REVIEW OF CLIMATIC CONDITIONS DURING THE 2008/09 GROWING SEASON (CROP MODELS)

KIWIFRUIT

BAY OF PLENTY

The Bay of Plenty had a good growing season for the 2009 kiwifruit crop, marred by a significant hailstorm during harvest in May 2009.

Spring in 2008 was warm, without frosts. Flower numbers were high and growers responded to the possibility of small fruit size by thinning off excess flowers and fruitlets. Conditions for pollination and early fruit growth were favourable. There was little damaging wind. A localised January hailstorm caused some damage, mainly around Katikati. Otherwise, warm conditions continued through the summer. Rainfall was reasonably well distributed, with no significant problems from heavy autumn rainfalls.

Fruit matured early and weather conditions for early harvest were good, enabling early shipping to market. Fruit size was similar to the 2008 crop and close to market preferred size distribution.

Hail mid-way through harvest on 11 May 2009 caused significant damage to some crops awaiting picking. More damage occurred to green kiwifruit than gold kiwifruit as more of the gold kiwifruit is picked earlier. Estimates are that 2.4 million trays of green kiwifruit and 200 000 trays of gold kiwifruit were lost due to hail damage. Variability between orchards was substantial with some affected kiwifruit crops too badly damaged to harvest and others having less than 10 to 20 percent of the fruit damaged. Despite the hail, record total and average production is still expected.

Despite frequent rain during May, harvest kept pace with maturing orchard blocks aided by good availability of labour.

OTHER KIWIFRUIT GROWING REGIONS

In Northland, gold yields were lower, and green yields were higher than the 2008 kiwifruit crop. Fruit size was smaller and favourable growing conditions lead to higher dry matter levels.

Green and gold kiwifruit yields in the Auckland region were down slightly for the 2009 harvest, with average dry matter levels. In the Waikato, kiwifruit yields and fruit size increased, and dry matter levels were the same as in 2008.

The Hawkes Bay region experienced a very good growing season, yields and size of kiwifruit increased slightly over 2008; dry matter levels were unchanged. Gisborne produced early, high dry matter fruit at similar yields to 2008. However, fruit size was slightly smaller due to a very dry growing season.

In Nelson and the rest of the South Island yields improved and dry matter levels were the same as 2008. A very warm summer with regular rainfall resulted in South Island kiwifruit being larger than the national average size for the first time in years.

Photos: Bob Zuur.

VITICULTURE

MARLBOROUGH

The 2008/09 season was characterised by good growing conditions. Winter and spring rainfall ensured irrigation was not a limiting factor at any stage during the season. Frost did not cause any significant damage in Marlborough vineyards in 2008/09.

Rainfall in December during and soon after flowering increased the risk of Botrytis rot and following rainfall in February, some varieties were affected by disease. This led to some additional leaf plucking and bunch removal to reduce disease.

Growing degree days (GDD) were lower than 2007/08 and as such the 2009 harvest was about a week later than the previous season. However, very low rainfall in March and into April meant growers were able to manage their harvest much more effectively ensuring fruit was picked at optimum ripeness and wineries were able to cope with the steady flow of fruit.

Reports have generally been very good regarding the quality of fruit that wineries received.

HAWKES BAY

The season began well with few frost issues. Significant recent investment in frost protection meant most growers were prepared for frost events and only a few light frosts occurred.

The flowering period across all varieties was very favourable. Excellent fruit set has seen some varieties, such as Merlot, with bunch weights double that expected. November was about average for GDD and very dry with 16 mm of rainfall before flowering and then a further 30 mm at the end of flowering in December. This contributed to a very favourable fruitset.

The summer months were also very dry. GDD were higher than average for December, January and February which led to harvest being a week earlier than usual. Rain events, however, in late February and early March caused an outbreak of Botrytis rot which mainly affected white varieties. Similar to 2007/08 the increased disease pressure forced some white varieties to be harvested before optimum ripeness, or infected fruit being removed before harvesting.

The season for red varieties has exceeded all expectations and reports are that the red wines from the 2009 vintage will be some of the best ever.

PIPFRUIT

HAWKES BAY

The Hawkes Bay region enjoyed one of its best pipfruit production years of the last two decades. There were no damaging frosts, fruit bud was strong and plentiful as a result of the light crops following the frosts last season, with spring weather conditions favourable for good fruit set and good fruit finish.

Spring temperatures were close to average with 101 Growing Degree days (GDD, base 10°C) and 143 GDD accumulations for October and November, respectively. Fruit sized well with above average fruit size for Royal Gala, Fuji and the Pacific series.

In general, disease incidence was low due to the below average rainfall. Rainfall for September to April was only 223 mm, or 52 percent of average. February was the only month that rainfall exceeded the monthly average with 55 percent of February's rainfall (40 mm) falling on the last day of the month. The majority of Hawkes Bay orchards have irrigation, so the low rainfall did not adversely affect the pipfruit crop, except on a few light sandy soils where irrigation water supply was inadequate for the extreme conditions.

December, January and February were very warm, with accumulated GDDs higher than monthly averages. A maximum temperature of 36.7°C was reached on 1 February, some 3°C above the previous recorded high for February. In spite of these high temperatures, sunburn injury to fruit was considered average, and packout was not adversely affected. The fruit had been exposed to consistent warm weather through December and January, so was well conditioned to the heat. The warm summer conditions advanced apple maturity for early mid-season varieties, and compressed the harvest period.

The calcium disorders of skin blotch and bitter pit have caused significant problems in the new variety Jazz™, with average grower line loss incidence of approximately 10 percent due to this problem. High summer temperatures and the dry season are thought to have contributed to these disorders.

Following the high summer temperatures, March and April were cooler than average, with clear sunny days and cool night temperatures making the 2009 harvest period one of the best in many years for fruit colour development.

Wet weather events over the harvest season were few, and of short duration leading to ideal conditions for harvest, and little loss of picking time due to wet weather.

NELSON

The winter of 2008 was colder and wetter compared with recent years. Above average rainfall in August, September, November and December kept growers vigilant with spraying for disease.

Fruit set conditions during November were not ideal and resulted in reduced fruit set and fruit size, and ultimately fruit finish. Early November saw extremely cold weather, with four days of consecutive frosts, including a 0.4°C frost recorded on 7 November at the Riwaka Research Station. In late November the region experienced overcast, humid conditions with heavy rainfall and flooding in some areas.

Following a cold and wet November, temperatures and sunshine hours improved to slightly above-average levels. The harvest period was relatively dry, with only a few days of heavy rain in February at the start of harvest. Temperatures were also cooler, which assisted colour development and allowed growers to pick most of the fruit on their trees.

One very late hailstorm at the completion of harvest had a minimal effect on production. No other serious hail events occurred during the season.

ARABLE

CANTERBURY

The Canterbury climate was one of extremes in 2008/09. Crops suffered a dry autumn, very wet winter, dry spring, frost and hail events in late spring, wind and hail during early harvest, then a wet February meaning a slow harvest and reduced crop quality. Some farms endured all of these conditions.

TABLE 1: BAY OF PLENTY WEATHER DATA

	RAINFALL (MM)			GROWING DEGREE DAYS[1] (GDD)		
MONTH	2007/08	2008/09	AVERAGE	2007/08	2008/09	AVERAGE
June	179	209	143	34	29	29
July	224	271	164	33	24	21
August	125	200	158	40	28	24
September	96	89	126	64	76	60
October	105	114	143	112	108	105
November	27	71	110	150	149	146
December	93	121	129	226	226	215
January	45	32	106	286	274	257
February	174	304	110	245	270	245
March	96	325	132	249	202	219
April	274	130	142	162	130	139
May	106	82	138	52	76	78
Total	**1544**	**1965**	**1600**	**1653**	**1566**	**1537**

Note
1 GDD – growing degree days. GDDs are calculated by taking the average of the daily high and low temperatures each day compared with a baseline (usually 10 degrees centigrade). They help to predict the date that a flower will bloom or a crop reach maturity.

Source
NIWA (Te Puke).

TABLE 2: HAWKES BAY WEATHER DATA

	RAINFALL (MM)			GROWING DEGREE DAYS[1] (GDD)		
MONTH	2007/08	2008/09	AVERAGE	2007/08	2008/09	AVERAGE
June	96	49	69	20	12	20
July	180	135	103	20	20	14
August	46	26	56	38	24	19
September	50	28	52	54	46	47
October	19	29	51	112	101	104
November	5	16	49	122	143	146
December	102	30	45	222	247	217
January	10	2	45	249	261	251
February	18	72	54	229	258	227
March	34	24	64	213	165	197
April	107	22	66	130	101	119
May	118	79	61	32	34	55
Total	**785**	**613**	**716**	**1441**	**1410**	**1415**

Note
1 GDD – growing degree days. GDDs are calculated by taking the average of the daily high and low temperatures each day compared with a baseline (usually 10 degrees centigrade). They help to predict the date that a flower will bloom or a crop reach maturity.

Source
NIWA (Whakatu).

TABLE 3: NELSON WEATHER DATA

	RAINFALL (MM)			GROWING DEGREE DAYS[1] (GDD)		
MONTH	2007/08	2008/09	AVERAGE	2007/08	2008/09	AVERAGE
June	147	99	84	3	4	6
July	78	206	81	3	5	3
August	112	195	85	7	10	6
September	100	85	75	41	46	29
October	185	76	90	60	82	77
November	3	122	78	132	122	124
December	87	119	76	236	207	194
January	88	12	72	287	249	236
February	62	151	57	224	224	213
March	96	65	73	202	149	177
April	154	57	85	109	88	84
May	3	38	76	14	5	31
Total	**1116**	**1224**	**931**	**1319**	**1191**	**1180**

Note
1 GDD – growing degree days. GDDs are calculated by taking the average of the daily high and low temperatures each day compared with a baseline (usually 10 degrees centigrade). They help to predict the date that a flower will bloom or a crop reach maturity.

Source
NIWA (Riwaka).

TABLE 4: MARLBOROUGH WEATHER DATA

	RAINFALL (MM)			GROWING DEGREE DAYS[1] (GDD)		
MONTH	2007/08	2008/09	AVERAGE	2007/08	2008/09	AVERAGE
June	45	25	65	20	20	18
July	54	153	66	21	9	8
August	43	131	59	17	12	14
September	35	76	55	60	61	50
October	91	73	62	99	99	99
November	9	54	57	141	150	136
December	63	76	49	220	209	207
January	19	10	46	287	253	249
February	26	98	51	227	209	218
March	51	10	42	220	174	183
April	113	56	42	117	104	102
May	4	33	52	12	19	52
Total	**553**	**796**	**644**	**1439**	**1319**	**1336**

Note
1 GDD – growing degree days. GDDs are calculated by taking the average of the daily high and low temperatures each day compared with a baseline (usually 10 degrees centigrade). They help to predict the date that a flower will bloom or a crop reach maturity.

Source
NIWA (Blenheim).

TABLE 5: NORTH CANTERBURY WEATHER DATA

	RAINFALL (MM)			GROWING DEGREE DAYS[1] (GDD)		
MONTH	2007/08	2008/09	AVERAGE	2007/08	2008/09	AVERAGE
June	53	75	57	13	8	6
July	58	191	68	9	3	2
August	35	107	64	7	2	6
September	25	32	53	26	40	26
October	87	31	56	48	55	60
November	27	6	51	78	133	99
December	46	57	57	170	166	166
January	9	18	52	209	237	206
February	147	75	43	179	154	178
March	15	24	59	136	130	141
April	34	45	55	76	83	66
May	35	104	51	1	9	21
Total	**572**	**764**	**664**	**953**	**1019**	**974**

Note
1 GDD – growing degree days. GDDs are calculated by taking the average of the daily high and low temperatures each day compared with a baseline (usually 10 degrees centigrade). They help to predict the date that a flower will bloom or a crop reach maturity.

Source
NIWA (Rangiora).

TABLE 6: MID CANTERBURY WEATHER DATA

	RAINFALL (MM)			GROWING DEGREE DAYS[1] (GDD)		
MONTH	2007/08	2008/09	AVERAGE	2007/08	2008/09	AVERAGE
June	62	86	60	10	11	8
July	75	149	64	11	3	4
August	35	90	67	11	2	10
September	29	41	43	32	49	33
October	79	22	53	60	59	70
November	40	11	51	99	140	104
December	59	77	55	182	164	166
January	19	46	47	239	263	212
February	108	61	42	197	166	189
March	23	35	51	163	144	153
April	38	68	51	80	101	73
May	57	171	53	3	11	29
Total	**624**	**858**	**635**	**1086**	**1114**	**1052**

Note
1 GDD – growing degree days. GDDs are calculated by taking the average of the daily high and low temperatures each day compared with a baseline (usually 10 degrees centigrade). They help to predict the date that a flower will bloom or a crop reach maturity.

Source
NIWA (Lincoln).

TABLE 7: SOUTH CANTERBURY WEATHER DATA

	RAINFALL (MM)			GROWING DEGREE DAYS[1] (GDD)		
MONTH	2007/08	2008/09	AVERAGE	2007/08	2008/09	AVERAGE
June	28	26	38	2	0	1
July	60	116	42	2	0	0
August	27	91	44	3	0	3
September	37	25	38	18	38	17
October	39	24	54	38	39	44
November	44	23	48	63	109	75
December	47	65	51	131	145	136
January	27	13	51	218	228	182
February	53	177	46	168	124	154
March	16	13	53	152	118	119
April	15	77	47	35	59	45
May	6	64	43	1	3	11
Total	**399**	**714**	**554**	**830**	**862**	**787**

Note
1 GDD – growing degree days. GDDs are calculated by taking the average of the daily high and low temperatures each day compared with a baseline (usually 10 degrees centigrade). They help to predict the date that a flower will bloom or a crop reach maturity.

Source
NIWA (Timaru).

TABLE 8: PUKEKOHE WEATHER DATA

	RAINFALL (MM)			GROWING DEGREE DAYS[1] (GDD)		
MONTH	2007/08	2008/09	AVERAGE	2007/08	2008/09	AVERAGE
June	120	194	135	60	54	275
July	180	248	143	47	35	259
August	126	207	120	52	30	241
September	97	58	111	85	66	166
October	96	111	106	113	102	110
November	71	58	100	150	156	54
December	97	114	107	254	211	32
January	13	36	84	326	252	38
February	37	139	69	273	264	74
March	39	31	95	274	210	116
April	136	69	102	184	150	151
May	88	169	122	74	42	221
Total	**1101**	**1434**	**1294**	**1891**	**1569**	**1738**

Note
1 GDD – growing degree days. GDDs are calculated by taking the average of the daily high and low temperatures each day compared with a baseline (usually 10 degrees centigrade). They help to predict the date that a flower will bloom or a crop reach maturity.

Source
NIWA (Pukekohe).

TABLE 9: WAIKATO WEATHER DATA

	RAINFALL (MM)			GROWING DEGREE DAYS[1] (GDD)		
MONTH	2007/08	2008/09	AVERAGE	2007/08	2008/09	AVERAGE
June	104	161	115	28	24	31
July	158	212	125	26	22	19
August	113	173	108	35	21	25
September	61	70	95	66	46	56
October	92	160	92	90	101	103
November	51	37	91	128	148	147
December	73	144	99	234	213	215
January	4	45	82	319	252	260
February	26	152	68	262	262	247
March	36	32	86	249	193	220
April	113	72	89	157	132	134
May	84	102	104	32	23	73
Total	**914**	**1360**	**1153**	**1627**	**1434**	**1529**

Note
1 GDD – growing degree days. GDDs are calculated by taking the average of the daily high and low temperatures each day compared with a baseline (usually 10 degrees centigrade). They help to predict the date that a flower will bloom or a crop reach maturity.

Source
NIWA (Ruakura).

TABLE 10: CENTRAL OTAGO WEATHER DATA

	RAINFALL (MM)			GROWING DEGREE DAYS[1] (GDD)		
MONTH	2007/08	2008/09	AVERAGE	2007/08	2008/09	AVERAGE
June	34	12	31	2	0	1
July	34	29	24	1	0	0
August	12	7	25	6	0	3
September	28	47	25	23	40	20
October	56	22	39	37	47	57
November	5	11	36	95	134	104
December	34	76	48	213	160	175
January	32	12	44	280	244	228
February	37	64	33	215	133	188
March	33	5	37	141	123	131
April	37	41	34	27	59	43
May	33	40	33	0	2	9
Total	**377**	**367**	**409**	**1038**	**941**	**960**

Note
1 GDD – growing degree days. GDDs are calculated by taking the average of the daily high and low temperatures each day compared with a baseline (usually 10 degrees centigrade). They help to predict the date that a flower will bloom or a crop reach maturity.

Source
NIWA (Clyde).

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