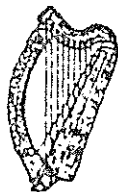


# METEOROLOGICAL SERVICE



## AGROMETEOROLOGICAL BULLETIN

SEPTEMBER 1983

### The Weather of September

In disturbed weather conditions, deep depressions affected the country on 2nd and 4th. In the wake of the first depression, whose centre crossed the country on the 2nd, strong northwest gale force winds with gusts of storm force developed on 2nd/3rd; strong southwest to west winds occurred with the 2nd depression on the 4th.

After the 4th the weather remained unsettled or changeable up to 23rd. There was a succession of troughs, northwesterly airflows and ridges giving variable daily sunshine amounts and frequent spells of rain or showers during the period. The spell as a whole was wet and rather cold. Driest interval occurred on 11th/12th when a ridge of high pressure dominated. Strong winds and squally showers were widespread on 18th.

A very mild and humid southerly airflow, associated with a slow moving trough to the southwest of Ireland, set in on the 23rd. With rising pressure through the trough, warm and brighter conditions gradually developed. High pressure dominated over the northwest of Europe and extended towards Ireland. Both nighttime minima and daytime maxima were several degrees above average. As pressure weakened cloudy, very humid and close weather with sporadic outbreaks of rain or drizzle and widespread mist or fog at night, affected the country to the end of the month.

Monthly Amounts of Precipitation were mostly normal or above normal and well above in the south and southwest; in the north, however, amounts were well below normal at some stations. Amounts varied from 160% of normal at Valentia to 67% at Malin Head. In general the weather was mainly dry at many stations after 22nd, apart from in the southwest and south. Wettest days were 2nd, 8th, 14th to 17th at most stations, and 22nd. Small soil moisture deficits still existed at some measuring stations in the midlands and east at the end of the month but for most places large surpluses were common up to 22nd.

Mean Monthly Air Temperature varied from 0.5C° below normal at Roche's Point and Belmullet to 0.4C° above at Shannon Airport. The middle 10-day period was coldest and the last warmest. Ground frost occurred on a number of nights and was most widespread on the 22nd. Degree day totals were also near average.

Mean Duration of Bright Sunshine was well below normal, varying from 59% of normal at Malin Head to 92% at Dublin Airport. Global radiation was 85-91% of average at those stations with long term records.

Gales were widespread from 2nd to 4th and 18th. Gale gusts were frequent from 1st to 5th, 10th/11th, 14th/19th, 22nd and 30th.

Summary Wet and dull, mean air temperatures were generally less than 0.5C° from normal. Last 10-days were warm and close and largely dry.

The data contained in this Bulletin are Provisional. Some of the material in Table 1 will be published in its final form later in the Monthly Weather Report; final values of Solar Radiation at stations in Table 2 will be published in the Annual Summary of Solar Radiation.

TABLE 1

SEPTEMBER 1983

STATION	PERIOD	RAINFALL (mm)				TEMPERATURE (°C)														BRIGHT SUNSHINE		WIND				
		AMOUNT	% OF AVERAGE	RAIN DAYS	WET DAYS	AIR							GROUND			SOIL (10cm)				MEAN DAILY (HRS.)	% 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	23.4	-	6	4	17.4	9.9	13.6	-	6.8	10	0	92	-	39	-	1.2	6	0	-	-	4.40	-	5.6	-	-
	11-20	49.9	-	7	7	15.3	9.1	12.2	-	7.4	11	0	78	-	25	-	4.8	14	0	-	-	3.17	-	4.8	-	-
	21-END	9.5	-	3	3	17.5	10.2	13.9	-	2.8	22	0	95	-	43	-	-2.0	22	1	-	-	2.11	-	3.4	-	-
	MONTH	82.8	108	16	14	16.7	9.8	13.2	-	2.8	22	0	265	-	106	-	-2.0	22	1	-	-	3.23	-	4.6	-	46
Shannon Airport e Co. Clare	1-10	35.6	-	7	5	17.2	11.0	14.1	-	7.8	10	0	97	-	42	-	5.0	10	0	14.7	-	3.49	-	6.7	5	-
	11-20	66.2	-	8	7	15.7	10.6	13.1	-	9.2	11	0	87	-	32	-	6.1	12	0	12.9	-	2.94	-	6.0	4	-
	21-END	4.3	-	3	1	18.0	12.3	15.1	-	6.2	22	0	107	-	53	-	3.6	22	0	14.6	-	2.29	-	4.4	2	-
	MONTH	106.1	122	18	13	17.0	11.3	14.1	+0.4	6.2	22	0	292	103	127	103	3.6	22	0	14.1	-0.5	2.91	74	5.7	11	50
Fermoy (Coolnakilla) Co. Cork	1-10	61.7	-	8	7	16.4	8.9	12.7	-	5.6	9	0	83	-	32	-	3.4	9	0	-	-	4.72	-	7.1	-	-
	11-20	59.2	-	9	9	14.7	7.6	11.1	-	4.0	18	0	67	-	18	-	0.9	18	0	-	-	4.05	-	5.5	-	-
	21-END	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A		N/A	N/A	-	N/A	-	-2.1	22	1	-	-	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	-	-2.1	22	1	-	-	N/A	-	N/A	-	N/A
Fermoy (Moore Park) Co. Cork	1-10	58.9	-	7	7	17.1	9.7	13.4	-	5.9	9	0	90	-	38	-	1.8	9	0	-	-	4.14	-	N/A	-	-
	11-20	41.1	-	9	7	15.6	8.7	12.2	-	4.9	20	0	78	-	26	-	1.0	20	0	-	-	3.57	-	N/A	-	-
	21-END	24.8	-	7	3	17.5	10.5	14.0	-	1.7	22	0	96	-	45	-	-1.2	22	1	-	-	1.48	-	2.3	-	-
	MONTH	124.8	137	23	17	16.7	9.6	13.2	-	1.7	22	0	264	-	108	-	-1.2	22	1	-	-	3.06	-	N/A	-	N/A
Mallow Co. Cork	1-10	54.3	-	7	6	17.2	9.0	13.1	-	6.5	1	0	87	-	35	-	1.7	1	0	-	-	3.66	-	-	-	-
	11-20	47.6	-	8	8	16.0	10.1	13.0	-	6.0	11	0	86	-	32	-	5.0	19	0	-	-	3.04	-	-	-	-
	21-END	30.4	-	8	2	16.8	9.9	13.4	-	2.0	23	0	90	-	39	-	-0.5	23	1	-	-	N/A	-	-	-	-
	MONTH	132.3	136	23	16	16.7	9.7	13.2	-	2.0	23	0	264	-	105	-	-0.5	23	1	-	-	N/A	-	-	-	-
Roches Point e Co. Cork	1-10	53.5	-	7	6	16.7	11.3	14.0	-	9.0	10	0	96	-	40	-	3.6	9	0	15.5	-	4.33	-	8.2	6	-
	11-20	46.7	-	9	9	15.5	10.2	12.8	-	8.3	11	0	84	-	29	-	5.5	18	0	13.5	-	4.12	-	7.9	6	-
	21-END	30.2	-	6	3	15.5	11.6	13.5	-	6.6	22	0	91	-	37	-	0.9	22	0	14.2	-	1.53	-	4.4	2	-
	MONTH	130.4	150	22	18	15.9	11.0	13.5	-0.5	6.6	22	0	272	97	107	92	0.9	22	0	14.4	-0.1	3.33	79	6.8	14	46
Glencolumbkille Co. Donegal	1-10	67.5	-	10	9	15.1	10.2	12.6	-	5.5	9	0	82	-	28	-	0.5	9	0	-	-	3.14	-	5.7	-	-
	11-20	63.9	-	10	9	13.5	9.1	11.3	-	5.5	13	0	69	-	16	-	1.8	13	0	-	-	1.62	-	4.8	-	-
	21-END	16.1	-	4	4	17.1	10.4	13.7	-	6.1	21	0	93	-	40	-	0.5	21	0	-	-	1.88	-	3.7	-	-
	MONTH	147.5	-	24	22	15.2	9.9	12.5	-	5.5	9	0	244	-	84	-	0.5	9	0	-	-	2.21	-	4.8	-	35

NOTES ON THE TABLES IN JANUARY ISSUE

TABLE 1 (CONTINUED)

SEPTEMBER 1983

STATION	PERIOD	RAINFALL (mm)				TEMPERATURE (°C)														BRIGHT SUNSHINE		WIND					
		AMOUNT	% OF AVERAGE	RAIN DAYS	WET DAYS	AIR							GROUND			SOIL (10cm)				MEAN DAILY (HRS.)	% 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	57.7	-	10	8	15.4	9.5	12.4	-	6.5	9	0	80	-	27	-	2.5	9	0	-	-	3.10	-	-	-	-	-
	11-20	80.5	-	9	9	13.7	8.6	11.1	-	5.3	13	0	67	-	16	-	2.0	13	0	-	-	1.10	-	-	-	-	-
	21-END	19.8	-	5	3	17.5	9.7	13.6	-	1.8	22	0	93	-	42	-	-0.8	22	1	-	-	2.08	-	-	-	-	-
	MONTH	158.0	103	24	20	15.5	9.2	12.4	-	1.8	22	0	240	-	85	-	-0.8	22	1	-	-	2.09	-	-	-	-	-
Malin Head Co. Donegal	1-10	32.4	-	10	6	15.7	10.2	12.9	-	6.2	7	0	85	-	31	-	2.9	7	0	14.1	-	3.35	-	10.5	6	-	-
	11-20	20.8	-	8	7	13.8	10.0	11.9	-	7.4	13	0	75	-	20	-	5.8	13	0	12.0	-	1.77	-	9.7	6	-	-
	21-END	15.7	-	6	5	16.3	10.8	13.5	-	6.0	21	0	91	-	38	-	2.6	22	0	13.0	-	1.66	-	7.7	4	-	-
	MONTH	68.9	67	24	18	15.3	10.3	12.8	-0.2	6.0	21	0	252	99	90	97	2.6	22	0	13.0	-0.1	2.26	59	9.3	16	51	-
Casement Aerodrome Co. Dublin	1-10	33.1	-	5	5	17.8	9.4	13.6	-	5.2	10	0	92	-	39	-	2.3	10	0	14.5	-	4.79	-	7.2	5	-	-
	11-20	51.6	-	9	8	15.1	9.0	12.0	-	7.2	13	0	76	-	23	-	2.1	13	0	12.0	-	2.85	-	7.5	5	-	-
	21-END	3.1	-	3	1	18.2	9.5	13.9	-	4.3	22	0	95	-	43	-	0.6	22	0	13.6	-	2.73	-	3.8	2	-	-
	MONTH	87.8	116	17	14	17.0	9.3	13.2	+0.2	4.3	22	0	263	103	106	103	0.6	22	0	13.4	-	3.46	86	6.2	12	52	-
Dublin Airport Co. Dublin	1-10	32.4	-	6	5	17.7	10.7	14.2	-	7.4	10	0	98	-	44	-	5.5	10	0	15.5	-	4.96	-	6.3	5	-	-
	11-20	37.2	-	8	7	15.2	9.4	12.3	-	8.6	12	0	79	-	25	-	5.3	13	0	12.8	-	3.45	-	6.1	3	-	-
	21-END	7.8	-	2	2	17.2	10.9	14.1	-	5.7	22	0	97	-	43	-	2.8	22	0	14.1	-	2.96	-	3.8	2	-	-
	MONTH	77.4	99	16	14	16.7	10.3	13.5	+0.3	5.7	22	0	274	103	111	103	2.8	22	0	14.1	+0.1	3.79	92	5.4	10	55	-
Kinsealy Co. Dublin	1-10	35.1	-	6	4	18.0	10.2	14.1	-	7.2	10	0	97	-	43	-	4.9	7	0	-	-	4.76	-	5.1	-	-	-
	11-20	42.0	-	9	7	15.6	8.9	12.2	-	6.9	13	0	78	-	25	-	4.1	13	0	-	-	3.29	-	4.2	-	-	-
	21-END	12.0	-	2	2	17.5	9.7	13.6	-	2.1	22	0	92	-	40	-	-0.6	22	1	-	-	2.77	-	3.1	-	-	-
	MONTH	89.1	120	17	13	17.0	9.6	13.3	-	2.1	22	0	267	-	108	-	-0.6	22	1	-	-	3.61	-	4.2	-	41	-
Galway Co. Galway	1-10	33.0	-	10	5	16.7	10.5	13.6	-	7.9	9	0	92	-	37	-	4.5	6	0	15.4	-	4.18	-	6.3	5	-	-
	11-20	68.9	-	9	9	15.0	10.2	12.6	-	8.4	20	0	82	-	26	-	6.9	13	0	13.5	-	2.90	-	6.1	3	-	-
	21-END	8.3	-	4	3	17.4	11.6	14.5	-	5.0	22	0	101	-	48	-	1.7	22	0	14.9	-	2.17	-	3.9	1	-	-
	MONTH	110.2	102	23	17	16.4	10.8	13.6	-0.0	5.0	22	0	276	-	112	-	1.7	22	0	14.6	-	3.08	80	5.4	9	44	-
Killarney (Muckross House) Co. Kerry	1-10	96.0	-	7	6	16.5	11.3	13.9	-	6.5	10	0	95	-	40	-	2.3	10	0	-	-	2.71	-	-	-	-	-
	11-20	92.5	-	9	8	15.3	10.4	12.9	-	7.3	11	0	85	-	30	-	2.5	12	0	-	-	2.73	-	-	-	-	-
	21-END	34.1	-	4	3	17.8	10.9	14.4	-	4.1	22	0	100	-	47	-	1.1	22	0	-	-	2.34	-	-	-	-	-
	MONTH	222.6	-	20	17	16.6	10.9	13.7	-	4.1	22	0	280	-	117	-	1.1	22	0	-	-	2.59	-	-	-	-	-

NOTES ON THE TABLES IN JANUARY ISSUE

TABLE 1 (CONTINUED)

SEPTEMBER 1983

STATION	PERIOD	RAINFALL (mm)				TEMPERATURE (°C)														BRIGHT SUNSHINE		WIND				
		AMOUNT	% OF AVERAGE	RAIN DAYS	WET DAYS	AIR							GROUND				SOIL (10cm)			MEAN DAILY (HRS.)	% 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	91.9	-	8	6	16.5	11.5	14.0	-	8.4	9	0	96	-	40	-	5.0	9	0	15.3	-	2.18	-	7.1	6	-
	11-20	85.2	-	9	9	15.4	10.9	13.2	-	9.7	20	0	88	-	32	-	5.8	12	0	13.7	-	2.65	-	6.9	6	-
	21-END	27.5	-	8	5	18.7	12.0	15.3	-	5.0	22	0	109	-	56	-	1.5	22	0	15.3	-	2.35	-	5.0	4	-
	MONTH	204.6	160	25	20	16.8	11.4	14.1	+0.1	5.0	22	0	292	104	127	108	1.5	22	0	14.8	+0.3	2.39	62	6.3	16	46
Ardfert (Liscahane) Co. Kerry	1-10	35.3	-	6	6	17.2	10.8	14.0	-	3.5	10	0	96	-	42	-	-0.5	10	1	-	-	3.10	-	-	-	-
	11-20	62.5	-	9	7	15.4	10.4	12.9	-	9.6	19	0	85	-	29	-	5.2	14	0	-	-	2.70	-	-	-	-
	21-END	7.2	-	4	4	18.4	10.9	14.7	-	4.9	21	0	103	-	50	-	-2.5	22	1	-	-	2.93	-	-	-	-
	MONTH	105.0	-	19	17	17.0	10.7	13.8	-	3.5	10	0	283	-	121	-	-2.5	22	2	-	-	2.91	-	-	-	-
Lullymore Co. Kildare	1-10	48.4	-	7	5	17.5	8.8	13.1	-	4.5	6	0	87	-	36	-	-3.2	6	3	-	-	4.20	-	5.7	-	-
	11-20	58.2	-	9	8	14.8	8.4	11.6	-	6.6	20	0	72	-	20	-	2.9	13	0	-	-	2.97	-	4.9	-	-
	21-END	3.8	-	3	2	17.6	9.8	13.7	-	1.6	22	0	94	-	42	-	-2.5	22	1	-	-	2.07	-	3.3	-	-
	MONTH	110.4	127	19	15	16.6	9.0	12.8	-	1.6	22	0	253	-	98	-	-3.2	6	4	-	-	3.08	-	4.7	-	39
Kilkenny Co. Kilkenny	1-10	26.4	-	7	6	17.9	9.5	13.7	-	5.8	9	0	93	-	40	-	1.1	9	0	15.1	-	4.52	-	4.8	5	-
	11-20	49.2	-	9	8	15.8	9.0	12.4	-	6.4	14	0	80	-	28	-	1.5	20	0	12.5	-	3.56	-	4.4	2	-
	21-END	14.5	-	2	2	17.3	10.7	14.0	-	1.7	22	0	96	-	45	-	-2.5	22	1	14.2	-	2.05	-	2.7	0	-
	MONTH	90.1	109	18	16	17.0	9.7	13.4	+0.2	1.7	22	0	269	106	112	108	-2.5	22	1	13.9	-0.2	3.38	88	4.0	7	43
Mooncoin (Silverspring) Co. Kilkenny	1-10	46.5	-	7	7	17.6	9.9	13.8	-	5.1	9	0	94	-	41	-	2.1	9	0	-	-	4.41	-	-	-	-
	11-20	34.0	-	6	5	16.2	9.3	12.7	-	6.4	20	0	83	-	30	-	1.5	20	0	-	-	4.23	-	-	-	-
	21-END	40.5	-	6	3	17.2	9.7	13.4	-	0.6	22	0	91	-	40	-	-0.9	22	1	-	-	2.01	-	-	-	-
	MONTH	121.0	129	19	15	17.0	9.6	13.3	-	0.6	22	0	268	-	111	-	-0.9	22	1	-	-	3.55	-	-	-	-
Ballinamore Co. Leitrim	1-10	49.6	-	9	5	16.6	9.2	12.9	-	6.1	6	0	85	-	33	-	1.4	10	0	-	-	4.03	-	3.9	-	-
	11-20	45.9	-	8	8	14.3	8.2	11.2	-	6.2	13	0	68	-	17	-	0.7	17	0	-	-	1.88	-	3.1	-	-
	21-END	22.1	-	5	2	17.1	9.4	13.3	-	0.2	22	0	90	-	40	-	-3.5	22	2	-	-	1.45	-	1.4	-	-
	MONTH	117.6	107	22	15	16.0	8.9	12.5	-	0.2	22	0	243	-	89	-	-3.5	22	2	-	-	2.45	-	2.8	-	30
Ardee (Boharnamoe) Co. Louth	1-10	26.5	-	5	5	18.3	9.5	13.9	-	6.1	10	0	95	-	43	-	5.0	10	0	-	-	-	-	-	-	-
	11-20	38.1	-	8	6	15.7	8.6	12.2	-	5.2	13	0	78	-	25	-	5.0	13	0	-	-	-	-	-	-	-
	21-END	15.3	-	3	2	N/A	10.9	N/A	-	6.0	21	0	N/A	-	N/A	-	5.2	21	0	-	-	-	-	-	-	-
	MONTH	79.9	-	16	13	N/A	9.7	N/A	-	5.2	13	0	N/A	-	N/A	-	5.0	10	0	-	-	-	-	-	-	-

NOTES ON THE TABLES IN JANUARY ISSUE

TABLE 1 (CONTINUED)

SEPTEMBER 1983

STATION	PERIOD	RAINFALL (mm)				TEMPERATURE (°C)														BRIGHT SUNSHINE		WIND				
		AMOUNT	% OF AVERAGE	RAIN DAYS	WET DAYS	AIR							GROUND				SOIL (10cm)			MEAN DAILY (HRS.)	% 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
Ballinrobe (Creagh) Co. Mayo	1-10	63.1	-	8	5	17.3	9.5	13.4	-	5.2	9	0	90	-	38	-	-3.9	9	2	-	-	4.57	-	4.4	-	-
	11-20	63.9	-	9	9	15.1	9.5	12.3	-	7.9	13	0	79	-	25	-	-1.6	13	1	-	-	2.32	-	3.6	-	-
	21-END	15.6	-	6	2	17.4	9.6	13.5	-	3.8	22	0	91	-	39	-	-4.6	22	3	-	-	1.41	-	2.6	-	-
	MONTH	142.6	110	23	16	16.6	9.5	13.1	-	3.8	22	0	260	-	102	-	-4.6	22	6	-	-	2.77	-	3.6	-	32
Belmullet Co. Mayo	1-10	55.4	-	7	6	16.1	10.1	13.1	-	4.6	9	0	87	-	33	-	0.4	9	0	15.0	-	3.98	-	8.0	6	-
	11-20	40.7	-	9	8	14.5	9.7	12.1	-	7.6	18	0	77	-	23	-	3.8	13	0	13.4	-	2.19	-	7.7	4	-
	21-END	15.5	-	5	3	16.8	10.4	13.6	-	5.1	22	0	92	-	40	-	0.6	22	0	14.0	-	1.68	-	5.3	2	-
	MONTH	111.6	103	21	17	15.8	10.1	12.9	-0.5	4.6	9	0	256	98	96	97	0.4	9	0	14.1	+0.3	2.62	64	7.0	12	43
Claremorris Co. Mayo	1-10	49.7	-	8	7	17.0	9.0	13.0	-	5.2	9	0	86	-	34	-	1.9	10	0	14.5	-	3.24	-	6.3	5	-
	11-20	57.3	-	9	8	14.9	8.6	11.7	-	6.1	13	0	73	-	21	-	2.6	13	0	12.5	-	1.70	-	5.8	2	-
	21-END	16.7	-	4	2	16.9	9.9	13.4	-	2.9	21	0	90	-	40	-	-1.5	22	1	13.6	-	1.40	-	4.3	1	-
	MONTH	123.7	109	21	17	16.3	9.1	12.7	+0.2	2.9	21	0	250	104	95	107	-1.5	22	1	13.5	+0.2	2.11	61	5.5	8	35
Glenamoy Co. Mayo	1-10	43.6	-	10	7	16.4	9.1	12.7	-	1.8	9	0	84	-	33	-	-0.5	9	1	-	-	3.81	-	5.4	-	-
	11-20	51.7	-	8	8	14.5	9.2	11.8	-	7.6	18	0	74	-	21	-	4.9	13	0	-	-	1.97	-	4.1	-	-
	21-END	14.1	-	7	2	17.3	10.2	13.8	-	2.5	22	0	94	-	43	-	0.0	21	0	-	-	1.85	-	4.0	-	-
	MONTH	109.4	82	25	17	16.1	9.5	12.8	-	1.8	9	0	253	-	96	-	-0.5	9	1	-	-	2.54	-	4.6	-	34
Dunsany (Grange) Co. Meath	1-10	41.2	-	7	4	17.1	9.2	13.1	-	4.7	6	0	87	-	36	-	-0.2	6	1	-	-	4.08	-	-	-	-
	11-20	42.5	-	9	7	14.3	8.6	11.5	-	7.0	20	0	71	-	18	-	2.3	13	0	-	-	3.19	-	-	-	-
	21-END	6.8	-	5	2	17.9	9.7	13.8	-	3.0	22	0	94	-	43	-	-2.5	22	1	-	-	2.05	-	-	-	-
	MONTH	90.5	109	21	13	16.4	9.2	12.8	-	3.0	22	0	252	-	97	-	-2.5	22	2	-	-	3.11	-	-	-	-
Clones Co. Monaghan	1-10	46.9	-	9	7	16.5	9.2	12.9	-	6.4	6	0	85	-	32	-	1.4	10	0	14.4	-	3.69	-	5.0	5	-
	11-20	49.4	-	8	8	14.3	8.5	11.4	-	6.0	13	0	70	-	18	-	2.0	13	0	12.6	-	2.50	-	4.2	3	-
	21-END	12.1	-	2	2	17.1	10.1	13.6	-	1.3	22	0	93	-	42	-	-5.1	22	1	13.4	-	1.95	-	2.5	0	-
	MONTH	108.4	120	19	17	16.0	9.3	12.6	+0.2	1.3	22	0	248	103	92	103	-5.1	22	1	13.5	+0.2	2.71	83	3.9	8	36
Birr Co. Offaly	1-10	34.3	-	9	5	17.0	9.4	13.2	-	6.1	9	0	88	-	35	-	1.7	9	0	14.9	-	4.05	-	5.0	4	-
	11-20	62.1	-	8	8	14.8	9.2	12.0	-	8.1	11	0	76	-	22	-	2.6	13	0	12.8	-	2.30	-	4.7	3	-
	21-END	5.0	-	4	2	17.7	10.6	14.2	-	4.0	22	0	98	-	46	-	-0.5	22	1	14.5	-	2.35	-	3.4	1	-
	MONTH	101.4	122	21	15	16.5	9.7	13.1	+0.0	4.0	22	0	262	102	103	101	-0.5	22	1	14.1	+0.1	2.90	75	4.4	8	40

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NOTES ON THE TABLES IN JANUARY ISSUE

TABLE 1 (CONTINUED)

SEPTEMBER 1983

STATION	PERIOD	RAINFALL (mm)				TEMPERATURE (°C)														BRIGHT SUNSHINE		WIND								
		AMOUNT	% OF AVERAGE	RAIN DAYS		AIR							GROUND				SOIL (10cm)			MEAN DAILY (HRS.)	% OF AVERAGE	MEAN SPEED (ms <sup>-1</sup> )	DAYS WITH GALE GUSTS	P.E. (PENMAN) (mm)						
				WET	DAYS	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				
																											MEAN DAILY	DIFFERENCE FROM AVERAGE	MEAN DAILY	DIFFERENCE FROM AVERAGE
Dundrum (Knockavilla) Co. Tipperary	1-10	64.1	-	7	7	16.9	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	N/A	N/A	N/A	-	-	-	-	-	-	-	-	-	-
	11-20	61.0	-	9	8	15.3	9.0	12.1	-	6.7	20	0	77	-	24	-	1.7	20	0	-	-	-	-	-	-	-	-	-	-	
	21-END	13.1	-	3	2	18.1	9.4	13.8	-	1.5	22	0	94	-	43	-	-1.2	22	1	-	-	-	-	-	-	-	-	-	-	
	MONTH	138.2	-	19	17	16.8	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	-	N/A	N/A	-	-	-	-	-	-	-	-	-	-	
Dungarvan (Carriglea) Co. Waterford	1-10	69.5	-	9	5	17.7	9.8	13.7	-	5.1	9	0	93	-	41	-	4.8	9	0	-	-	5.20	-	3.3	-	-	-	-	-	
	11-20	46.5	-	8	7	16.2	9.5	12.8	-	7.0	20	0	84	-	31	-	6.1	20	0	-	-	4.37	-	3.1	-	-	-	-	-	
	21-END	45.1	-	8	2	17.2	11.4	14.3	-	6.4	22	0	99	-	45	-	1.6	22	0	-	-	1.50	-	1.9	-	-	-	-	-	
	MONTH	161.1	155	25	14	17.0	10.2	13.6	-	5.1	9	0	277	-	116	-	1.6	22	0	-	-	3.69	-	2.8	-	37	-	-	-	
Mullingar Co. Westmeath	1-10	47.1	-	8	5	16.8	8.5	12.6	-	4.6	6	0	82	-	31	-	1.6	6	0	14.6	-	4.52	-	5.8	5	-	-	-	-	
	11-20	55.2	-	9	9	14.4	8.6	11.5	-	6.5	20	0	71	-	19	-	3.6	13	0	12.4	-	2.84	-	5.6	3	-	-	-	-	
	21-END	14.3	-	3	2	17.0	9.9	13.4	-	2.3	22	0	91	-	40	-	-0.2	22	1	13.7	-	2.37	-	4.3	0	-	-	-	-	
	MONTH	116.6	121	20	16	16.1	9.0	12.5	+0.2	2.3	22	0	244	99	90	94	-0.2	22	1	13.6	-0.0	3.24	86	5.2	8	40	-	-	-	
J.F.K. Park Co. Wexford	1-10	54.6	-	7	7	17.1	10.3	13.7	-	6.5	9	0	93	-	39	-	2.1	10	0	-	-	4.43	-	6.4	-	-	-	-	-	
	11-20	35.1	-	8	5	15.5	9.4	12.4	-	7.6	11	0	80	-	26	-	-0.1	20	1	-	-	4.21	-	6.0	-	-	-	-	-	
	21-END	33.9	-	5	3	16.5	10.7	13.6	-	4.0	22	0	92	-	38	-	-2.9	22	1	-	-	1.71	-	3.8	-	-	-	-	-	
	MONTH	123.6	129	20	15	16.3	10.1	13.2	-	4.0	22	0	264	-	104	-	-2.9	22	2	-	-	3.45	-	5.5	-	43	-	-	-	
Clonroche Co. Wexford	1-10	57.3	-	7	6	17.4	10.0	13.7	-	5.5	9	0	93	-	39	-	-2.0	9	2	-	-	4.89	-	2.9	-	-	-	-	-	
	11-20	51.5	-	8	8	15.6	8.6	12.1	-	7.0	12	0	77	-	25	-	-0.5	14	1	-	-	3.92	-	2.7	-	-	-	-	-	
	21-END	34.7	-	7	2	16.7	10.1	13.4	-	3.5	22	0	91	-	38	-	-4.1	22	3	-	-	2.22	-	1.7	-	-	-	-	-	
	MONTH	143.5	138	22	16	16.6	9.6	13.1	-	3.5	22	0	261	-	102	-	-4.1	22	6	-	-	3.68	-	2.5	-	33	-	-	-	
Johnstown Castle Co. wexford	1-10	40.4	-	7	6	16.8	11.0	13.9	-	8.2	10	0	95	-	40	-	4.5	9	0	-	-	5.16	-	5.7	-	-	-	-	-	
	11-20	42.1	-	8	6	15.4	9.8	12.6	-	8.1	11	0	82	-	28	-	3.2	14	0	-	-	4.38	-	4.8	-	-	-	-	-	
	21-END	42.4	-	7	4	16.1	11.0	13.6	-	5.5	22	0	92	-	38	-	1.5	22	0	-	-	1.78	-	3.7	-	-	-	-	-	
	MONTH	124.9	126	22	16	16.1	10.6	13.4	-	5.5	22	0	269	-	105	-	1.5	22	0	-	-	3.77	-	4.8	-	39	-	-	-	
Rosslare Co. Wexford	1-10	42.8	-	7	5	17.3	11.4	14.4	-	9.5	9	0	100	-	44	-	6.0	9	0	15.9	-	4.78	-	7.0	5	-	-	-	-	
	11-20	45.0	-	7	6	15.7	10.4	13.1	-	8.7	11	0	87	-	31	-	4.7	20	0	13.4	-	4.46	-	6.6	7	-	-	-	-	
	21-END	23.4	-	4	4	15.9	12.2	14.1	-	7.5	22	0	97	-	42	-	0.7	22	0	14.7	-	1.81	-	4.9	1	-	-	-	-	
	MONTH	111.2	129	18	15	16.3	11.3	13.8	-0.2	7.5	22	0	283	101	117	100	0.7	22	0	14.7	-0.2	3.68	74	6.2	13	51	-	-	-	

NOTES ON THE TABLES IN JANUARY ISSUE

TABLE 2 GLOBAL SOLAR RADIATION

STATION	PERIOD	AMOUNT
		Joule/cm <sup>2</sup>
Malin Head Co. Donegal	1-10	10416
	11-20	7449
	21-end	6046
	Month	23911
Dublin Airport Co. Dublin	1-10	11758
	11-20	9300
	21-end	7438
	Month	28496
Cahirciveen (Valentia Obs.) Co. Kerry	1-10	10224
	11-20	8886
	21-end	7838
	Month	26948
Kilkenny Co. Kilkenny	1-10	11963
	11-20	9978
	21-end	6769
	Month	28710
Belmullet Co. Mayo	1-10	11468
	11-20	8216
	21-end	6202
	Month	25886
Clones Co. Monaghan	1-10	10344
	11-20	8421
	21-end	6548
	Month	25313
Birr Co. Offaly	1-10	10906
	11-20	7919
	21-end	6911
	Month	25736

Notes on the tables in January issue

Table 4 over

\*Mean of readings at 0300, 0900, 1500, 2100 GMT

\*\*To 200mm depth; positive, temp. increasing with depth.

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	17.7	-	40	9
	11-20	14.6	-	12	28
	21-end	13.2	-	7	5
	Month	45.5	-	-	-
Kinsealy Co. Dublin	1-10	25.7	-	49	21
	11-20	12.8	-	17	32
	21-end	13.8	2	19	-
	Month	52.3	-	-	-
Cahirciveen (Valentia Obs.) Co. Kerry	1-10	10.8	-	0	90
	11-20	14.3	-	0	71
	21-end	2.3	-	0	12
	Month	27.4	-	-	-
Ballinamore Co. Leitrim	1-10	11.3	-	18	42
	11-20	7.5	-	0	38
	21-end	8.3	-	0	14
	Month	27.1	-	-	-
Glenamoy Co. Mayo	1-10	14.1	-	18	33
	11-20	9.7	-	0	42
	21-end	7.8	-	0	6
	Month	31.6	-	-	-
Johnstown Castle Co. Wexford	1-10	31.1	-	12	9
	11-20	22.4	-	0	20
	21-end	4.3	-	0	26
	Month	89.3	-	-	-

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TABLE 4 SOIL CLIMATE (MULLINGAR)

Bare Soil	Period	Mean			Temperature Gradient** °C/100mm	Moisture (mb) 75mm	Tension at depths 150mm
		Max.	Mean*	Min.			
Peat	01-10	16.1	15.0	14.1	0.3	73	72
	11-20	13.9	12.6	11.8	0.8	58	60
	21-end	14.0	13.3	12.5	-0.1	76	69
Mineral	01-10	16.9	14.4	12.9	0.4	167	86
	11-20	14.3	12.3	11.1	0.6	111	62
	21-end	14.9	13.6	11.6	-0.3	134	73

## special topic

### REDWATER AND WEATHER

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Redwater in cattle (bovine babesiosis) in Ireland is caused by a parasite (Babesia divergens), that infects the red cells of the blood. Since this disease is transmitted by a vector, the tick Ixodes ricinus, it is not surprising that climate and weather influence the occurrence of the disease. However, the exact nature of this influence has yet to be completely defined.

The vector tick spends only a few days each year in its three year life-cycle sucking blood and transmitting the infection. The remainder of its life cycle is spent at the base of the vegetation where it requires a relative humidity of at least 80% throughout the year in order to survive. This means that ticks occur mainly in areas of high rainfall and on rough grazings where a sufficiently thick mat of vegetation occurs to retain moisture. Such habitats are to be found in every county in Ireland, particularly in hill-land and in the West. It should be noted, however, that redwater is not confined to such grazings as the epidemiology of the disease is complex and a single tick can transmit the disease. The seasonal timing of the disease is related to the feeding period of the tick (tick activity) and most cases occur in late May, early June and in mid-September.

Temperature undoubtedly exerts an effect on tick activity and thus on the transmission rate of the disease. Donnelly & MacKellar (1970) studied clinical records over a thirteen year period in Devon, England and showed that air temperatures have a strong influence on the occurrence of cases approximately two weeks later. They suggested that this effect was due to the effect of temperature on the tick which becomes active at temperatures within the range 7-10°C. This is certainly true as far as the start and end of the grazing season is concerned. A cold, wet spring will result in not only a later redwater season than usual, but also fewer cases will occur as unfed ticks do not survive well once they have commenced activity (eg. 1979, 1983). If autumn temperatures do not decline as rapidly as usual then members of the tick population which usually feeds in spring will become active early and more autumn cases will occur than usual (eg 1978). However, if the times of the year when the air temperature is below the threshold for tick activity are excluded the relationship between air temperature and redwater occurrence becomes relatively weak (Gray, 1980).

Fluctuations in the annual incidence of the disease can be considerable (eg. 1981 and 1982) and are not always explicable in terms of the effect of air temperatures in early spring and late autumn. Many other factors can affect the numbers of cases treated by veterinary surgeons, the main data source for the estimation of incidence, but when these are allowed for it seems that weather can exert effects in addition to that of temperature.

It has been established that in endemic redwater habitats tick populations are typically small and scattered (Gray & Lohan, 1982). It is likely that in this situation increases in temperature, once above the activity threshold, have a limited effect on the transmission rate of the disease. Weather factors that cause cattle to move into the habitat of the vector, by affecting grass growth for example, are probably of greater significance and this subject should receive more attention.

( to be continued )