

The Climate Impact Report

(Updated 10 May 2012)

The Immediate Past

As at 10 May 2012

7 day period ending:	9-May	2-May	25-Apr
Total Rainfall – Marlborough Research Centre(mm)	0.2	13.4	0.0
Total Rainfall – Rai Falls(mm)	13	52	0
Total Rainfall – Awapiri(mm)	1.5	23.5	0
Total Rainfall - Molesworth(mm)	0.0	11.4	10.0
Total Rainfall - Lower Awatere (mm)	0.4	3.0	5.6
Total Rainfall - Kenepuru (mm)	7.4	14.6	21.0
Forecaster's Predicted Average Rainfall for the next 7 days(mm)	13-16mm	5-7mm	13-16mm
Forecaster's Predicted Average Wind Speed - next 7 days(km/hr)	19.5	13.1	22.7
Forecaster's Predicted Average Temperature - next 7 days (°C)	11	11.2	12.8
How does Rain todate compare with the LTA since Jan 1st	24.5%	24.5%	22.4%
How does LTA Rain todate normally compare since Jan 1st	30.1%	28.6%	26.1%
Average Daily Temperature (°C)	11.0	13.1	11.9
10 cm Soil Temperature (9.00 am) (°C)	8.4	10.1	9.5
Total PEN Evapotranspiration (mm)	7.3	14.1	12.4
Predicted Soil Moisture – Clay Loams	24%	27%	24%
Plant Available Moisture – Clay Loams (mm)	0.0	2.5	0.0
Percentage DM grown from 1 July versus LTA	120%	122%	123%
Pasture Growth Rates for last week - Wairau (kgDM/day)	4	11	5
Pasture Growth Rates for last week - Waihopai (kgDM/day)	18	14	13
Pasture Growth Rates for last week - Ward (kgDM/day)	23	36	29
Predicted Soil Moisture – Silt Loams	25%	27%	25%
Plant Available Moisture – Silt Loams (mm)	0.0	2.5	0.0
Growth Heat Units above 10°C	10.8	19.8	13.0
Cumulative Heat Units todate from 1st July	1180.9	1170.2	1145.3
LTA Heat Units from 1st of July	1246.3	1231.7	1214.6
Period Ending:	6-May	29-Apr	22-Apr
Rainfall recorded – Upper Avon Valley(mm)	1.0	27.0	0.0
Rainfall recorded – Lower Avon Valley(mm)	1.0	24.0	0.0
Rainfall recorded – Upper Wairau Valley (mm)	0.6	4.0	0.0
Rainfall recorded – Ward(mm)	1.8	7.5	0.0
Rainfall recorded – Okaramio(mm)	0.0	37.0	N/A
10 cm Soil Temperature – Upper Avon Valley (8.00am) (°C)	8.1	9.4	10.1
10 cm Soil Temperature – Lower Avon Valley (8.00am) (°C)	11.4	12.6	13.4
10 cm Soil Temperature – Ward (8.00am) (°C)	9.6	11.2	10.5
10 cm Soil Temperature – Okaramio (8.00am) (°C)	11.2	13.7	N/A

Well Data from the Marlborough District Council Web Site

Brancott Vineyard Well	N/A	43.9	44.8
Hawksbury Vineyard Well	84.3	84.2	84
Conders No 2. Well	34.3	34.3	34.2
Predicted Growth Rates for next two weeks given forecast Rainfall and Temperature *			
	Weeks Beginning	9-May	16-May
Wairau (kgDM/day)		4	9
Waihopai (kgDM/day)		19	12
Ward (kgDM/day)		27	20

*The predicted pasture growth rates in the previous table are generated in a simulated computer model in which the extent to which pasture grows is governed by the long-term averages for temperature and soil moisture. The figures quoted are representative of what should grow if the LTA's are achieved. It is not the amount of pasture available to animals. The ME/kg DM is based on a growing leafy pasture. Stemmy or dying pastures will have ME values from 1 to 2% lower than the figures quoted. Green clovers do not vary much in ME value.

The Immediate Forecast

Table 3

Date	Rain (mm)										
	Marlb Sound			Wairau Plain			Awatere			East Coast	
		%P		%P		%P		%P		%P	
Thu 10/05/12	4.2 - 4.8	30%	4.0 - 4.6	30%	4.4 - 5.4	30%	7.4 - 8.8	60%			
Fri 11/05/12	2.6 - 2.8	30%	2.6 - 2.6	30%	2.8 - 3.4	30%	3.4 - 4.2	30%			
Sat 12/05/12	0.1 - 0.1	10%	0.1 - 0.1	10%	0.1 - 0.1	10%	nil -	10%			
Sun 13/05/12	0.6 - 2.2	20%	0.6 - 0.6	10%	0.6 - 0.6	10%	0.6 - 0.6	10%			
Mon 14/05/12	2.0 - 4.6	30%	2.0 - 2.6	30%	1.4 - 2.0	20%	1.0 - 1.4	20%			
Tue 15/05/12	3.0 - 3.8	30%	3.2 - 4.2	30%	3.6 - 4.4	30%	3.8 - 5.2	30%			
Wed 16/05/12	0.8 - 1.4	20%	0.8 - 0.8	10%	0.8 - 0.8	10%	0.8 - 1.0	10%			
WEEK 1	13.1 - 19.5	60%	13.1 - 15.4	60%	13.5 - 16.5	60%	16.9 - 21.1	60%			
Rain Days	6	69%	6	69%	6	69%	6	69%			
Thu 17/05/12	nil -	0%	nil -	0%	nil -	0%	nil -	10%			
Fri 18/05/12	0.5 - 0.5	10%	0.5 - 0.5	10%	0.5 - 0.5	10%	0.5 - 0.5	10%			
Sat 19/05/12	1.8 - 1.8	20%	1.8 - 1.8	20%	1.8 - 1.8	20%	1.8 - 1.8	20%			
Sun 20/05/12	nil -	0%	nil -	0%	nil -	0%	nil -	0%			
Mon 21/05/12	nil -	0%	nil -	0%	nil -	0%	nil -	0%			
Tue 22/05/12	nil -	0%	nil -	0%	nil -	0%	nil -	0%			
Wed 23/05/12	nil -	0%	nil -	0%	nil -	0%	nil -	0%			
WEEK 2	2.3 - 2.3	30%	2.3 - 2.3	30%	2.3 - 2.3	30%	2.3 - 2.3	30%			
Rain Days	2	23%	2	23%	2	23%	2	23%			

Note: The %P equals the probability of rain on either that day or during the weekly period. 0% means no rain.

Table 4

Date	Temperature			Growing Degr Day	Heat Units	Possible Frost	Chill Units >7°C	Wind Chill °
	Minimum	Maximum	Ave Temp					
Thu 10/05/12	7.7	15.0	11.3	1	1.3			4.6
Fri 11/05/12	6.7	13.7	10.2	1	0.2			5.6
Sat 12/05/12	6.0	16.7	11.3	1	1.3			8.1
Sun 13/05/12	8.0	18.0	13.0	1	3.0			4.7
Mon 14/05/12	9.0	16.3	12.7	1	2.7			8.6
Tue 15/05/12	5.7	14.3	10.0					3.6
Wed 16/05/12	3.7	13.0	8.3			1		1.8
WEEK 1	6.7	15.3	11.0	5	8.5	1	0.0	5.3
Thu 17/05/12	1.7	14.3	8.0			1		6.3
Fri 18/05/12	2.7	14.7	8.7			1		1.1
Sat 19/05/12	4.7	14.0	9.3					2.7
Sun 20/05/12	2.0	15.0	8.5			1		4.8
Mon 21/05/12	1.0	16.0	8.5			1		9.1
Tue 22/05/12	2.0	16.0	9.0			1		9.6
Wed 23/05/12	3.0	17.0	10.0					9.4
WEEK 2	2.4	15.3	8.9	0	0.0	5	0.0	6.1

Table 5















Date	Wind		Ave km/hr	Spray Condition		Forecast
	Direction	Airflow				
Thu 10/05/12	S SE SW	10 - 35	22.5			Some showers with SE/SW winds
Fri 11/05/12	S > SE E	5 - 25	15.0			Some showers mainly in East. SE winds
Sat 12/05/12	VB NE> NW	0 - 25	12.5	spray		Partly cloudy with freshening NW winds
Sun 13/05/12	NW	15 - 50	32.5			Showers in Snds, elsewhere fine
Mon 14/05/12	NW> N	5 - 25	15.0			Showers/rain with late Southerly change
Tue 15/05/12	SW > S	10 - 30	20.0			Rain/showers with southerly conds
Wed 16/05/12	S> SW	8 - 30	19.0			Isolated showers, SW winds
WEEK 1	Range/Average	7.6 - 31.4	19.5	1		
Thu 17/05/12	SW W	0 - 18	9.0	spray		Fine and frosty inland
Fri 18/05/12	SW W> W	5 - 40	22.5			Mainly fine with westerly winds
Sat 19/05/12	SW S	8 - 32	20.0			Mainly fine with southerlies
Sun 20/05/12	SW S	0 - 25	12.5	spray		Fine with light southerlies
Mon 21/05/12	SW > SE E	0 - 12	6.0	spray		Fine with light SE winds
Tue 22/05/12	VB NE	0 - 12	6.0	spray		Fine with light NE winds
Wed 23/05/12	VB> NW	0 - 15	7.5	spray		Fine with NW winds
WEEK 2	Range/Average	1.9 - 22.0	11.9	5		

Table 6

Regional Marlborough			
	Average rain	No. Raindays	% Probability
Week 1	16.2 mm	6	69%
Week 2	2.3 mm	2	23%

These pages are a compilation of data derived from New Zealand Met Service, Metvuw and Metscape.

NIWA Outlook

The Seasonal Climate Outlook covering May through to July 2012 has been released by NIWA. The La Niña event has now ended and Neutral conditions now affect the weather patterns of the tropical Pacific. This will mean lower than normal pressures to the north of New Zealand and higher than normal pressures over southern New Zealand. Sea temperatures around New Zealand are likely to remain near normal or slightly cooler than normal during the present early winter period. Air temperatures are likely to be average to above average for most of the country with the exception of the east coast of the South Island where near average temperatures should prevail. Rainfall and soil moisture levels are expected to be normal to above normal in the north and east of the North Island and near normal in all other regions. River flows, however, are expected to be normal to above normal in the north and east of the North Island, normal or below normal in the west of both Islands and near normal in the north and east of the South Island.

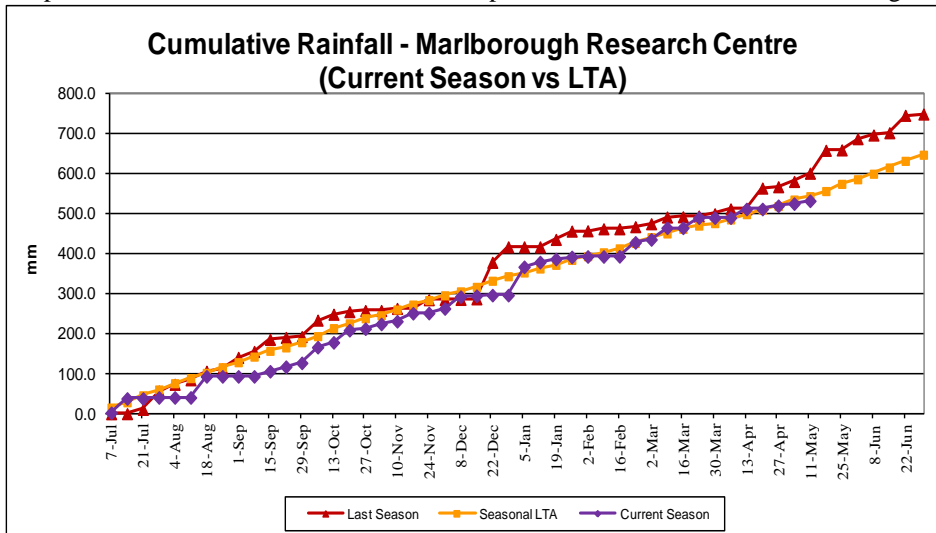
How to Read the Graphs Below

All of the graphs below contain three lines or bars of data; *the Long Term Average (LTA), last season (2010/11) and this current season (2011/12)*. If the current season line or bar is above the LTA, then we are better than normal and if the line or bar is below the LTA then we are below normal.

Rainfall and Temperature

Graph 1: Cumulative Weekly Rainfall

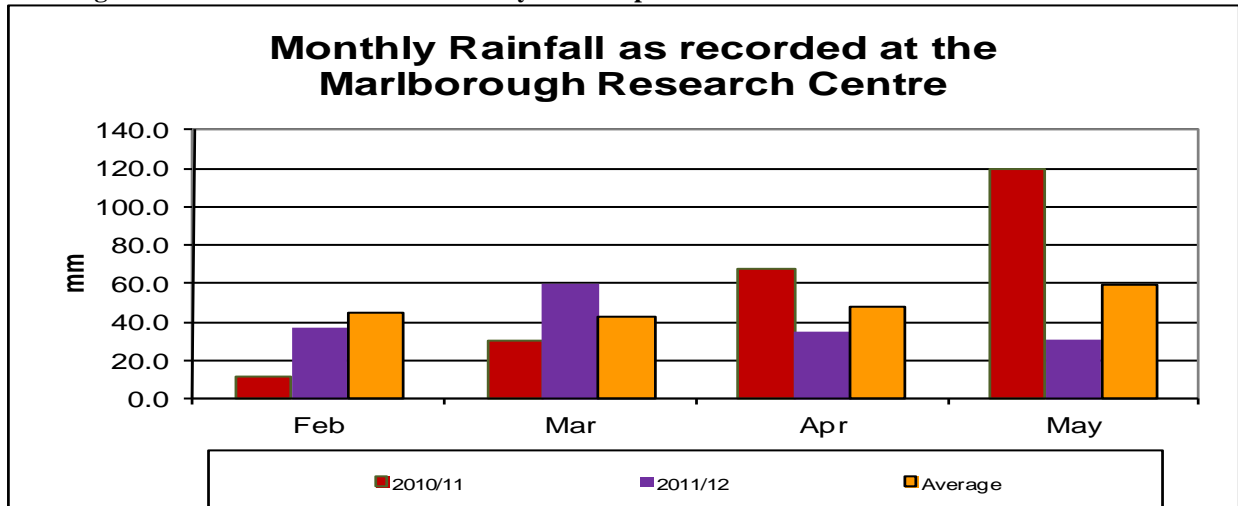
Graph 1 below shows the rainfall to date compared with the last season and the long term median from 1980.



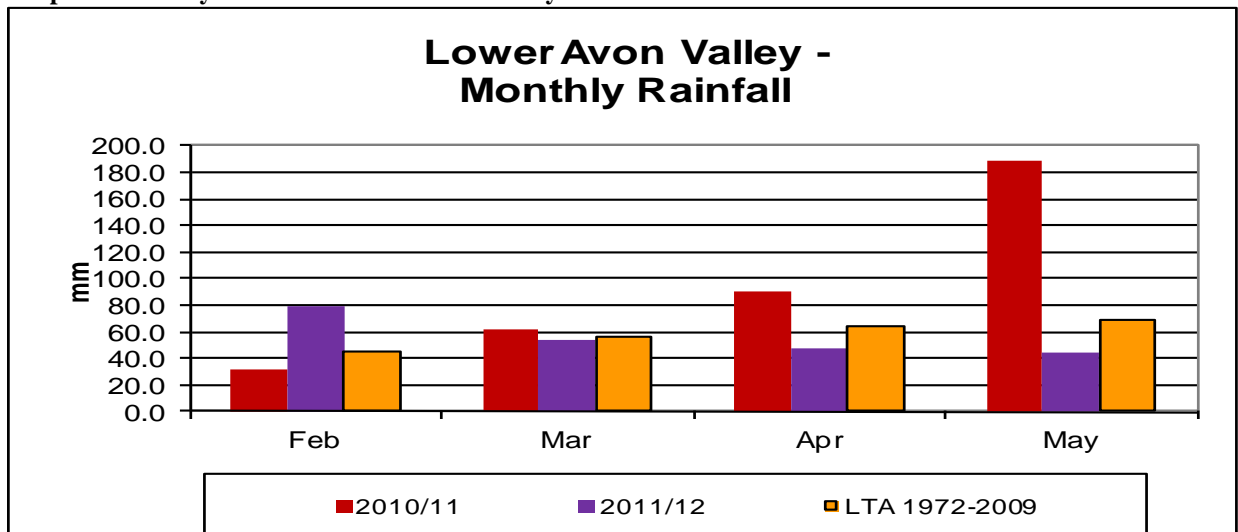
During September to late April, a minimum of 25mm of rain each week is needed to sustain even moderate amounts of pasture growth. The days between 10mm or greater falls are also a critical factor.

Graph 2: Monthly Rainfall – Wairau Plains

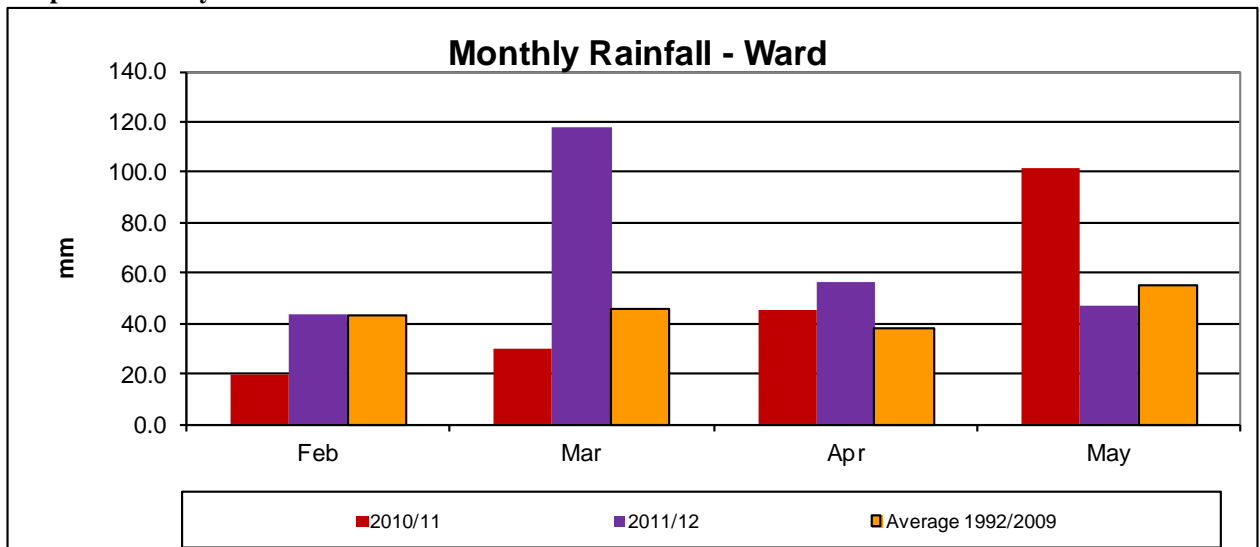
For the three graphs below, the rainfall for the current month has been updated to the end of month using the 14-day forecast and the LTA. This means that they currently show the position of rainfall received to date plus forecast rain over the next 14 days plus the effect of receiving LTA for the rest of the month. They will be updated each week.



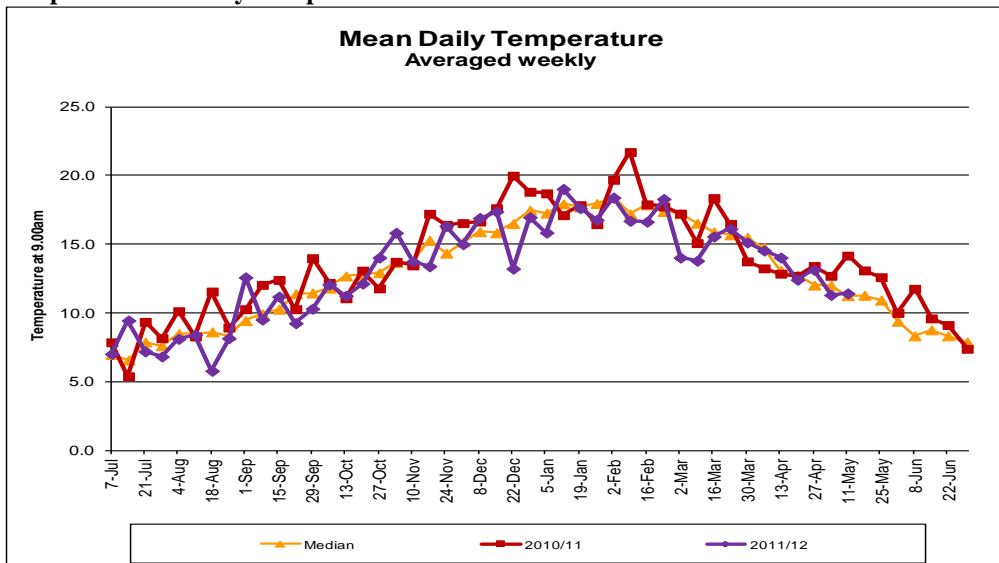
Graph 3: Monthly Rainfall – Lower Avon Valley



Graph 4: Monthly Rainfall – Ward



Graph 5: Mean Daily Temperature

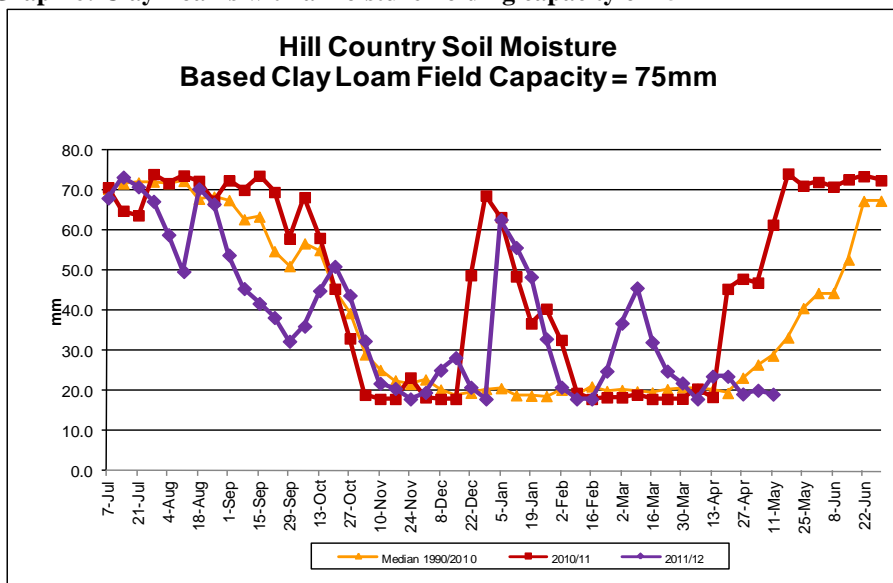


When the Mean Day Temperature rises above 15°C, even though the improved pasture may seem leafy and green; the quality is likely to be at least 1 Mega Joule of Metabolizable Energy lower.

Graph 5 above shows the mean daily temperature averaged on a weekly basis compared with last year and the long-term median from 1987.

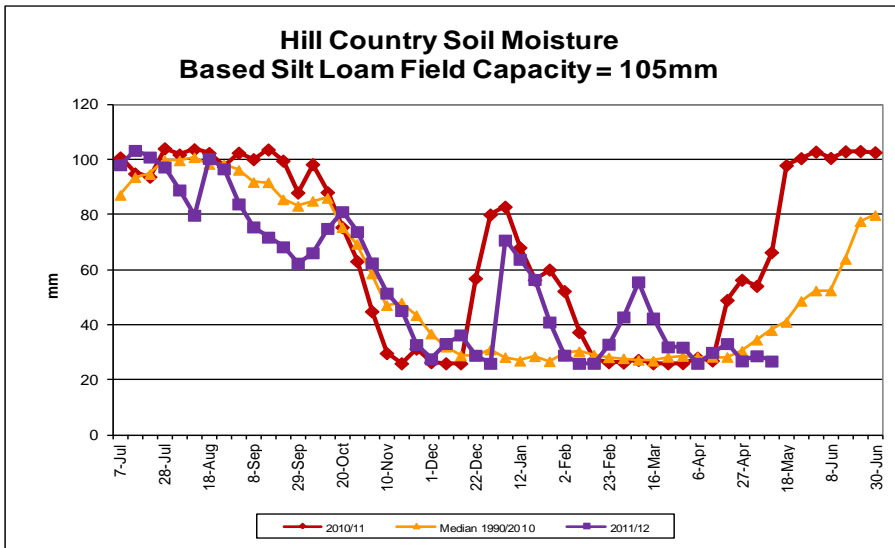
Soil moisture

Graph 6: Clay Loams with a moisture holding capacity of 75mm



Graph 6 depicts the moisture levels on a typical Marlborough Clay Loam Hill Country site. The Clay Loam has a water holding capacity of 75mm. In this soil the growth in pasture slows at 50% soil moisture and Wilt Point is reached at 25% soil moisture. Wilt Point is when pasture dies. Each data point on the graph represents one week. A heavy rainfall on one day of the week may not be enough to lift that week's data as much as assumed.

Graph 7: Silt Loams with a moisture holding capacity of 105mm

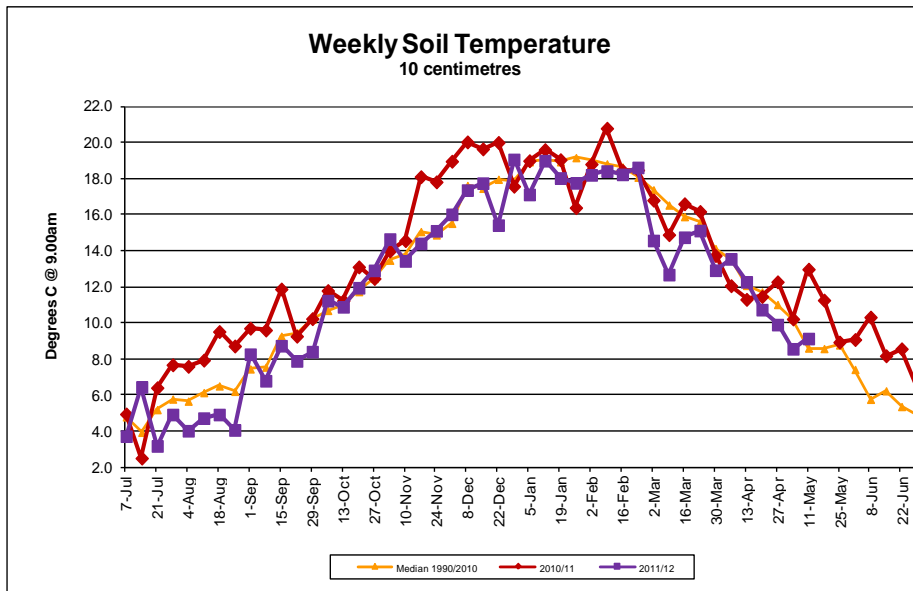


The same criteria apply to Graph 7 as to Graph six, that is pasture growth slows once 50% soil moisture is reached and ceases at 25% soil moisture. Because of the different soil type and water holding capacity the loams display different moisture holding characteristics compared to a clay soil.

10°C Soil Temperature

Graph 8 below compares this season's soil temperature against the long-term average and last year.

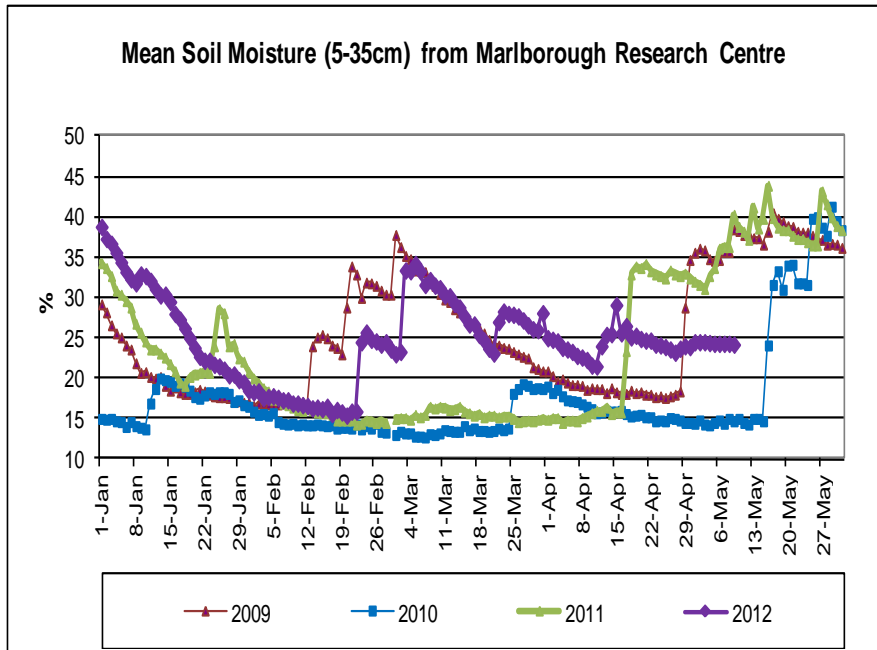
Graph 8: 10°C Soil Temperature



Soil Temperature has its major affect on pasture growth when it drops below 10°C. Below this temperature grasses have a much slower growth rate. Below 7°C legume growth virtually stops. Soil temperature varies throughout the day by up to 4 to 6 degrees. This means in winter it can be warm enough for small periods of growth. At a deeper depth the soil tends to be much warmer.

Soil moisture at Marlborough Research Centre

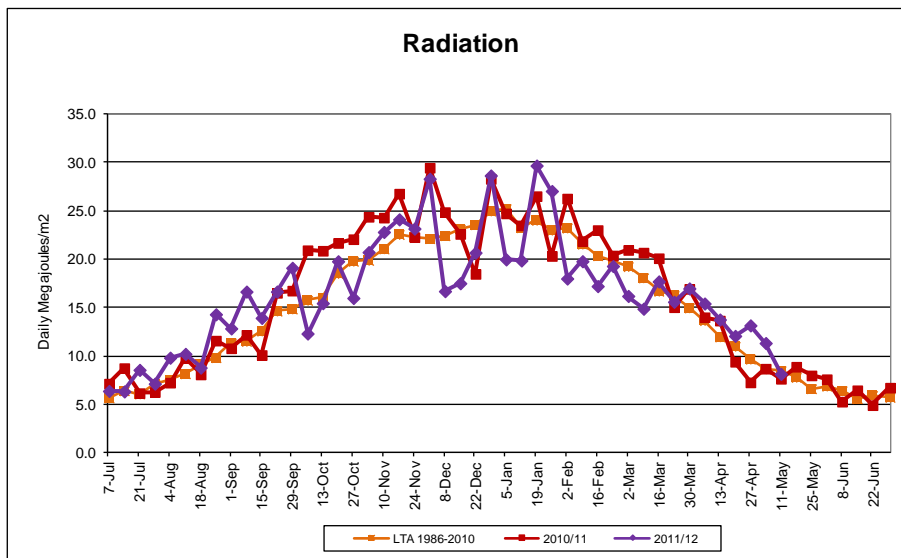
Graph 9: Mean Soil Moisture



The graph to the left shows the Mean Soil Moisture recorded at the Marlborough Research Centre for the past 3 years and up until yesterday for the current year.

Radiation

Graph 10 Radiation



Radiation has an important affect both on evapotranspiration and photosynthesis for plant growth. The higher the radiation level, the greater the ET and plant growth. It is measured in megajoules per metre² per day.

For irrigators using PAN Evaporation, that is an open pan then in general solar radiation is not completely taken into account.

Disclaimer:

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A more substantive report, which looks at climate and pasture growth over the next two – four weeks, is available on subscription from Ian Blair. For Subscription Information: Please contact Ian Blair, “Climate Matters” Blenheim, Ph 03 578 9923, email ieblair@xtra.co.nz.