One out of the box

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Well, to state the obvious, it has certainly been a difficult start to the growing season. Count your blessings if you escaped the barrage of late frosts and the damage caused by hail storms.

I went into the analysis for this month's Weather Sense with preconceived ideas about what I would find in terms of Spring temperatures this year. I got a bit of a surprise!

The warmth of Spring is a critical factor in setting your crop up for the rest of the growing season. Fruit size and keeping qualities of fruit in crops such as apples for example are strongly affected by temperatures during the cell division phase of growth. As described in previous Weather Sense', the amount of heat driving your crop's development can be measured as "Growing Degree Days". This month we look at heat accumulation during the Spring expressed as Growing Degree Days (GDD). This analysis was undertaken using the standard met summary features of the HortPlus MetWatch software, with base temperature set at 10ºC (Note to MetWatch users: set GDD base temperature using Options | General; then graph using View | Weather Summary | Graph). Data was sourced from the New Zealand-wide network of weather stations.

Figure 1 shows the accumulation of heat in growing regions across the country. The cold snap early October is particularly pronounced in Hawke's Bay and Gisborne.

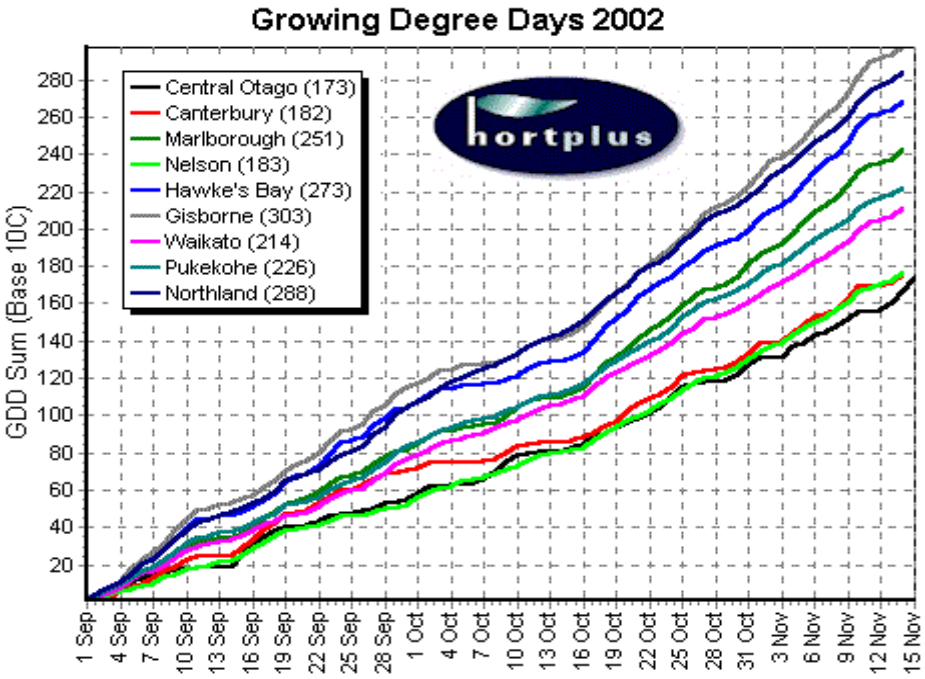

Figure 1. Summary of GDD accumulations by region. (Total accumulation for period 1 Sept - 15 Nov shown in brackets for each region.)

How did this year compare to other growing seasons? Table 1 shows heat accumulations in a number of growing regions over a 5 year period. 2002 was the coolest of the five years in all but Hawke's Bay where it was second coolest. I was surprised though about the same period for 2000 which was not terribly flash either. A good example of the usefulness of collecting and analysing data rather than relying on subjective memory!

Table 1. Growing Degree Day accumulations for a range of growing regions and years (GDD Base 10ºC, 1 Sept- 15 Nov)

	C. Otago	Nelson	Hawke's Bay	Bay Plenty
2002	173	183	273	222
2001	224	242	299	291
2000	180	192	245	255
1999	239	282	318	314
1998	205	207	333	318

Hawke's Bay received more than its fair share of coverage on the 6 o'clock news this year due to adverse Spring temperatures. If we look in depth at heat accumulations in Hawke's Bay this year and compare with previous growing seasons the picture is not quite as cut and dried as you might expect. The warm winter conditions that led to such poor accumulations of winter chilling this past year carried on through into a warm September (Figure 2). In fact, 2002 had the ***highest*** GDD accumulations of the past five years for the month of September in Hawke's Bay. The first two weeks of October saw the end of that trend, and total accumulations to mid-November were the 4th lowest - unfortunately through a critical period of development for many crops.

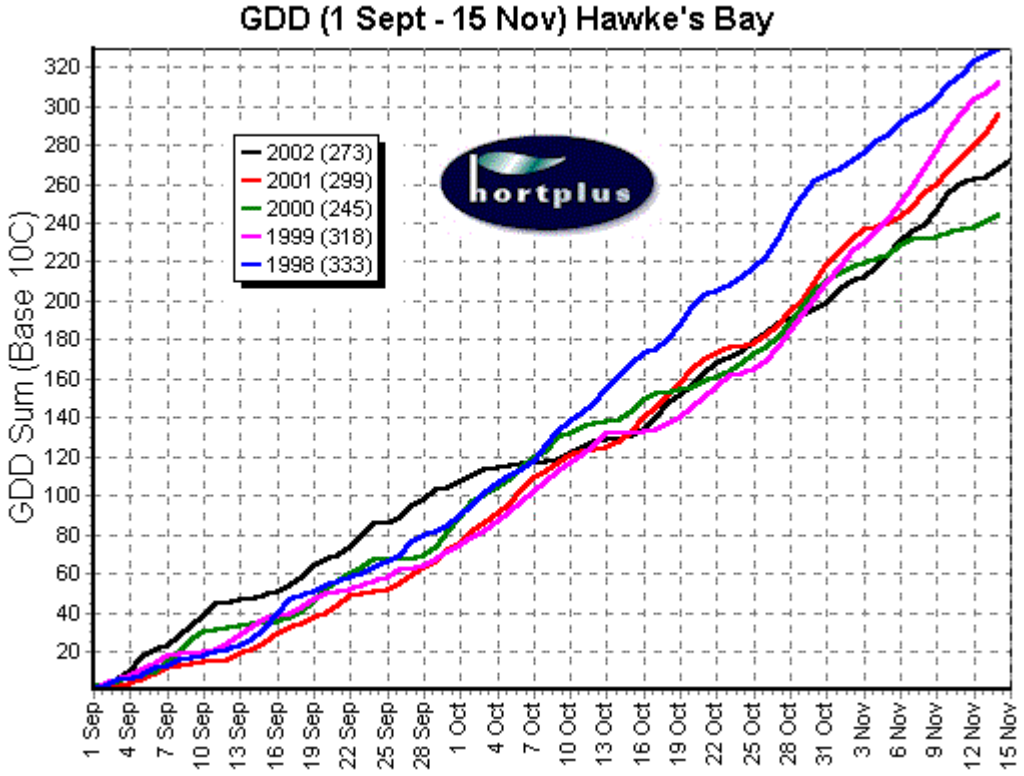

Figure 2. Growing Degree Day accumulations in Hawke's Bay over five years. (Total accumulation for period 1 Sept - 15 Nov shown in brackets for each year.)

If we continue to look in a bit more depth at the data for Hawke's Bay, Table 2 shows average daily information for the period 1 September to 15 November for five years.

Table 2. Daily average temperature information for Hawke's Bay.

	Min	Max	Mean	GDD
2002	5.9	18.5	12.4	273
2001	8.0	18.1	13.3	299
2000	6.2	17.7	12.1	245
1999	7.0	19.2	13.1	318
1998	7.4	19.1	13.4	333

The average maximum daily temperature in Hawke's Bay this year was actually higher than last year by almost ½ºC. The much lower average daily minimum temperature though says it all.

Looking at the information in Table 2 puts an interesting perspective on how relatively small differences in average temperatures reflect large differences in the climate your crop experiences. It is worth bearing this thought in mind the next time you hear or talk about the climate change scenarios being predicted for New Zealand with warming by 2030 in the order of ½ - 1½ºC. But that is another story.