



# AGROMETEOROLOGICAL BULLETIN

*May 2016  
3rd 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



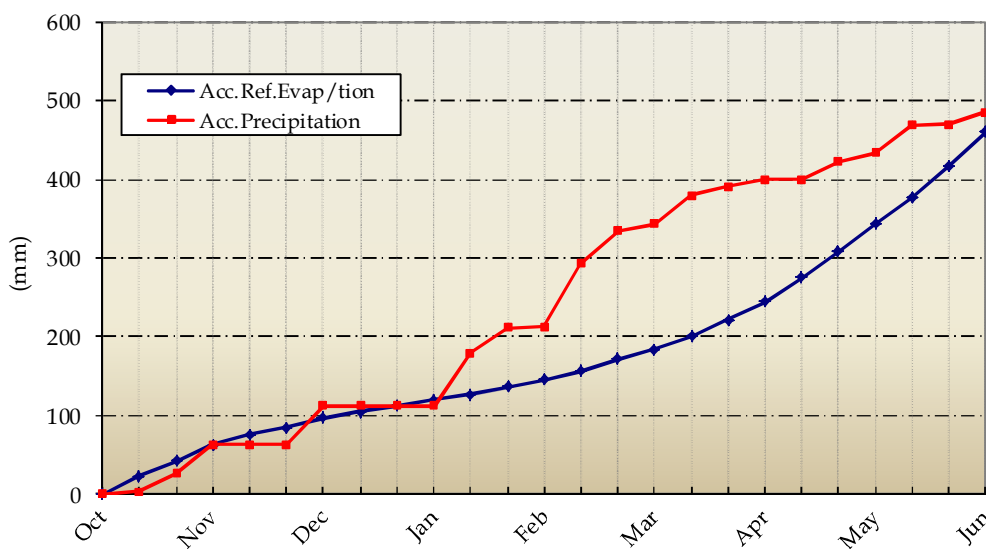
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3rd 10-day period (21-31/05/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.4	21.4	24.6	23.6	22.8	23.6	23.6	23.4	25.0	26.6	26.8	23.7	25.1	24.2
	Min	14.2	14.4	9.6	10.2	9.4	10.6	14.0	12.6	12.8	14.6	16.0	12.6	14.7	12.7
Relative Humidity	Max	89	82	94	90	93	94	91	95	93	89	94	91	90	-
	Min	59	37	36	53	39	53	52	57	61	54	55	51	48	-
Soil Temperature at 10 cm	06 UTC	19.6	16.2	15.8	18.0	18.4	20.6	17.8	16.8	18.8	20.6	22.3	18.6	21.6	19.3
	12 UTC	19.6	19.4	22.6	23.0	25.6	23.6	19.8	23.0	26.6	28.2	29.0	23.7	26.0	23.6
Sunshine Duration		0.0	1.4	11.3	11.1	13.1	2.8	5.2	12.7	10.7	10.7	12.5	8.3	9.6	8.3
Precipitation		7.5	0.1				7.3	0.2					15.1	9.9	12.4
Evaporation		3.5	2.4	5.6	6.3	6.8	0.9	1.5	5.4	3.4	11.3	6.8	53.9	72.5	70.1
Growing Degrees	5	11.8	12.9	12.1	11.9	11.1	12.1	13.8	13.0	13.9	15.6	16.4	144.6	163.9	147.7
	10	6.8	7.9	7.1	6.9	6.1	7.1	8.8	8.0	8.9	10.6	11.4	89.6	108.9	92.7

3rd 10-day period (21-31/05/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	43.1	47.8	45.7
Precipitation - Reference Evapotranspiration	-28.0	-37.9	-33.3
Number of Rainy Days	4.0	3.0	2.4
Number of Dry Days	2.0	18.0	-

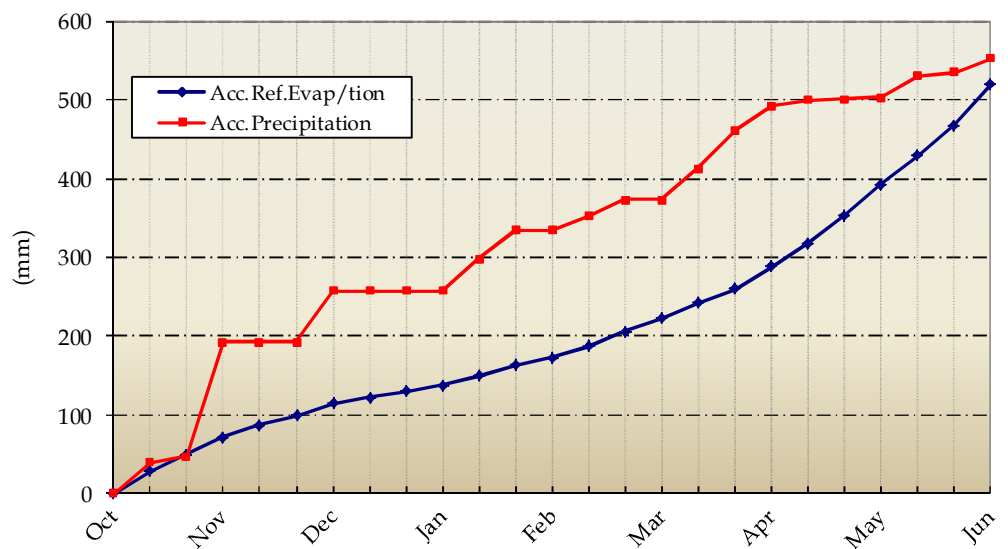
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/05/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.4	25.1	26.0	23.8	22.2	24.2	27.1	27.6	29.2	30.4	28.0	25.7	24.2	25.4
	Min	15.5	12.4	11.6	15.2	12.5	15.3	14.0	15.0	15.8	15.2	15.8	14.4	14.5	14.0
Relative Humidity	Max	91	88	86	87	86	83	89	86	81	88	85	86	84	-
	Min	60	39	27	54	46	47	38	34	21	21	34	38	46	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	21.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	25.8
Sunshine Duration		4.0	11.8	12.9	9.3	12.8	13.0	12.6	12.4	6.7	7.4	11.0	10.4	10.0	10.2
Precipitation		18.6											18.6		6.8
Evaporation		0.2	1.2	1.0	1.7	9.3	2.0	13.0	2.0	2.0	13.8	9.2	55.4	63.9	63.7
Growing Degrees	5	12.5	13.8	13.8	14.5	12.4	14.8	15.6	16.3	17.5	17.8	16.9	165.7	157.5	161.7
	10	7.5	8.8	8.8	9.5	7.4	9.8	10.6	11.3	12.5	12.8	11.9	110.7	102.5	106.7

3rd 10-day period (21-31/05/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	52.0	49.7	48.0
Precipitation - Reference Evapotranspiration	-33.4	-49.7	-41.2
Number of Rainy Days	1.0	0.0	1.0
Number of Dry Days	0.0	11.0	-

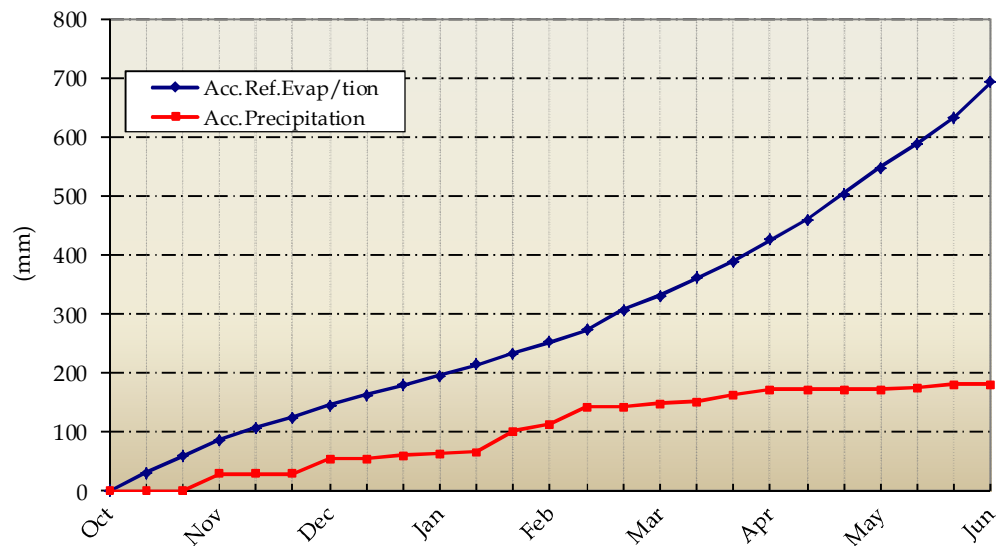
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/05/2016)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.6	21.8	23.2	24.8	23.4	23.6	24.8	25.0	26.6	29.2	27.4	25.3	23.7	24.9
	Min	19.6	15.6	18.2	15.6	16.6	16.0	15.0	16.4	17.0	20.0	22.6	17.5	17.0	16.6
Relative Humidity	Max	77	87	79	74	72	77	79	81	79	68	91	79	88	-
	Min	27	60	47	38	53	55	54	50	43	24	50	46	51	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		8.4	9.8	12.4	12.6	11.6	12.8	12.8	12.7	11.9	12.6	13.0	11.9	9.8	10.1
Precipitation		1.0											1.0	1.2	4.4
Evaporation		6.0	5.1	7.4	5.3	7.2	5.1	4.9	7.6	3.1	7.1	6.2	65.0	49.2	74.4
Growing Degrees	5	19.1	13.7	15.7	15.2	15.0	14.8	14.9	15.7	16.8	19.6	20.0	180.5	168.6	173.1
	10	14.1	8.7	10.7	10.2	10.0	9.8	9.9	10.7	11.8	14.6	15.0	125.5	113.6	118.1

3rd 10-day period (21-31/05/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	59.8	50.3	-
Precipitation - Reference Evapotranspiration	-58.8	-49.1	4.4
Number of Rainy Days	1.0	2.0	0.7
Number of Dry Days	5.0	45.0	-

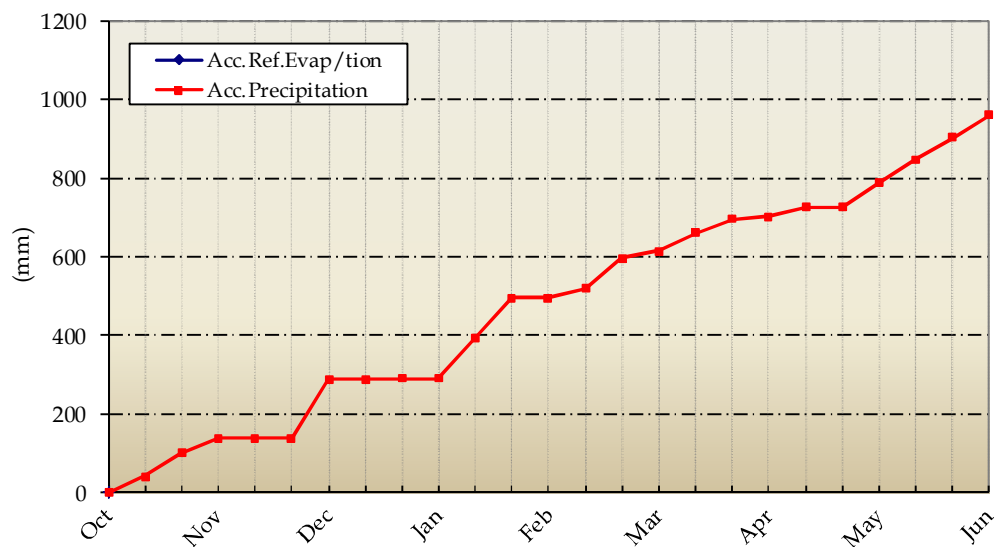
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/05/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.8	22.1	22.6	21.3	19.2	25.5	27.0	28.8	27.9	26.0	27.7	24.0	23.9	24.6
	Min	11.0	11.0	12.8	8.8	5.5	7.8	8.2	10.4	11.7	10.8	9.4	9.8	9.4	10.6
Relative Humidity	Max	100	100	81	100	99	100	98	100	100	98	89	97	100	-
	Min	81	50	50	29	52	43	38	33	25	49	32	44	37	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	17.3
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	21.4
Sunshine Duration		0.8	10.0	12.1	8.5	11.2	12.7	12.8	12.6	8.6	8.7	9.7	9.8	7.1	8.1
Precipitation		55.6											55.6	14.3	20.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	55.4
Growing Degrees	5	8.4	11.6	12.7	10.1	7.4	11.7	12.6	14.6	14.8	13.4	13.6	130.7	128.5	138.9
	10	3.4	6.6	7.7	5.1	2.4	6.7	7.6	9.6	9.8	8.4	8.6	75.7	73.5	83.9

3rd 10-day period (21-31/05/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	42.6
Precipitation - Reference Evapotranspiration	-	-	-21.7
Number of Rainy Days	1.0	2.0	3.4
Number of Dry Days	0.0	6.0	-

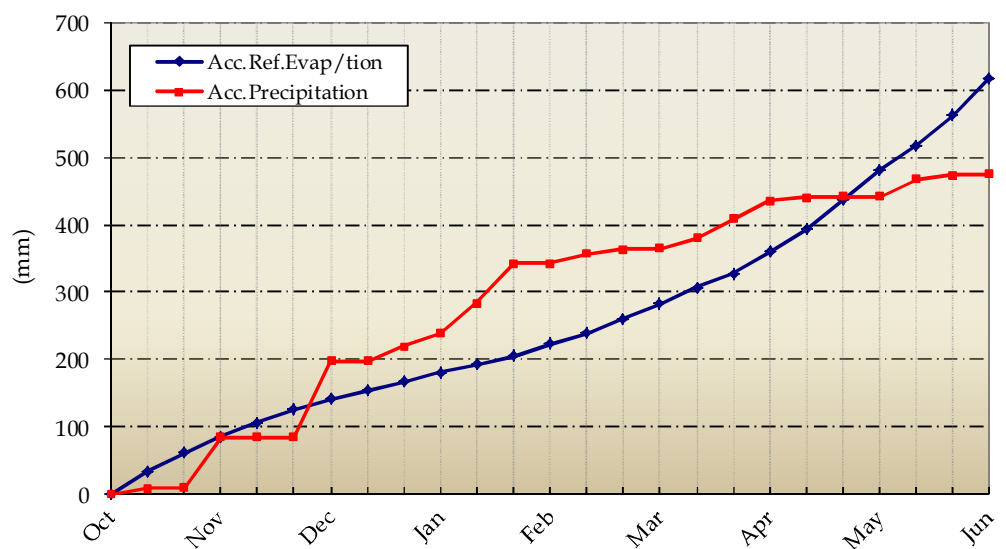
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/05/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.6	22.6	24.4	24.8	24.8	27.7	27.9	26.6	26.6	28.9	32.9	26.3	26.1	26.1
	Min	16.0	11.0	11.0	11.8	10.0	12.8	14.8	12.8	15.9	14.3	14.6	13.2	13.1	13.4
Relative Humidity	Max	91	93	93	90	92	85	92	92	92	89	89	91	91	-
	Min	51	48	38	38	32	30	30	44	36	27	18	36	38	-
Soil Temperature at 10 cm	06 UTC	18.0	18.0	18.2	19.0	19.2	19.2	20.0	21.0	21.4	21.6	21.6	19.7	19.8	20.5
	12 UTC	19.4	19.6	20.6	21.0	20.4	21.2	22.4	22.2	21.4	23.4	23.6	21.4	21.3	24.4
Sunshine Duration		4.9	6.6	12.5	9.7	12.4	12.9	12.2	12.3	10.6	11.7	11.7	10.7	9.9	9.6
Precipitation		0.8	1.5										2.3	2.2	3.4
Evaporation		3.2	4.3	6.6	4.3	8.7	7.0	6.5	5.5	6.4	7.8	10.2	70.5	-	68.8
Growing Degrees	5	14.3	11.8	12.7	13.3	12.4	15.3	16.4	14.7	16.3	16.6	18.8	162.4	160.6	162.7
	10	9.3	6.8	7.7	8.3	7.4	10.3	11.4	9.7	11.3	11.6	13.8	107.4	105.6	107.7

3rd 10-day period (21-31/05/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	55.8	53.0	49.3
Precipitation - Reference Evapotranspiration	-53.5	-50.8	-45.9
Number of Rainy Days	2.0	3.0	1.1
Number of Dry Days	0.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



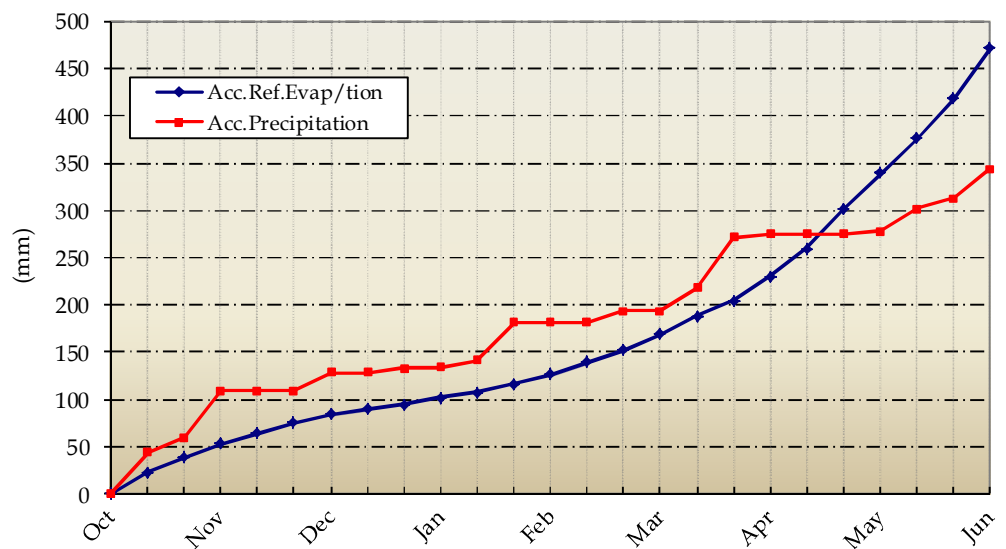


Larisa

3rd 10-day period (21-31/05/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.0	22.0	29.2	27.8	27.3	29.8	30.4	31.6	32.6	34.3	33.6	28.8	27.3	27.7
	Min	14.4	14.2	9.0	12.6	11.4	11.5	12.0	14.1	14.2	16.3	15.8	13.2	13.3	12.6
Relative Humidity	Max	100	100	100	100	70	88	93	96	93	95	82	92	90	-
	Min	80	32	23	18	23	22	22	22	26	21	14	28	28	-
Soil Temperature at 10 cm	06 UTC	19.2	18.2	18.0	18.0	19.8	20.4	21.0	21.6	22.2	23.0	23.2	20.4	21.9	20.0
	12 UTC	18.6	18.2	18.4	19.8	19.4	20.2	20.8	22.0	22.0	24.0	23.2	20.6	21.8	22.3
Sunshine Duration		0.0	4.0	11.7	10.4	12.2	12.3	12.2	11.4	9.2	9.4	11.7	9.5	7.6	8.8
Precipitation		28.2	2.8								0.6		31.6	1.8	17.2
Evaporation		1.3	4.2	7.3	9.9	12.1	6.1	9.4	9.6	7.9	8.8	12.2	88.8	71.0	67.8
Growing Degrees	5	11.2	13.1	14.1	15.2	14.4	15.7	16.2	17.9	18.4	20.3	19.7	176.1	168.6	166.2
	10	6.2	8.1	9.1	10.2	9.4	10.7	11.2	12.9	13.4	15.3	14.7	121.1	113.6	111.2

3rd 10-day period (21-31/05/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	53.6	50.5	50.4
Precipitation - Reference Evapotranspiration	-22.0	-48.7	-33.2
Number of Rainy Days	3.0	2.0	3.0
Number of Dry Days	0.0	6.0	-

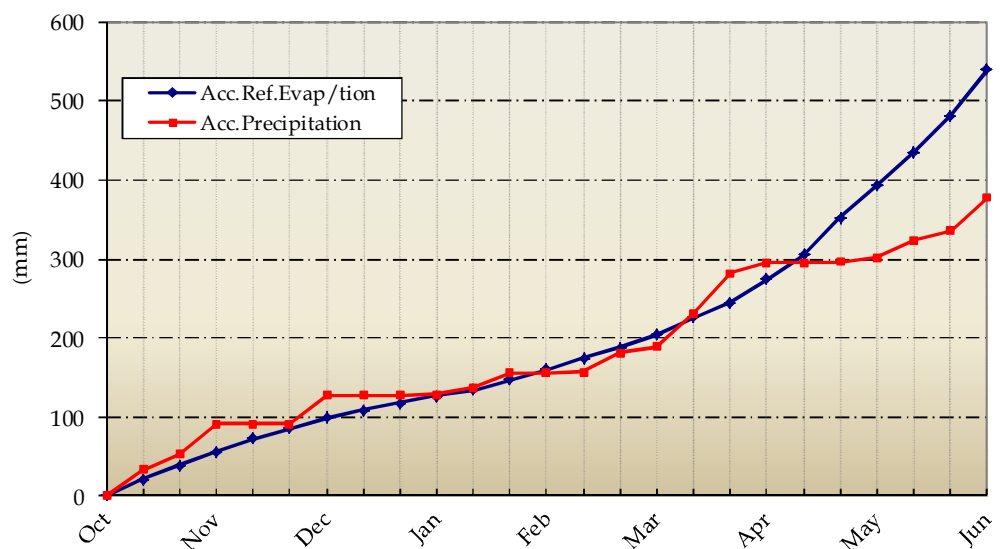
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/05/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.4	22.0	26.8	28.0	25.4	26.6	28.4	27.6	26.0	27.0	32.0	26.1	26.1	26.2
	Min	15.0	15.9	11.2	13.0	16.0	19.8	15.7	14.2	14.6	16.4	16.0	15.3	15.1	13.9
Relative Humidity	Max	97	83	89	79	57	60	70	81	81	93	94	80	80	-
	Min	70	43	27	23	28	32	33	30	48	46	18	36	34	-
Soil Temperature at 10 cm	06 UTC	19.0	17.4	17.5	19.6	19.2	21.0	21.4	22.2	22.8	23.5	23.0	20.6	22.1	20.7
	12 UTC	18.1	19.2	24.2	25.0	26.4	26.4	28.5	28.2	27.3	28.4	27.8	25.4	26.7	25.4
Sunshine Duration		5.0	5.0	13.1	8.0	12.6	12.7	13.7	13.5	10.6	4.5	12.7	10.1	8.3	8.3
Precipitation		41.4	0.4										41.8	2.3	16.2
Evaporation		1.8	1.7	11.3	13.8	9.6	7.4	9.0	7.0	5.0	9.7	9.4	85.7	62.7	70.6
Growing Degrees	5	11.2	14.0	14.0	15.5	15.7	18.2	17.1	15.9	15.3	16.7	19.0	172.5	171.2	165.0
	10	6.2	9.0	9.0	10.5	10.7	13.2	12.1	10.9	10.3	11.7	14.0	117.5	116.2	110.0

3rd 10-day period (21-31/05/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	57.9	54.4	48.7
Precipitation - Reference Evapotranspiration	-16.1	-52.1	-32.5
Number of Rainy Days	2.0	1.0	2.9
Number of Dry Days	0.0	16.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

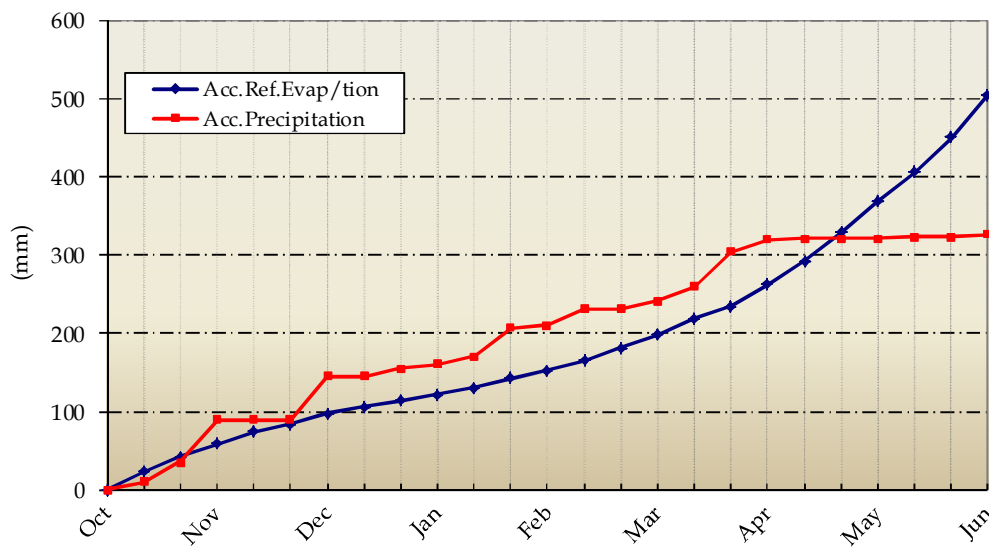




3rd 10-day period (21-31/05/2016)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.1	19.7	26.7	27.8	26.2	28.0	28.2	28.7	31.2	33.8	35.6	28.1	26.1	26.9
	Min	16.2	14.2	10.4	13.8	12.4	13.6	16.8	13.0	13.6	15.8	16.4	14.2	13.1	12.8
Relative Humidity	Max	96	97	79	77	69	73	67	76	78	70	64	77	89	-
	Min	58	52	22	25	23	21	22	26	25	18	10	27	33	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		1.1	1.6	12.0	7.9	11.9	13.0	13.3	13.1	8.3	9.2	12.0	9.4	8.3	
Precipitation		2.1	1.1										3.2	10.2	6.0
Evaporation		3.0	4.0	7.7	3.5	7.5	10.0	0.0	8.3	6.7	9.8	12.0	72.5	66.5	
Growing Degrees	5	14.7	12.0	13.6	15.8	14.3	15.8	17.5	15.9	17.4	19.8	21.0	177.6	160.5	
	10	9.7	7.0	8.6	10.8	9.3	10.8	12.5	10.9	12.4	14.8	16.0	122.6	105.5	

3rd 10-day period (21-31/05/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.3	45.8	
Precipitation - Reference Evapotranspiration	-51.1	-35.6	6.0
Number of Rainy Days	2.0	3.0	2.3
Number of Dry Days	15.0	15.0	-

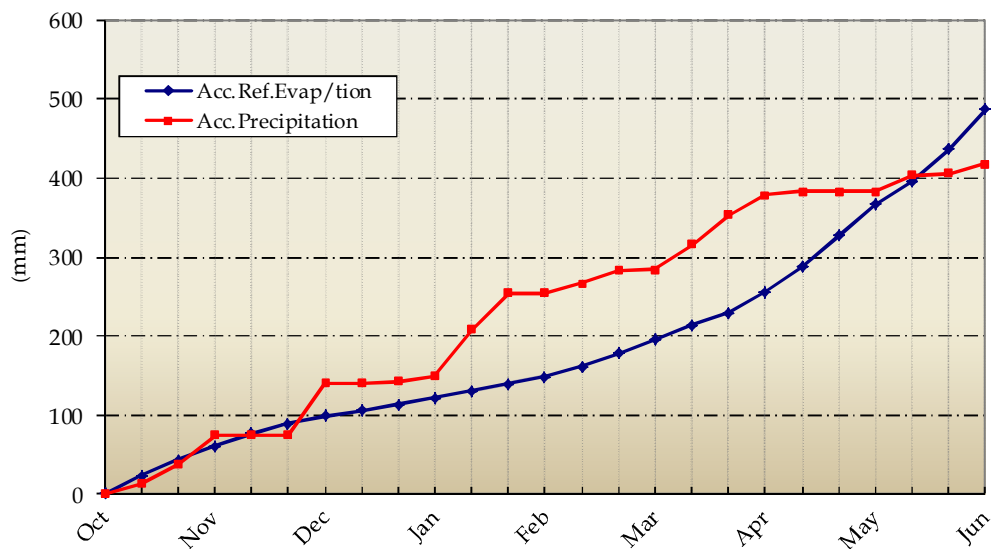
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/05/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.1	22.0	23.3	22.2	20.4	26.4	29.5	27.9	28.4	31.6	31.1	25.6	23.6	24.8
	Min	12.6	8.2	4.9	8.6	9.8	5.6	8.2	8.6	11.1	11.5	11.5	9.1	8.3	9.2
Relative Humidity	Max	100	100	100	87	89	99	97	96	94	81	80	93	99	-
	Min	50	40	31	32	33	22	18	25	22	16	11	27	31	-
Soil Temperature at 10 cm	06 UTC	-	-	15.2	17.8	17.6	18.2	19.6	20.4	21.8	22.2	22.8	19.5	18.6	18.5
	12 UTC	-	-	24.0	24.2	25.0	27.4	28.6	-	-	29.8	30.6	27.1	24.1	21.5
Sunshine Duration		10.5	5.9	12.8	9.5	13.1	12.7	10.9	12.7	11.0	12.2	11.6	11.2	8.7	8.9
Precipitation		11.5	0.1										11.6	5.6	11.3
Evaporation		-	-	6.6	6.9	7.2	7.6	7.1	6.3	7.7	8.4	5.0	-	-	48.7
Growing Degrees	5	10.9	10.1	9.1	10.4	10.1	11.0	13.9	13.3	14.8	16.6	16.3	136.3	120.6	132.1
	10	5.9	5.1	4.1	5.4	5.1	6.0	8.9	8.3	9.8	11.6	11.3	81.3	65.6	77.1

3rd 10-day period (21-31/05/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	51.4	43.6	47.0
Precipitation - Reference Evapotranspiration	-39.8	-38.0	-35.7
Number of Rainy Days	2.0	4.0	2.6
Number of Dry Days	0.0	2.0	-

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<sub>n</sub> 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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