



# AGROMETEOROLOGICAL BULLETIN

*October 2015  
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



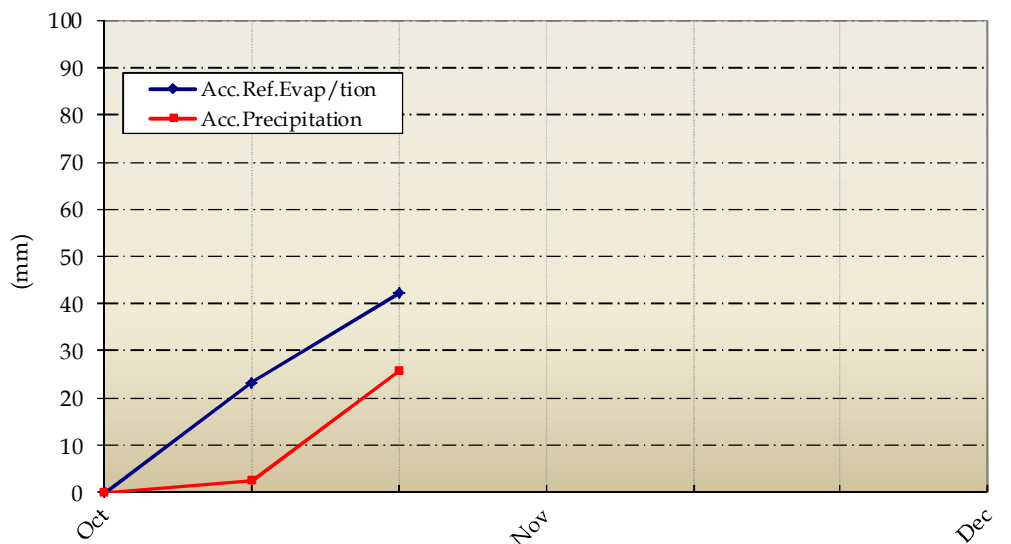
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*Web addresses of HNMS*  
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2nd 10-day period (11-20/10/2015)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.6	24.2	20.4	20.4	21.6	19.6	21.4	21.6	21.4	21.2	21.1	22.5	20.8
	Min	15.0	16.6	12.2	10.8	13.0	12.8	15.2	12.6	15.0	11.4	13.5	11.0	10.8
Relative Humidity	Max	98	98	91	90	78	81	82	96	91	98	90	91	-
	Min	88	67	51	52	51	55	49	51	57	74	60	48	-
Soil Temperature at 10 cm	06 UTC	17.8	17.8	17.2	15.2	15.6	15.6	17.0	16.6	18.0	16.6	16.7	17.7	15.2
	12 UTC	16.8	21.0	19.6	18.6	19.4	18.6	20.3	19.4	20.6	20.0	19.4	20.8	18.0
Sunshine Duration		0.0	8.6	9.2	10.3	9.9	6.7	4.8	2.8	7.0	2.5	6.2	7.9	5.9
Precipitation		21.0		2.1								23.1	0.0	15.0
Evaporation		3.3	5.9	5.7	1.6	5.2	3.6	1.7	2.3	3.0	1.7	34.0	36.8	42.1
Growing Degrees	5	12.3	15.4	11.3	10.6	12.3	11.2	13.3	12.1	13.2	11.3	123.0	117.9	107.7
	10	7.3	10.4	6.3	5.6	7.3	6.2	8.3	7.1	8.2	6.3	73.0	67.9	58.4

2nd 10-day period (11-20/10/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	18.8	20.6	22.7
Precipitation - Reference Evapotranspiration	4.3	-20.6	-7.7
Number of Rainy Days	2.0	0.0	1.9
Number of Dry Days	4.0	12.0	-

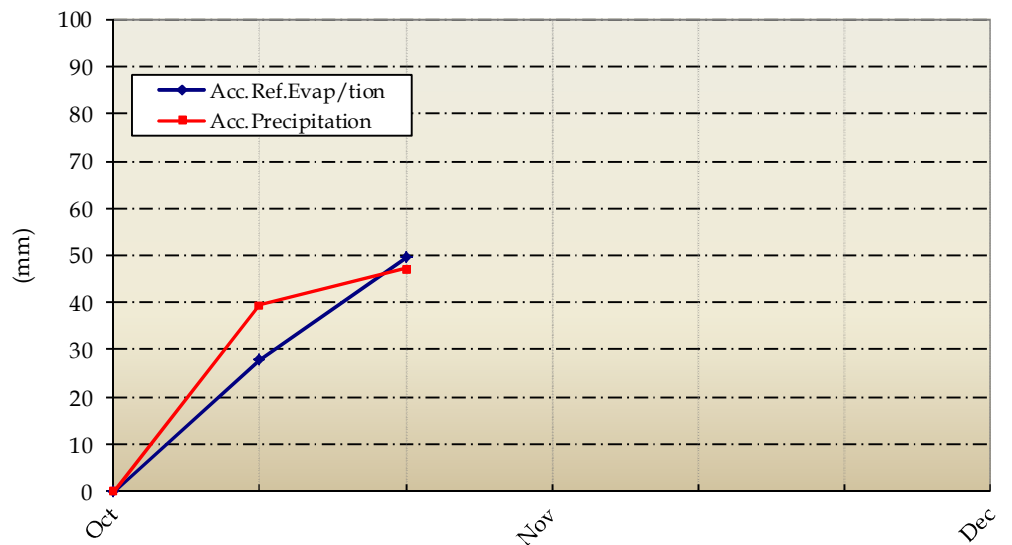
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/10/2015)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.0	24.4	23.3	26.4	26.4	24.1	25.6	25.8	26.8	26.8	25.6	25.5	24.1
	Min	20.8	18.2	15.7	13.4	13.8	16.2	15.8	18.0	17.4	19.4	16.9	14.7	13.2
Relative Humidity	Max	90	83	83	84	88	90	88	88	86	89	87	90	-
	Min	47	46	49	33	45	55	57	60	46	53	49	48	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	19.8	18.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	23.1	21.5
Sunshine Duration		5.6	7.5	9.4	9.2	8.8	3.1	3.7	2.6	8.3	5.4	6.4	8.1	7.1
Precipitation		7.7										7.7		23.9
Evaporation		1.4	4.0	2.0	4.0	3.0	2.0	3.0	1.3	0.7	2.2	23.6	-	36.4
Growing Degrees	5	18.4	16.3	14.5	14.9	15.1	15.2	15.7	16.9	17.1	18.1	162.2	151.0	136.6
	10	13.4	11.3	9.5	9.9	10.1	10.2	10.7	11.9	12.1	13.1	112.2	101.0	86.6

2nd 10-day period (11-20/10/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	21.8	22.8	22.5
Precipitation - Reference Evapotranspiration	-14.1	-22.8	1.4
Number of Rainy Days	1.0	0.0	2.6
Number of Dry Days	0.0	12.0	-

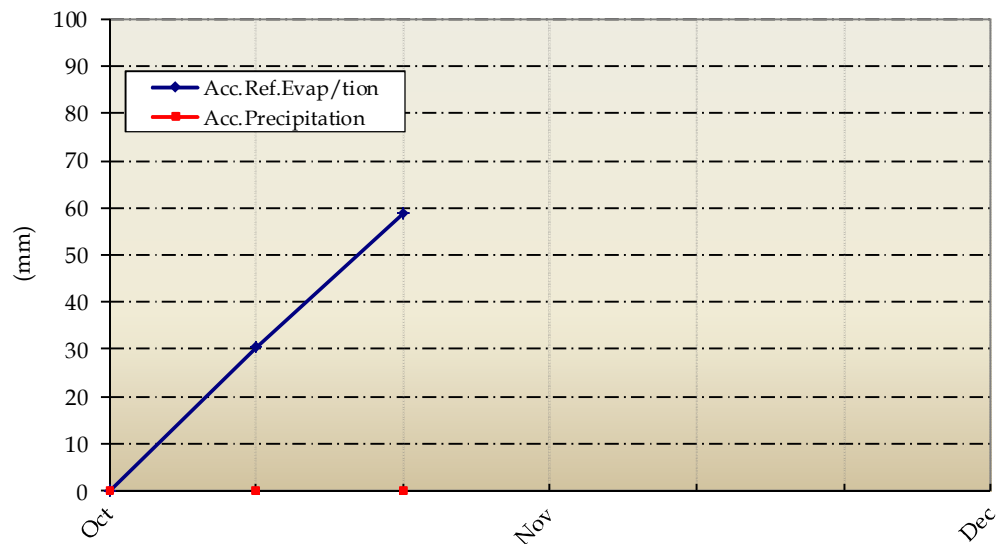
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/10/2015)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.2	26.0	25.0	25.0	24.0	23.6	24.2	24.0	24.8	31.6	25.6	25.1	24.0
	Min	20.4	22.2	20.0	18.6	17.0	19.0	18.6	17.0	17.4	19.0	18.9	18.9	17.1
Relative Humidity	Max	86	90	81	84	83	82	91	93	92	80	86	78	-
	Min	37	58	59	61	60	66	66	74	54	38	57	50	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		7.7	6.7	9.0	8.0	8.3	6.9	5.0	7.2	8.2	7.9	7.5	7.8	6.5
Precipitation		0.0			0.0						0.0	0.0		12.5
Evaporation		2.9	3.4	5.0	2.3	4.3	2.3	3.1	1.3	3.3	5.1	33.0	41.9	49.3
Growing Degrees	5	19.3	19.1	17.5	16.8	15.5	16.3	16.4	15.5	16.1	20.3	172.8	170.0	155.9
	10	14.3	14.1	12.5	11.8	10.5	11.3	11.4	10.5	11.1	15.3	122.8	120.0	105.9

2nd 10-day period (11-20/10/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	28.4	33.3	-
Precipitation - Reference Evapotranspiration	-28.4	-33.3	12.5
Number of Rainy Days	0.0	0.0	1.7
Number of Dry Days	20.0	22.0	-

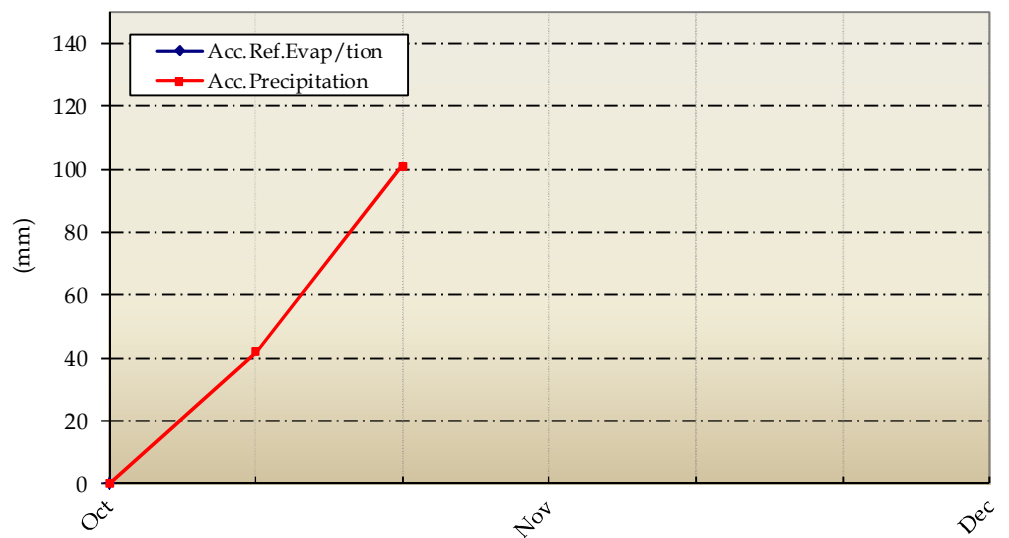
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/10/2015)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.4	20.4	21.0	22.7	23.9	18.2	21.2	21.6	23.7	23.7	22.0	23.6	20.6
	Min	14.8	12.9	7.1	5.5	7.0	13.1	12.8	12.1	12.4	10.8	10.8	9.8	8.9
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	100	100	97	-
	Min	51	63	38	39	45	70	70	67	52	61	56	47	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	14.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	16.3
Sunshine Duration		4.9	5.5	6.3	7.9	6.8	0.2	1.9	1.0	4.6	4.7	4.4	5.7	5.3
Precipitation		33.6	5.9		0.0		16.1	3.5	0.1		0.0	59.2		37.1
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	30.1
Growing Degrees	5	14.1	11.7	9.1	9.1	10.5	10.7	12.0	11.9	13.1	12.3	114.2	116.9	98.7
	10	9.1	6.7	4.1	4.1	5.5	5.7	7.0	6.9	8.1	7.3	64.2	66.9	49.1

2nd 10-day period (11-20/10/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	15.0	17.6
Precipitation - Reference Evapotranspiration	-	-15.0	19.5
Number of Rainy Days	5.0	0.0	3.4
Number of Dry Days	0.0	13.0	-

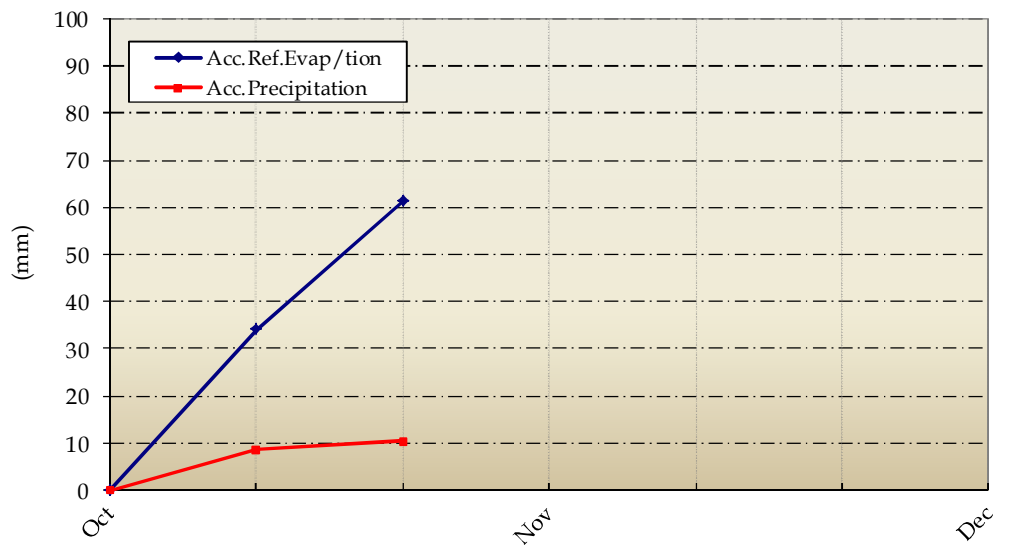
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/10/2015)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.1	27.2	26.9	25.9	26.2	26.5	26.1	27.1	27.7	28.5	27.0	26.6	24.7
	Min	18.6	16.1	13.7	11.6	14.0	14.8	14.1	17.6	15.2	17.8	15.4	14.8	13.1
Relative Humidity	Max	89	92	89	90	92	93	93	92	94	92	92	92	-
	Min	48	33	29	43	42	50	46	53	44	57	44	46	-
Soil Temperature at 10 cm	06 UTC	22.0	21.6	21.2	20.4	20.6	20.6	20.5	21.6	21.4	21.4	21.1	20.6	18.6
	12 UTC	22.6	22.5	21.8	21.2	21.8	21.5	21.6	21.6	22.0	22.0	21.9	21.6	20.9
Sunshine Duration		6.0	8.9	10.1	9.8	9.9	4.5	9.0	6.3	8.5	5.0	7.8	8.7	6.8
Precipitation		1.9					0.0				0.0	1.9	20.1	24.4
Evaporation		11.4	6.1	6.1	6.2	2.1	2.8	5.4	3.3	5.8	3.6	52.8	-	39.0
Growing Degrees	5	18.4	16.7	15.3	13.8	15.1	15.7	15.1	17.4	16.5	18.2	161.9	157.2	138.6
	10	13.4	11.7	10.3	8.8	10.1	10.7	10.1	12.4	11.5	13.2	111.9	107.2	88.6

2nd 10-day period (11-20/10/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	27.2	27.8	24.3
Precipitation - Reference Evapotranspiration	-25.3	-7.7	0.1
Number of Rainy Days	1.0	2.0	2.7
Number of Dry Days	0.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

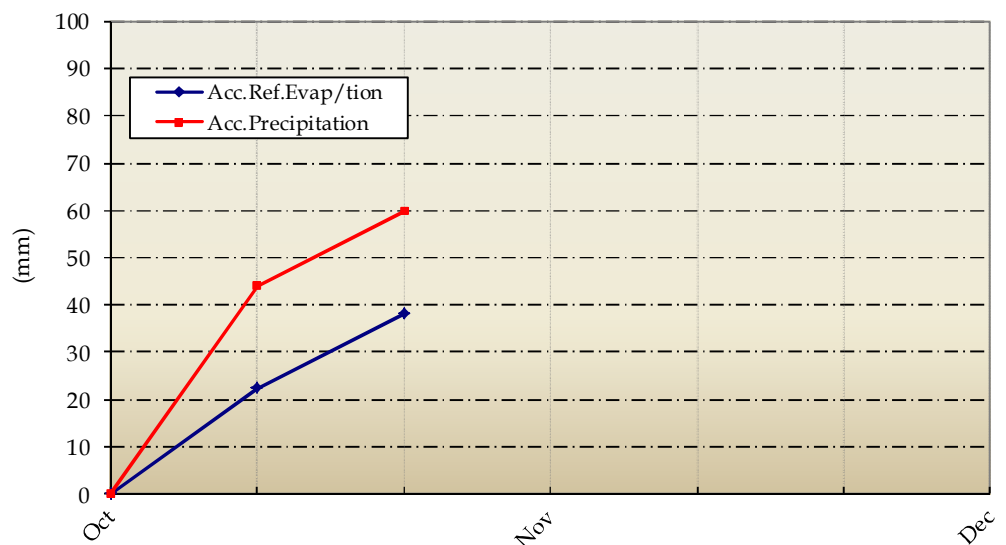


Larisa

2nd 10-day period (11-20/10/2015)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.6	26.6	24.0	21.8	20.8	18.8	21.4	20.6	23.6	24.6	22.9	25.8	23.0
	Min	16.5	15.0	10.8	12.7	15.8	15.0	16.0	16.5	17.3	17.0	15.3	12.6	10.1
Relative Humidity	Max	100	100	100	100	97	100	100	100	100	100	100	97	-
	Min	54	32	44	63	66	78	64	71	58	57	59	40	-
Soil Temperature at 10 cm	06 UTC	21.0	21.2	17.2	20.2	20.4	20.4	20.0	20.2	20.2	20.4	20.1	-	17.2
	12 UTC	20.8	21.2	20.4	20.2	20.2	20.2	20.0	19.8	20.4	20.6	20.4	-	18.6
Sunshine Duration		5.7	9.0	7.5	0.0	0.9	0.0	0.0	0.0	1.8	1.9	2.7	5.9	5.6
Precipitation		14.6					1.1					15.7	3.3	14.1
Evaporation		1.4	0.7	5.0	2.1	2.2	0.0	1.1	1.0	1.6	1.6	16.7	35.9	31.3
Growing Degrees	5	16.6	15.8	12.4	12.3	13.3	11.9	13.7	13.6	15.5	15.8	140.7	141.6	115.6
	10	11.6	10.8	7.4	7.3	8.3	6.9	8.7	8.6	10.5	10.8	90.7	91.6	65.8

2nd 10-day period (11-20/10/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	15.9	22.5	20.6
Precipitation - Reference Evapotranspiration	-0.2	-19.2	-6.5
Number of Rainy Days	2.0	1.0	2.4
Number of Dry Days	0.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

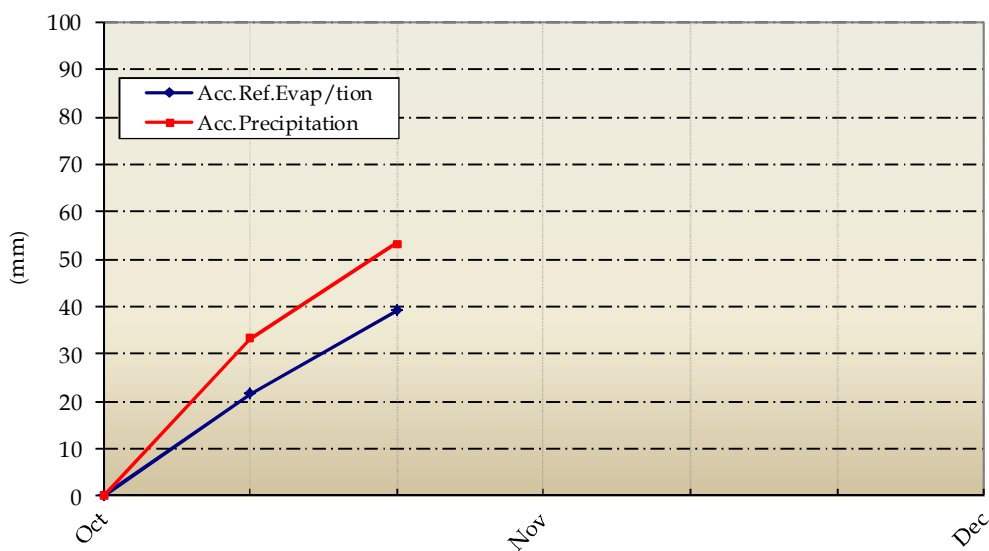


Mikra

2nd 10-day period (11-20/10/2015)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.2	24.6	23.2	21.0	21.2	19.8	20.4	21.6	22.6	22.8	22.1	23.1	21.6
	Min	16.6	16.4	16.0	16.0	16.4	14.4	14.4	17.6	18.2	15.7	16.2	14.0	11.6
Relative Humidity	Max	94	96	82	86	88	94	92	92	94	94	91	88	-
	Min	61	60	52	60	61	67	72	64	63	71	63	53	-
Soil Temperature at 10 cm	06 UTC	19.4	19.4	18.6	19.0	19.0	17.8	18.0	19.2	19.8	18.8	18.9	18.5	16.5
	12 UTC	19.6	22.0	20.4	19.5	20.4	19.2	19.6	20.2	20.8	20.4	20.2	21.6	19.4
Sunshine Duration		4.0	6.7	9.2	0.4	0.8	2.7	0.0	3.6	3.4	4.5	3.5	5.9	5.3
Precipitation		18.5					1.5					20.0		13.0
Evaporation		3.2	5.2	1.4	1.6	1.9	1.9	0.3	3.6	3.1	3.7	25.9	31.7	31.8
Growing Degrees	5	15.4	15.5	14.6	13.5	13.8	12.1	12.4	14.6	15.4	14.3	141.6	135.9	116.2
	10	10.4	10.5	9.6	8.5	8.8	7.1	7.4	9.6	10.4	9.3	91.6	85.9	66.2

2nd 10-day period (11-20/10/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	17.5	20.7	20.4
Precipitation - Reference Evapotranspiration	2.5	-20.7	-7.4
Number of Rainy Days	2.0	0.0	2.0
Number of Dry Days	0.0	12.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



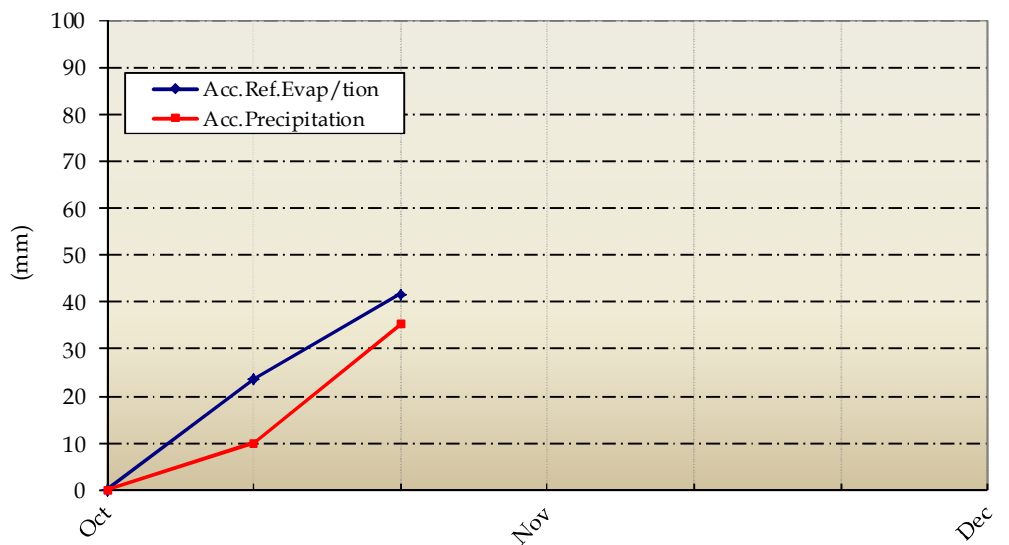


Tanagra

2nd 10-day period (11-20/10/2015)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.6	26.6	22.5	21.8	22.2	20.0	22.4	21.8	23.2	23.8	23.0	25.4	22.8
	Min	19.1	17.3	14.4	13.7	12.0	12.9	12.2	13.8	16.0	14.0	14.5	14.2	12.0
Relative Humidity	Max	100	83	99	100	98	98	100	100	100	100	98	88	-
	Min	60	34	43	50	53	13	58	62	58	63	49	36	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		1.0	8.6	9.3	8.0	6.6	2.2	6.3	0.4	7.2	4.0	5.4	7.7	
Precipitation		25.2										25.2		11.3
Evaporation		3.0	6.0	3.0	2.5	2.2	2.3	1.5	2.0	3.0	1.0	26.5	-	
Growing Degrees	5	17.4	17.0	13.5	12.8	12.1	11.5	12.3	12.8	14.6	13.9	137.7	147.9	
	10	12.4	12.0	8.5	7.8	7.1	6.5	7.3	7.8	9.6	8.9	87.7	97.9	

2nd 10-day period (11-20/10/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	18.1	24.5	
Precipitation - Reference Evapotranspiration	7.1	-24.5	11.3
Number of Rainy Days	1.0	0.0	2.5
Number of Dry Days	0.0	13.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

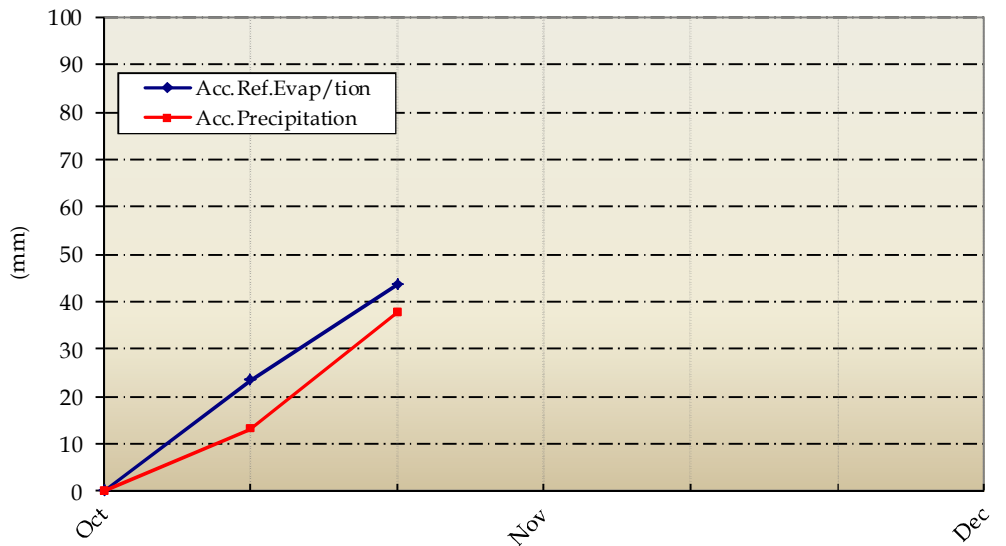


Tripoli

2nd 10-day period (11-20/10/2015)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.3	21.9	23.4	22.3	22.4	21.5	25.2	23.9	22.9	23.6	23.0	24.6	21.3
	Min	14.4	14.2	7.1	7.2	10.3	9.8	9.5	11.2	14.2	13.3	11.1	8.9	8.2
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	100	100	98	-
	Min	53	39	34	51	37	56	44	44	56	61	48	32	-
Soil Temperature at 10 cm	06 UTC	17.8	17.6	15.6	15.4	16.6	16.2	-	17.2	18.2	18.2	17.0	15.9	15.5
	12 UTC	-	19.8	19.4	18.8	19.4	18.2	-	-	20.6	19.4	19.4	19.8	17.2
Sunshine Duration		5.6	8.3	9.6	9.5	9.1	5.3	6.6	4.8	6.0	2.3	6.7	7.0	6.8
Precipitation		22.9	1.6					0.1				24.6		15.9
Evaporation		3.4	4.0	2.5	1.8	2.9	-	-	2.1	2.3	1.6	-	-	28.1
Growing Degrees	5	13.9	13.1	10.3	9.8	11.4	10.7	12.4	12.6	13.6	13.5	120.8	117.6	97.5
	10	8.9	8.1	5.3	4.8	6.4	5.7	7.4	7.6	8.6	8.5	70.8	67.6	48.2

2nd 10-day period (11-20/10/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	20.2	22.0	21.4
Precipitation - Reference Evapotranspiration	4.4	-22.0	-5.5
Number of Rainy Days	3.0	0.0	2.7
Number of Dry Days	0.0	12.0	-

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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