

Table 1: Blenheim Weather Data – September 2005

	September 2005	September LTA	Period of LTA	Deviation from or % of LTA	September 2004
Growing Degree Days for month	66.3	40.5	(1947-2004)	164%	32.5
Growing Degree Days Total from July onwards	117.1	58.2	(1947-2004)	201%	46.3
Mean Maximum (°C)	17.3	15.8	(1932-1980)	+1.5°C	15.6
Mean Minimum (°C)	6.5	5.1	(1932-1980)	+1.4°C	5.2
Mean Temp (°C)	11.9	10.6	(1932-2000)	+1.3°C	10.4
Grass Frosts (<= -1.0°C)	4	10.5	(1932-1980)	6.5 fewer	8
Air Frosts (0.0°C)	1	4.4	(1986-2004)	equal	
Sunshine hours	189.2	2.6	(1932-1980)	1.6 fewer	1
Sunshine hours – lowest		0.78	(1986-2004)	equal	
Sunshine hours – highest					
Sunshine hours total - 2005	1771.6	192	(1935-2000)	99%	206.2
Rainfall (mm)	19.2	130.8	1963		
Rainfall (mm) – lowest		244.3	1972		
Rainfall (mm) – highest					
Rainfall total (mm) – 2005	408.4	1737	(1935-2000)	102%	1725.8
Evapotranspiration – mm	71.9	51	(1930-2000)	38%	83.4
Avg. Daily Windrun (km)	266.9	3.0	1951		
Mean soil temp – 10cm	9.8	191.5	1943		
Mean soil temp – 30cm	11.4	497	(1930-2000)	82%	548.0
	71.9	71.4	(1996-2004)	100%	71.5
	266.9	292.1	(1996-2004)	91%	303.8
	9.8	8.8	(1986-2004)	+1.0°C	8.3
	11.4	10.6	(1986-2004)	+0.8°C	9.8

Temperature

The temperature during September 2005 experienced some marked variation from average. The first week was very warm with an average of 13.5°C. The third week experienced a cold southerly front and a couple of days only recorded an average temperature of 6 to 8°C. However for the third month in a row Blenheim's temperature was well above average. July +2.5°C, August +1.8°C, September +1.3°C. September 2005 was warmer than in 2003 and 2004 however similar temperatures have been recorded in recent years. September 2001 recorded 11.9°C and September 2002 recorded 12.2°C. September 1998 was exceptionally warm with an average of 13.1°C. The average temperatures for the three months July to September 2005 was +1.9°C. This is the warmest three months July to September for the period 1932-2005.

Growing Degree Days

Total growing degree-days for July to September 2005 were 117.1. This is the second highest total for the period 1987-2005, second only to 1998 that recorded a massive 140.3 due the exceptionally hot September as detailed above.

Rainfall

September rainfall at 19.2mm was only 38 per cent of the monthly average. September also broke the cycle of high monthly total followed by low monthly total that Blenheim had experienced from January-August 2005. Both August and September recorded low rainfall with a combined monthly total of only 34.0mm, compared with the average for the two months of 115mm. Total rainfall for January-September 2005 of 408mm was only 82 percent of the long-term average.

Evapotranspiration

As I include evapotranspiration figures in the summary table each month I thought a simple explanation of ET would be appropriate. *“The combination of two separate processes whereby water is lost on the one hand from the soil surface by evaporation and on the other hand from the*

crop by transpiration is referred to as evapotranspiration (ET)". (from Crop evaporation FAO 1998).

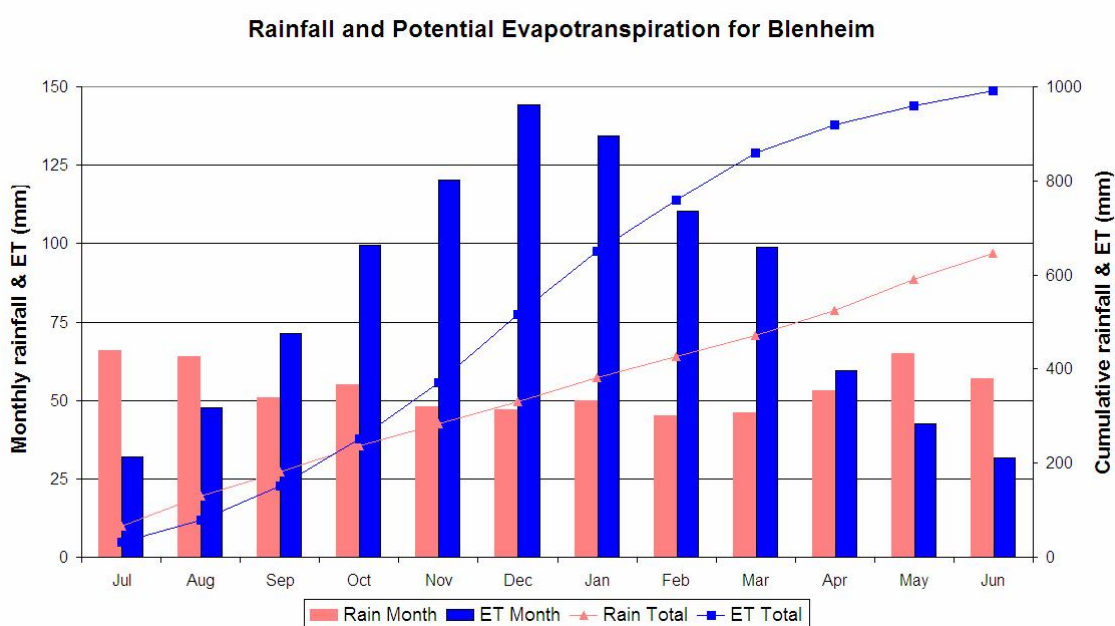
The principal weather parameters affecting evapotranspiration are radiation, air temperature, humidity and wind speed. Evapotranspiration is therefore calculated from a number of measured weather parameters. The evapotranspiration rate is expressed in millimetres (mm) per unit time, as is rainfall.

The ET figures that are included in the table above or that are published in a newspaper are for a grass pasture. For other crops a multiplier is applied to the daily ET total to calculate the potential evapotranspiration for each crop. For wine grapes the crop factor normally used is 0.5. The crop factor will vary according to the stage of the season, 0.30 initially, 0.70 mid season, 0.45 end of season.

The graph contrasts long-term rainfall and evapotranspiration for Blenheim. Blenheim's total rainfall is fairly evenly spread throughout the year (45mm in Feb to 66mm in July). Hence the line showing cumulative rainfall for the year is fairly straight. In contrast the potential evapotranspiration is very seasonally dependent. ET is low over the winter months and very high over summer. The graph shows that rainfall in Blenheim only exceeds ET for the months of May, June, July and August. It is this Autumn Winter period when soil moisture recharge normally occurs.

Total average rainfall for Blenheim is 647mm whereas total average ET is 992mm, or 153% of rainfall. The middle section of the graph from October to March illustrates why Marlborough dryland pastoral farms normally brown off over the summer with ET two to three times the rainfall received. Hence the reason that pastoral farmers are so reliant on spring growth in August and September to produce the bulk of their pasture growth prior to the normal drying out that occurs.

It is noticeable that evapotranspiration as calculated by the Dashwood met station in the Awatere Valley is significantly higher than in Blenheim, (Dashwood average = 1109mm, or 112% of the Blenheim average = 992mm). Much of the extra evapotranspiration in the Awatere Valley is driven



by the fact that the Awatere receives approximately 140% of the wind run that Blenheim does.

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