



# HILLnews

THE QUARTERLY NEWSLETTER FROM HILL LABORATORIES → ISSUE No.8 December 2009

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**Hill Laboratories**  
BETTER TESTING BETTER RESULTS

## WISHING YOU A VERY MERRY CHRISTMAS

ON BEHALF OF OUR TEAM HERE AT HILL  
LABORATORIES, WE WOULD LIKE TO THANK YOU  
FOR YOUR SUPPORT DURING 2009, AND OFFER OUR  
BEST WISHES FOR A PROSPEROUS YEAR IN 2010.

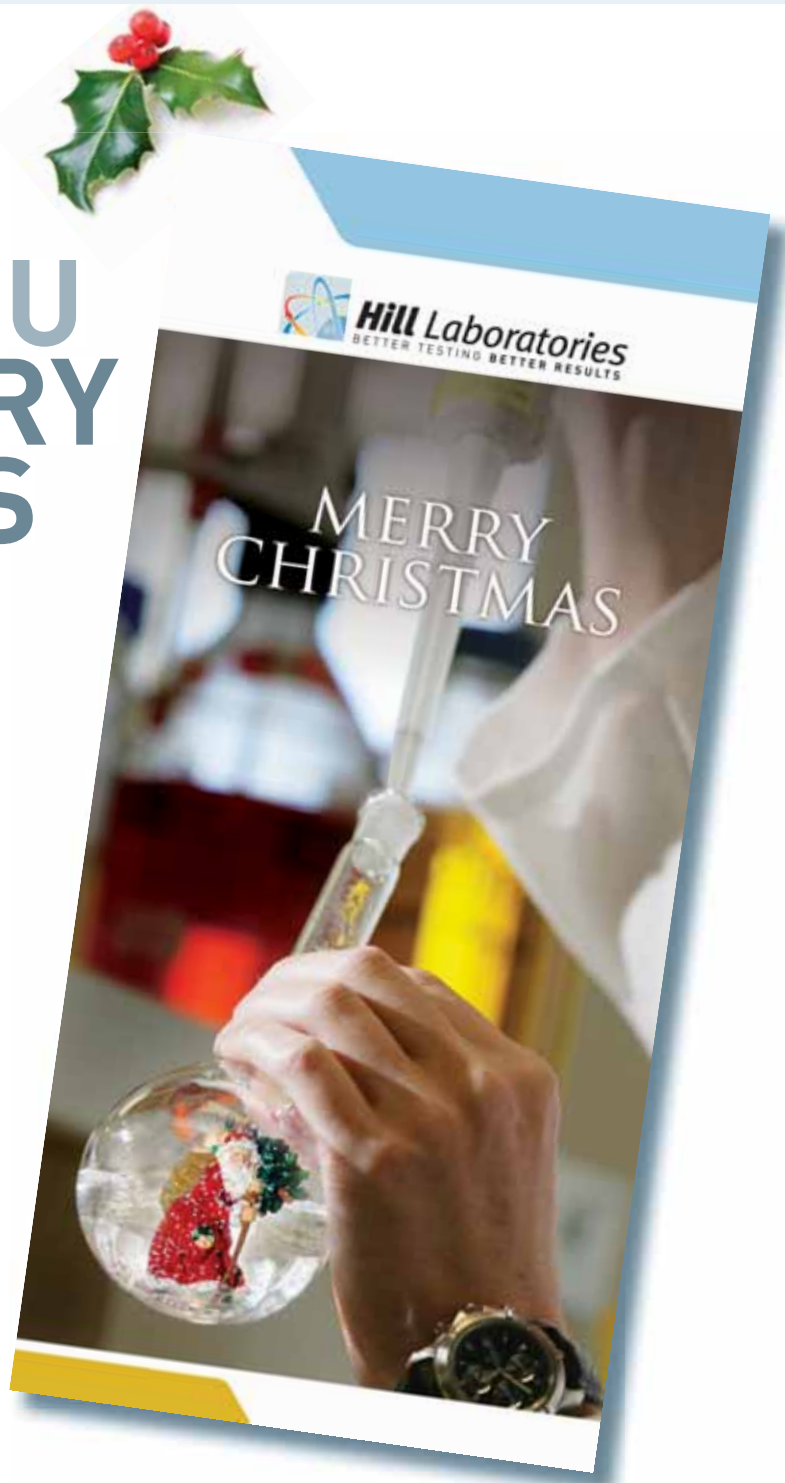
Hill Laboratories has a very broad range of clients. From farmers and growers at the heart of the NZ primary industry, to specialized producers of food products for consumers around the world, we enjoy providing the information our clients need to be successful.

We took the opportunity to update our website during the year, to make it a more useful resource for our customers. If you haven't seen this yet, please visit [www.hill-laboratories.com](http://www.hill-laboratories.com). Further stages of development are underway and will be released in the first half of 2010 with some great new features we know our clients will value.

We have also placed a strong emphasis on providing our clients with a great service during the year. In particular, we have grown our team of Client Service Managers to 15 people – all of whom have the knowledge and experience that our clients value when carrying out testing.

For those who are enjoying a holiday over the December/January period, may it prove to be restful and renewing for you.

**Roger Hill and Steve Howse**



## HILL LABORATORIES

# CHRISTMAS OPENING TIMES

LISTED BELOW ARE THE DETAILS OF WHEN WE ARE OPEN AND CLOSED OVER THE CHRISTMAS BREAK, FOR YOUR INFORMATION.

### Hamilton Office

Thursday	24 Dec	Open	8.30-5.00 pm
Friday	25 Dec	Closed	Christmas Day
Saturday	26 Dec	Closed	Boxing Day
Sun/Mon	27/28 Dec	Closed	
Tues/Wed	29/30 Dec	Open	8.30-5.00 pm
Thursday	31 Dec	Open	8.30-5.00 pm
Friday	1 Jan	Closed	New Years Day
Saturday	2 Jan	Closed	
Sun/Mon	3/4 Jan	Closed	
Tuesday	5 Jan	Open	8.30-5.30 pm

Any samples put on an overnight courier on Thursday 24 Dec will not get to us for 5 days - 29 Dec. Overnight courier samples on Thursday 31 Dec will not be received until Tuesday 5 Jan.

### Christchurch Laboratory

Thursday	24 Dec	Open	8.00-5.00 pm
Friday	25 Dec	Closed	Christmas Day *
Saturday	26 Dec	Closed	Boxing Day *
Sun/Mon	27/28 Dec	Open	9.00-5.00 pm
Tues/Wed	29/30 Dec	Open	8.00-5.00 pm
Thursday	31 Dec	Open	8.00-5.00 pm
Friday	1 Jan	Closed	New Years Day *
Saturday	2 Jan	Closed	*
Sun/Mon	3/4 Jan	Open	9.00-5.00 pm
Tuesday	5 Jan	Open	8.00-6.30 pm

\*Samples for Christchurch lab will be accepted if arranged prior.

A reminder that samples sent a day or two prior to these dates may not be arriving on an 'open' day, therefore they could spend the holidays at the courier depot.

# LOOKING FORWARD TO 2010

**WE ARE PROUD TO BE A WHOLLY NZ OWNED AND COMPLETELY INDEPENDENT TESTING LABORATORY, WHICH IS NOW 25 YEARS OLD.**

Innovation is something we value highly at Hill Laboratories. From its earliest days, our staff have enjoyed using analytical technology in new ways to provide the solutions our clients need. This desire to be innovative is alive and well, and you can expect to see some exciting new developments coming out of Hill Laboratories in 2010.

During 2010 our clients will be offered the ability to use our website to view the status of jobs being worked on, and review jobs that have been completed. We welcome feedback on these and any other features that will make our website a tool which is really useful for those using our services.

There is increasing demand for information about the Uncertainty of Measurement associated with our testing from some sectors of our client base. It is a complex challenge to provide this information for the wide range of tests that we offer, but we expect to be able to offer this reporting on request from early in 2010.

Near infra-red measurement (NIR) is used widely around the world for rapid and non-destructive analysis of samples. Hill Laboratories already uses NIR extensively for testing of plant and feed samples in our Agricultural Division, and along the way we have developed world class expertise in developing and maintaining calibrations for NIR analyses. We will continue to apply this expertise to provide innovative new solutions to the needs of our clients right across the company.

Our Christchurch laboratory has held a leading position in the South Island microbiology market for many years. Our water chemistry testing capability was introduced to the laboratory during 2009, and has grown dramatically since then. In 2010 we will broaden our testing scope in Christchurch to meet the needs of our customers there.

All in all there is much to look forward to next year, and we are looking forward to working with you on these and other things that will make you more successful.

**HILL LABORATORIES**



# CONTROL OF YOUR TESTS RIGHT WHERE YOU NEED IT! ON-LINE IMPROVEMENTS COMING IN THE NEW YEAR

**INTRODUCING MY LAB. THE LATEST DEVELOPMENT IN OUR QUEST TO OFFER THE BEST TESTING SERVICES WITH THE BEST CUSTOMER SUPPORT. MYLAB PROVIDES YOU WITH FREE AND EASY-TO-USE ONLINE ACCESS TO INFORMATION RELATED TO THE TESTS YOU SUBMIT TO HILL LABORATORIES.**

In the last newsletter we wrote about the launch of our new website. The website has proven very popular with customers. At Hill Laboratories we intend to build on this success by launching some online tools for our customers in the New Year.

The **MYLAB 1.0** launch scheduled for introduction in the first quarter of 2010 will for the first time allow clients to log on to their own account and track the progress of samples as they go through our laboratory for testing. Initially **MYLAB** will give you the date the sample is received at the lab, the status of the testing and the estimated completion date of that testing. We're really excited about this development which has so far proved very popular with our customers during Prototype testing.

**MYLAB 1.1** and **1.2** will also be released towards mid year and will see increased functionality that allows customers to view current test status and a library of:

- **REPORTS**
- **INVOICES**
- **REQUEST FORMS**
- **QUOTES**
- **STATEMENTS**

all on-line for you to access at any time, anywhere.

It is our hope that **MYLAB** will make interacting with Hill Laboratories even easier and provide you with the tools to get the very best out of your testing experience.



## HILL LABORATORIES

# INTRODUCTION OF PCR TESTING

**Available at Hill Laboratories – PCR Testing for the monitoring Escherichia coli O157:H7 programme in Bulk Manufacturing Beef.**

Those listed slaughter operations and pack houses involved in the processing and exporting of beef to the United States testing for E coli O157:H7 can meet all their requirements by testing with Hill Laboratories. Hill Laboratories is an approved laboratory under the NZFSA laboratory approval scheme. We have recently purchased a PCR testing machine and with LAS competent administrators and trainers it continues to be the Laboratory of choice for this type of testing

**For more information** about getting your beef tested to meet export requirements, please call our South Island laboratory on **03 377 7176**.



If you are using your own container or chilly bin to send in your samples, can you please make sure it is labelled with your name, so it can be returned to you. If not, bins can not be returned.

# BALLANCE OXFAM TRAIL FOUR PEOPLE ONE GOAL

**WHY DID 1200 OTHERWISE APPARENTLY NORMAL PEOPLE SET OUT ON THE MORNING OF 4 APRIL 2009 TO RUN, WALK OR STUMBLE ACROSS 100 KM OF NEW ZEALAND FARMLAND? WAS IT FOR THE GLORY, THE CHALLENGE OR THE CHANCE TO PARADE PUBLICLY IN LAYERS OF LYCRA?**

For the members of team "In Ballance" from Ballance Agri-Nutrients, it was all about getting out of their comfort zones and getting into a good cause – Oxfam. The occasion was the fundraising event known as the Oxfam Trailwalker.

The "In Ballance" team had been sponsored by countless good-hearted friends, families and companies, including Hill Laboratories, and they weren't in the mood to let anyone down.

Congratulations to the "In Ballance" team who checked in with a final time of 17 hours and 35 minutes, nearly two and a half hours better than hoped. They finished as the 16th team to cross the finish line, the 13th fastest team to finish and only the 9th team to finish with all four members.

**For more information** about the Oxfam Trailwalker go to [www.oxfamtrailwalker.org.nz](http://www.oxfamtrailwalker.org.nz)



Left to right: Rachele, Sue, Karen, Peter.

## AGRICULTURAL

### NEWS IN BRIEF

## DETECTING ORGANISMS IN ANIMAL FEED

**Listeria and Salmonella organisms can now be determined in silage and other animal feeds at our Christchurch laboratory.** Both of these are undesirable microbial species in animal feed and contamination can occur either during the silage-making process or from subsequent poor storage. Listeriosis in cattle results from infection with the bacterium *Listeria monocytogenes*, with the source of infection commonly attributed to the animal feed. Both tests are reported as detected or not detected.

## TECHNICAL NOTE

**A new Technical Note – “Soil Sulphur in Pastoral Soils” has just been released.**

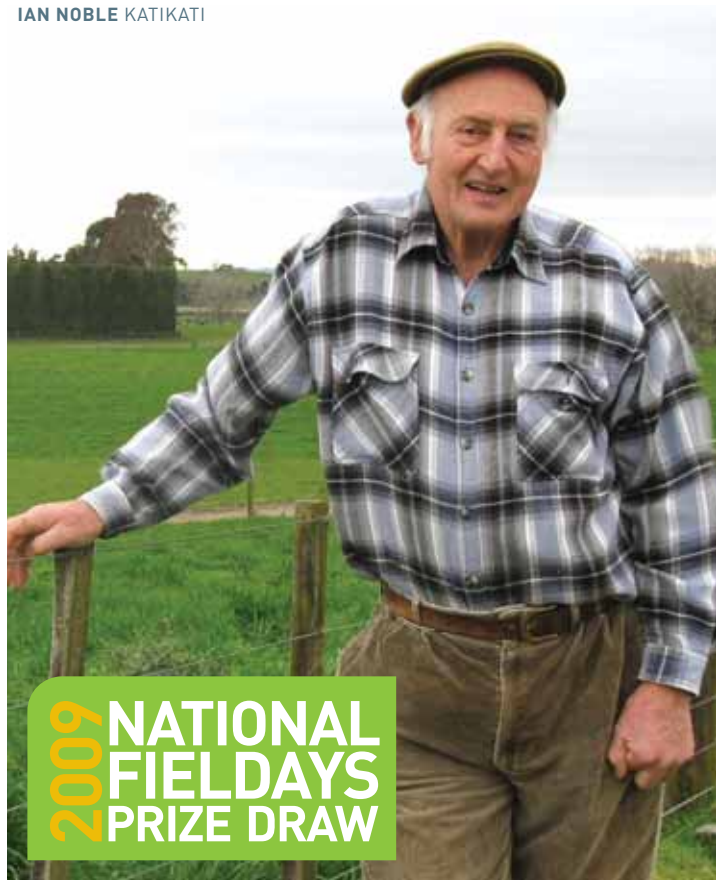
View this and a wide range of other information on our website [www.hill-laboratories.com](http://www.hill-laboratories.com). This new technical note describes the three main soil tests on offer for soil-sulphur; Sulphate-S, (Extractable) Organic S and Total S. It outlines how each test result contributes to an understanding of the Sulphur status in the soil specifically for pastoral soils, but the information can also relate to other growing systems.

## DAIRY EFFLUENT TESTING

**Dairy Effluent testing is recommended to manage nutrient loading on to effluent paddocks in terms of soil fertility and animal health as well as compliance with resource consents.** Nutrients in dairy effluent are highly variable throughout the year depending on the quality of the grass being eaten by the cow and also depending on what supplements are being consumed. Our Dairy Effluent Kit contains a sampling bottle, disposable glove, instructions and a courier ticket to return the chilly-bin containing the sample.

Please contact the laboratory to find out more on **(07) 858-2000**.

IAN NOBLE KATIKATI



# AND THE WINNER IS...

**IF YOU ENTERED INTO THE PRIZE DRAW AT THE HILL LABORATORIES SITE DURING THE 2009 NATIONAL AGRICULTURAL FIELDDAYS WE THANK YOU FOR THE INTEREST YOU HAVE SHOWN IN USING OUR TESTING SERVICES. THE WINNER OF THE OF THE \$650 PRIZE DRAW IS IAN NOBLE OF KATIKATI.**

On winning his award, Ian said .....

“We have been a user of Hill Laboratories’ soil test services for many years and I am a grateful recipient of their prize of free testing from Fielddays. I have long believed that if you can measure you can manage. Soil testing is an aid to the use of a cost effective fertilizer programme which is even more necessary in the present budget constrained times. We have farmed at 60 Matahui Road, KatiKati since 1966, milking 240 cows on a dairy farm of 75 hectares, with two run-offs in the district for dairy replacements, bull beef and some dry stock. I see soil testing as a factor in good decision making and endorse its value”

Thanks to Ian and others that entered the draw – see you again at the National Fielddays next year.


**AGRICULTURAL**

# GRAPE NUTRITION



**GRAPES ARE GROWN THROUGHOUT THE WORLD IN TEMPERATE CLIMATE ZONES ON A WIDE RANGE OF SOIL TYPES AND FERTILITY. WHILE GRAPES GROW AND PRODUCE REASONABLE QUALITY WINES IN A WIDE RANGE OF CONDITIONS, TOP QUALITY WINES ARE PRODUCED WHERE THE COMBINATION OF CLIMATIC CONDITIONS, SOIL TYPE AND NUTRITION ENHANCE THE CHARACTERISTICS OF SPECIFIC VARIETIES.**

In New Zealand, the original plantings were on fertile soils where fertiliser requirements were low and nutrient deficiencies not common. The recent trend has been to plant low fertility soils including sandy or stony types in Hawkes Bay, Marlborough, Canterbury and Central Otago.

The main requirement for grape soils is for good drainage with contour, aspect and location suited to the specific variety for high quality production. On low fertility soils, nutrition related disorders may result in poor vine growth and production; however poor drainage, drought stress, phylloxera, herbicide injury, nematode damage or root disease may have a similar effect.

Fertiliser requirements are assessed using soil and plant tests in conjunction with observation of vine condition and vigour. Recommended tests include a Basic Soil Profile (pH; Olsen P; Exchangeable Cations K, Ca, Mg, Na; CEC; %BS; Volume Weight) with additional useful information about soil quality gained from the Organic Soil Profile (Organic Matter, Total Nitrogen, Available Nitrogen). The Sulphate-S status of the soil should also be monitored as sulphur plays a role in nitrogen metabolism of the wine as well as being involved in the synthesis of some of the flavour components of wine e.g. thiols. For new plantings, deep soil tests representing soil from 15cm to 30cm are useful in terms of assessing lime requirement and for appropriate pre-planting management.

One of the limitations of soil tests for established vines is that the root zone extends well beyond the soil sampling depth of 15cm so soil test results should be used along with plant tests for best information regarding vine nutrient status. Hill Laboratories recommends the Combined Grape Profile at flowering where the highly mobile nutrients (NO<sub>3</sub>-N, K, P and Mg) are measured in the petiole as well as the full range of nutrients (N, P, K, S, Ca, Mg, Na, Fe, Mn, Zn, Cu and B) measured in the blade. Results are reported

as a histogram plotted against varietal-specific medium ranges – an approach unique to Hill Laboratories. Testing regimes for petiole, blade and whole leaf at flowering or at veraison are also available.

## COMMON NUTRITION ISSUES INCLUDE:

- **Nitrogen** – deficiency in low fertility soils affects vine vigour; seen as yellow foliage with short internode length on shoots. Fruit yield may be reduced or where deficiency is not severe the winemaker may have problems with stuck fermentation, thus affecting wine quality.
- **Potassium** – high levels due to luxury uptake is common and an imbalance with calcium has been linked with grape stem necrosis. (This disorder has also been linked with stress during the growing season, or nitrogen deficiency in overseas research.) High potassium (as high K/N ratio) in berries lifts the pH of the must and may affect wine quality.
- **Magnesium** – deficiency shows up from mid-season as interveinal yellowing of foliage with oldest leaves affected first. In red varieties leaves become reddened rather than yellow.
- **Boron** – low levels at flowering affect pollination and may be seen as small seedless berries in the bunches; leaf symptoms are interveinal chlorosis. Deficiency is common in soils with low organic matter, and under severe climatic conditions. Boron may be toxic if applied unevenly as a soil application or if irrigation water has boron at greater than about 0.5 g/m<sup>3</sup>
- Deficiencies of Zn, Cu, Mn or Fe are usually associated with high soil pH (>pH 7)
- Aluminium and manganese may be toxic at low soil pH.

## ENVIRONMENTAL

# NEW TESTING BEING INTRODUCED IN THE ENVIRONMENTAL SECTION

## NEW TESTS AND METHODS DEVELOPED:

### 1) Acidherbs in water by LCMSMS now accredited

As part of our continuous drive to improve the quality of data we produce, we have developed a test method for Acid Herbicides (e.g. 2,4-D, 2,4,5-T etc) by LCMSMS. The use of the LCMSMS means that derivatisation (in this case methylation) is no longer required. We have also added some new compounds into the suite - Acifluorfen, Endothal, Oryzalin, Tetrachlorophenol (breakdown product of PCP).

### 2) Sulfonyl Ureas in water and soil by LCMSMS

Sulfonyl Ureas are a class of very potent herbicides that are relatively non-toxic to humans. Compounds such as metsulfuron-methyl are the active ingredients in common sprays such as Answer and Escort. Because of their toxicity to plants, the methods developed are very sensitive with soil detection limits in the sub-ppb (part per billion) range, and the water in the ppt (part per trillion) range.

### 3) Alkylquats in water by LCMSMS

The Alkyl Quaternary Ammonium Compounds suite includes Didecyldimethylammonium Chloride (DDAC), Benzalkonium Chloride (BAC, quantified as the C14 homologue), 3-iodo-2-propylbutyl carbamate (IPBC) and dodine. DDAC and BAC are common cationic

surfactants and although IPBC is not an alkyl quaternary ammonium compound, it is typically included in DDAC formulations for use in the timber industry as an anitispstain agent. Similarly Dodine, while not technically an alkyl quat, has been included in this suite as we occasionally receive requests to analyse for this fungicide.

### 4) Methoprene in water by LCMSMS

Methoprene is used in drinking water cisterns and water treatment stations to control mosquitoes. It is also used on pasture and crops to control a range of insects. It is essentially non-toxic to humans and acts by preventing insects reaching maturity, thus breaking the life cycle. Methoprene is readily degraded in sunlight and by microbial activity to the extent that analysis for methoprene must be undertaken within 5 days.

### 5) Imidacloprid in soil by LCMSMS

Imidacloprid is a chlorinated analogue of nicotine, and is used as an insecticide in a wide variety of applications. It is somewhat controversial as French beekeepers blame the pesticide for the drastic decline of wild bee populations in their country, however its manufacturers cite independent studies confirming it has no adverse effects on bees, and that the decline of bees is due to the increase in varroa mite.

## ENVIRONMENTAL SOIL SAMPLES STORAGE AFTER TESTING



**THE CONTINUING INCREASE IN THE NUMBER OF ENVIRONMENTAL SOIL SAMPLES WE ARE TESTING HAS LEAD US TO REVISE THE TIME PERIOD FOR WHICH THESE ARE HELD AFTER TESTING.**

This has been done to minimise our need for extra storage space (ie cost to us), so that we can continue to offer our tests at a competitive price.

We presently (see Section 2.3.2 in our Environmental Catalogue) hold most soil samples for 5-6 months after testing is completed.

As from 1 January 2010 we intend to reduce this period to 3 months. We are happy to return samples to our clients, either immediately after testing, or at the end of the holding time. By special request, and with a charge, we can hold samples for longer periods, but this will depend on available long term storage space and must be arranged on a case-by-case basis.

## FOOD & BIOANALYTICAL



# ANALYSING SAUVIGNON BLANC FLAVOURS IN WINE

**SAUVIGNON BLANC HAS BEEN THE FOCUS OF WINE AROMA RESEARCH FOR A NUMBER OF YEARS. THIS HAS BEEN DUE TO THE UNIQUE AND DISTINCT CHARACTERS OF NEW ZEALAND PRODUCED SAUVIGNON BLANC WINES. THE “SAUVIGNON BLANC PROJECT” HAS BEEN MULTI-FACETED AND HAS INCLUDED INPUT FROM A NUMBER OF RESEARCH ORGANIZATIONS.**

The Department of Chemistry, Auckland University have been looking at:

- The chemical and sensory profiles of NZ Sauvignon Blanc wines
- Identifying new aroma compounds
- Examining the stability of these compounds during winemaking and bottle aging.

The Auckland School of Biological Sciences has been developing yeast strains with differing efficiencies of conversion of the various volatile compound precursors. This could allow winemakers to use different yeasts to produce wines with different flavour characteristics. Plant & Food Research Auckland has been investigating sensory profiles of the Sauvignon Blanc wines to create a lexicon for the use of winemakers. The Marlborough Wine Research Institute ran trials aimed at understanding the development and

concentration of the flavour compounds in fruit, juice and wine. Similarly, Lincoln University has also carried out work on Sauvignon Blanc flavour compounds.

There are two key groups of compounds that have been found to contribute to the aroma and flavour of the NZ Sauvignon Blanc wines. These are known as “thiols” and “methoxypyrazines”. Hill Laboratories are able to analyse for these flavour compounds in wine.

The test for thiols covers three different compounds known as 3-MH, 3-MHA and 4-MMP. These compounds have a passionfruit or blackcurrant flavour. They are formed during the winemaking process and are a product of the yeast fermentation.

The methoxypyrazines also covers three compounds known as IPMP, SBMP and IBMP. These compounds are responsible for the green capsicum aroma in wine and have highly potent flavours with a sensory threshold of between 6-15 ppt (parts per trillion). Methoxypyrazines flavours are favourable in wines like Sauvignon Blanc but generally unfavourable in red wines. The compounds are formed in the grapes and are transferred into the wine with winemaking process having little effect on the actual levels in the finished product. Please contact the laboratory for prices.

Ref. The Wine Science press. January 2005. University of Auckland.

**For further information, see the wine testing page on the website [www.hill-laboratories.com](http://www.hill-laboratories.com)**

■ We hope you enjoyed reading HILLNEWS.

If you'd like to see other areas of content covered – in particular certain technical areas – or you feel you have suggested improvements, please write to Martin Lovell at; [martin.lovell@hill-labs.co.nz](mailto:martin.lovell@hill-labs.co.nz)