

METEOROLOGICAL SERVICE



OCTOBER 1984

AGROMETEOROLOGICAL BULLETIN

The weather of October

Widespread rain on 1st/2nd, gave way to improved conditions and rising pressure over Ireland on 3rd/4th. The onset of a northwesterly airflow with scattered showers on 5th was succeeded by a ridge of high pressure on 6th. Mild conditions and a strong southwesterly airflow enveloped the country on 7th giving cloudy weather with spells of mist, drizzle and rain. Apart from a short interlude of bright conditions on 9th, the mild spell persisted through the following week. During the period, winds over the country gradually backed to southerly and as high pressure intensified over Europe, a ridge extended from it northwestwards over Britain and Ireland; there was an attendant improvement in the weather from the southeast, warm and sunny spells developing particularly in eastern regions up to 15th.

Pressure declined on 16th enabling a trough and southwest winds to affect the country. A rapidly deepening depression off the southwest of Ireland produced strong to gale force winds with storm force gusts late on 17th and early 18th, the centre of the depression moving northwards over western and northern regions. Southwesterly winds on 18th and northwesterly winds late on 19th were accompanied by blustery showers. Widespread frost and clear skies on the night 20th/21st was followed by a return to the mild southwesterly airflow with spells of drizzle and rain. A ridge on 23rd preceded an active depression which deepened as it approached the country on 23rd. This depression however remained south of the country on 24th while the associated rainbelts moved northwards over the country. The low centre later veered northeastwards over Britain and a strong northwest airflow was induced over Ireland on 25th. A recovery of the ridge on 26th was succeeded by the onset of a moist southerly airflow on 27th, which later veered southwesterly, with frontal troughs and changeable conditions prevailing to the end of the month.

Precipitation:

Monthly rainfall amounts were above average except in southern, eastern and south-midland regions, where they were mostly below average, and extreme western areas where they were well above normal. Amounts varied from 185% of normal at Belmullet to 83% at Dublin Airport. Wettest days occurred on 1st/2nd, 8th, 13th, 17th-19th, 21st/22nd, 24th (when daily amounts were generally heaviest) 27th and 29th.

Temperature:

Mean monthly air temperature was generally near normal and varied from 0.2°C above normal at Dublin Airport to 0.9°C below normal at Belmullet. Degree day accumulations also showed similar variation. While monthly values of soil temperature (100mm) varied from near average at Birr to 0.6°C below at Belmullet, deviations generally ranged from 2.0°C-3.0°C below average in the period 1st-5th to 1.5°C-2.2°C above in the period 11th-15th. Air frost occurred during the first seven days; ground frost was widespread in the period 1st-5th or 6th, 21st and 27th.

Sunshine and Radiation:

Mean duration of bright sunshine was above normal mostly except at western and southern coastal stations. It varied from 121% of normal at Kilkenny to 87% at Roches Point. Global radiation was 109% of average at Dublin Airport but only 93% at Birr.

Wind:

General gales with storm gusts occurred on 18th. Strong winds with gale gusts also occurred on 13th, 17th-20th, 22nd in southern areas, 27th, 29th and 31st.

Summary:

Wet in western areas, relatively mild apart from a cold spell during the first six days and generally bright. Strong gales and storm gusts on 18th.

TABLE 1

OCTOBER 1984

STATION	PERIOD	RAINFALL (mm)				TEMPERATURE (°C)														BRIGHT SUNSHINE		WIND		P.E. (PENMAN) (mm)			
		AMOUNT	% OF AVERAGE	RAIN DAYS	WET DAYS	AIR							GROUND			SOIL (10cm)				MEAN DAILY (HRS.)	% OF AVERAGE	MEAN SPEED (ms ⁻¹)	DAYS WITH GALE GUSTS				
						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 (HRS.)
Carlow (Oak Park) Co. Carlow	1-10	7.1	-	3	1	14.5	4.1	9.3	-	-0.8	3	2	53	-	17	-	-2.6	4	5	-	-	4.58	-	3.3	-	-	-
	11-20	21.1	-	3	3	14.9	9.2	12.0	-	5.7	20	0	76	-	25	-	3.4	20	0	-	-	2.86	-	5.3	-	-	-
	21-END	44.7	-	10	8	13.8	5.9	9.9	-	0.8	27	0	62	-	15	-	-1.8	27	1	-	-	2.46	-	4.5	-	-	-
	MONTH	72.9	95	16	12	14.4	6.4	10.4	-	-0.8	3	2	191	-	56	-	-2.6	4	6	-	-	3.27	-	4.3	-	-	16
Shannon Airport Co. Clare	1-10	15.9	-	7	5	14.1	6.3	10.2	-	1.8	3	0	59	-	17	-	-0.8	5	1	10.6	-	3.92	-	4.4	0	-	-
	11-20	32.4	-	6	4	15.6	10.1	12.9	-	7.4	20	0	85	-	31	-	4.9	20	0	12.0	-	3.11	-	6.5	4	-	-
	21-END	52.9	-	11	8	14.2	7.5	10.9	-	3.5	27	0	71	-	18	-	0.6	26	0	10.1	-	2.19	-	5.6	5	-	-
	MONTH	101.2	120	24	17	14.6	8.0	11.3	+0.1	1.8	3	0	215	101	65	102	-0.8	5	1	10.9	-0.5	3.05	111	5.5	9	24	-
Fermoy (Coolnakilla) Co. Cork	1-10	9.8	-	7	3	12.9	4.8	8.8	-	1.7	5	0	47	-	10	-	-1.5	4	4	-	-	4.01	-	3.4	-	-	-
	11-20	39.5	-	6	4	13.1	8.2	10.6	-	3.5	20	0	62	-	15	-	1.0	17	0	-	-	2.18	-	5.7	-	-	-
	21-END	73.5	-	10	7	12.7	6.4	9.6	-	2.0	27	0	58	-	10	-	-1.2	27	1	-	-	1.63	-	5.4	-	-	-
	MONTH	122.8	-	23	14	12.9	6.4	9.7	-	1.7	5	0	167	-	35	-	-1.5	4	5	-	-	2.57	-	4.8	-	-	12
Fermoy (Moore Park) Co. Cork	1-10	6.9	-	5	3	14.5	3.3	8.9	-	0.0	4	0	50	-	15	-	-5.0	6	6	-	-	3.61	-	1.9	-	-	-
	11-20	35.5	-	4	3	14.8	9.4	12.1	-	5.7	20	0	77	-	25	-	2.1	20	0	-	-	2.53	-	3.4	-	-	-
	21-END	53.6	-	8	7	14.4	6.1	10.2	-	0.5	26	0	67	-	18	-	-3.8	27	4	-	-	2.04	-	3.0	-	-	-
	MONTH	96.0	104	17	13	14.5	6.3	10.4	-	0.0	4	0	194	-	58	-	-5.0	6	10	-	-	2.70	-	2.8	-	-	12
Mallow Co. Cork	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	-	-	-	3.20	-	-	-	-	-
	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	-	-	-	2.03	-	-	-	-	-
	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	-	-	-	1.97	-	-	-	-	-
	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	-	-	-	2.39	-	-	-	-	-
Roches Point Co. Cork	1-10	4.9	-	4	2	13.9	7.1	10.5	-	4.8	4	0	61	-	15	-	0.3	4	0	11.3	-	3.72	-	5.5	2	-	-
	11-20	22.3	-	4	3	14.1	10.5	12.3	-	7.1	20	0	79	-	24	-	3.6	17	0	12.3	-	2.21	-	7.9	5	-	-
	21-END	57.3	-	9	8	13.3	8.8	11.1	-	5.2	26	0	73	-	17	-	-1.0	27	1	11.2	-	2.05	-	7.9	6	-	-
	MONTH	84.5	95	17	13	13.8	8.8	11.3	-0.2	4.8	4	0	213	97	56	89	-1.0	27	1	11.6	-0.1	2.64	87	7.1	13	24	-
Glencolumbkille Co. Donegal	1-10	43.3	-	9	8	12.9	6.6	9.8	-	2.5	3	0	55	-	11	-	-5.0	5	5	-	-	4.30	-	3.6	-	-	-
	11-20	81.4	-	9	8	13.6	8.7	11.2	-	6.1	20	0	68	-	17	-	0.0	17	1	-	-	2.00	-	4.7	-	-	-
	21-END	108.9	-	11	10	11.8	6.7	9.3	-	4.6	26	0	54	-	6	-	-2.0	21	4	-	-	1.36	-	4.5	-	-	-
	MONTH	233.6	-	29	26	12.8	7.3	10.0	-	2.5	3	0	176	-	34	-	-5.0	5	10	-	-	2.52	-	4.2	-	-	16

TABLE 1 (CONTINUED)

OCTOBER 1984

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 ⁻¹)	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	34.0	-	9	6	13.1	4.6	8.9	-	-1.3	3	3	49	-	10	-	-1.6	3	3	-	-	2.78	-	-	-	-	-
	11-20	74.6	-	8	7	13.9	8.0	10.9	-	4.1	17	0	66	-	18	-	0.8	20	0	-	-	2.31	-	-	-	-	-
	21-END	147.5	-	10	9	12.2	5.4	8.8	-	2.0	21	0	49	-	6	-	0.6	21	0	-	-	1.37	-	-	-	-	-
	MONTH	256.1	165	27	22	13.0	6.0	9.5	-	-1.3	3	3	163	-	35	-	-1.6	3	3	-	-	2.13	-	-	-	-	-
Malin Head Co. Donegal	1-10	23.0	-	7	6	13.3	7.5	10.4	-	2.9	4	0	60	-	14	-	0.5	3	0	10.0	-	4.73	-	7.9	6	-	-
	11-20	29.9	-	8	8	13.9	9.1	11.5	-	7.6	20	0	71	-	18	-	4.8	14	0	10.8	-	1.94	-	9.6	7	-	-
	21-END	69.2	-	11	9	12.7	7.2	9.9	-	4.5	27	0	61	-	10	-	0.6	29	0	8.8	-	1.60	-	10.2	11	-	-
	MONTH	122.1	116	26	23	13.3	7.9	10.6	-0.4	2.9	4	0	192	96	42	86	0.5	3	0	9.8	-0.6	2.72	112	-9.3	24	34	-
Casement Aerodrome Co. Dublin	1-10	12.7	-	3	2	14.0	4.5	9.3	-	-0.3	3	1	52	-	14	-	-4.7	3	4	9.8	-	4.69	-	4.9	3	-	-
	11-20	18.7	-	3	3	15.3	8.4	11.8	-	4.4	16	0	74	-	25	-	-0.3	16	1	11.2	-	4.09	-	7.8	6	-	-
	21-END	26.1	-	8	6	14.0	6.4	10.2	-	2.6	27	0	65	-	17	-	-2.5	27	1	9.6	-	2.63	-	7.4	7	-	-
	MONTH	57.5	85	14	11	14.4	6.4	10.4	+0.1	-0.3	3	1	192	104	56	108	-4.7	3	6	10.2	-	3.76	120	6.7	16	27	-
Dublin Airport Co. Dublin	1-10	8.0	-	4	3	13.8	5.9	9.9	-	3.0	3	0	55	-	14	-	-2.6	3	2	10.5	-	4.36	-	3.8	0	-	-
	11-20	19.0	-	4	2	15.3	9.6	12.5	-	5.5	20	0	81	-	29	-	1.9	16	0	11.8	-	3.82	-	5.5	4	-	-
	21-END	29.2	-	8	6	14.2	6.8	10.5	-	3.0	26	0	68	-	18	-	-2.5	27	1	9.7	-	2.46	-	5.1	4	-	-
	MONTH	56.2	83	16	11	14.4	7.4	10.9	+0.2	3.0	3	0	204	103	61	113	-2.6	3	3	10.6	-0.1	3.51	109	4.8	8	27	-
Kinsealy Co. Dublin	1-10	8.6	-	3	3	14.7	4.8	9.8	-	-0.7	4	2	56	-	17	-	-4.0	4	3	-	-	4.59	-	3.1	-	-	-
	11-20	14.3	-	4	3	15.5	8.8	12.2	-	4.6	16	0	78	-	27	-	1.5	16	0	-	-	4.05	-	4.4	-	-	-
	21-END	26.8	-	9	6	14.8	6.7	10.8	-	3.3	26	0	71	-	20	-	-3.2	27	2	-	-	2.61	-	4.1	-	-	-
	MONTH	49.7	76	16	12	15.0	6.8	10.9	-	-0.7	4	2	205	-	64	-	-4.0	4	5	-	-	3.71	-	3.9	-	21	-
Galway Co. Galway	1-10	35.7	-	6	6	13.4	5.6	9.5	-	-0.6	3	1	54	-	14	-	-1.1	3	1	10.3	-	3.28	-	4.5	3	-	-
	11-20	44.5	-	8	6	14.9	9.7	12.3	-	6.5	20	0	79	-	26	-	5.0	20	0	12.0	-	3.04	-	6.4	5	-	-
	21-END	86.8	-	10	8	13.4	7.0	10.2	-	2.7	27	0	64	-	13	-	0.2	26	0	10.0	-	2.47	-	5.6	5	-	-
	MONTH	167.0	143	24	20	13.9	7.4	10.6	-0.1	-0.6	3	1	197	-	53	-	-1.1	3	1	10.7	-	2.92	97	5.5	13	20	-
Killarney (Muckross House) Co. Kerry	1-10	26.4	-	8	6	13.6	6.2	9.9	-	2.0	1	0	57	-	16	-	-2.5	4	5	-	-	2.13	-	-	-	-	-
	11-20	63.7	-	6	4	15.2	9.5	12.4	-	5.1	18	0	80	-	28	-	0.3	15	0	-	-	2.48	-	-	-	-	-
	21-END	105.7	-	10	8	14.4	8.3	11.3	-	3.6	26	0	77	-	22	-	-1.8	27	2	-	-	1.57	-	-	-	-	-
	MONTH	195.8	123	24	18	14.4	8.0	11.2	-	2.0	1	0	213	-	65	-	-2.5	4	7	-	-	2.05	-	-	-	-	-

TABLE 1 (CONTINUED)

OCTOBER 1984

STATION	PERIOD	RAINFALL (mm)				TEMPERATURE (°C)														BRIGHT SUNSHINE		WIND		P.E. (PENMAN) (mm)		
		AMOUNT	% OF AVERAGE	RAIN DAYS	WET DAYS	AIR							GROUND				SOIL (10cm)			MEAN DAILY (HRS.)	% OF AVERAGE	MEAN SPEED (m/s)	DAYS WITH GALE GUSTS			
						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 ^e (Valentia Obsy.) Co. Kerry	1-10	40.1	-	8	5	13.8	6.6	10.2	-	2.8	4	0	58	-	15	-	0.7	1	0	11.1	-	2.81	-	4.4	2	-
	11-20	62.5	-	7	7	14.9	10.1	12.5	-	7.3	17	0	81	-	27	-	4.5	15	0	12.4	-	2.23	-	6.9	5	-
	21-END	117.7	-	10	8	14.2	8.1	11.2	-	4.6	26	0	75	-	20	-	1.9	26	0	11.3	-	2.16	-	6.7	8	-
	MONTH	220.3	155	25	20	14.3	8.3	11.3	-0.5	2.8	4	0	214	96	62	90	0.7	1	0	11.6	-0.2	2.39	91	6.0	15	19
Ardfert (Liscahane) Co. Kerry	1-10	25.6	-	9	7	13.9	6.0	9.9	-	0.4	3	0	57	-	16	-	-4.6	3	6	-	-	3.07	-	-	-	-
	11-20	56.9	-	6	4	15.5	9.7	12.6	-	6.6	17	0	82	-	30	-	-1.7	17	1	-	-	2.68	-	-	-	-
	21-END	81.2	-	9	7	14.2	8.2	11.2	-	3.7	27	0	75	-	20	-	-4.6	26	2	-	-	2.57	-	-	-	-
	MONTH	163.7	-	24	18	14.5	8.0	11.2	-	0.4	3	0	214	-	66	-	-4.6	3	9	-	-	2.77	-	-	-	-
Lullymore Co. Kildare	1-10	14.6	-	4	4	14.0	3.2	8.6	-	-2.0	4	4	47	-	13	-	-8.5	5	5	-	-	4.43	-	3.1	-	-
	11-20	21.1	-	5	4	14.7	8.2	11.5	-	4.5	20	0	71	-	22	-	2.0	20	0	-	-	3.03	-	4.8	-	-
	21-END	49.0	-	9	9	13.6	4.9	9.3	-	-1.1	27	1	57	-	13	-	-6.0	27	3	-	-	2.31	-	4.3	-	-
	MONTH	84.7	103	18	17	14.1	5.4	9.7	-	-2.0	4	5	174	-	48	-	-8.5	5	8	-	-	3.23	-	4.1	-	15
Kilkenny ^e Co. Kilkenny	1-10	9.3	-	4	3	14.6	3.5	9.0	-	-0.6	3	2	51	-	15	-	-4.7	4	6	10.1	-	4.81	-	2.4	0	-
	11-20	24.8	-	3	3	15.5	8.9	12.2	-	5.5	20	0	78	-	28	-	0.7	15	0	11.6	-	3.23	-	4.6	3	-
	21-END	37.6	-	10	8	14.0	5.1	9.5	-	-2.2	27	1	60	-	16	-	-6.5	27	4	9.7	-	2.16	-	3.6	3	-
	MONTH	71.7	86	17	14	14.7	5.8	10.2	-0.2	-2.2	27	3	189	102	58	109	-6.5	27	10	10.5	-0.1	3.36	121	3.5	6	19
Mooncoin (Silverspring) Co. Kilkenny	1-10	10.2	-	4	2	14.8	3.7	9.2	-	-0.2	10	1	53	-	17	-	-4.1	3	7	-	-	4.83	-	-	-	-
	11-20	28.2	-	3	3	14.8	8.9	11.9	-	3.9	11	0	75	-	24	-	2.5	11	0	-	-	2.54	-	-	-	-
	21-END	60.9	-	10	9	14.1	5.4	9.8	-	-1.2	27	1	63	-	16	-	-5.8	27	4	-	-	2.08	-	-	-	-
	MONTH	99.3	102	17	14	14.5	6.0	10.3	-	-1.2	27	2	191	-	57	-	-5.8	27	11	-	-	3.12	-	-	-	-
Ballinamore Co. Leitrim	1-10	13.3	-	7	4	13.5	3.4	8.5	-	-2.6	4	3	46	-	11	-	-9.8	4	6	-	-	3.72	-	2.0	-	-
	11-20	54.5	-	9	9	14.0	8.0	11.0	-	5.0	20	0	66	-	18	-	-2.4	19	3	-	-	N/A	-	3.2	-	-
	21-END	74.5	-	10	10	13.1	3.7	8.4	-	-1.3	27	1	48	-	9	-	-8.2	27	8	-	-	2.52	-	3.1	-	-
	MONTH	142.3	129	26	23	13.5	5.0	9.3	-	-2.6	4	4	159	-	38	-	-9.8	4	17	-	-	N/A	-	2.8	-	N/A
Ardee (Boharnamoe) Co. Louth	1-10	4.5	-	4	3	14.7	3.4	9.1	-	-2.9	4	3	52	-	16	-	-5.2	5	4	-	-	-	-	-	-	-
	11-20	9.2	-	5	2	15.7	7.6	11.6	-	1.2	20	0	73	-	25	-	1.0	20	0	-	-	-	-	-	-	-
	21-END	33.2	-	8	7	14.4	4.0	9.2	-	-1.1	28	2	57	-	14	-	-2.7	27	2	-	-	-	-	-	-	-
	MONTH	46.9	57	17	12	14.9	5.0	9.9	-	-2.9	4	5	182	-	55	-	-5.2	5	6	-	-	-	-	-	-	-

TABLE 1 (CONTINUED)

OCTOBER 1984

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 ⁻¹)	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-M.I.F"	DATE	DAYS WITH GROUND FROST						MEAN DAILY	DIFFERENCE FROM AVERAGE
Ballinrobe (Creagh) Co. Mayo	1-10	21.7	-	8	4	14.1	4.5	9.3	-	-1.6	3	2	54	-	15	-	-6.6	4	5	-	-	3.86	-	2.3	-	-
	11-20	71.2	-	8	6	14.5	8.1	11.3	-	4.9	17	0	69	-	20	-	-1.9	17	1	-	-	2.36	-	4.3	-	-
	21-END	101.4	-	11	9	13.2	5.8	9.5	-	2.2	27	0	57	-	10	-	-2.8	26	4	-	-	1.90	-	3.5	-	-
	MONTH	194.3	153	27	19	13.9	6.1	10.0	-	-1.6	3	2	179	-	45	-	-6.6	4	10	-	-	2.68	-	3.4	-	14
Belmullet Co. Mayo	1-10	24.5	-	8	5	13.8	6.5	10.2	-	-0.5	3	1	59	-	15	-	-4.5	3	3	11.2	-	4.26	-	5.6	2	-
	11-20	89.1	-	9	8	13.8	8.7	11.3	-	6.3	20	0	69	-	17	-	3.8	17	0	12.0	-	2.11	-	7.7	5	-
	21-END	95.1	-	10	10	12.5	7.2	9.8	-	4.9	27	0	60	-	9	-	0.6	24	0	10.1	-	1.66	-	8.0	6	-
	MONTH	208.7	185	27	23	13.3	7.5	10.4	-0.9	-0.5	3	1	188	92	41	77	-4.5	3	3	11.1	-0.1	2.65	97	7.1	13	22
Claremorris Co. Mayo	1-10	14.0	-	5	4	13.6	3.7	8.6	-	-1.7	3	2	48	-	13	-	-5.0	3	5	9.5	-	3.52	-	3.8	0	-
	11-20	49.1	-	9	6	14.3	8.2	11.2	-	4.1	20	0	69	-	21	-	-0.3	17	1	11.2	-	2.19	-	6.1	5	-
	21-END	74.2	-	11	10	13.0	5.3	9.2	-	1.0	21	0	55	-	10	-	-2.2	21	3	9.1	-	1.92	-	5.9	5	-
	MONTH	137.3	119	25	20	13.6	5.7	9.7	-0.4	-1.7	3	2	171	97	44	100	-5.0	3	9	9.9	-0.4	2.52	101	5.3	10	11
Glenamoy Co. Mayo	1-10	35.8	-	8	7	13.4	4.7	9.0	-	-2.1	3	2	50	-	11	-	-4.9	3	4	-	-	4.25	-	2.6	-	-
	11-20	101.0	-	9	8	14.0	7.8	10.9	-	5.4	15	0	65	-	17	-	2.6	15	0	-	-	2.10	-	3.9	-	-
	21-END	104.3	-	11	10	12.6	6.2	9.4	-	3.9	21	0	55	-	8	-	1.6	24	0	-	-	1.78	-	4.6	-	-
	MONTH	241.1	175	28	25	13.3	6.2	9.8	-	-2.1	3	2	170	-	37	-	-4.9	3	4	-	-	2.68	-	3.7	-	13
Dunsany (Grange) Co. Meath	1-10	16.8	-	6	5	13.6	2.3	8.0	-	-2.5	5	3	43	-	11	-	-5.5	5	6	-	-	N/A	-	-	-	-
	11-20	18.0	-	4	3	14.3	6.5	10.4	-	3.8	13	0	60	-	15	-	1.5	16	0	-	-	3.17	-	-	-	-
	21-END	41.7	-	9	9	13.5	3.3	8.4	-	-1.5	28	1	49	-	11	-	-2.0	28	3	-	-	N/A	-	-	-	-
	MONTH	76.5	92	19	17	13.8	4.0	8.9	-	-2.5	3	4	152	-	38	-	-5.5	5	9	-	-	N/A	-	-	-	-
Clones Co. Monaghan	1-10	11.4	-	7	4	13.4	3.9	8.7	-	-1.5	3	3	47	-	11	-	-6.1	5	4	9.8	-	3.79	-	2.2	0	-
	11-20	34.0	-	9	8	13.9	8.7	11.3	-	5.0	20	0	69	-	20	-	3.6	17	0	11.2	-	1.98	-	4.2	3	-
	21-END	56.7	-	9	9	13.0	5.5	9.2	-	0.9	27	0	55	-	10	-	-4.4	27	2	9.2	-	2.41	-	4.0	4	-
	MONTH	102.1	116	25	21	13.4	6.0	9.7	-0.2	-1.5	3	3	171	97	40	93	-6.1	5	6	10.0	-0.1	2.72	111	3.5	7	16
Birr Co. Offaly	1-10	9.7	-	5	2	13.7	4.0	8.9	-	-2.1	5	2	49	-	13	-	-5.2	5	4	10.3	-	3.63	-	3.6	0	-
	11-20	20.2	-	4	3	15.1	9.0	12.1	-	4.1	20	0	77	-	26	-	2.7	20	0	11.8	-	3.48	-	5.6	4	-
	21-END	48.7	-	8	8	13.7	6.0	9.9	-	2.4	26	0	61	-	14	-	-1.6	27	2	9.9	-	2.25	-	5.1	5	-
	MONTH	78.6	98	17	13	14.1	6.3	10.2	-0.2	-2.1	5	2	187	99	52	100	-5.2	5	6	10.6	+0.0	3.09	110	4.8	9	19

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TABLE 1 (CONTINUED)

OCTOBER 1984

STATION	PERIOD	RAINFALL (mm)				TEMPERATURE (°C)														BRIGHT SUNSHINE		WIND		P.E. (PENMAN) (mm)														
		AMOUNT	% OF AVERAGE	RAIN DAYS	WET DAYS	AIR							GROUND				SOIL (10cm)			MEAN DAILY (HRS.)	% OF AVERAGE	MEAN SPEED (ms ⁻¹)	DAYS WITH GALE GUSTS															
						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	10.2	-	4	2	14.3	3.8	9.1	-	-0.6	3	2	51	-	14	-	-4.0	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	11-20	31.4	-	4	3	15.1	8.0	11.6	-	3.0	11	0	72	-	23	-	-2.4	11	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	21-END	46.6	-	9	8	14.0	3.9	8.9	-	-2.0	28	2	55	-	14	-	-6.5	27	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	MONTH	88.2	-	17	13	14.5	6.2	9.8	-	-2.0	28	4	178	-	51	-	-6.5	27	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Dungarvan (Carriglea) Co. Waterford	1-10	8.8	-	4	2	15.3	4.1	9.7	-	-0.1	4	1	57	-	19	-	-0.1	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	11-20	28.9	-	3	3	15.2	9.6	12.4	-	6.0	20	0	80	-	28	-	4.0	20	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	21-END	91.4	-	10	10	14.1	6.8	10.5	-	-1.1	27	1	69	-	20	-	-1.5	27	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	MONTH	129.1	123	17	15	14.9	6.8	10.8	-	-1.1	27	2	207	-	66	-	-1.5	27	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mullingar Co. Westmeath	1-10	18.9	-	7	5	13.3	3.9	8.6	-	-0.7	4	2	46	-	11	-	-4.1	4	3	9.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	11-20	27.2	-	7	3	14.5	8.0	11.2	-	2.6	20	0	69	-	20	-	3.1	20	0	11.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	21-END	58.3	-	9	8	13.1	5.2	9.1	-	-0.2	27	1	54	-	11	-	-4.5	27	2	9.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MONTH	104.4	116	23	16	13.6	5.7	9.6	-0.4	-0.7	4	3	169	97	42	93	-4.5	27	5	10.0	-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J.F.K. Park Co. Wexford	1-10	12.6	-	6	4	14.2	2.7	8.4	-	0.1	3	0	46	-	12	-	-5.5	9	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	11-20	14.0	-	3	1	14.4	7.1	10.7	-	3.5	20	0	64	-	16	-	-3.4	11	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	21-END	73.4	-	10	9	13.5	4.3	8.9	-	-0.1	26	2	53	-	11	-	-5.6	26	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	MONTH	100.0	94	19	14	14.0	4.7	9.3	-	-0.1	26	2	162	-	39	-	-5.6	26	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clonroche Co. Wexford	1-10	11.8	-	6	3	14.1	4.1	9.1	-	0.4	3	0	50	-	12	-	-3.9	3	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	11-20	20.7	-	4	2	14.5	8.7	11.6	-	5.1	20	0	72	-	21	-	1.4	20	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	21-END	83.7	-	10	10	13.2	4.8	9.0	-	-0.5	21	3	55	-	12	-	-3.7	21	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	MONTH	116.2	102	20	15	13.9	5.8	9.9	-	-0.5	21	3	176	-	45	-	-3.9	3	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Johnstown Castle Co. Wexford	1-10	18.7	-	7	4	13.6	6.1	9.9	-	3.4	6	0	55	-	12	-	-2.5	6	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	11-20	19.1	-	4	2	14.4	10.3	12.3	-	6.7	20	0	79	-	25	-	0.0	11	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	21-END	72.4	-	10	9	13.5	7.5	10.5	-	3.1	27	0	68	-	16	-	-1.9	26	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	MONTH	110.2	107	21	15	13.8	7.9	10.9	-	3.1	27	0	203	-	54	-	-2.5	6	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rosslare Co. Wexford	1-10	22.3	-	7	3	13.9	7.6	10.7	-	4.9	2	0	63	-	16	-	2.6	3	0	11.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	11-20	23.2	-	6	3	14.7	10.9	12.8	-	7.2	20	0	84	-	29	-	5.0	20	0	12.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	21-END	53.9	-	9	6	13.7	8.7	11.2	-	5.1	26	0	75	-	20	-	0.8	27	0	11.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	MONTH	99.4	110	22	12	14.1	9.1	11.6	10.1	4.9	2	0	222	99	64	98	0.8	27	0	11.5	-0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 2 GLOBAL (SOLAR) RADIATION

STATION	PERIOD	AMOUNT
		Joule/cm ²
Malin Head Co. Donegal	1-10	8397
	11-20	4468
	21-end	3757
	Month	16622
Dublin Airport Co. Dublin	1-10	8031
	11-20	6460
	21-end	4302
	Month	18793
Cahirciveen (Valentia Obs.) Co. Kerry	1-10	7353
	11-20	5043
	21-end	4990
	Month	17386
Kilkenny Co. Kilkenny	1-10	8582
	11-20	5843
	21-end	4148
	Month	18573
Belmullet Co. Mayo	1-10	7868
	11-20	4423
	21-end	3630
	Month	15921
Clones Co. Monaghan	1-10	7819
	11-20	4562
	21-end	4519
	Month	16900
Birr Co. Offaly	1-10	7181
	11-20	5975
	21-end	4110
	Month	17266

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	12.2	1	59	-
	11-20	11.0	-	45	14
	21-end	3.1	-	3	42
	Month	26.3	-	-	-
Kinsealy Co. Dublin	1-10	11.2	1	41	-
	11-20	11.1	-	36	5
	21-end	6.6	-	15	21
	Month	28.9	-	-	-
Cahirciveen (Valentia Obs.) Co. Kerry	1-10	14.7	-	0	90
	11-20		-	0	91
	21-end	3.3	-	-	-
	Month	18.0	-	-	-
Ballinamore Co. Leitrim	1-10	6.1	-	0	7
	11-20	6.6	-	0	48
	21-end	2.5	-	0	72
	Month	15.2	-	-	-
Glenamoy Co. Mayo	1-10	1.4	-	0	34
	11-20	7.3	-	0	94
	21-end	11.2	-	0	115
	Month	19.9	-	-	-
Johnstown Castle Co. Wexford	1-10	9.7	-	10	9
	11-20	11.1	-	2	8
	21-end	14.1	-	0	58
	Month	34.9	-	-	-

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Notes on the tables in January issue

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	10.7	9.5	8.1	+1.3
	11-20	11.9	11.0	10.0	+0.6	60	62
	21-end	10.0	8.8	7.5	+1.0	59	61
Mineral	1-10	11.7	9.8	8.0	+0.8	70	69
	11-20	12.4	11.0	9.8	+0.6	62	60
	21-end	10.8	9.3	7.6	+0.7	53	53

special topic

CROP PHENOLOGY AND DRY MATTER DISTRIBUTION

The course of above ground dry matter accumulation of a spring wheat crop during its growth cycle indicates three growth stages: 1. Individual plants 2. Closed crop canopy 3. Leaves dying. However, a crop not only accumulates weight, it also passes through successive phenological development stages: after sowing or planting it first forms roots, leaves and stems during the pre-anthesis phase, subsequently it flowers, the seeds are set and filled and the crop matures in the post-anthesis phase.

Consequently, growth is defined as the increase in weight or volume of the total plant or the various plant organs, and development is defined as the transition from one phenological phase to another, and is characterised by the order and rate of appearance of vegetative and reproductive plant organs, the two processes, growth and development, are often strongly related to each other, which is probably the reason that often the term development is used, when growth is meant.

The timing and rate of organ appearance is dependent on environmental conditions and is consequently highly variable. The order of appearance of the organs on the other hand is almost independent of the circumstances, is practically invariable within species, but may vary between species. Important events in the development of dry cereals are for instance emergence, floral initiation, the moment at which the first ear primordia appear, the moment of flowering (anthesis) and the end of grain filling. For tuber crops the onset of tuber bulking is such an event.

The major environmental conditions influencing phenological development are temperature and daylength. Many plant species need a period of low temperature to induce flowering, e.g. winter wheat, winter rye and sugar beet. The process taking place during this period is called vernalization. After the demand for low temperature for winter crops has been satisfied, and for all other crops, it is in general a higher temperature that promotes the rate of development at all phenological stages, meaning thus that the length of a given phenological phase is shorter at higher temperatures.

Thus, the higher the temperature, the faster a crop develops and the shorter the length of its total growing period. If we define development on a numerical scale, ranging from 0 to 2, with 0 at emergence, 1 at anthesis and 2 at maturity, then the development rate is that part of the scale that is accumulated per unit time. Generally a crop does not flower in the middle of its growing period, and consequently the development rate during the pre-anthesis phase differs from the development rate during the post-anthesis phase. If, for example, the time lapse between emergence and anthesis for certain crop variety in a specific environment is 50 days and between anthesis and maturity 25 days, then the average development rate during the pre-anthesis phase is 1:50 or 0.02/D, and during the post-anthesis phase it is 1:25 or 0.04/D, the numerical values between 0 and 2 obtained by adding the daily development rates are defined as the development stage.

It can be easily understood that, although the basic processes governing phenological development and biomass production act independently, a strong relation exists between the two. If the rate of development is high, total biomass production will be low, because the period of linear growth will be short. That, however, is not all. Crops are generally not grown for total biomass, but for their storage organs, such as tubers, grains or pods. These storage organs grow only during the latter part of the growth cycle, after roots, leaves and stems have been produced first. A short growing period, resulting in a low vegetative biomass, especially of leaves responsible for light interception, leads inevitably to a poor crop. On the other hand, too much biomass invested in vegetative organs may lead to a relatively low production of storage organs, especially since in that case the maintenance requirements are high. Therefore, we are not only interested in total biomass production, but also in its distribution over the various plant parts.

(to be continued)