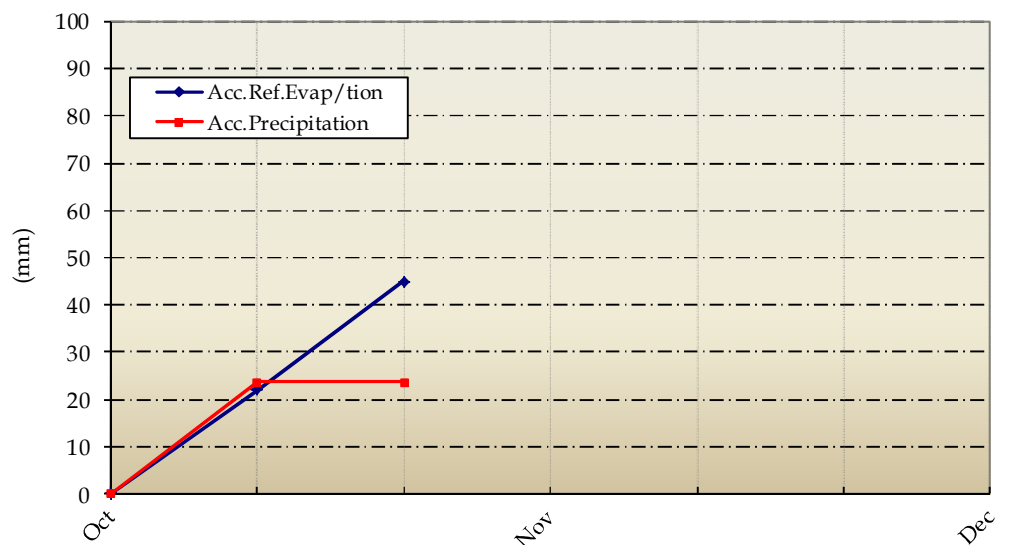


2nd 10-day period (11-20/10/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.0	25.6	26.4	27.0	27.4	27.2	26.8	26.0	26.0	25.8	26.6	23.3	23.0
	Min	14.4	15.8	13.4	12.1	10.0	10.0	11.2	12.8	12.0	12.4	12.4	10.7	10.1
Relative Humidity	Max	98	97	98	98	96	97	98	100	98	100	98	90	-
	Min	47	56	51	40	29	36	35	48	48	51	44	43	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	17.2
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	18.6
Sunshine Duration		7.0	4.7	7.1	7.4	7.6	7.4	6.2	7.0	7.1	6.1	6.8	5.1	5.6
Precipitation													0.3	14.1
Evaporation		2.6	4.3	4.1	4.9	2.4	5.5	3.6	4.0	2.3	2.4	36.1	35.7	31.3
Growing Degrees	5	16.2	15.7	14.9	14.6	13.7	13.6	14.0	14.4	14.0	14.1	145.2	120.2	115.6
	10	11.2	10.7	9.9	9.6	8.7	8.6	9.0	9.4	9.0	9.1	95.2	70.2	65.8

2nd 10-day period (11-20/10/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	23.0	20.4	20.6
Precipitation - Reference Evapotranspiration	-23.0	-20.1	-6.5
Number of Rainy Days	0.0	2.0	2.4
Number of Dry Days	12.0	7.0	-

The missing info in the tables are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



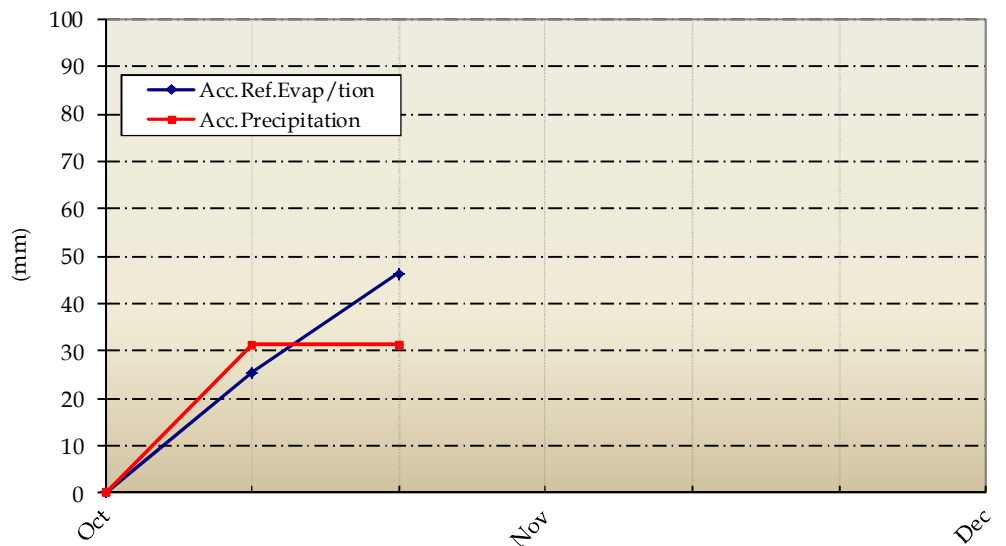
Mikra

2nd 10-day period (11-20/10/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.0	24.2	25.1	25.8	25.2	25.6	23.5	23.9	23.6	23.2	24.7	23.1	21.6
	Min	17.0	15.6	14.2	13.7	12.3	11.9	13.7	15.9	14.6	14.3	14.3	12.8	11.6
Relative Humidity	Max	96	93	94	95	92	92	93	94	94	95	94	76	-
	Min	50	61	61	54	47	41	66	66	65	68	58	40	-
Soil Temperature at 10 cm	06 UTC	20.0	20.2	20.2	19.6	19.0	18.0	18.8	19.8	19.6	19.4	19.5	19.3	16.5
	12 UTC	21.6	22.0	22.2	22.0	23.0	21.6	21.0	21.8	21.8	20.8	21.8	22.2	19.4
Sunshine Duration		7.7	7.4	9.5	9.2	9.6	9.2	6.8	7.6	7.3	5.3	8.0	7.0	5.3
Precipitation													0.1	13.0
Evaporation		-	-	-	-	-	-	-	-	-	-	-	39.3	31.8
Growing Degrees	5	17.0	14.9	14.7	14.8	13.8	13.8	13.6	14.9	14.1	13.8	145.2	129.5	116.2
	10	12.0	9.9	9.7	9.8	8.8	8.8	8.6	9.9	9.1	8.8	95.2	79.5	66.2

2nd 10-day period (11-20/10/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	20.8	23.9	20.4
Precipitation - Reference Evapotranspiration	-20.8	-23.8	-7.4
Number of Rainy Days	0.0	1.0	2.0
Number of Dry Days	12.0	10.0	-

The missing info in the tables are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



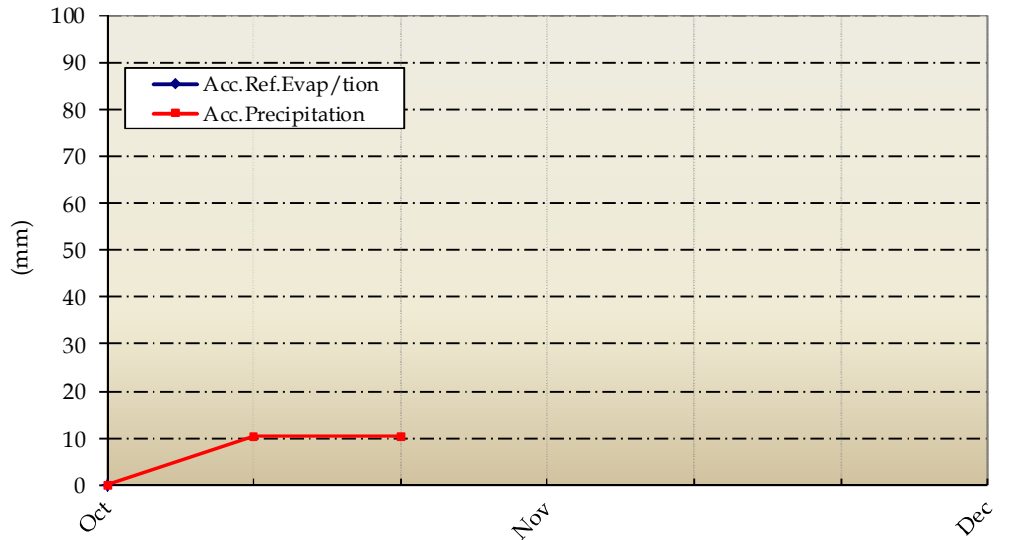
Tanagra

2nd 10-day period (11-20/10/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.2	26.2	26.5	27.0	27.0	26.8	26.9	25.0	24.8	25.4	26.4	20.5	22.8
	Min	17.4	16.6	13.6	10.7	9.6	12.3	14.6	13.2	13.8	13.6	13.5	13.9	12.0
Relative Humidity	Max	95	96	85	98	93	86	98	99	100	99	95	94	-
	Min	39	25	32	24	26	29	28	47	52	48	35	55	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		8.2	9.4	9.3	8.9	9.0	8.8	5.3	7.8	5.4	6.5	7.9	4.3	
Precipitation													2.4	11.3
Evaporation												-	-	
Growing Degrees	5	17.8	16.4	15.1	13.9	13.3	14.6	15.8	14.1	14.3	14.5	149.6	121.9	
	10	12.8	11.4	10.1	8.9	8.3	9.6	10.8	9.1	9.3	9.5	99.6	71.9	

2nd 10-day period (11-20/10/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	18.8	
Precipitation - Reference Evapotranspiration	-	-16.4	11.3
Number of Rainy Days	0.0	4.0	2.5
Number of Dry Days	12.0	10.0	-

The missing info in the tables and the graph are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



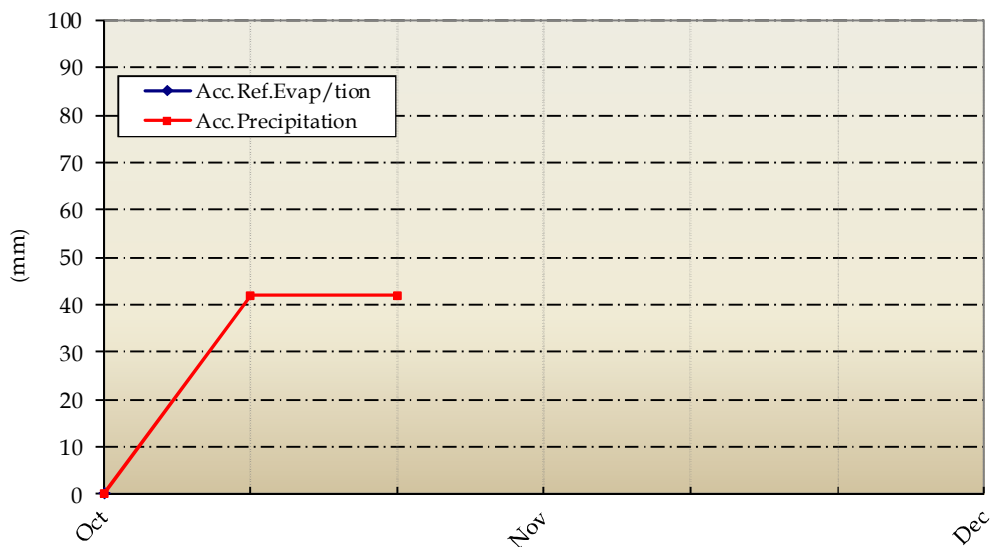
Tripoli

2nd 10-day period (11-20/10/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	-	-	-	-	27.0	26.5	25.5	24.5	24.7	25.2	25.6	20.5	21.3
	Min	-	-	-	-	6.4	6.9	8.6	8.8	9.0	7.5	7.9	7.6	8.2
Relative Humidity	Max	-	-	-	97	99	100	90	100	100	100	98	98	-
	Min	-	-	-	25	21	19	30	26	29	31	26	46	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	15.0	15.2	15.6	-	-	-	15.3	14.2	15.5
	12 UTC	-	-	-	20.8	19.8	19.8	20.0	-	-	-	20.1	17.6	17.2
Sunshine Duration		1.0	9.3	9.4	7.9	9.2	8.9	6.9	5.1	7.9	7.6	7.3	7.0	6.8
Precipitation						0.0	0.0		0.0	0.1	0.0	0.1	0.0	15.9
Evaporation		-	-	-	3.9	2.7	3.2	-	-	-	-	-	21.5	28.1
Growing Degrees	5	-	-	-	-	11.7	11.7	12.1	11.7	11.9	11.4	-	90.5	97.5
	10	-	-	-	-	6.7	6.7	7.1	6.7	6.9	6.4	-	40.5	48.2

2nd 10-day period (11-20/10/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	18.8	21.4
Precipitation - Reference Evapotranspiration	-	-18.8	-5.5
Number of Rainy Days	1.0	0.0	2.7
Number of Dry Days	10.0	12.0	-

The missing info in the tables and the graph are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration





◆ **List of Symbols and Abbreviations**

Reference Evapotranspiration ETo (mm):

Calculated by the FAO Penman-Montieth equation

$$ET_0 = \frac{0.408 * \Delta * (R_n - G) + \gamma * \frac{900}{T + 273} * u_2 * (e_s - e_a)}{\Delta + \gamma * (1 + 0.34 * u_2)}$$

using 10-day step.

R_n is estimated from sunshine measurements and G assumed to be zero.

Growing Degrees: Degrees with mean temperature exceeding the base of 5 or 10 °C.

Number of Rainy Days: Number of days with precipitation of at least 0.1 mm.

Number of Dry Days: Number of dry days recorded since the last rainy day.

Measurements Units

- ◆ Temperature : °C
- ◆ Relative Humidity : %
- ◆ Soil Temperature : °C
- ◆ Sunshine Duration : Hours
- ◆ Precipitation : mm
- ◆ Evaporation (Pan) : mm
- ◆ Growing Degrees : °C

UTC (Universal Time coordinates) in Greece

- ◆ Winter : Time(UTC) = Local time - 2
- ◆ Summer : Time(UTC) = Local time - 3

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