

*HAWKES BAY AMATEUR WINEMAKERS
AND BREWERS CLUB*



March 2023

WEBSITE: www.wine-and-beer-hb.org.nz

Hi everyone,

Well, what can we say? Gabby sure blew a curve ball our way. I am sure that those of us less affected are thinking of the battlers who have a long haul ahead.

We hope to see all of you who can actually get there, at the next Club Meeting on Wed 15th March, at the Deaf Clubrooms 22 Lee Road Taradale at 7.30pm.

Of course there is nothing to report from last months meeting, Thanks go to Brian for putting the word out that the meeting could not take place when most of the rest of us had no power, phones or internet, or bridges to drive over.

This time last year we were talking about our recent outing to Zealandt Brewery, sadly it will be a long time before they can reopen.

At this months meeting we will cover the points cup judging for last month, as well as the scheduled classes for this month. You can enter both, so we should have enough to fill the gaps from those who still cannot get to the meeting. We plan to have plenty of time for the informal discussion that was going to be last month as well as knowing that a certain stormy topic is likely to consume a chunk of that time as well.

Hop Harvest;

March is Hop Harvesting time, and if anyone would like to harvest some for themselves, then talk to Brian, or Jim who both know where they can be had.

Beer Appreciation Day;
Saturday March 11

B.A.D



Make sure to include your favourite locals, outstanding regulars and some new breweries as well.

Invite some great musicians and a funky DJ.

Get some tasty food on board that goes down well with tasty beverages.

Set it up in the grounds of a beautiful historic house surrounded by stunning gardens or in a picturesque riverside park.

Limit numbers so there are no lengthy queues.

Be happy.

Job done.

This is being held this Saturday starting at 12.00 at Duart House in Havelock North.

I hearby shamelessly plug this event, as it has always been such an enjoyable little beer, cider and food festival. You may even see your editor helping out on one of the beer stands. If you grab tickets online here, you save \$5 on the already very reasonable price.

<https://www.beerappreciationday.co.nz/>

for more Info and tickets

Anyone who is keen, contact me as **I could have a spare free ticket** up for grabs. Jim.

Clubnight Raffle;

Still only \$2 a raffle or three for \$5.

Upcoming events;

- 15th March will now be the first club night for the year, we meet at the Deaf Clubrooms 22 Lee Road Taradale at 7.30pm. We will be having a more relaxed meeting with hopefully more time for informal Brewing and Winemaking discussion.

The classes for our points cup judging are:

You may enter one from each month

February

W7	Dry Red Fruit.
W21	Aperitif.
B1	Light Beer & Kolsh (1,2,3)
B3	Lager (1,2,3)

March

W1	Dry Red Grape.
W11	Medium White Fruit.
L2	Naturally Infused Liqueur
B4	Bitter or Pale Ale (1,2,3,4)

- The mini Dusty Gringo challenge between 4 of our All Grain Brewers will be postponed until Nigel can make it. Store your entry in the fridge if you have one running.
- The Club Outing to tour Abby Winery and Brewery will be rescheduled when an appropriate date can be found.

- In April we are tentatively planning a Saturday Afternoon Wine show and tell BBQ on Brian's new deck at Lyndhurst.
- 6th to 8th October is the date for the **National Competition**.
We've made the Bookings

Hopefully we will get a reasonable turnout for this month's meeting, at the Deaf Club Rooms, Lee Street, Taradale, 7.30pm on the 15th March.

We don't have a speaker lined up, but if we all make an effort to bring something for the Fat Monk and two months worth of points cup entries it should provoke plenty of discussion.

Your committee would also like to take this opportunity to get some input from you all about the details and planning for the National competition we are hosting this year.

Bring your Dry Red Fruit, or Aperitif wine, Dry Red Grape or Medium White Fruit wine, your Light Beer or Lager and your Bitter or Pale Ale, and your Naturally Infused Liqueur, something of interest for the Fat Monk, and of course a few \$\$ for the raffle.

CHEERS !

And see you all on Wednesday.

Jim.



This Month, we carry on with from Octobers excerpts from Marc Sedams “Guide to Water Treatment”.

Alkalinity:

Alkalinity is a measure of the buffering capacity of the anions in solution, and, with pH, can complete the chemical picture of your water. A buffer prevents changes in pH by maintaining a relatively constant concentration of hydrogen and hydroxide ions within a certain pH range. Bicarbonate is a strong buffer and the major component of the alkalinity of brewing water; the relationship between alkalinity and hardness is apparent.

How alkalinity is measured. Alkalinity is quantitatively measured by titration with a strong mineral acid until the buffering capacity of the anions in solution is neutralized; that is, the buffering power of the solution has been overcome and the pH is able to change. This value is expressed, after multiplying by a conversion factor based on the sample size, as the “ppm alkalinity as CaCO₃.”

Permanent versus temporary hardness:

Water hardness can be either permanent (noncarbonate) or temporary (carbonate); the designations in parenthesis give you an idea on what each is based. Calcium carbonate precipitates (drops out of solution). It is tenuously soluble in water, and the solubility is entirely pH dependent (see Table II, “Distribution of Carbonation Versus pH”). Water that has a high concentration of calcium or magnesium and roughly similar levels of carbonate ions has “temporary hardness”; vigorous boiling and aeration will result in a precipitation of calcium carbonate and, to a lesser extent, magnesium carbonate (magnesium carbonate is 300 times more soluble than calcium carbonate). The water can be decanted off the precipitate, leaving the mineral salts behind. This robs the water of soluble calcium and magnesium (the components of hardness, by simplified definition), decreasing the overall hardness of the water. Water that has a high concentration of calcium and magnesium ions but a low concentration of carbonate ions has “permanent hardness”; that is, no amount of boiling and aeration will precipitate out calcium beyond the concentration of carbonate present.

Table II: Distribution of Carbonates Versus pH

The higher or more alkaline the pH, the higher the amount of negatively charged carbonate (CO_3^{-2}) and bicarbonate (HCO_3^-) ions in solution. Conversely, the lower or more acidic the pH, the higher the amount of positively charged ions (such as H_2CO_3) in solution.

pH	% CO_3^{-2}	% HCO_3^-	% H_2CO_3
10	32	68	0
9	5	95	0
8	0	97	3
7	0	81	19
6.5	0	58	42
6	0	30	70
5.5	0	12	88
5	0	4	96

*Data from George Fix, *Principles of Brewing Science*, p. 16 (reference 3).

Table III: Minor Minerals

**Data from references 1–6.*

Compound	Effect on Beer Taste	Effect on Mashing/Wort Composition	Effect on Fermentation
CATIONS			
Potassium (K⁺) [range: 0.01–10 ppm]	<ul style="list-style-type: none"> • Imparts salty taste similar to sodium 	<ul style="list-style-type: none"> • Very soluble 	n/a
Iron (Fe⁺², Fe⁺³) [range: 0.01–0.3 ppm]	<ul style="list-style-type: none"> • Unpleasant, inky taste with levels as low as 0.05 ppm 	<ul style="list-style-type: none"> • Increases haze and oxidation of tannins at >1 ppm 	<ul style="list-style-type: none"> • Weakens yeast at >1 ppm
Manganese (Mn⁺²) [range: 0.001–0.1 ppm]	<ul style="list-style-type: none"> • Unpleasant, metallic taste 	n/a	<ul style="list-style-type: none"> • Trace mineral necessary for yeast metabolism
Copper (Cu⁺²) [range: 0.001–0.1 ppm]	<ul style="list-style-type: none"> • Unpleasant, metallic taste • Above 1 ppm leads to permanent haze 	<ul style="list-style-type: none"> • Copper equipment is “passivated” upon contact with wort and runs no risk of leaching into beer 	<ul style="list-style-type: none"> • Trace mineral necessary for yeast metabolism • High concentrations cause yeast mutation
Zinc (Zn⁺²) [range: 0.01–0.2 ppm]	n/a	n/a	<ul style="list-style-type: none"> • Trace mineral necessary for yeast metabolism

ANIONS			
Nitrate (NO_3^-) [range: 0.1–10 ppm; ideally zero]	<ul style="list-style-type: none"> • Ruins palate 	<ul style="list-style-type: none"> • Above 10 ppm, indicative of pollution by sewage 	<ul style="list-style-type: none"> • Can be reduced to nitrite by certain wort spoilage bacteria
Nitrite (NO_2^-) [range: 0.1–10 ppm; ideally zero]	<ul style="list-style-type: none"> • Originates from decomposition of nitrates by coliform bacteria • Always indicative of pollution 		<ul style="list-style-type: none"> • Toxic to bacteria
OTHER COMPOUNDS			
Silica (SiO_2 ; H_4SiO_4 in solution)	n/a	<ul style="list-style-type: none"> • A colloid; interferes with lautering • As H_4SiO_4, can precipitate calcium and magnesium out of solution 	<ul style="list-style-type: none"> • Causes haze
Chlorine – Free and Chloramine $(\text{Cl}_2)^*$ [range: 0–0.5 ppm]	<ul style="list-style-type: none"> • Added by almost all public water utilities as a biocide • Can form chlorophenols, detectable at levels < 5 ppb! <p>*Most chlorine is in the form of hypochlorite (HOCl) at normal tap water pH, but it is generally reported as “Cl_2” in water analyses. Likewise for chloramines, actually H_2NCl, HNCl_2, or NCl_3.</p>		

Water with high levels of carbonate (temporary) hardness tends toward a pH of 8.3–8.4 because of the equilibrium between carbonates on one hand and atmospheric carbon dioxide

on the other. It is not necessary to look at the individual concentrations of calcium, magnesium, and carbonate on your water analysis; checking only the values for hardness and alkalinity will give you a very good idea of the basics needed to treat your water (though it is still important to know about the concentrations of individual ions to accurately brew to style).

Working with hard water. Permanently hard water is ideal for brewing purposes and responds well to acidulation in the mash and kettle. Temporarily hard water (containing more than 50 ppm alkalinity as CaCO_3) is more problematic in brewing and may need to be treated to reduce bicarbonate levels. The most common method is to vigorously boil and aerate the water as described above. Other methods of treating temporary water hardness are available. Brewers can add a portion of toasted malt or dark-roasted malt (both are naturally acidic) or lactic acid to the mash, which will help to overcome moderately alkaline waters, as will the addition of calcium and magnesium in the form of sulfate or chloride salts or dilution with distilled water (more on these techniques in later sections).

Residual alkalinity. Temporary hardness can be calculated by determining "residual alkalinity." Bob Kolbach derived an equation to calculate residual alkalinity in 1953; it takes into account all of the minerals that contribute to changes in the pH of beer. Using this calculation to determine the course of water treatment to be conducted before dough-in can greatly improve starch conversion, lautering, and the overall quality of the beer by preventing large "swings" in pH that inevitably result from adjustment done during the mash.

More next time there is nothing more exciting to share

CHEERS !

And see you all on Wednesday.

Jim