



AGROMETEOROLOGICAL BULLETIN

*March 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



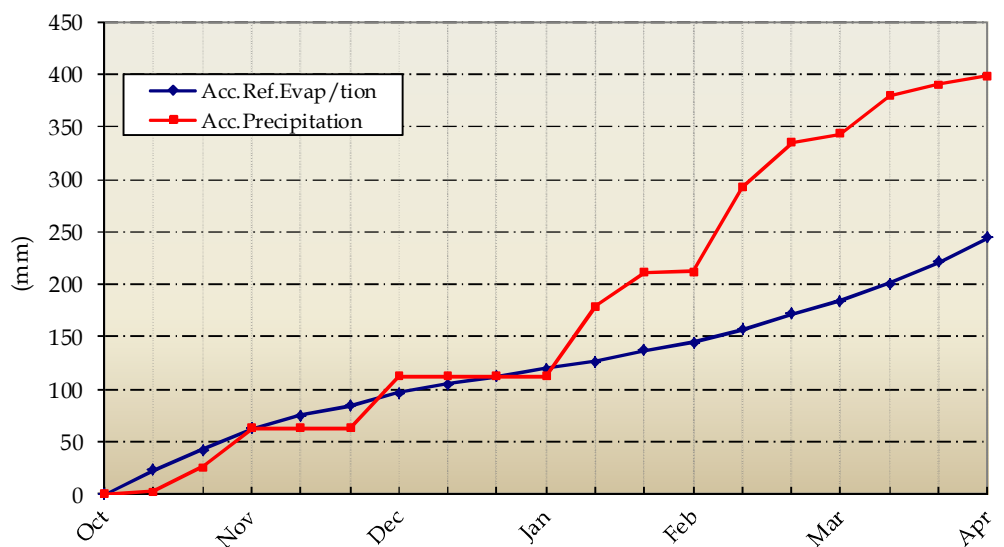
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3rd 10-day period (21-31/03/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.8	17.8	19.0	17.6	11.4	11.6	12.6	12.4	16.4	17.2	18.2	15.5	15.3	14.1
	Min	6.0	10.0	12.8	11.4	5.4	2.4	2.6	0.4	4.0	9.2	3.4	6.1	7.7	4.9
Relative Humidity	Max	95	93	83	91	94	90	90	92	94	93	97	92	91	-
	Min	60	68	52	64	56	45	43	50	57	61	69	57	56	-
Soil Temperature at 10 cm	06 UTC	10.0	12.4	13.6	13.6	11.4	7.4	7.8	7.2	8.6	11.0	11.4	10.4	10.3	8.3
	12 UTC	15.0	16.4	15.2	15.2	11.4	11.0	13.0	13.6	14.2	16.8	17.6	14.5	13.6	11.0
Sunshine Duration		9.7	6.8	1.7	0.8	0.0	4.0	6.7	8.2	7.6	9.1	9.2	5.8	4.8	5.5
Precipitation				0.5	0.1	7.0	0.7						8.3	35.5	15.2
Evaporation		3.3	2.2	2.3	3.6	0.7	2.7	4.0	1.8	0.6	1.2	5.2	27.6	27.0	32.3
Growing Degrees	5	6.4	8.9	10.9	9.5	3.4	2.0	2.6	1.4	5.2	8.2	5.8	64.3	71.6	51.2
	10	1.4	3.9	5.9	4.5	0.0	0.0	0.0	0.0	0.2	3.2	0.8	19.9	22.2	11.3

3rd 10-day period (21-31/03/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	23.6	21.7	23.3
Precipitation - Reference Evapotranspiration	-15.3	13.8	-8.1
Number of Rainy Days	4.0	8.0	2.7
Number of Dry Days	8.0	2.0	-

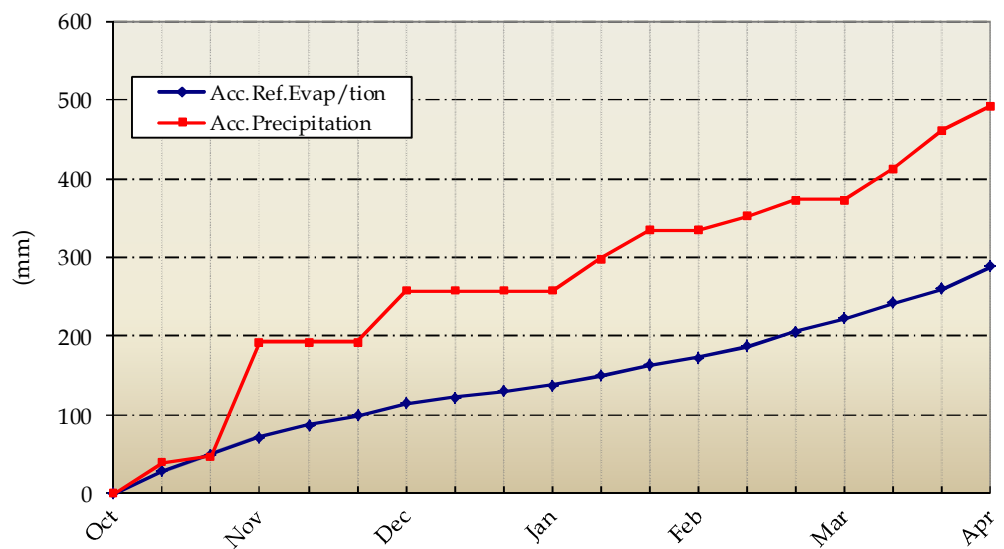
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/03/2016)		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	22.8	20.8	17.4	15.0	16.2	15.2	16.7	18.3	19.1	21.0	18.4	18.0	17.4
	Min	7.4	6.4	14.0	12.7	9.1	4.1	7.8	3.0	8.2	8.2	9.2	8.2	9.1	7.7
Relative Humidity	Max	89	89	86	89	90	86	89	89	91	92	90	89	88	-
	Min	52	29	31	56	45	38	55	39	58	59	50	47	51	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	13.2	11.5
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	15.0	14.2
Sunshine Duration		10.0	7.4	0.0	3.2	4.6	9.3	7.6	9.3	1.3	10.5	11.3	6.8	6.4	6.8
Precipitation				5.5	17.5	5.6		2.7		0.4			31.7	57.4	19.5
Evaporation		6.0	1.0	8.9	1.9	1.1	2.4	4.1	1.0	0.8	2.2	2.0	31.4	32.5	33.3
Growing Degrees	5	8.4	9.6	12.4	10.1	7.1	5.2	6.5	4.9	8.3	8.7	10.1	91.0	94.1	83.1
	10	3.4	4.6	7.4	5.1	2.1	0.2	1.5	0.0	3.3	3.7	5.1	36.2	41.4	30.3

3rd 10-day period (21-31/03/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	28.1	26.7	27.1
Precipitation - Reference Evapotranspiration	3.6	30.7	-7.6
Number of Rainy Days	5.0	7.0	3.2
Number of Dry Days	4.0	1.0	-

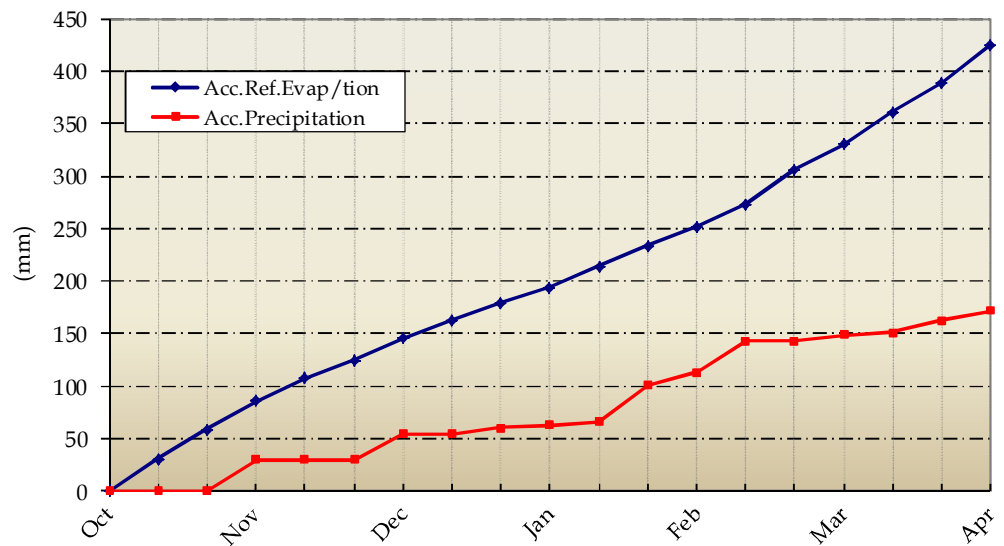
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/03/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.2	25.6	22.2	22.8	22.4	15.8	15.4	14.8	18.2	19.0	19.4	19.4	18.0	17.7
	Min	9.2	10.2	18.0	15.0	12.4	12.0	7.6	10.0	7.6	10.8	9.2	11.1	11.9	10.5
Relative Humidity	Max	94	75	55	81	86	81	92	92	90	97	88	85	85	-
	Min	55	22	22	38	41	45	53	53	57	67	56	46	54	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		9.3	10.0	1.8	8.7	6.9	9.0	4.7	7.0	8.8	9.7	10.6	7.9	4.6	6.6
Precipitation							1.0	1.1	7.3				9.4	14.0	15.8
Evaporation		0.7	11.3	6.8	4.0	5.4	1.1	0.6	1.9	4.4	2.0	1.6	39.8	33.0	48.5
Growing Degrees	5	8.7	12.9	15.1	13.9	12.4	8.9	6.5	7.4	7.9	9.9	9.3	112.9	109.0	100.1
	10	3.7	7.9	10.1	8.9	7.4	3.9	1.5	2.4	2.9	4.9	4.3	57.9	54.0	45.5

3rd 10-day period (21-31/03/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	36.4	30.2	-
Precipitation - Reference Evapotranspiration	-27.0	-16.2	15.8
Number of Rainy Days	3.0	6.0	3.0
Number of Dry Days	9.0	9.0	-

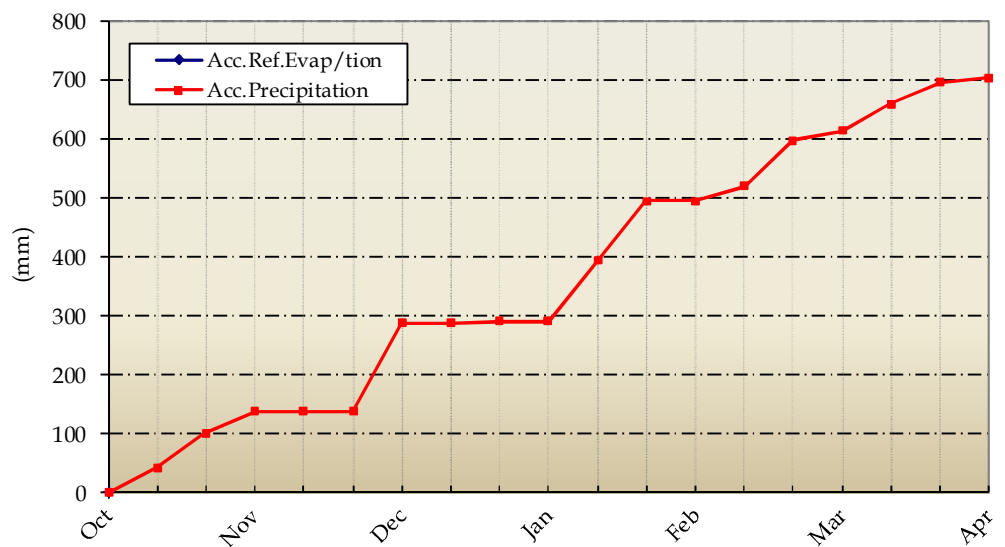
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/03/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.0	20.0	17.8	16.7	12.9	13.2	13.2	15.2	12.6	18.3	21.4	16.4	14.3	15.1
	Min	0.6	5.5	14.0	8.6	6.8	-2.2	4.3	-1.4	3.3	6.2	3.2	4.4	4.4	4.4
Relative Humidity	Max	100	94	94	100	99	100	97	100	100	100	100	99	99	-
	Min	34	29	29	86	31	34	43	37	61	57	35	43	55	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	7.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	10.5
Sunshine Duration		7.6	7.4	0.7	-	4.0	4.9	5.4	7.3	0.2	6.0	8.7	5.2	2.7	4.7
Precipitation			0.0	0.0	4.3	0.1	0.0	1.4		1.8	0.1		7.7	61.6	32.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	28.9
Growing Degrees	5	4.8	7.8	10.9	7.7	4.9	0.5	3.8	1.9	3.0	7.3	7.3	59.6	50.1	50.7
	10	0.0	2.8	5.9	2.7	0.0	0.0	0.0	0.0	0.0	2.3	2.3	15.9	4.5	11.1

3rd 10-day period (21-31/03/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	22.4
Precipitation - Reference Evapotranspiration	-	-	9.9
Number of Rainy Days	5.0	9.0	3.9
Number of Dry Days	5.0	2.0	-

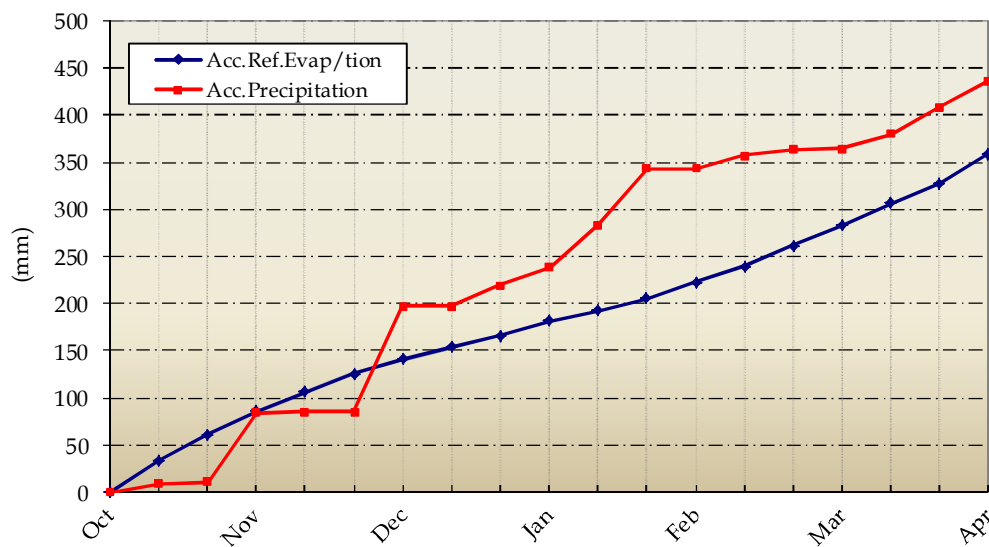
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/03/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.4	19.4	21.0	19.0	15.6	16.8	16.4	17.0	19.4	19.8	20.2	18.7	19.1	17.8
	Min	5.8	5.2	12.7	13.0	7.9	3.0	6.0	3.8	5.1	8.3	7.2	7.1	9.7	6.9
Relative Humidity	Max	93	95	93	92	94	91	92	89	93	93	94	93	94	-
	Min	25	56	28	56	61	47	46	45	47	44	54	46	54	-
Soil Temperature at 10 cm	06 UTC	12.4	12.6	14.6	14.4	13.8	12.4	12.8	12.4	12.6	13.4	13.4	13.2	13.4	11.8
	12 UTC	13.8	14.8	14.6	14.8	14.0	14.2	13.6	14.2	14.0	15.0	15.8	14.4	14.1	14.2
Sunshine Duration		9.9	7.6	1.1	3.7	5.4	7.2	10.0	11.0	7.0	11.1	10.9	7.7	6.1	6.5
Precipitation				3.9	17.5	6.2		0.3					27.9	51.3	20.1
Evaporation		2.0	2.6	2.0	1.1	5.2	6.9	2.2	4.3	2.9	3.0	4.5	36.7	-	37.4
Growing Degrees	5	8.6	7.3	11.9	11.0	6.8	4.9	6.2	5.4	7.3	9.1	8.7	87.0	103.5	81.3
	10	3.6	2.3	6.9	6.0	1.8	0.0	1.2	0.4	2.3	4.1	3.7	32.1	48.9	28.3

3rd 10-day period (21-31/03/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	31.2	27.7	27.8
Precipitation - Reference Evapotranspiration	-3.3	23.6	-7.7
Number of Rainy Days	4.0	8.0	3.3
Number of Dry Days	4.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

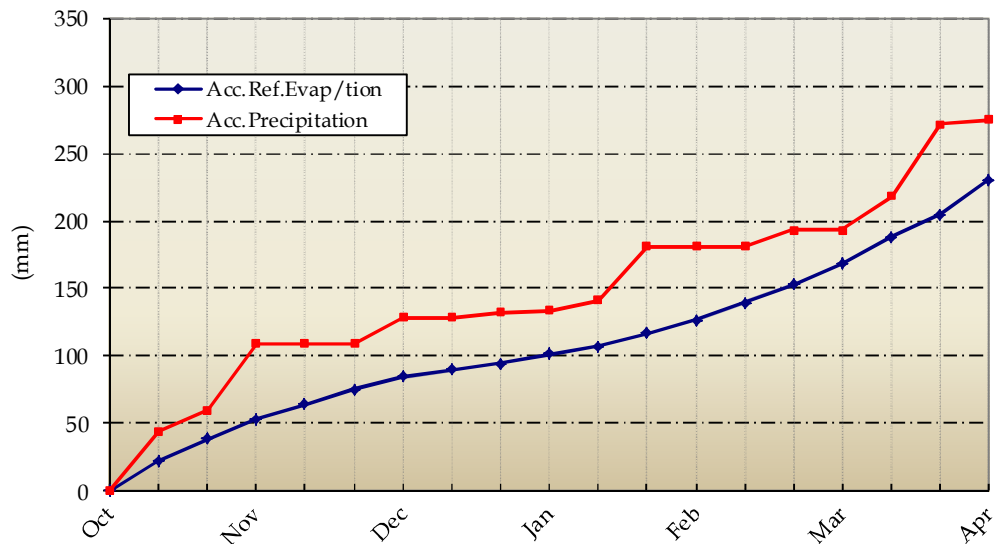


Larisa

3rd 10-day period (21-31/03/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.1	24.6	20.0	17.7	12.0	14.0	11.0	16.9	19.9	22.8	24.5	18.6	14.6	16.9
	Min	2.0	7.5	8.8	9.2	4.0	-1.0	5.6	0.2	1.5	5.2	4.6	4.3	5.8	4.2
Relative Humidity	Max	100	100	92	100	100	100	100	100	100	100	100	99	100	-
	Min	33	32	42	49	60	38	71	39	42	39	37	44	64	-
Soil Temperature at 10 cm	06 UTC	11.6	12.2	13.2	13.0	13.2	11.4	12.0	11.4	12.0	12.2	12.8	12.3	-	10.0
	12 UTC	11.8	12.2	13.2	13.2	12.8	11.4	11.6	11.2	12.0	12.2	12.8	12.2	-	11.4
Sunshine Duration		8.8	8.0	1.8	2.2	1.6	9.6	3.1	8.8	6.5	10.2	10.5	6.5	2.8	6.0
Precipitation					0.6	2.6		0.0					3.2	36.7	11.3
Evaporation		2.4	4.4	2.0	3.9	0.0	0.0	1.4	1.4	3.8	5.0	4.6	28.9	19.4	32.5
Growing Degrees	5	6.6	11.1	9.4	8.5	3.0	1.5	3.3	3.6	5.7	9.0	9.6	71.1	57.2	61.7
	10	1.6	6.1	4.4	3.5	0.0	0.0	0.0	0.0	0.7	4.0	4.6	24.7	13.7	16.3

3rd 10-day period (21-31/03/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	26.0	18.0	25.6
Precipitation - Reference Evapotranspiration	-22.8	18.7	-14.3
Number of Rainy Days	2.0	9.0	3.1
Number of Dry Days	4.0	1.0	-

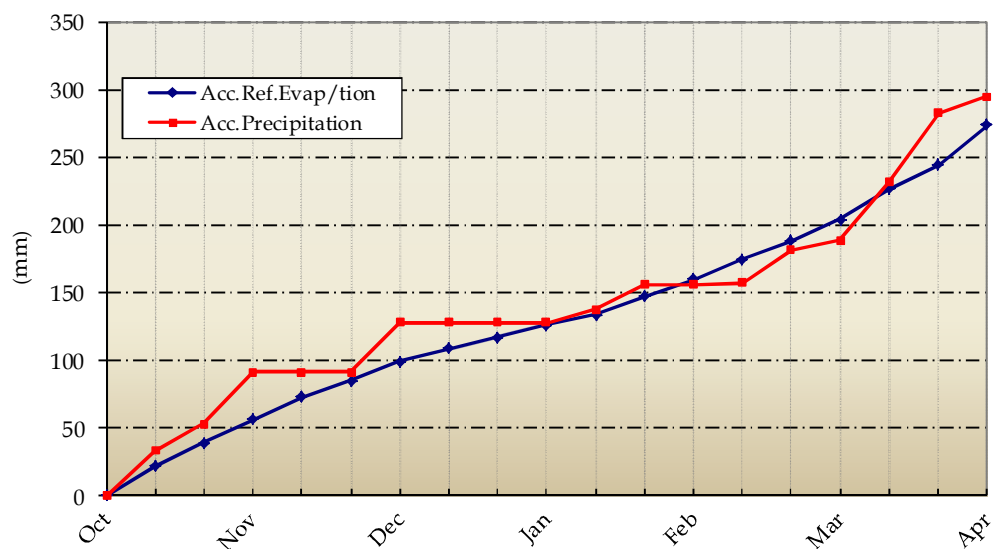
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/03/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.8	23.0	19.9	18.1	13.0	13.7	11.8	15.0	16.2	20.6	20.6	17.2	14.2	16.0
	Min	3.8	7.6	11.6	12.0	7.3	-0.2	6.6	2.4	4.6	5.6	6.4	6.2	7.1	5.7
Relative Humidity	Max	89	91	96	75	71	85	94	94	91	93	95	89	90	-
	Min	53	28	47	45	32	25	55	41	51	44	56	43	59	-
Soil Temperature at 10 cm	06 UTC	10.2	11.0	13.6	13.6	11.4	11.0	11.2	9.4	9.8	11.0	12.2	11.3	9.9	9.6
	12 UTC	14.2	14.2	14.4	15.2	11.8	12.0	12.6	12.6	13.0	15.0	15.6	13.7	12.2	12.9
Sunshine Duration		10.1	0.0	1.7	5.8	3.7	9.4	2.8	10.4	7.4	10.4	10.4	6.6	3.9	5.4
Precipitation					0.6	0.2		11.7					12.5	39.1	11.2
Evaporation		2.4	3.6	6.8	5.0	4.0	0.1	0.5	4.0	0.2	5.9	4.4	36.9	28.0	35.2
Growing Degrees	5	5.3	10.3	10.8	10.1	5.2	1.8	4.2	3.7	5.4	8.1	8.5	73.2	62.2	64.3
	10	0.3	5.3	5.8	5.1	0.2	0.0	0.0	0.0	0.4	3.1	3.5	23.6	14.2	17.2

3rd 10-day period (21-31/03/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	29.6	21.4	25.7
Precipitation - Reference Evapotranspiration	-17.1	17.7	-14.5
Number of Rainy Days	3.0	8.0	2.7
Number of Dry Days	7.0	2.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

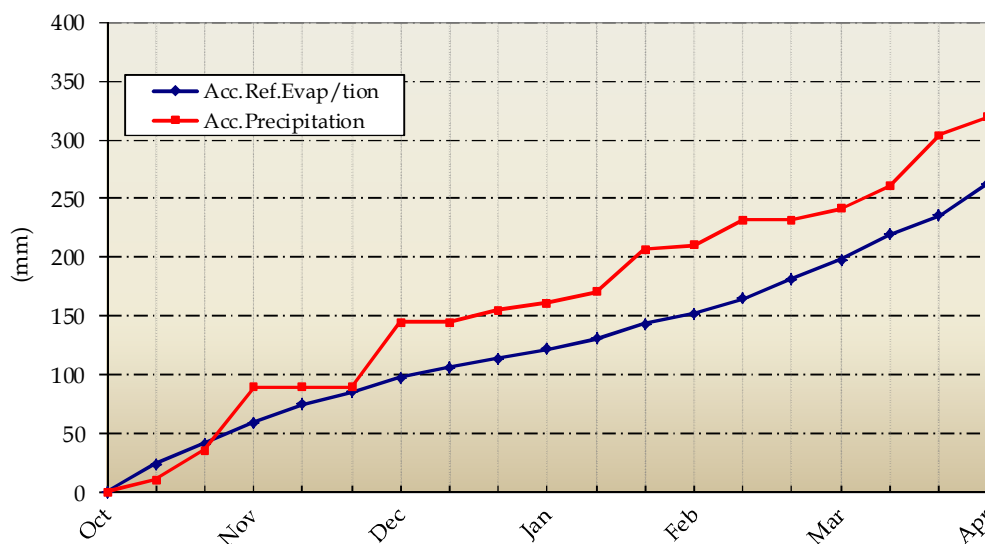


Tanagra

3rd 10-day period (21-31/03/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	20.2	22.7	19.6	19.0	13.0	13.3	12.2	15.7	19.4	21.8	21.8	18.1	15.4	16.7
	Min	3.9	1.0	13.4	15.0	4.4	1.6	4.6	3.4	2.3	8.4	6.4	5.9	6.9	5.4
Relative Humidity	Max	100	72	62	82	100	100	100	100	100	99	99	92	99	-
	Min	29	33	40	42	61	44	60	33	45	41	52	44	58	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		8.7	7.9	1.4	2.6	1.6	8.0	13.0	10.8	9.2	10.9	10.6	7.7	3.6	
Precipitation				0.5	0.3	6.3		8.5					15.6	36.2	12.3
Evaporation		4.3	5.5	5.0	4.0	0.7	2.3	2.3	2.5	2.5	3.0	3.0	35.1	18.9	-
Growing Degrees	5	7.1	6.9	11.5	12.0	3.7	2.5	3.4	4.6	5.9	10.1	9.1	76.6	67.6	-
	10	2.1	1.9	6.5	7.0	0.0	0.0	0.0	0.0	0.9	5.1	4.1	27.5	20.1	-

3rd 10-day period (21-31/03/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	27.7	19.1	-
Precipitation - Reference Evapotranspiration	-12.1	17.1	-
Number of Rainy Days	4.0	8.0	-
Number of Dry Days	3.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

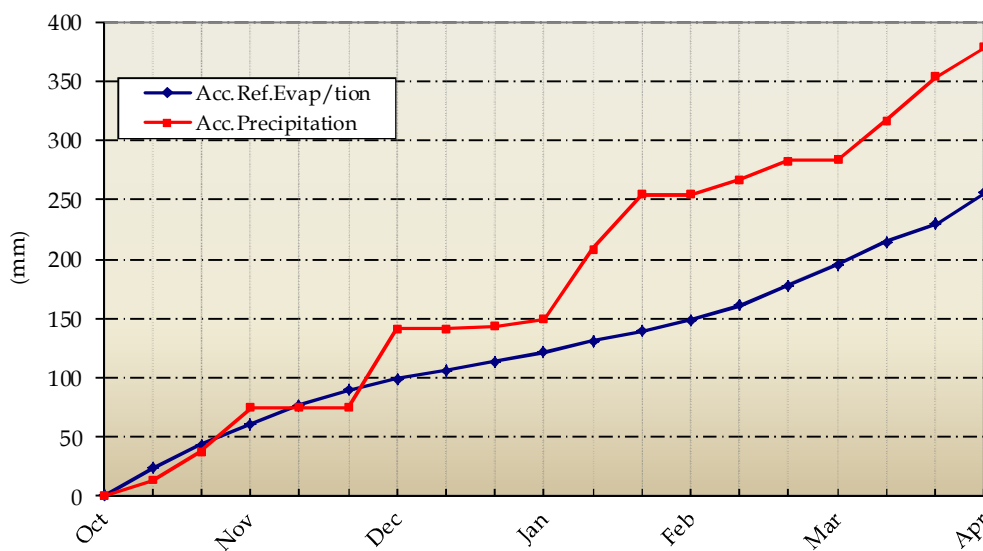


Tripoli

3rd 10-day period (21-31/03/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	20.6	19.5	16.2	13.2	11.6	12.9	13.3	15.3	17.1	19.9	21.6	16.5	13.8	14.8
	Min	-0.2	2.1	9.5	8.6	5.9	-2.5	0.8	-2.1	0.6	2.2	3.5	2.6	5.4	3.1
Relative Humidity	Max	100	100	89	93	100	100	100	100	100	100	100	98	100	-
	Min	27	30	36	65	57	77	45	30	46	36	32	44	58	-
Soil Temperature at 10 cm	06 UTC	7.0	8.4	10.6	10.2	9.4	6.6	8.0	6.8	7.6	8.6	10.0	8.5	9.8	7.9
	12 UTC	13.2	14.2	12.2	12.2	-	-	-	12.2	12.0	14.6	16.0	13.3	13.0	9.5
Sunshine Duration		10.5	9.5	0.0	4.2	2.5	8.3	6.5	8.9	6.5	9.2	10.5	7.0	4.6	6.3
Precipitation				0.8	12.1	10.6		0.8	0.9				25.2	66.3	22.9
Evaporation		2.9	4.0	2.2	0.0	0.9	2.1	1.3	3.0	1.9	3.2	3.8	25.3	-	26.8
Growing Degrees	5	5.2	5.8	7.9	5.9	3.8	0.2	2.1	1.6	3.9	6.1	7.6	49.8	50.9	45.6
	10	0.2	0.8	2.9	0.9	0.0	0.0	0.0	0.0	0.0	1.1	2.6	8.4	7.0	7.9

3rd 10-day period (21-31/03/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	26.1	20.9	25.6
Precipitation - Reference Evapotranspiration	-0.9	45.4	-2.7
Number of Rainy Days	5.0	9.0	3.9
Number of Dry Days	4.0	8.0	-

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_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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