



# AGROMETEOROLOGICAL BULLETIN

## The Weather of July 1989

### Summary

*1st- 24th* : High pressure dominant ; mostly dry, bright and very warm.  
*25th- end* : Unsettled and cooler most rain in northwest  
*Month* : Dry , bright and warm.

### Meteorological Situation

A retreating trough on 1st was replaced by a Scandinavian / Azores high extending across Ireland. Settled warm weather ensued. Pressure declining on the Scandinavian side, low pressure drifted up over Britain from Biscay and thundery outbreaks or rain occurred over Ireland in a north to northeast airflow. The Atlantic ridge returned on 9th but was followed by weak troughs from 10th to 12th. During this time the Azores high had drifted northwards in the Atlantic and circulating humid air gave mist and drizzle in the northwest to 14th. High pressure became prominent subsequently giving a settled and very warm to hot spell of weather to 24th. Drought conditions occurred nationwide although some thundery activity occurred on 19th and 21st from a trough off the west. As the high moved into Europe weak Atlantic troughs which affected northwestern areas finally crossed the country on 25th bringing cooler conditions. Pressure having declined , a westerly airflow developed. As unsettled conditions set in , frontal systems were more active in the north and west than in the south and east.

### Precipitation

Amounts were very low in all areas except perhaps in the north . Values varied from 12 % of normal at Kilkenny and Dublin Airport to 71 % at Malin Head. Rain was heavy and thundery in southern areas on 6th / 7th and was widespread on 10th, 20th / 21st , 25th , and 29th to 31st . Soil moisture deficits were high throughout the month, having reached 59mm in the southwest and 105mm in the east by the end of the month and causing widespread drought. Weather conditions favouring potato blight were largely absent . Minor blight spells occurred on 14th/15th, 17th and 25th and more frequently in coastal areas.

### Sunshine and Radiation

Bright sunshine hours were well above normal almost everywhere , varying from 202 % of normal at Clones to 114 % at Belmullet. Global radiation varied from 129% of normal at Dublin Airport to 117% of normal at Valentia.

### Temperature

Mean air temperature varied from 3.2°C above normal at Clones to 1.3°C at Malin Head . The mean maximum varied from 4.7°C above normal at Clones to 1.5°C above at Malin Head while the mean minimum varied from 2.0°C above normal at a number of stations to 1.2°C above at Malin Head. Hottest spell occurred from 16th to 24th.

### Wind

Strong winds were absent except in the final week of the month.

NOTE: The data contained in this bulletin are provisional . Some of the material in Table 1 will *Annual Sub.* be published in its final form in the monthly Weather Report; final values of Global Radiation at stations in Table 2 will be published in the annual Solar Radiation Observations *£ 20.00*

TABLE 1

JULY 1989

STATION	PERIOD	RAINFALL (mm)				TEMPERATURE (°C)														BRIGHT SUNSHINE		WIND				
		AMOUNT	% OF AVERAGE	RAIN DAYS	WET DAYS	AIR							GROUND				SOIL (10cm)			TOTAL NO. OF HOURS	% OF AVERAGE	MEAN SPEED (ms <sup>-1</sup> )	DAYS WITH GALE GUSTS	P.E. (PENMAN) (mm)		
						MEAN MAX.	MEAN MIN.	MEAN DAILY	DIFFERENCE FROM AVERAGE	LOWEST MIN.	DATE	DAYS WITH AIR FROST	DEGREE DAYS ABOVE 4.4°C	% OF AVERAGE	DEGREE DAYS ABOVE 10.0°C	% OF AVERAGE	LOWEST "GRASS-MIN"	DATE	DAYS WITH GROUND FROST						MEAN DAILY	DIFFERENCE FROM AVERAGE
Carlow (Oak Park) Co. Carlow	1-10	0.0	-	0	0	22.1	10.4	16.3	-	7.3	2	0	119	-	65	-	3.0	2	0	-	-	72.4	-	0.1	-	-
	11-20	1.6	-	2	1	25.6	13.1	19.3	-	11.0	10	0	149	-	93	-	7.4	10	0	-	-	97.4	-	0.6	-	-
	21-END	8.3	-	4	3	23.4	13.2	18.3	-	10.0	28	0	153	-	91	-	7.5	31	0	-	-	50.2	-	1.1	-	-
	MONTH	9.9	18	6	4	23.7	12.3	18.0	-	7.3	2	0	421	-	249	-	3.0	2	0	-	-	220.0	-	0.6	-	94
Shannon Airport Co. Clare	1-10	0.5	-	1	0	22.2	12.3	17.2	-	8.6	2	0	128	-	73	-	2.5	2	0	19.9	-	80.1	-	3.4	0	-
	11-20	0.6	-	2	0	24.9	14.6	19.7	-	11.8	16	0	153	-	97	-	7.5	16	0	22.5	-	82.4	-	3.8	0	-
	21-END	15.7	-	6	6	20.2	13.4	16.8	-	0.0	28	0	141	-	85	-	0.0	28	0	20.4	-	47.5	-	4.6	1	-
	MONTH	16.8	25	9	6	22.3	13.4	17.9	+2.4	0.0	28	0	422	119	254	145	0.0	28	0	20.9	+3.5	210.0	146	4.0	1	109
Cork Airport Co. Cork	1-10	0.5	-	1	0	21.0	11.8	16.4	-	8.2	2	0	120	-	64	-	4.4	2	0	20.1	-	89.8	-	5.1	2	-
	11-20	3.0	-	1	1	24.0	13.6	18.8	-	12.0	13	0	144	-	88	-	10.4	13	0	22.4	-	93.7	-	5.3	0	-
	21-END	8.5	-	5	2	21.8	13.7	17.7	-	11.1	31	0	147	-	85	-	7.5	23	0	20.3	-	70.4	-	5.3	0	-
	MONTH	12.0	16	7	3	22.2	13.1	17.7	+2.9	8.2	2	0	411	125	238	160	4.4	2	0	20.9	+4.3	253.9	152	5.2	2	126
Fermoy (Coolnakilla) Co. Cork	1-10	0.0	-	0	0	20.6	8.8	14.7	-	-0.4	9	1	105	-	53	-	4.1	4	0	-	-	N/A	-	N/A	-	-
	11-20	18.0	-	1	1	24.2	12.5	18.3	-	10.0	13	0	139	-	83	-	6.2	14	0	-	-	N/A	-	N/A	-	-
	21-END	13.9	-	6	5	20.5	13.5	17.0	-	9.5	31	0	138	-	77	-	7.9	31	0	-	-	N/A	-	N/A	-	-
	MONTH	31.9	-	7	6	21.7	11.6	16.7	-	-0.4	9	1	383	-	213	-	4.1	4	0	-	-	N/A	-	N/A	-	N/A
Fermoy (Moore Park) Co. Cork	1-10	0.0	-	0	0	N/A	N/A	N/A	-	N/A	N/A	N/A	N/A	-	N/A	-	0.1	4	N/A	-	-	73.4	-	N/A	-	-
	11-20	1.5	-	1	1	25.5	12.6	19.1	-	10.2	17	0	147	-	91	-	4.9	13	0	-	-	93.5	-	N/A	-	-
	21-END	6.9	-	6	3	23.6	13.0	18.3	-	8.5	31	0	153	-	92	-	3.0	31	0	-	-	63.3	-	N/A	-	-
	MONTH	8.4	14	7	4	N/A	N/A	N/A	-	N/A	N/A	N/A	N/A	-	N/A	-	0.1	4	N/A	-	-	230.2	-	N/A	-	N/A
Roches Point Co. Cork	1-10	14.0	-	2	1	20.6	12.8	16.7	-	9.8	2	0	123	-	67	-	7.1	2	0	19.2	-	91.3	-	5.3	2	-
	11-20	4.9	-	1	1	22.7	14.8	18.7	-	13.0	13	0	143	-	87	-	10.4	17	0	21.6	-	99.6	-	5.1	0	-
	21-END	9.5	-	2	2	21.6	14.7	18.2	-	12.1	31	0	152	-	90	-	10.4	31	0	19.9	-	73.9	-	5.2	0	-
	MONTH	28.4	47	5	4	21.6	14.1	17.9	+2.8	9.8	2	0	418	123	245	155	7.1	2	0	20.2	+3.1	264.8	152	5.2	2	127
Glencolumbkille Co. Donegal	1-10	8.9	-	3	1	18.4	10.9	14.6	-	8.5	2	0	102	-	47	-	4.5	2	0	-	-	N/A	-	2.4	-	-
	11-20	7.6	-	3	3	19.8	11.6	15.7	-	8.8	17	0	113	-	57	-	3.5	17	0	-	-	N/A	-	2.7	-	-
	21-END	39.6	-	9	7	19.9	12.8	16.4	-	10.4	31	0	132	-	70	-	6.5	23	0	-	-	N/A	-	3.4	-	-
	MONTH	56.1	-	15	11	19.4	11.8	15.6	-	8.5	2	0	347	-	174	-	3.5	17	0	-	-	N/A	-	2.8	-	N/A

NOTES ON THE TABLES IN JANUARY ISSUE

TABLE 1 (CONTINUED)

JULY 1989

STATION	PERIOD	RAINFALL (mm)				TEMPERATURE (°C)														BRIGHT SUNSHINE		WIND														
		AMOUNT	% OF AVERAGE	RAIN DAYS	WET DAYS	AIR							GROUND				SOIL (10cm)			TOTAL NO. OF HOURS	% OF AVERAGE	MEAN SPEED (ms <sup>-1</sup> )	DAYS WITH GALE GUSTS	P.E. (PENMAN) (mm)												
						MEAN MAX.	MEAN MIN.	MEAN DAILY	DIFFERENCE FROM AVERAGE	LOWEST MIN.	DATE	DAYS WITH AIR FROST	DEGREE DAYS ABOVE 4.4°C	% OF AVERAGE	DEGREE DAYS ABOVE 10.0°C	% OF AVERAGE	LOWEST "GRASS-MIN"	DATE	DAYS WITH GROUND FROST						MEAN DAILY	DIFFERENCE FROM AVERAGE										
Glenties Co. Donegal	1-10	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	11-20	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	21-END	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	MONTH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Malin Head <sup>e</sup> Co. Donegal	1-10	13.5	-	3	3	16.4	12.1	14.3	-	11.2	5	0	99	-	43	-	7.8	3	0	18.6	-	71.4	-	4.4	0	-	-	-	-	-	-	-	-	-	-	
	11-20	3.6	-	5	2	16.6	12.0	14.3	-	8.9	18	0	99	-	43	-	6.8	18	0	18.3	-	43.7	-	5.7	2	-	-	-	-	-	-	-	-	-	-	
	21-END	39.3	-	8	8	19.3	13.6	16.5	-	11.5	30	0	133	-	71	-	9.8	31	0	18.2	-	48.7	-	6.9	4	-	-	-	-	-	-	-	-	-	-	
	MONTH	56.4	71	16	13	17.5	12.6	15.1	+1.3	8.9	18	0	330	109	157	130	6.8	18	0	18.4	+2.8	163.8	120	5.7	6	85	-	-	-	-	-	-	-	-	-	
Casement Aerodrome <sup>e</sup> Co. Dublin	1-10	1.7	-	1	1	21.2	10.5	15.9	-	6.8	3	0	115	-	60	-	4.6	3	0	18.8	-	74.0	-	3.0	0	-	-	-	-	-	-	-	-	-	-	
	11-20	1.5	-	2	1	24.4	12.6	18.5	-	9.9	11	0	141	-	85	-	7.3	11	0	21.6	-	107.7	-	3.8	0	-	-	-	-	-	-	-	-	-	-	-
	21-END	7.2	-	7	3	22.9	14.1	18.5	-	9.1	31	0	155	-	94	-	6.4	24	0	20.3	-	54.0	-	5.9	2	-	-	-	-	-	-	-	-	-	-	-
	MONTH	10.4	19	10	5	22.8	12.5	17.6	+2.7	6.8	3	0	411	121	239	148	4.6	3	0	20.2	-	235.7	155	4.3	2	114	-	-	-	-	-	-	-	-	-	
Dublin Airport <sup>e</sup> Co. Dublin	1-10	0.2	-	1	0	20.5	11.9	16.2	-	8.9	2	0	118	-	62	-	0.0	5	0	21.7	-	84.7	-	1.9	0	-	-	-	-	-	-	-	-	-	-	-
	11-20	1.7	-	1	1	23.3	12.4	17.8	-	0.0	11	0	135	-	81	-	7.7	11	0	24.6	-	110.3	-	2.4	0	-	-	-	-	-	-	-	-	-	-	-
	21-END	5.4	-	7	2	22.3	14.6	18.5	-	9.8	31	0	155	-	93	-	-51.0	21	1	22.3	-	111.7	-	3.1	0	-	-	-	-	-	-	-	-	-	-	-
	MONTH	7.3	12	9	3	22.0	13.0	17.5	+2.5	0.0	11	0	408	120	237	149	-51.0	21	1	22.8	+5.4	306.7	188	2.5	0	125	-	-	-	-	-	-	-	-	-	
Kinsealy Co. Dublin	1-10	2.1	-	1	1	20.5	10.6	15.5	-	7.7	3	0	111	-	57	-	-1.4	3	2	-	-	84.6	-	2.7	-	-	-	-	-	-	-	-	-	-	-	
	11-20	1.8	-	1	1	23.6	12.4	18.0	-	8.4	11	0	136	-	80	-	0.6	18	0	-	-	104.5	-	3.3	-	-	-	-	-	-	-	-	-	-	-	-
	21-END	5.1	-	5	2	22.2	13.4	17.8	-	8.3	29	0	147	-	86	-	2.0	31	0	-	-	52.8	-	3.7	-	-	-	-	-	-	-	-	-	-	-	-
	MONTH	9.0	16	7	4	22.1	12.2	17.1	-	7.7	3	0	394	-	223	-	-1.4	3	2	-	-	241.9	-	3.2	-	108	-	-	-	-	-	-	-	-	-	-
Galway <sup>e</sup> Co. Galway	1-10	1.1																																		
	11-20	2.2																																		
	21-END	15.1																																		
	MONTH	18.4																																		
Killarney (Muckross House) Co. Kerry	1-10	0.0	-	0	0	20.2	10.9	15.6	-	6.9	2	0	112	-	57	-	0.6	1	0	-	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	
	11-20	1.4	-	3	1	23.4	13.7	18.6	-	10.4	13	0	142	-	86	-	7.5	13	0	-	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	
	21-END	15.9	-	6	4	20.6	14.7	17.7	-	9.3	23	0	146	-	85	-	9.2	31	0	-	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	
	MONTH	17.3	20	9	5	21.4	13.2	17.3	-	6.9	2	0	399	-	227	-	0.6	1	0	-	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	

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TABLE 1 (CONTINUED)

JULY 1989

STATION	PERIOD	RAINFALL (mm)				TEMPERATURE (°C)														BRIGHT SUNSHINE		WIND				
		AMOUNT	% OF AVERAGE	RAIN DAYS	WET DAYS	AIR							GROUND			SOIL (10cm)				TOTAL NO. OF HOURS	% OF AVERAGE	MEAN SPEED (ms <sup>-1</sup> )	DAYS WITH GALE GUSTS	P.E. (PENMAN) (mm)		
						MEAN MAX.	MEAN MIN.	MEAN DAILY	DIFFERENCE FROM AVERAGE	LOWEST MIN.	DATE	DAYS WITH AIR FROST	DEGREE DAYS ABOVE 4.4°C	% OF AVERAGE	DEGREE DAYS ABOVE 10.0°C	% OF AVERAGE	LOWEST "GRASS-MIN"	DATE	DAYS WITH GROUND FROST						MEAN DAILY	DIFFERENCE FROM AVERAGE
Cahirciveen (Valentia Obsy.) Co. Kerry	1-10	0.7	-	1	0	19.3	11.4	15.3	-	8.0	2	0	109	-	54	-	6.0	2	0	18.6	-	63.1	-	3.6	0	-
	11-20	1.3	-	2	1	22.0	13.5	17.8	-	11.6	16	0	134	-	78	-	9.1	16	0	21.3	-	82.1	-	3.2	1	-
	21-END	22.9	-	8	6	20.4	14.9	17.7	-	10.2	23	0	146	-	84	-	7.9	23	0	19.3	-	42.6	-	5.0	0	-
	MONTH	24.9	29	11	7	20.6	13.3	17.0	+2.2	8.0	2	0	389	117	216	144	6.0	2	0	19.7	+2.6	187.8	130	4.0	1	93
Ardfert (Lis Cahane) Co. Kerry	1-10	0.9	-	2	0	19.5	10.6	15.1	-	6.2	2	0	107	-	53	-	3.4	2	0	-	-	N/A	-	-	-	-
	11-20	2.8	-	4	1	21.8	12.7	17.3	-	9.6	16	0	129	-	73	-	5.9	18	0	-	-	N/A	-	-	-	-
	21-END	25.1	-	8	6	21.0	14.1	17.5	-	10.9	23	0	145	-	83	-	5.9	23	0	-	-	N/A	-	-	-	-
	MONTH	28.8	-	14	7	20.8	12.5	16.7	-	6.2	2	0	360	-	208	-	3.4	2	0	-	-	N/A	-	-	-	-
Lullymore Co. Kildare	1-10	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	-	-	N/A	-	N/A	-	-
	11-20	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	-	-	N/A	-	N/A	-	-
	21-END	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	-	-	N/A	-	N/A	-	-
	MONTH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	-	-	N/A	-	N/A	-	N/A
Kilkenny Co. Kilkenny	1-10	0.4	-	1	0	22.4	10.8	16.6	-	6.5	2	0	122	-	68	-	3.7	2	0	19.7	-	73.6	-	2.4	0	-
	11-20	0.8	-	2	0	26.0	12.6	19.3	-	10.2	18	0	149	-	93	-	6.6	18	0	21.6	-	100.6	-	2.4	0	-
	21-END	5.8	-	4	3	23.7	13.1	18.4	-	9.5	23	0	154	-	93	-	5.3	23	0	20.9	-	59.2	-	2.9	0	-
	MONTH	7.0	12	7	3	24.0	12.2	18.1	+2.9	6.5	2	0	425	124	254	153	3.7	2	0	20.8	+2.8	233.4	160	2.6	0	111
Mooncoin (Silverspring) Co. Kilkenny	1-10	1.8	-	2	1	22.1	10.8	16.4	-	7.1	2	0	120	-	66	-	2.4	3	0	-	-	63.1	-	-	-	-
	11-20	3.0	-	1	1	25.1	12.3	18.7	-	8.9	18	0	143	-	87	-	3.9	18	0	-	-	91.1	-	-	-	-
	21-END	6.1	-	5	3	41.1	12.9	27.0	-	9.6	30	0	249	-	187	-	0.4	22	0	-	-	63.8	-	-	-	-
	MONTH	10.9	18	8	5	29.8	12.0	20.9	-	7.1	2	0	512	-	341	-	0.4	22	0	-	-	218.0	-	-	-	-
Ballinamore Co. Leitrim	1-10	0.8	-	1	0	22.3	9.9	16.1	-	5.1	3	0	117	-	64	-	-0.6	2	1	-	-	N/A	-	1.8	-	-
	11-20	1.3	-	2	1	24.5	11.3	17.9	-	7.1	11	0	135	-	80	-	3.4	16	0	-	-	N/A	-	2.2	-	-
	21-END	30.7	-	6	5	21.4	13.2	17.3	-	9.6	31	0	142	-	80	-	4.6	31	0	-	-	N/A	-	2.3	-	-
	MONTH	32.8	40	9	6	22.7	11.5	17.1	-	5.1	3	0	394	-	224	-	-0.6	2	1	-	-	N/A	-	2.1	-	N/A
Ardee (Boharnamoe) Co. Louth	1-10	0.0	-	0	0	22.4	8.4	15.4	-	5.1	3	0	110	-	59	-	3.0	3	0	-	-	-	-	-	-	-
	11-20	0.2	-	1	0	26.3	11.4	18.9	-	5.0	11	0	145	-	90	-	4.5	11	0	-	-	-	-	-	-	-
	21-END	12.7	-	4	4	23.8	12.3	18.0	-	8.7	31	0	150	-	89	-	7.0	27	0	-	-	-	-	-	-	-
	MONTH	12.9	20	5	4	24.1	10.8	17.4	-	5.0	11	0	404	-	238	-	3.0	3	0	-	-	-	-	-	-	-

NOTES ON THE TABLES IN JANUARY ISSUE

TABLE 1 (CONTINUED)

JULY 1989

STATION	PERIOD	RAINFALL (mm)				TEMPERATURE (°C)													BRIGHT SUNSHINE		WIND						
		AMOUNT	% OF AVERAGE	RAIN DAYS	WET DAYS	AIR							GROUND		SOIL (10cm)		TOTAL NO. OF HOURS	% OF AVERAGE	MEAN SPEED (ms <sup>-1</sup> )	DAYS WITH GALE GUSTS	P.E. (PENMAN) (mm)						
						MEAN MAX.	MEAN MIN.	MEAN DAILY	DIFFERENCE FROM AVERAGE	LOWEST MIN.	DATE	DAYS WITH AIR FROST	DEGREE DAYS ABOVE 4.4°C	% OF AVERAGE	DEGREE DAYS ABOVE 10.0°C	% OF AVERAGE						LOWEST "GRASS-MIN"	DATE	MEAN DAILY	DIFFERENCE FROM AVERAGE		
Ballinrobe (Creagh) Co. Mayo	1-10	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	N/A	-	N/A	-	N/A	-	-	-	-
	11-20	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	N/A	-	N/A	-	N/A	-	N/A	-	-
	21-END	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	N/A	-	N/A	-	N/A	-	N/A	-	-
	MONTH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	N/A	-	N/A	-	N/A	-	N/A	-	N/A
Belmullet Co. Mayo	1-10	3.1	-	2	1	18.0	11.3	14.7	-	6.0	2	0	103	-	48	-	3.3	2	0	17.8	-	61.3	-	4.5	0	-	-
	11-20	5.4	-	3	1	19.4	12.7	16.0	-	10.9	18	0	116	-	60	-	7.1	18	0	18.8	-	55.4	-	4.1	0	-	-
	21-END	16.1	-	7	6	19.1	13.7	16.4	-	11.6	31	0	132	-	70	-	9.4	23	0	18.6	-	42.9	-	6.2	1	-	-
	MONTH	24.6	34	12	8	18.8	12.6	15.7	+1.6	6.0	2	0	351	113	178	137	3.3	2	0	18.4	+2.0	159.6	114	5.0	1	82	-
Claremorris Co. Mayo	1-10	1.2	-	2	0	21.2	10.5	15.8	-	4.0	2	0	115	-	60	-	1.2	2	0	19.8	-	88.6	-	3.2	0	-	-
	11-20	3.2	-	2	1	23.8	12.1	18.0	-	9.3	17	0	136	-	80	-	6.5	17	0	21.5	-	72.5	-	2.8	0	-	-
	21-END	12.4	-	7	5	21.0	12.2	16.6	-	7.5	23	0	134	-	73	-	5.8	23	0	19.2	-	44.3	-	4.0	1	-	-
	MONTH	16.8	22	11	6	22.0	11.6	16.8	+2.5	4.0	2	0	384	121	213	152	1.2	2	0	20.1	+4.0	205.4	169	3.4	1	96	-
Glenamoy Co. Mayo	1-10	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	N/A	-	N/A	-	N/A	-	N/A	-	-
	11-20	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	N/A	-	N/A	-	N/A	-	N/A	-	-
	21-END	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	N/A	-	N/A	-	N/A	-	N/A	-	-
	MONTH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	N/A	-	N/A	-	N/A	-	N/A	-	N/A
Dunsany (Grange) Co. Meath	1-10	0.6	-	2	0	21.0	10.0	15.5	-	5.2	2	0	111	-	58	-	0.5	2	0	-	-	N/A	-	-	-	-	-
	11-20	0.6	-	2	0	24.6	11.5	18.1	-	6.4	11	0	137	-	82	-	1.0	11	0	-	-	N/A	-	-	-	-	-
	21-END	28.7	-	4	3	22.4	13.4	17.9	-	8.3	31	0	149	-	87	-	5.7	31	0	-	-	N/A	-	-	-	-	-
	MONTH	29.9	45	8	3	22.7	11.7	17.2	-	5.2	2	0	397	-	227	-	0.5	2	0	-	-	N/A	-	-	-	-	-
Clones Co. Monaghan	1-10	2.1	-	2	1	22.2	11.2	16.7	-	9.5	3	0	123	-	67	-	5.5	2	0	19.0	-	93.3	-	3.1	0	-	-
	11-20	0.3	-	1	0	24.6	12.2	18.4	-	8.3	11	0	140	-	85	-	1.2	11	0	20.8	-	106.2	-	3.5	0	-	-
	21-END	33.6	-	7	6	22.0	13.3	17.7	-	9.0	31	0	146	-	85	-	2.5	31	0	18.9	-	52.7	-	3.2	0	-	-
	MONTH	36.0	50	10	7	22.9	12.3	17.6	+3.2	8.3	11	0	409	128	236	166	1.2	11	0	19.5	+3.1	252.2	202	3.2	0	115	-
Birr Co. Offaly	1-10	0.1	-	0	0	22.3	10.2	16.3	-	3.7	2	0	119	-	65	-	0.6	2	0	19.9	-	72.5	-	1.6	0	-	-
	11-20	2.6	-	2	1	25.7	13.5	19.6	-	10.8	18	0	152	-	96	-	8.6	18	0	22.8	-	82.7	-	1.8	0	-	-
	21-END	9.6	-	6	3	22.4	13.6	18.0	-	11.2	23	0	149	-	88	-	7.2	23	0	20.8	-	46.0	-	2.6	0	-	-
	MONTH	12.3	18	8	4	23.4	12.5	17.9	+3.1	3.7	2	0	420	125	249	159	0.6	2	0	21.2	+3.8	201.2	149	2.0	0	98	-

NOTES ON THE TABLES IN JANUARY ISSUE

TABLE 1 (CONTINUED)

JULY 1989

STATION	PERIOD	RAINFALL (mm)				TEMPERATURE (°C)															BRIGHT SUNSHINE		WIND													
		AMOUNT	% OF AVERAGE	RAIN DAYS	WET DAYS	AIR					GROUND					SOIL (10cm)					TOTAL NO. OF HOURS	% OF AVERAGE	MEAN SPEED (ms <sup>-1</sup> )	DAYS WITH GALE GUSTS	P.E. (PENMAN) (mm)											
						MEAN MAX.	MEAN MIN.	MEAN DAILY	DIFFERENCE FROM AVERAGE	LOWEST MIN.	DATE	DAYS WITH AIR FROST	DEGREE DAYS ABOVE 4.4°C	% OF AVERAGE	DEGREE DAYS ABOVE 10.0°C	% OF AVERAGE	LOWEST "GRASS-MIN"	DATE	DAYS WITH GROUND FROST	MEAN DAILY						DIFFERENCE FROM AVERAGE										
Dundrum (Knockavilla) Co. Tipperary	1-10	0.0	-	0	0	22.0	9.9	16.0	-	5.3	2	0	116	-	63	-	2.2	2	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	11-20	3.6	-	2	1	25.6	12.6	19.1	-	10.8	18	0	147	-	91	-	7.6	16	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	21-END	14.0	-	6	4	22.3	12.5	17.4	-	7.4	23	0	143	-	82	-	4.2	23	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	MONTH	17.6	-	8	5	23.3	11.7	17.5	-	5.3	2	0	405	-	236	-	2.2	2	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Dungarvan (Carriglea) Co. Waterford	1-10	0.6	-	2	0	23.0	11.2	17.1	-	6.4	3	0	127	-	73	-	-1.0	3	0	-	-	-	-	N/A	-	1.8	-	-	-	-	-	-	-	-		
	11-20	3.7	-	1	1	25.1	13.0	19.0	-	11.3	17	0	146	-	90	-	3.9	12	0	-	-	-	-	N/A	-	1.9	-	-	-	-	-	-	-	-	-	
	21-END	10.6	-	4	2	23.5	13.7	18.6	-	9.5	27	0	157	-	95	-	1.4	31	0	-	-	-	-	N/A	-	1.8	-	-	-	-	-	-	-	-	-	
	MONTH	14.9	22	7	3	23.9	12.7	18.3	-	6.4	3	0	430	-	258	-	-1.0	3	0	-	-	-	-	N/A	-	1.8	-	-	-	-	-	-	-	-	-	-
Mullingar Co. Westmeath	1-10	0.9	-	1	0	21.8	10.5	16.1	-	5.7	2	0	117	-	64	-	3.6	2	0	19.1	-	-	-	87.1	-	3.1	0	-	-	-	-	-	-	-	-	
	11-20	0.9	-	2	0	24.7	12.5	18.6	-	9.1	11	0	142	-	86	-	7.2	11	0	21.7	-	-	-	101.9	-	3.4	0	-	-	-	-	-	-	-	-	-
	21-END	21.0	-	7	5	21.6	13.0	17.3	-	10.2	31	0	142	-	81	-	8.4	31	0	19.6	-	-	-	55.5	-	4.0	2	-	-	-	-	-	-	-	-	-
	MONTH	22.8	32	10	5	22.7	12.0	17.4	+3.1	5.7	2	0	402	122	230	151	3.6	2	0	20.1	+3.4	-	-	244.5	177	3.5	2	112	-	-	-	-	-	-	-	-
J.F.K. Park Co. Wexford	1-10	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	N/A	-	N/A	-	N/A	N/A	N/A	-	-	-	-	N/A	-	N/A	-	-	-	-	-	-	-	-	-	
	11-20	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	N/A	-	N/A	-	N/A	N/A	N/A	-	-	-	-	N/A	-	N/A	-	-	-	-	-	-	-	-	-	-
	21-END	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	N/A	-	N/A	-	N/A	N/A	N/A	-	-	-	-	N/A	-	N/A	-	-	-	-	-	-	-	-	-	-
	MONTH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	N/A	-	N/A	-	N/A	N/A	N/A	-	-	-	-	N/A	-	N/A	-	-	-	-	-	-	-	-	-	-
Clonroche Co. Wexford	1-10	5.8	-	1	1	21.2	11.6	16.4	-	7.2	2	0	120	-	65	-	-0.5	2	2	-	-	-	-	73.3	-	1.4	-	-	-	-	-	-	-	-	-	
	11-20	0.0	-	0	0	24.5	14.2	19.4	-	12.2	18	0	150	-	94	-	3.5	19	0	-	-	-	-	100.0	-	1.4	-	-	-	-	-	-	-	-	-	
	21-END	5.6	-	5	4	22.8	14.3	18.5	-	9.6	31	0	155	-	94	-	1.7	31	0	-	-	-	-	74.2	-	1.6	-	-	-	-	-	-	-	-	-	
	MONTH	11.4	15	6	5	22.8	13.4	18.1	-	7.2	2	0	425	-	253	-	-0.5	2	2	-	-	-	-	247.5	-	1.5	-	-	-	-	-	-	-	-	-	-
Johnstown Castle Co. Wexford	1-10	10.1	-	3	2	20.0	12.3	16.1	-	8.7	3	0	117	-	62	-	2.7	3	0	-	-	-	-	53.6	-	1.3	-	-	-	-	-	-	-	-	-	
	11-20	1.2	-	1	1	23.3	13.3	18.3	-	11.3	19	0	139	-	83	-	8.2	15	0	-	-	-	-	97.1	-	1.2	-	-	-	-	-	-	-	-	-	
	21-END	9.2	-	4	3	22.0	13.7	17.8	-	9.0	31	0	148	-	86	-	0.7	31	0	-	-	-	-	57.4	-	1.5	-	-	-	-	-	-	-	-	-	
	MONTH	20.5	29	8	6	21.8	13.1	17.4	-	8.7	3	0	404	-	231	-	0.7	31	0	-	-	-	-	208.1	-	1.3	-	-	-	-	-	-	-	-	-	-
Rosslare Co. Wexford	1-10	14.8	-	3	2	17.9	13.2	15.5	-	11.0	10	0	111	-	55	-	6.5	3	0	18.4	-	-	-	69.3	-	5.2	1	-	-	-	-	-	-	-	-	
	11-20	0.3	-	1	0	20.9	14.4	17.6	-	12.8	13	0	132	-	76	-	7.6	19	0	21.8	-	-	-	106.8	-	3.6	0	-	-	-	-	-	-	-	-	
	21-END	7.7	-	3	2	21.2	14.4	17.8	-	8.7	31	0	148	-	86	-	6.3	31	0	21.3	-	-	-	73.5	-	4.6	1	-	-	-	-	-	-	-	-	
	MONTH	22.8	39	7	4	20.0	14.0	17.0	+1.9	8.7	31	0	391	116	218	140	6.3	31	0	20.5	+2.3	-	-	249.6	129	4.5	2	114	-	-	-	-	-	-		

NOTES ON THE TABLES IN JANUARY ISSUE

TABLE 2 GLOBAL RADIATION

STATION	PERIOD	AMOUNT MJ/m <sup>2</sup>
Malin Head Co. Donegal	1-10	N/A
	11-20	N/A
	21-end	N/A
	Month	
Dublin Airport Co. Dublin	1-10	215.78
	11-20	246.91
	21-end	179.24
	Month	641.93
Cahirciveen (Valentia Obs.) Co. Kerry	1-10	197.14
	11-20	225.43
	21-end	168.12
	Month	590.69
Kilkenny Co. Kilkenny	1-10	205.76
	11-20	234.29
	21-end	189.85
	Month	629.90
Belmullet Co. Mayo	1-10	171.03
	11-20	169.12
	21-end	150.13
	Month	490.28
Clones Co. Monaghan	1-10	221.58
	11-20	244.21
	21-end	164.65
	Month	630.64
Birr Co. Offaly	1-10	199.90
	11-20	220.00
	21-end	169.35
	Month	

Notes on the tables in January issue

TABLE 3 POTENTIAL EVAPOTRANSPIRATION (P.E.) AND SOIL MOISTURE

STATION	PERIOD	P.E. (mm)		SOIL MOISTURE (mm)	
		Amount	Deficit	Accumulated Deficit	Surplus
Carlow (Oak Park) Co. Carlow	1-10	26.5	20	71	
	11-20	39.4	20	91	
	21-end	39.6	4	95	
	Month	105.5	-	-	
Kinsealy Co. Dublin	1-10	38.3	25	81	
	11-20	52.7	21	102	
	21-end	41.0	3	105	
	Month	132.0	-	-	
Cahirciveen (Valentia Obs.) Co. Kerry	1-10	22.9	22	34	
	11-20	31.9	29	65	
	21-end	27.7	-	59	4
	Month	82.5	-	-	
Ballinamore Co. Leitrim	1-10	38.7	29	79	
	11-20	51.9	22	101	
	21-end	32.5	-	-	24
	Month	123.1	-	-	
Glenamoy Co. Mayo	1-10				
	11-20				
	21-end	N/A	N/A	N/A	N/A
	Month				
Johnstown Castle Co. Wexford	1-10	26.2	9	63	
	11-20	36.3	21	84	
	21-end	41.3	7	91	
	Month	103.8	-	-	

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TABLE 4 SOIL CLIMATE (MULLINGAR)

BARE SOIL TYPE	PERIOD	MEAN TEMPERATURE (°C at 100mm)			TEMPERATURE GRADIENT (to 200mm)	SOIL WATER POTENTIAL (hPa) (at depths)	
		Max.	Daily	Min.		75mm	200mm
		Peat	1-10	21.5	19.3	15.3	-1.22
11-20	23.7		21.6	17.7	-1.41	332.30	313.70
21-end	21.9		19.8	16.6	-0.23	259.27	276.27
Mineral	1-10	22.7	18.8	14.3	-1.13	498.30	470.50
	11-20	25.3	21.3	16.8	-1.36	799.70	776.90
	21-end	22.9	19.4	16.3	0.27	696.36	795.91

# PRECIPITATION VALUES FOR July 1989

MARKREE ( CO. SLIGO )					LETTERKENNY ( CO. DONEGAL )			
PERIOD	AMOUNT	% OF AVERAGE	RAIN DAYS NO.	WET DAYS NO.	AMOUNT	% OF AVERAGE	RAIN DAYS NO.	WET DAYS NO.
1 - 10	2.4		2	1	0.1		0	0
11 - 20	4.0		4	1	1.1		2	0
21 - END	24.7		9	7	25.5		8	7
MONTH	31.1	35	15	9	26.7	32	10	7

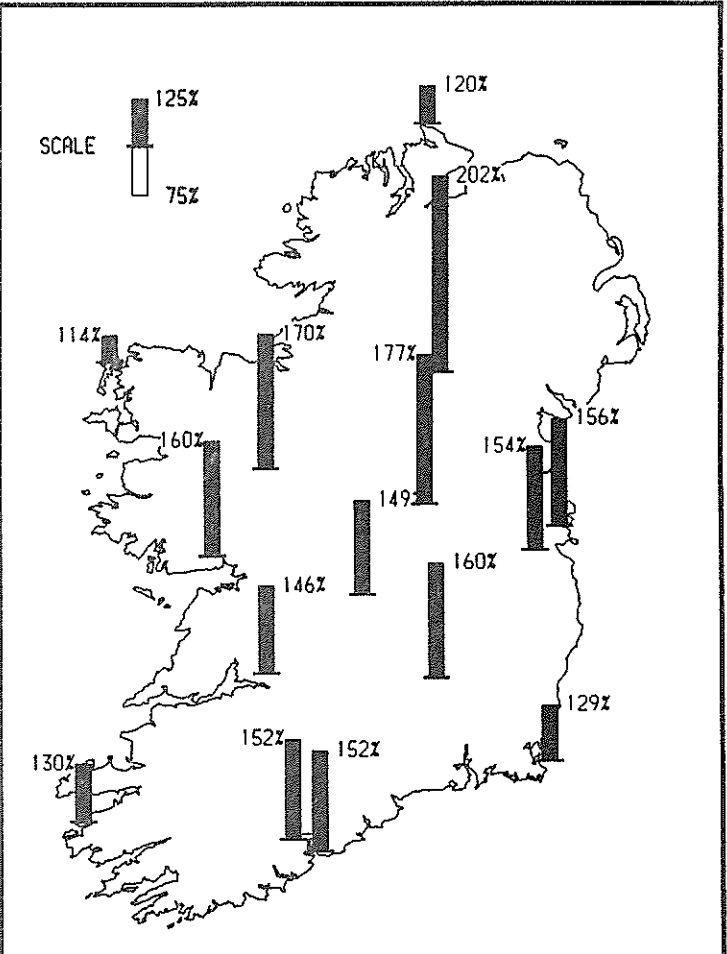
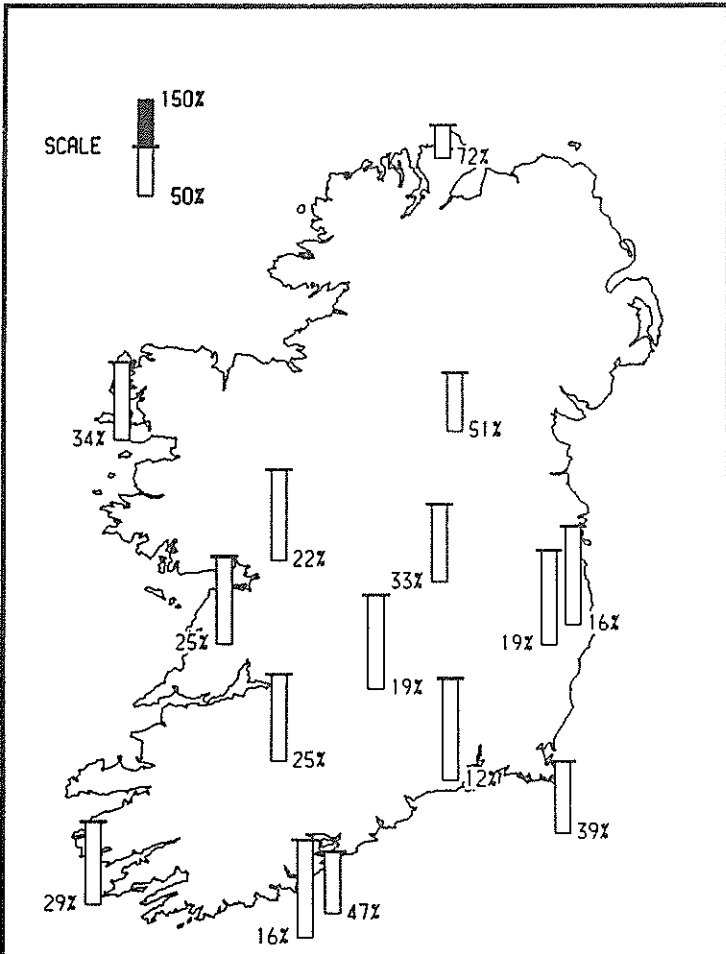
## Outlook for August 12th - 22rd

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Cool, windy and very unsettled with fast moving rainbelts or showers each day. Good drying between spells of rain . Rainfall amounts 20mm to 35mm. Ground conditions remaining firm with continuing high soil moisture deficit.

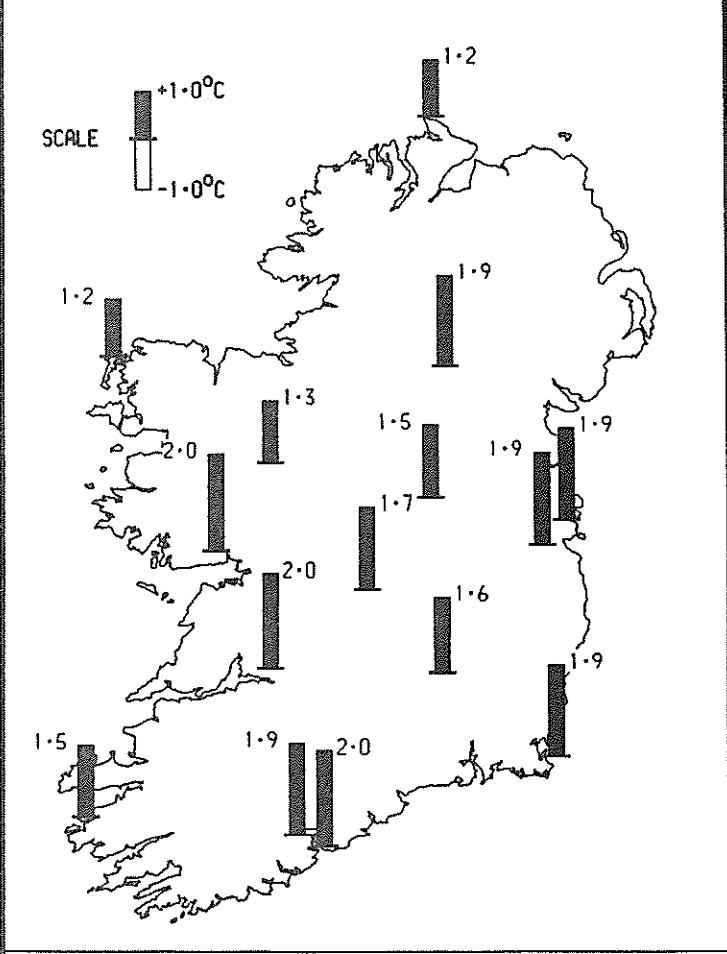
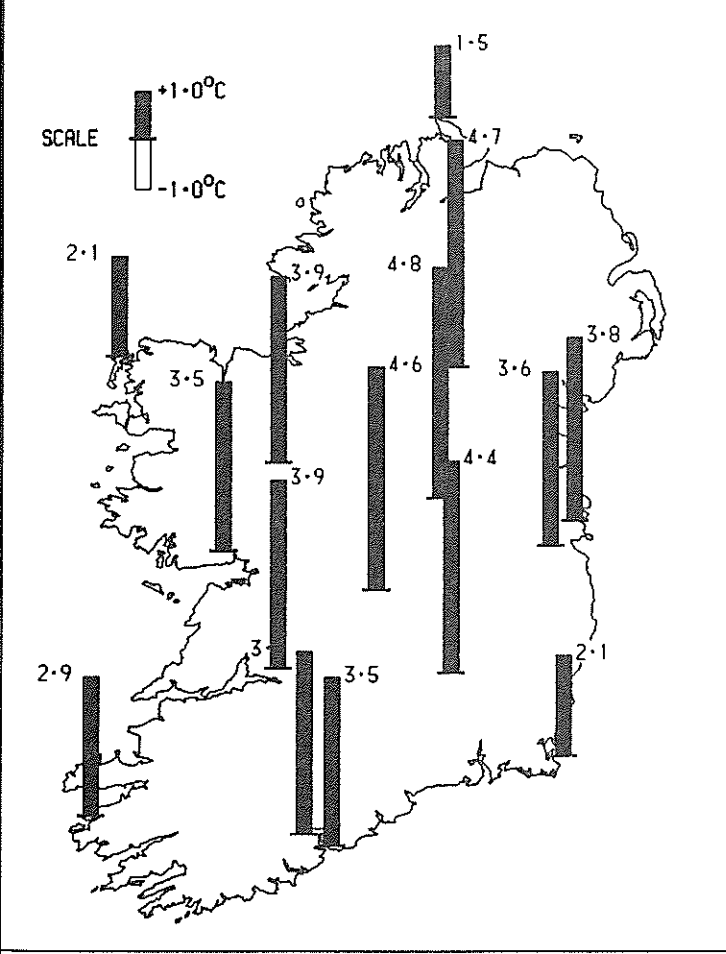


# Differences from average



RAINFALL (Percentage of 1951-1980 normals)

SUNSHINE (Percentage of 1951-1980 normals)



MEAN MAX. TEMPERATURE (Deviation from 1951-1980 normals)

MEAN MIN. TEMPERATURE (Deviation from 1951-1980 normals)

# SOIL MOISTURE DEFICIT

T. Keane, Meteorological Service

Soil loses its moisture by evaporation or evapotranspiration as well as through percolation and drainage. The process of transpiration requires a transport of water through plants which offers resistance to flow. A soil is said to be at field capacity when it contains all the moisture it can freely hold against gravity. Clearly this quantity varies with the soil characteristics such as pore size and the hydraulic conductivity.

Excessive moisture may lead to a state of saturation or even water-logging but after a low rainfall period the soil will return again to its field capacity state. Further evaporation, or where there is a crop cover, evapotranspiration, leads to a soil moisture deficit (SMD). If evapotranspiration continues to exceed incoming rainfall/irrigation the SMD will increase, whereas if excess rainfall occurs the SMD may be reduced or eliminated.

SMD is usually expressed in terms of depth of water in the same manner as rainfall amounts. The amount of rainfall needed to replenish the SMD can easily be calculated whereas if irrigation is undertaken, the volume of water required is estimated considering the area, e.g. to reduce a SMD by 25 mm over a hectare of ground requires an application of 250,000 litres of water.

Tillage is best undertaken when the soil is dry—the existence of a SMD makes for improved cultivation and good trafficability. While a moderate SMD in April is good for spring sowing conditions, a large SMD in April/May can lead to poor establishment and uneven emergence of crops. High SMD in June may not be unwelcome to those concerned with silage and hay making but excessively large soil moisture deficits in July and early August can inhibit the growth of many crops, especially the shallow rooted or bulking root crops, e.g. grass or potatoes. Again in August or September, a moderately large SMD leads to good harvesting conditions.

The following table shows the SMD at Oak Park measured by a Thornthwaite lysimeter from April to September, 1982 to 1989, compared with average. Except for a wet spell in June/early July, the soil conditions in 1982 proved to be near normal. During the 1983 season, a SMD build-up was late but became critically high in August. In 1984 the May values were very high and the SMD situation in July was the highest of the period. Deficits in 1985 were adequate until poor harvesting conditions set in during second half of July. The situation in 1986 was also poor except for a short spell in early June whereas in 1987 there were high values only in May. July to September 1988 proved to be very wet. While SMD values were low in April 1989 they reached a moderate to high level in May and became very high in July.

**Table: 10-day Interval Soil Moisture Deficit ( SMD ) at Oak Park , Carlow, 1982 - 1989**

Month	Date	YEAR								Average 1971 - 1989
		1982	1983	1984	1985	1986	1987	1988	1989	
April	10	0	0	0	0	10	0	17	0	7
	20	16	0	0	0	0	11	13	0	6
	30	38	0	28	15	12	30	31	4	22
May	10	43	0	58	5	0	55	15	25	15
	20	28	0	70	11	0	62	40	40	28
	31	37	16	76	14	2	63	25	68	28
June	10	16	12	67	20	22	30	13	62	30
	20	0	21	81	31	47	16	15	58	34
	30	0	50	98	35	0	15	30	51	40
July	10	11	81	95	63	3	37	0	71	62
	20	28	83	91	51	7	3	5	91	54
	31	63	95	107	0	24	26	0	95	53
August	10	79	104	74	0	0	46	4	-	45
	20	57	97	89	0	4	53	0	-	53
	31	61	49	94	0	9	39	2	-	39
September	10	72	40	95	0	28	0	0	-	31
	20	62	12	90	14	47	0	12	-	31
	30	20	7	58	22	57	0	0	-	20

Note: increasing SMD implies rainfall deficiency, reducing SMD rainfall excess, during given period(s); (-) not yet available