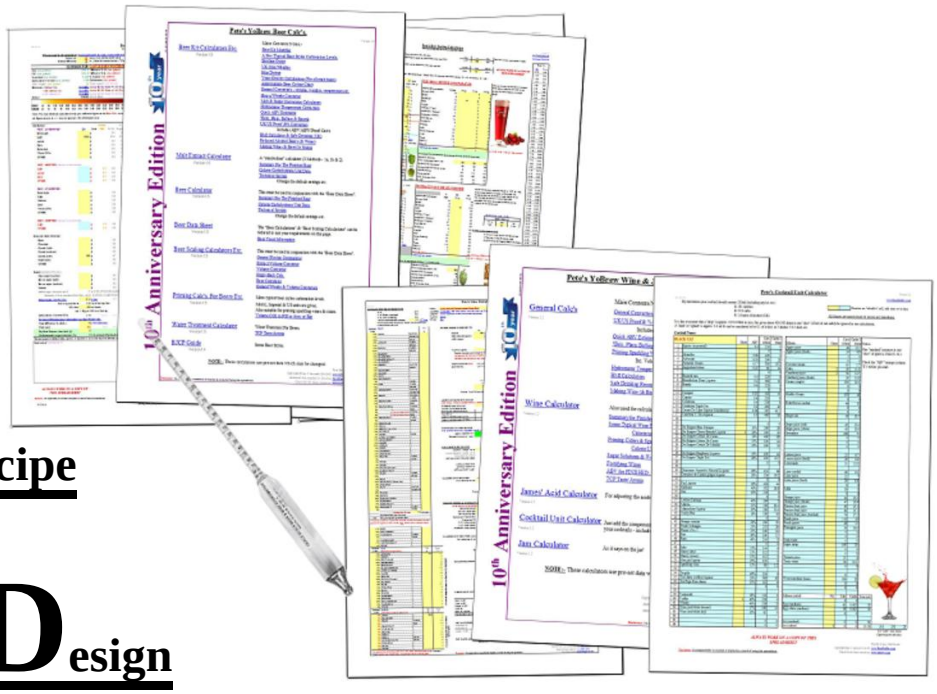
Computer Aided Recipe Design



This document will hopefully help people to design their own beer, wine, cider, cocktails & jam recipes, most of the mathematics will be performed by the free "YoBrew Calc's v1.5" which can be downloaded via this link Free Beer & Wine Calculators. The calculators are available in the Microsoft Office (.XLS, these files can also be opened/saved in Microsoft Office 2010 etc.), the other "office" such as Ashampoo "PlanMaker" & "LibreOffice" etc, should work without too many problems.

NOTE:- These are just examples of recipe design, DO NOT assume that they will give drinkable results!

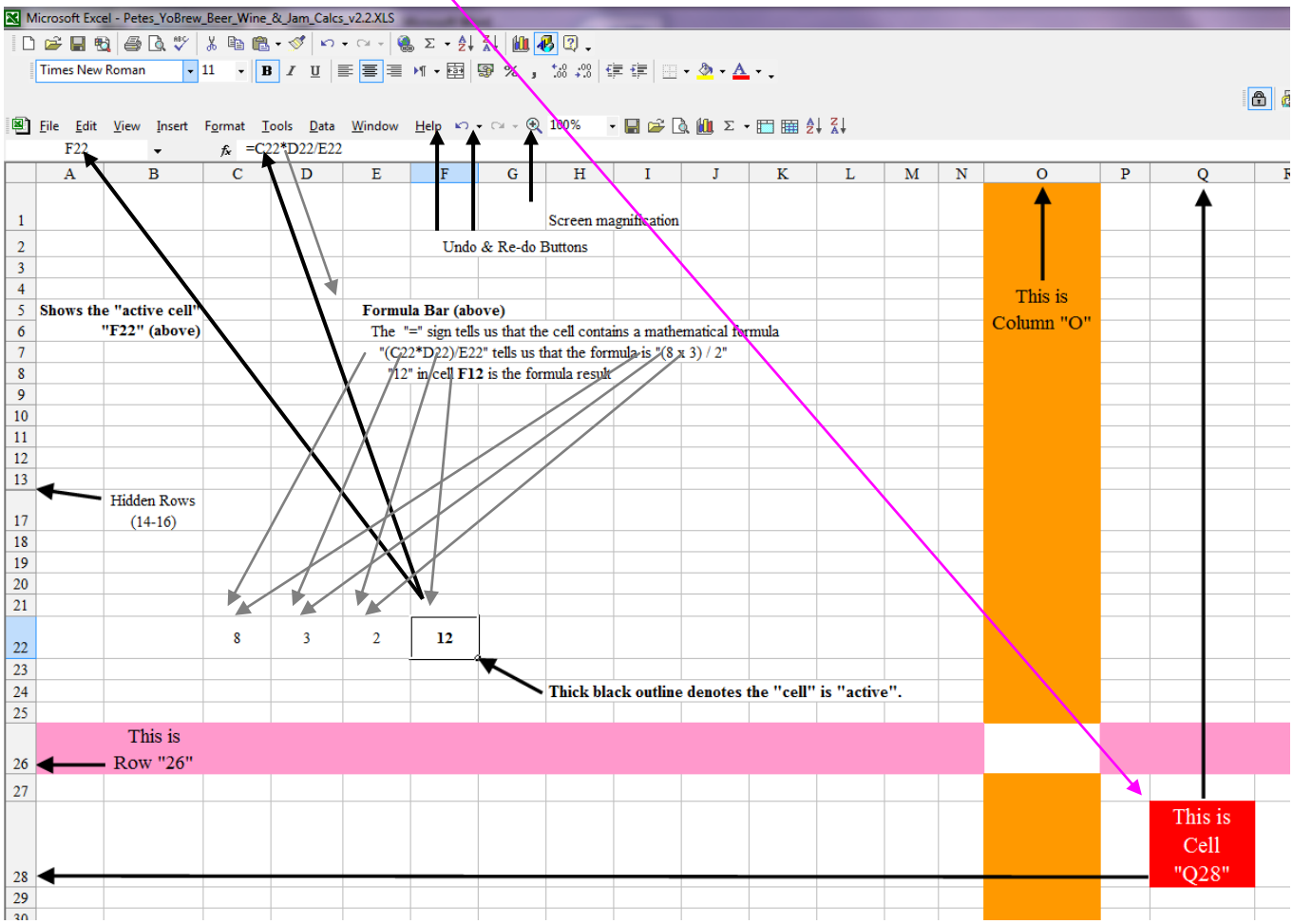
Versions 1.5 of the calculators are used.

Spreadsheet Notes Wine Recipe Design Cider Recipe Design
Beer Recipe Design General Info.

SPREADSHEET NOTES

A spreadsheet is simply a grid made up of re-sizeable (horizontal) rows numbered “1, 2, 3, …” etc. & (vertical) columns lettered “A, B, C, ….., AA, AB, …” etc. Each rectangle or CELL has its own “Map reference” i. e. Q28, where Q refers to the relevant column & 28 to the relevant row. The cells can be used to store numbers, letters &, most importantly, they are able to perform mathematical functions (sums - i.e. add-ups, takeaways, timeses, guzinta’s* etc.). Luckily all we have to do is insert or delete numbers, once we have altered a cell, just press the return or enter keys, or click the left mouse button (LMB) & the change takes place.

The screenshot below hopefully explains some of the above terms.



*Guzinta - for those of you who are not mathematically/technically minded, 3 guzinta 15 five times!

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WINE RECIPE DESIGN

Notes/Assumptions:-

- Version 1.5 of the "Wine Calc's" is used.
- The calculators cannot tell you if the final product is good, bad or indifferent, it can only give approximate parameters.
- Approximately 5g or1 tsp of Bentonite can be used at the start of fermentation to help clear the wine.
- Fermentation increases acidity by about 1.5%.
- The calculator figures shown in grey can be largely ignored.
- "Easy-to-use" quantities will be used where possible; i.e. fruit juices will be used from 1 litre Tetra-Paks.

Here are some typical guidelines for several wine styles; they are not by any means "fixed".

AA AB AC AD AE AF AG AH AI AJ AK AL AM AN BA BB BC

SOME TYPICAL WINE PARAMETERS (If used, treat as a rough guide only, the figures below are VERY arbitrary). Adapted from "Must" by Professor Gerry Fowles.

WINE TYPE	DRY WHITE	DRY RED	ROSÉ	SWEET WHITE	SWEET RED	DESSERT (FRUIT)	DESSERT (PORT)	
% ALC ABV	10-13	11-13	11-12	12-15	13-18	17-20	17-20	Many good wines could possibly not fit within these limits, but beware of any recipes displaying vast differences.
% ACID	0.50-0.70	0.50-0.65	0.60-0.75	0.50-0.75	0.40-0.65	0.55-0.65	0.40-0.50	
% TANNIN	<0.04	0.09-0.3	0.04-0.09	<0.04	0.15-0.3	0.2-0.3	0.2-0.3	
STYLE	Dry	Med. Dry	Med.	Med. Sweet	Sweet	Dessert		

DRY RED GRAPE & APPLE JUICE WINE

This is a good recipe to start because of its simplicity. Many recipes call for 3 litres of juice & that will be our starting point. Please note, just because this wine is relativity easy to make does not mean it is rubbish, far from it!

It is best to state with a clean sheet, literally, you will notice cell G5 is not zero, as fermentation produces some acidity.
Enter the name of the wine in cell G3 & the finished quantity of the wine, in our case 4.5 litres (six 750ml bottles) is entered into cell D7.

	B	C	D	E	F	G	H	I	J	K	L	M
1								**Pete's Wine Calculator**				
2	28"10"16											
3	**SUMMARY FOR THE FINISHED WINE**				Name:-	**DRY RED GRAPE & APPLE JUICE WINE**						
4		O. G.	1000		ALCOHOL	0.0% ABV	(OR, after priming with 0.00g sugar per 750ml bottle, 0.0% ABV)					
5		F. G. (Before sweetening)	1000		ACIDITY	0.15% (expressed in terms of the tartaric equivalent)						
6		F. G. (After sweetening)	1000		TANNIN	0.00%						
7		Volume (finished/effective starting)	4.5	/4.70 litres	STYLE	Medium dry						

Fermentation always causes losses, in this case through dead yeast cells & liquid losses through siphoning etc. This general wastage is assumer to be 200ml & entered in cell J57. You will then observe that cell E7 now has changed to "4.7".

And now for the recipe, using 1 litre (1000ml) of supermarket apple juice & 2 litres (2000ml) of supermarket red grape juice. In according to the information, from the juice boxes, the sugar content of these is 11 & 15.6g per 100ml respectively. We can put our juice quantities in the relevant cells ("1000" in cell E116 & "2000" in cell E119) & enter their corresponding sugar content ("11" in cell F116 & "15.6" in F118). Ensure that column E, rows 12-140 are otherwise left blank.

114	Assumed	JUICES		Vol	Sugar
115	Waste	(Check labels for sugar & preservatives)		ml	%
116	0%	APPLE	-	1000	11
117	0%	CRANBERRY	-		12
118	0%	GRAPE	WHITE		15.6
119	0%	"	RED	2000	15.6
120	0%	GRAPEFRUIT	-		9

The % ABV (G4) is only 4.8 & I like my wines (personally) to be in the 11-11.5% range. In order to raise this, the OG (D4) must be increased by adding other fermentable substances. You will observe that the acidity (G5) & tannin (G6) are all in the same area as the table at the top of the page. Sugar only increases gravity, nothing else, so, I will try adding 500g to cell J12. Now cell D4 reads 1074 % G4 reads 10.6%.

Making the sugar content 580g raises the Original Gravity to1080 (D4) & the alcohol to 11.6% ABV (cell G4).
Pectic needs to be added to stop pectin hazes forming (cell J23), one tsp added at the start should be sufficient. One tsp Bentonite *MAY* be added (cell J24) to help clear the wine.

The Final Spreadsheet

Pete's Wine Calculator

28/10/16

SUMMARY FOR THE FINISHED WINE			Name:-	DRY RED GRAPE & APPLE JUICE WINE
O. G.	1080		ALCOHOL	11.6% ABV (OR, after priming with 0.00g sugar per 750ml bottle, 11.6% ABV)
F. G. (Before sweetening)	994		ACIDITY	0.60% (expressed in terms of the tartaric equivalent)
F. G. (After sweetening)	994		TANNIN	0.09%
Volume (finished/effective starting)	4.5	/4.70 litres	STYLE	Dry

The latter figure includes left-over pulp, "wastage" & an allowance for any sweetening/priming sugars used.

Insert your own data in the yellow boxes.
No information available, value "guessed".

Assumed Waste	FRUIT		Wt g
15%	APPLE	EATING	
15%	"	COOKING	
18%	"	CRAB	
12%	APRICOT	FLESH	
74%	"	DRIED	
15%	BANANA	FLESH	
95%	"	DRIED	
13%	BILBERRY	-	
12%	BLACKBERRY	-	
17%	BLACKCURRANT	-	
14%	BLUEBERRY	-	
15%	CHERRY	EATING	
15%	"	SOUR	
13%	CRANBERRY	-	
16%	DAMSON	-	
85%	DATE	-	
20%	ELDERBERRY	-	
0%	"	JUICE	
21%	FIGS	FLESH	
70%	"	DRIED	
35%	GOOSEBERRY	EATING	
35%	"	COOKING	

OTHER ADDED INGREDIENTS

	Wt			
SUGAR	580	g, add to 390ml hot water to obtain 730ml of sugar syrup with an S.G. of approx.		1300
SOD. BICARB (approx.)		g = 0.00 tsp OR calcium carbonate (precipitated chalk) for acid reduction		
ACID (approx.)		g = 0.00 tsp TARTARIC	OR = 0.00g = 0.00 tsp CITRIC	
			OR = 0.00g = 0.00 tsp MALIC	
			OR = 0.00g = 0.00 tsp ACID BLEND	
TANNIN (approx.)		g = 0.00 tsp POWDER	OR = 0.0g = 0.0 tsp LIQUID TANNIN	
Read the instructions on the packaging BEFORE adding.			OR = 0.0 tea bag(s) OR = 0.0g loose tea, mashed in a te	
PECTIC ENZYME (min.)	3.3g = 0.7 tsp (approx.)			
BENTONITE	4.5g = 1.0 tsp (approx.)			

Any data given for tannin is un-reliable, careful design of your recipes is much better than adding additional tanning.
Tea tannin is not the same as grape tannin, neither is most shop-bought tannins as they are made, apparently, by re-cycling chestnut/oak trees etc

	Approximate Must Tota			
	Weight	Sugars	Acid	Tannin
	3000	1002	21.4	4.10

	Nutrient & Vitamin Sectio			
	N	K	B1	B3
Total Nutrient & Vitamin supplied by the "ingredients"	7600	3750	0.80	6.20
Nutrient & Vitamins required for 4.70 litres of must	705	2585	0.47	0.94
g = 0.00 level 5ml tsp nutrient give a total of	6895	1165		
tablet(s) vit. B complex give(s) a total of			0.33	5.26

(Assume 1 level 5ml tsp nutrient & 1 vit. B tablet ≈ 1 rounded tsp "Energiser")

Red figures denote defic

SWEET RED GRAPE & APPLE JUICE WINE

Sweet wines can be made by at least four different ways.

1. Stop the fermentation when the wine reaches the desired gravity by adding potassium sorbate.
2. Sweeten the finished wine by using a propriety sweetener such as Xylitol.
3. When the must gravity falls to about 1005 or so, feed it with sugar. Repeat the process 'til you get the sweetness required & the must fermentation ceases.
4. Ferment the wine to dryness & add potassium sorbate. Then use the YoBrew calc's "Wine Calc" cell J41.

The addition of 100g sugar to cell J41 raises the FG to 1002, making the wine medium dry. When sweetening sugar is used, the volumes are automatically adjusted.

Pete's Wine Calculator

28/10/16

SUMMARY FOR THE FINISHED WINE			Name:-	DRY RED GRAPE & APPLE JUICE WINE
O. G.	1080		ALCOHOL	11.6% ABV (OR, after priming with 0.00g sugar per 750ml bottle, 11.6% ABV)
F. G. (Before sweetening)	994		ACIDITY	0.60% (expressed in terms of the tartaric equivalent)
F. G. (After sweetening)	1002		TANNIN	0.08%
Volume (finished/effective starting)	4.5	/4.58 litres	STYLE	Medium dry

The latter figure includes left-over pulp, "wastage" & an allowance for any sweetening/priming sugars used.

Insert your own data in the yellow boxes.
No information available, value "guessed".

17%	GRAPE JUICE	WHITE	
17%	"	RED	
0%	GRAPE CONC. g	WHITE	
0%	" g	RED	
0%	" ml. Note the change of units	WHITE	
0%	" ml. Note the change of units	RED	
10%	GRAPEFRUIT	FLESH	
0%	"	JUICE	

ADDING SWEETENING SUGAR

FOR STILL WINES & CIDERS ONLY, ADD SUGAR SOLN. AFTER STABILIZATION. Always use potassium sorbate before adding any sweetening sugar.
Sweetening sugar to be used 100 g (0 nom.) for an estimated gravity increase of 8.3 (Medium dry)
Assume 100g sugar makes approx. 125 ml of syrup, S.G. 1300, by adding approx. 70ml. of water.

Style/Approx. Commercial equiv.	Dry/1	Medium Dry/2	Medium/3	Med. Sweet/4	Sweet/5	Des
Final Gravity	<998	998-1005	1005-1010	1010-1015	1015-1020	10
Approx sweetening sugar (g/4.5 l)	0-50	50-130	130-200	200-260	260-310	31
Approx sweetening sugar (g/750ml)	0-8.3	8.3-22	22-33	33-43	43-52	5

It is far better to design sweet wines rather than sweeten a finished dry wine as the Calc's allow for the sweetening sugar added as a syrup.

IMPORTANT:- Always add potassium sorbate (stabiliser) after racking & before adding any sweetening sugar, this prevents possible dangerous secondary fermentation in the bottle.

CIDER RECIPE DESIGN

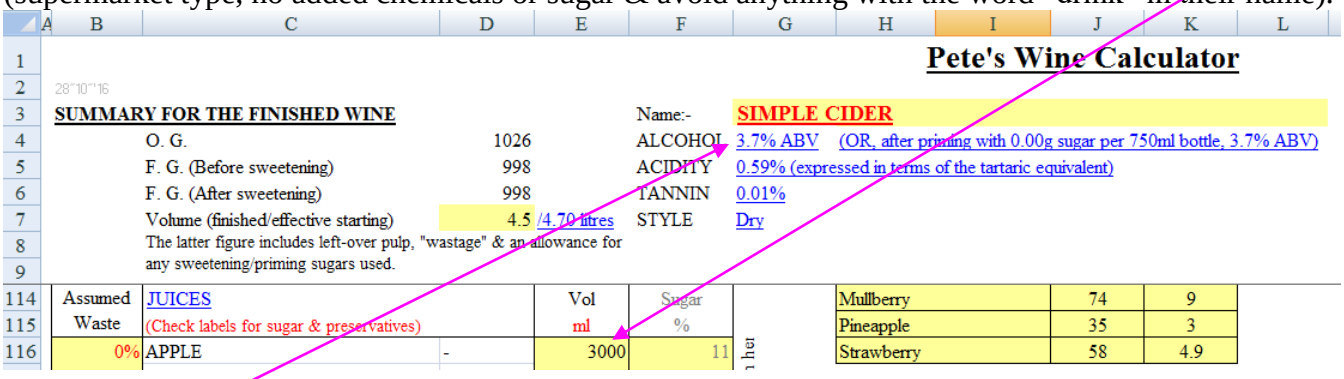
By definition Cyder is made from pure apple juice & Cider from apple juice, water, sugar etc. The easiest way to make cider is from a kit but these can be very variable in quality, some can be almost as bad as the highly commercial industrial stuff sold to-day & which can contain all sorts of colourings, artificial sweeteners & other assorted chemicals.
Incidentally, most cider kits appear to use malt extract, it could be possibly cheaper &/or give a sweeter taste.

Notes/Assumptions:-

- Cider uses the version 1.5 of the "Wine Calc's".
- Calculators cannot tell you if the final product is good, bad or indifferent, it can only give approximate parameters
- Fermentation increases acidity by about 1.5%.
- A mixture of different apple juices is generally believed to give better results than a single variety – do a tour of your local shops/supermarkets buying a 1 litre Tetra-Pak from each. Any wine yeast may be used but Champagne is best in theory as gives smaller & more solid deposits in the bottle.
- All ciders will be dry, artificial sweeteners such as Saccharin or preferably proper wine sweeteners may be added.

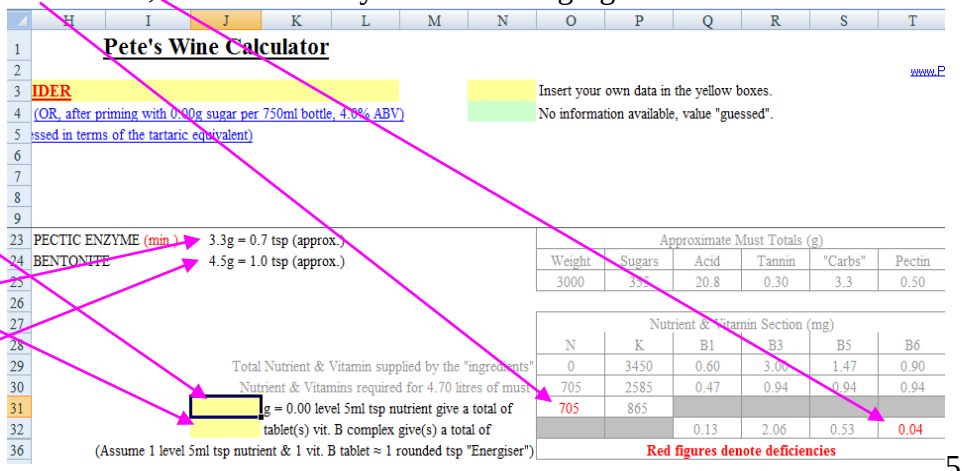
SIMPLE CIDER (STILL)

Again, for 4.5 litres bottled cider. 3 litres (3000ml) apple juice for example is entered into cell E116 (supermarket type, no added chemicals or sugar & avoid anything with the word "drink" in their name).



This gives 3.7% ABV but it could be made higher by adding sugar to cell J12, e.g. just 25g would give a modest increase of 0.3%.

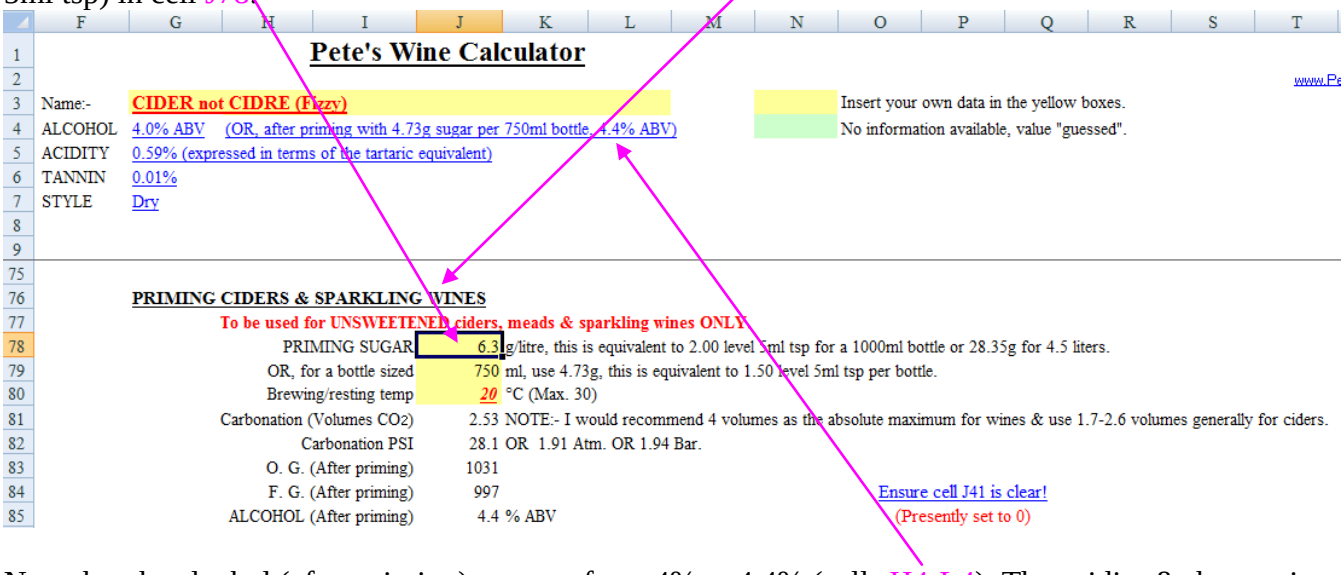
Note the RED figures in cells O31 & T32, this is caused by the cider being light in nutrients & the vitamin B6. Approx. 4.5ml (1 tsp) of nutrient can be added cell J31 to correct this deficit. The slight vitamin problem can be ignored or half of a Vit. B complex tablet added to J32. Approx. 1 tsp of pectic enzyme is also required (cell J23). Also 1 tsp of Bentonite *may* be added to help clear the wine (J24).



CIDER not CIDRE (Fizzy)

Priming a live beer, wine or cider etc. gives it some "fizz". Over priming can be very dangerous, especially if glass bottles are used so, ensure the bottles are sound & capable of standing pressure. Most beers & ciders are primed with one or two level 5ml tsp per litre, this work out about 1.7-2.5 volumes of CO_2, this equates to about 17-28 psi.

Still using the Simple Cider above, we can progress to cell G76-J76, "PRIMING CIDERS & SPARKLING WINES" section. So, if we like our very drinks fizzy, we can enter 6.3g (max. = 2 level 5ml tsp) in cell J78.



Note that the alcohol (after priming) goes up from 4% to 4.4% (cells H4-L4). The acidity & the tannin levels are not affected.

A Few Possible Variations

Some of the apple juice could be replaced by pear juice, replacing it all would make "Perry". Unfortunately I have no reliable information regarding pear juice & so it is not included in the spreadsheet but normally the apple juice is replaced by an equal amount of pear juice. I have even seen recipes containing both juices.

Petals from an aromatic, fully opened rose, picked on a good sunny day, can be added around day 4, giving a little subtlety to the bouquet & flavour, elderflowers can also be used, but be careful as they are very strongly flavoured & can easily become over-powering.

BEER RECIPE DESIGN

The beer calculator can entail some messing around to get the required result, so, to quote a wall known saying, patience is a virtue.

Notes/Assumptions:-

- Cider uses the version 1.5 of the "Beer Calc's" ("Extract Calc" page).
- Calculators cannot tell you if the final product is good, bad or indifferent, they can only give approximate parameters.
- The calculator figures shown in grey can be largely ignored.

BJCP Beer Styles

APPROXIMATE BEER COLOUR (

EBC	4	8	12	16	20	24	28	32	36	40	44	48	52
SRM	2	4	6	8	10	12	14	16	18	20	22	24	26

Viewed through a 25mm glass.
Viewed through a 1/2 inch glass.

	STYLE	**OG**	**FG**	**ABV%**	Bitterness **EBU/ IBU**	Colour **SRM** Min.	Max.
53	**8. ENGLISH PALE ALE**						
54	A. Standard/Ordinary Bitter	1032-40	1007-11	3.2-3.8	25-35	4	14
55	B. Special/Best/Premium Bitter	1040-48	1008-12	3.8-4.6	25-40	5	16
56	C. Extra Special/Strong Bitter	1048-60+	1010-16	4.6-6.2	30-50+	6	18

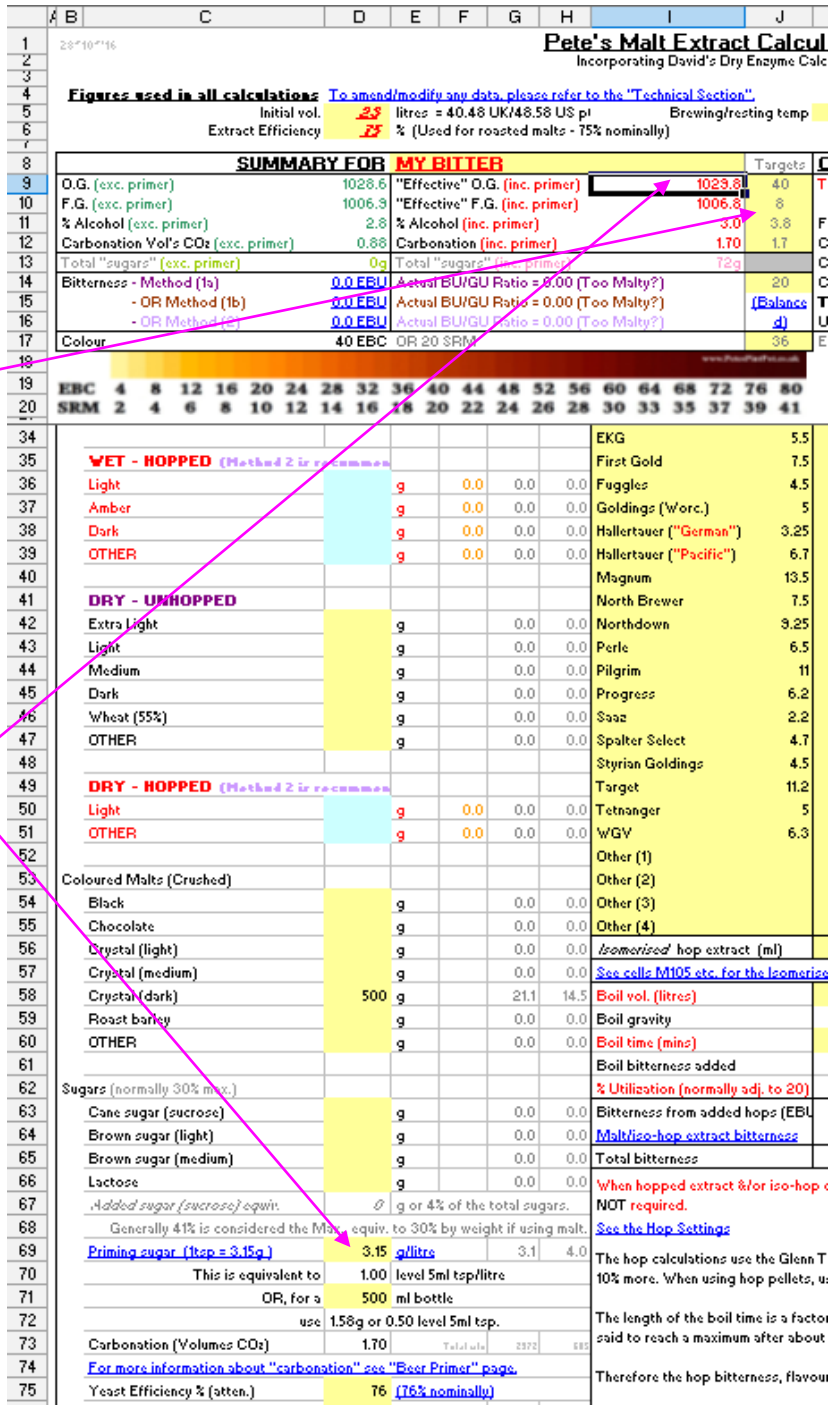
I suppose the first step in any recipe design is to choose a beer style, there is a "BJCP" (Beer Judge Certification Program - American) page in the YoBrew calculator which defines all (?) beer styles. I would hate to think how many traditional British beers fail to fit into their allocated category but at least a guideline is available. For this example I decided on Special/Best/Premium Bitter (B55-H55).

MY BITTER

From my friendly neighbourhood home brew shop, I buy 1.8Kg of light liquid malt extract, a 500g bag crushed crystal malt (I have assumed this to be "light"), 50g of (typical British) Goldings hops & a sachet of Ale yeast. Using the "Extract Calc" the malt quantities are entered accordingly, note the "Targets" cells (J9-J17) are there just as a reminder.

Note that cell D69 (Priming sugar – used at the bottling stage) is set at 3.15g (or 1 level 5ml tsp) per litre, a good starting point, its effect can be seen in cells I9-I12.

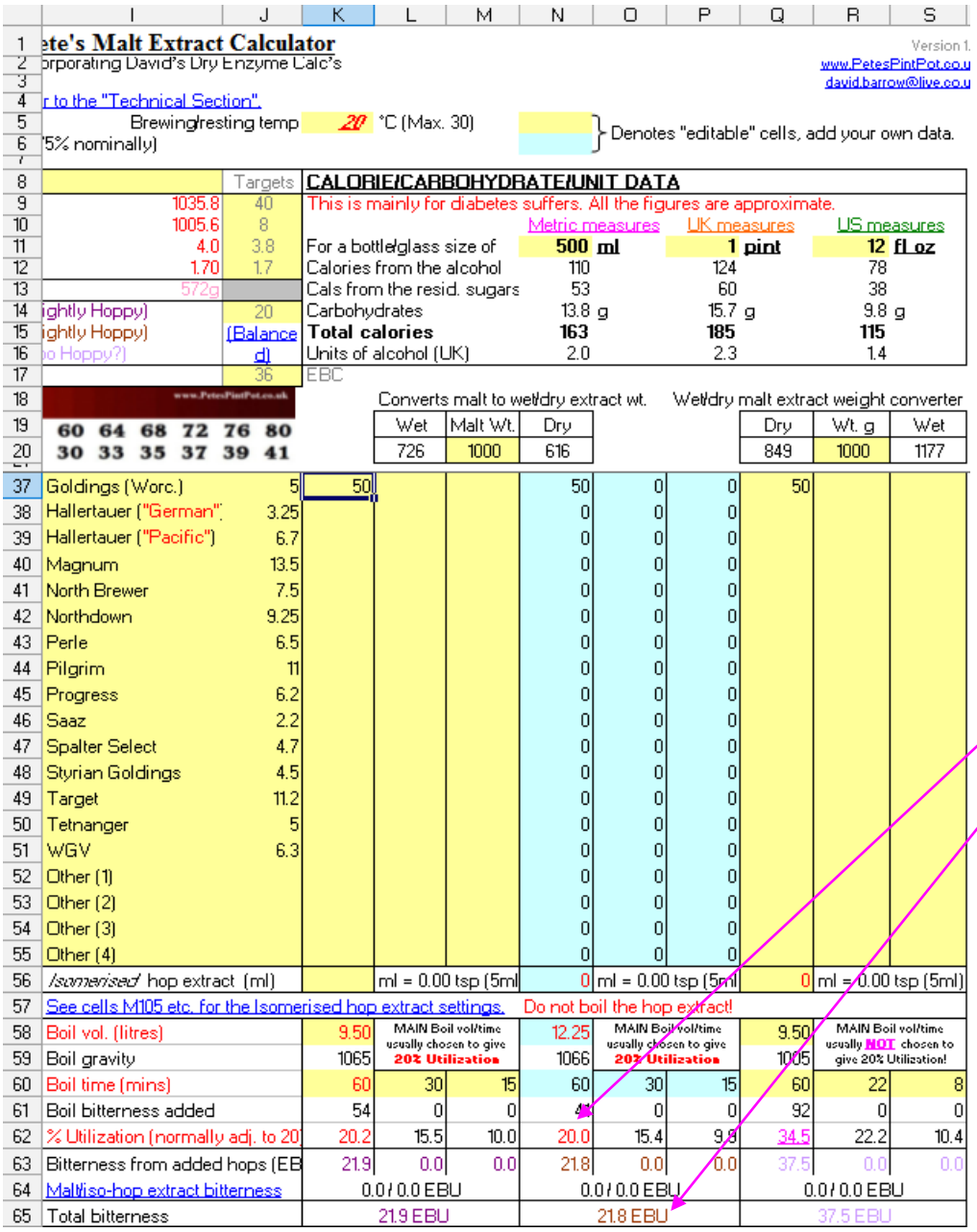
Ignoring the hop/bitterness figures for now, the results are nothing like the BJCP figures at the top of the page. Starting with the O.G. (Original Gravity after priming- cell I9), this can be increased by increasing the malts, adding sugar or decreasing our volume. Cell D5 shows that we are initially making 23 litres or about 40.5UK pints, if we reduce this to 17 litres then our gravity will increase to about 1040, perfectly acceptable but we want to keep the volume at 23 litres. The "Colour" (cell D17) is at the high end at 40 EBC (European Brewing Convention), we could reduce the crystal malt (D58) to say 250g, but this will also reduce our OG & thus the alcohol content. We now



have to concentrate on the alcohol (I11) but we could try 1000g “Cane sugar” in cell D63, the calculator now estimates 5.1% ABV in cell I11, this is a little too high for the style. The % ABV can be reduced to 4 if we set D63to 500g.

If we decide that this is near enough for us then we can concentrate on the “Bitterness”. There are three ways of calculating bitterness, using slightly different brewing methods, they appear under cells K25-S25. NOTE:- the crystal malt (cell) has been set to “250 for the following examples”.

METHOD 1a, the sugar is added after the boil. (This means that any sugars will be added to the fermenter - NOT the boiler.)
In cell K37 we enter our Goldings hop weight of 50g. Cell L65 gives us the bitterness of 21.9EBU (European Bitterness Units), but only IF cell K62 reads “20”% utilization this is set by cells K58 & K60 (the boil volume & boil time). This figure is a little outside the limits of 25-40 EBU. To alter the bitterness we could add more hops (cell K25), alternatively we could amend the boil vol. (K58) or the boil time (K60).
Note:- 20% hop utilization is not essential but the “norm” for most recipes.



	I	J	K	L	M	N	O	P	Q	R	S
1	ete's Malt Extract Calculator										
2	orporating David's Dry Enzyme Calc's										
3											
4	r to the "Technical Section".										
5	Brewing/resting temp		20	°C (Max. 30)							
6	5% nominally)										
7											
8		Targets	CALORIE/CARBOHYDRATE/UNIT DATA								
9	1035.8	40	This is mainly for diabetes suffers. All the figures are approximate.								
10	1005.6	8				Metric measures		UK measures		US measures	
11	4.0	3.8	For a bottle/glass size of			500 ml		1 pint		12 fl oz	
12	1.70	1.7	Calories from the alcohol			110		124		78	
13	572g		Cals from the resid. sugars			53		60		38	
14	ightly Hoppy)	20	Carbohydrates			13.8 g		15.7 g		9.8 g	
15	ightly Hoppy)	(Balance	Total calories			163		185		115	
16	o Hoppy?)	d)	Units of alcohol (UK)			2.0		2.3		1.4	
17		36	EBC								
18	www.PetesPintPot.co.uk			Converts malt to wet/dry extract wt.				Wet/dry malt extract weight converter			
19	60 64 68 72 76 80			Wet	Malt Wt.	Dry			Dry	Wt. g	Wet
20	30 33 35 37 39 41			726	1000	616			849	1000	1177
37	Goldings (Worc.)	5	50			50	0	0	50		
38	Hallertauer ("German")	3.25				0	0	0			
39	Hallertauer ("Pacific")	6.7				0	0	0			
40	Magnum	13.5				0	0	0			
41	North Brewer	7.5				0	0	0			
42	Northdown	9.25				0	0	0			
43	Perle	6.5				0	0	0			
44	Pilgrim	11				0	0	0			
45	Progress	6.2				0	0	0			
46	Saaz	2.2				0	0	0			
47	Spalter Select	4.7				0	0	0			
48	Styrian Goldings	4.5				0	0	0			
49	Target	11.2				0	0	0			
50	Tetnanger	5				0	0	0			
51	WGV	6.3				0	0	0			
52	Other (1)					0	0	0			
53	Other (2)					0	0	0			
54	Other (3)					0	0	0			
55	Other (4)					0	0	0			
56	*Isomerised* hop extract (ml)			ml = 0.00 tsp (5ml		0	ml = 0.00 tsp (5ml		0	ml = 0.00 tsp (5ml)	
57	See cells M105 etc. for the Isomerised hop extract settings.					Do not boil the hop extract!					
58	Boil vol. (litres)		9.50	MAIN Boil vol/time usually chosen to give 20% Utilization		12.25	MAIN Boil vol/time usually chosen to give 20% Utilization		9.50	MAIN Boil vol/time usually NOT chosen to give 20% Utilization!	
59	Boil gravity		1065			1066			1005		
60	Boil time (mins)		60	30	15	60	30	15	60	22	8
61	Boil bitterness added		54	0	0	4	0	0	92	0	0
62	% Utilization (normally adj. to 20		20.2	15.5	10.0	20.0	15.4	9.8	34.5	22.2	10.4
63	Bitterness from added hops (EB		21.9	0.0	0.0	21.8	0.0	0.0	37.5	0.0	0.0
64	Malt/iso-hop extract bitterness		0.0 / 0.0 EBU			0.0 / 0.0 EBU			0.0 / 0.0 EBU		
65	Total bitterness		21.9 EBU			21.8 EBU			37.5 EBU		

METHOD 1b, the sugar added at start of boil. (This means that any sugars will be added to the boiler - before the boil commences.)
When hop data is entered using “1a” it is automatically transferred to “1b” unless it is over-written. For “sugarless” (exc. the priming sugar) recipes the calculations are the same. Adding sugar decreases the hop utilization (N62) & hence reduces the bitterness (cell O65).
This method is widely used as the “normal” of brewing.

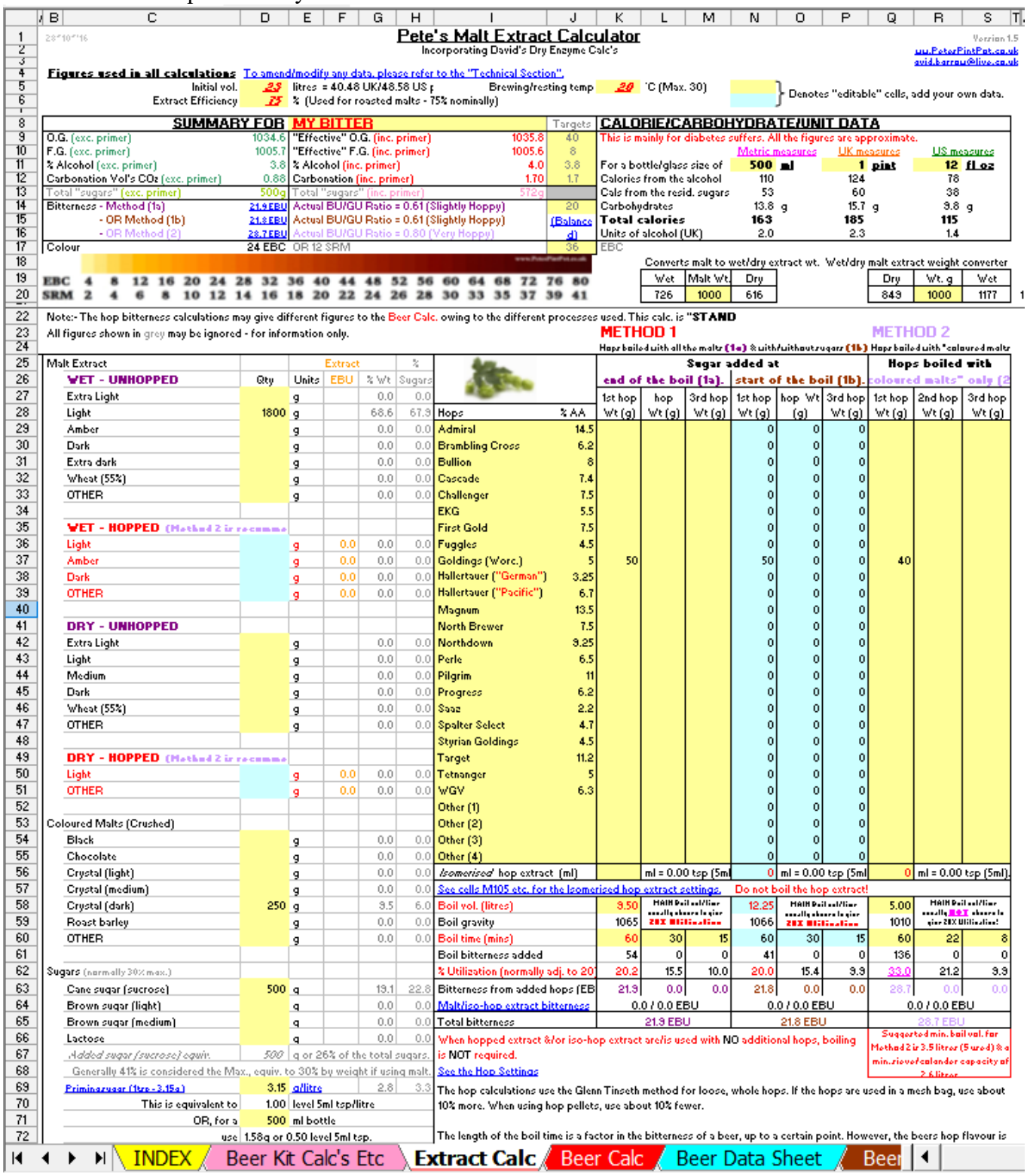
METHOD 2, NO sugar or malt extract added to the boil. (This means that any sugars & malt extract will be added directly to the fermenter, only the “Coloured Malts” - cells D54 to D60 &, of course, the hops will be boiled.)
Using the picture on the previous page, in cell N37, enter the hop weight of 50g. With the boil vol & boil times set as per the example 1a, cell R65 gives us the bitterness of 37.5 EBU which is at the high for the style.

When using “Method 2”, I don't care what value the % Utilization (cell Q62) is set, I adjust the other relevant parameters to get "reasonable" figures & proceed from there. This method saves time, energy & resources &, ultimately, money, it also produces better beers!

I think that reducing hops in cell Q37 to 40g, the boil vol. (Q58) to 5 litres & the boil time (Q60) to 60 mins, is a reasonable compromise resulting in 28.7EBU.

The Final Spreadsheet

Use whichever “hop method” you choose.



Pete's Malt Extract Calculator

Incorporating David's Dry Enzyme Calc's

Version 1.5

Figures used in all calculations — To amend/modify any data, please refer to the "Technical Section".

Initial vol. 25 litres = 40.48 UK/48.58 US p — Brewing/resting temp 20 °C (Max. 30)

Extract Efficiency 75 % (Used for roasted malts - 75% nominally)

} Denotes "editable" cells, add your own data.

SUMMARY FOR MY BITTER				Targets
O.G. (exc. primer)	1034.6	"Effective" O.G. (inc. primer)	1035.8	40
F.G. (exc. primer)	1005.7	"Effective" F.G. (inc. primer)	1005.6	8
% Alcohol (exc. primer)	3.8	% Alcohol (inc. primer)	4.0	3.8
Carbonation Vol's CO2 (exc. primer)	0.88	Carbonation (inc. primer)	1.70	1.7
Total "sugars" (exc. primer)	500g	Total "sugars" (inc. primer)	572g	
Bitterness - Method (1a)	21.9 EBU	Actual BU/GU Ratio = 0.61 (Slightly Hoppy)		20
- OR Method (1b)	21.8 EBU	Actual BU/GU Ratio = 0.61 (Slightly Hoppy)		(Balance
- OR Method (2)	28.7 EBU	Actual BU/GU Ratio = 0.80 (Very Hoppy)		d)
Colour	24 EBC	OR 12 SRM		36 EBC

CALORIE/CARBOHYDRATE/UNIT DATA	Metric measures	UK measures	US measures
This is mainly for diabetes suffers. All the figures are approximate.			
For a bottle/glass size of	500 ml	1 pint	12 fl oz
Calories from the alcohol	110	124	78
Cals from the resid. sugars	53	60	38
Carbohydrates	13.8 g	15.7 g	9.8 g
Total calories	**163**	**185**	**115**
Units of alcohol (UK)	2.0	2.3	1.4

EBC	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80
SRM	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	33	35	37	39	41

Converts malt to wet/dry extract wt.

Wet	Malt Wt.	Dry
726	1000	616

Wet/dry malt extract weight converter

Dry	Wt. g	Wet
849	1000	1177

Note:- The hop bitterness calculations may give different figures to the Beer Calc. owing to the different processes used. This calc. is "STAND

All figures shown in grey may be ignored - for information only.

METHOD 1 — Hops boiled with all the malts (1a) & with/without sugars (1b) — METHOD 2 — Hops boiled with "coloured malts" only (2

Malt Extract	Qty	Units	Extract EBU	% Wt	% Sugars
WET - UNHOPPED					
Extra Light		g		0.0	0.0
Light	1800	g		68.6	67.3
Amber		g		0.0	0.0
Dark		g		0.0	0.0
Extra dark		g		0.0	0.0
Wheat (55%)		g		0.0	0.0
OTHER		g		0.0	0.0
WET - HOPPED (Method 2 is recomme					
Light		g	0.0	0.0	0.0
Amber		g	0.0	0.0	0.0
Dark		g	0.0	0.0	0.0
OTHER		g	0.0	0.0	0.0
DRY - UNHOPPED					
Extra Light		g		0.0	0.0
Light		g		0.0	0.0
Medium		g		0.0	0.0
Dark		g		0.0	0.0
Wheat (55%)		g		0.0	0.0
OTHER		g		0.0	0.0
DRY - HOPPED (Method 2 is recomme					
Light		g	0.0	0.0	0.0
OTHER		g	0.0	0.0	0.0
Coloured Malts (Crushed)					
Black		g		0.0	0.0
Chocolate		g		0.0	0.0
Crystal (light)		g		0.0	0.0
Crystal (medium)		g		0.0	0.0
Crystal (dark)	250	g		3.5	6.0
Roast barley		g		0.0	0.0
OTHER		g		0.0	0.0
Sugars (normally 30% max.)					
Cane sugar (sucrose)	500	g		19.1	22.8
Brown sugar (light)		g		0.0	0.0
Brown sugar (medium)		g		0.0	0.0
Lactose		g		0.0	0.0
Added sugar (sucrose) equiv.	*500*	g or 26% of the total sugars.			
Generally 41% is considered the Max., equiv. to 30% by weight if using malt.					
Primingsugar (1tsp - 3.15g)	3.15	g/litre	2.8	3.3	
This is equivalent to	1.00	level 5ml tsp/litre			
OR, for a	500	ml bottle			
use	1.58g or 0.50 level 5ml tsp.				

Hops	% AA	Sugar added at end of the boil (1a). 1st hop Wt (g)	hop Wt (g)	3rd hop Wt (g)	Sugar added at start of the boil (1b). 1st hop Wt (g)	hop Wt (g)	3rd hop Wt (g)	Hops boiled with "coloured malts" only (2 1st hop Wt (g)	2nd hop Wt (g)	3rd hop Wt (g)
Admiral	14.5				0	0	0			
Brambling Cross	6.2				0	0	0			
Bullion	8				0	0	0			
Cascade	7.4				0	0	0			
Challenger	7.5				0	0	0			
EKG	5.5				0	0	0			
First Gold	7.5				0	0	0			
Fuggles	4.5				0	0	0			
Goldings (Worc.)	5	50			50	0	0	40		
Hallertauer ("German")	3.25				0	0	0			
Hallertauer ("Pacific")	6.7				0	0	0			
Magnum	13.5				0	0	0			
North Brewer	7.5				0	0	0			
Northdown	9.25				0	0	0			
Perle	6.5				0	0	0			
Pilgrim	11				0	0	0			
Progress	6.2				0	0	0			
Saaz	2.2				0	0	0			
Spalter Select	4.7				0	0	0			
Styrian Goldings	4.5				0	0	0			
Target	11.2				0	0	0			
Tettnanger	5				0	0	0			
WGV	6.3				0	0	0			
Other (1)					0	0	0			
Other (2)					0	0	0			
Other (3)					0	0	0			
Other (4)					0	0	0			
Isomerised hop extract (ml)			ml = 0.00 tsp (5ml		0	ml = 0.00 tsp (5ml		0	ml = 0.00 tsp (5ml).	
See cells M105 etc. for the Isomerised hop extract settings.					Do not boil the hop extract!					
Boil vol. (litres)		9.50	MAIN Boil vol/liqr usually above le qior 28% Utilisation		12.25	MAIN Boil vol/liqr usually above le qior 28% Utilisation		5.00	MAIN Boil vol/liqr usually NOT above le qior 28% Utilisation!	
Boil gravity		1065			1066			1010		
Boil time (mins)		60	30	15	60	30	15	60	22	8
Boil bitterness added		54	0	0	41	0	0	136	0	0
% Utilisation (normally adj. to 20		20.2	15.5	10.0	20.0	15.4	9.9	33.0	21.2	9.9
Bitterness from added hops (EB		21.9	0.0	0.0	21.8	0.0	0.0	28.7	0.0	0.0
Malt/iso-hop extract bitterness		0.0 / 0.0 EBU			0.0 / 0.0 EBU			0.0 / 0.0 EBU		
Total bitterness		21.9 EBU			21.8 EBU			28.7 EBU		

When hopped extract &/or iso-hop extract are/is used with NO additional hops, boiling is NOT required.

Suggested min. boil vol. for Method 2 is 3.5 litres (5 used) & a min. sieve/colander capacity of 2.6 litres

See the Hop Settings

The hop calculations use the Glenn Tinseth method for loose, whole hops. If the hops are used in a mesh bag, use about 10% more. When using hop pellets, use about 10% fewer.

The length of the boil time is a factor in the bitterness of a beer, up to a certain point. However, the beers hop flavour is

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I always choose “Method 2”.

GENERAL INFO.

The Specific Gravity (S.G.) of a liquid, as measured by a hydrometer, is the ratio between the weight of a liquid compared to the weight of an equal volume of water. 1 litre of water (@ 20°C & normal atmospheric pressure) weighs 1Kg & its S.G. is 1Kg/1 litre = 1 or, as normally denoted, 1000 or 1.000 or 0 Brewers degrees, I have adopted 1000 for this article. If a liquid has a S.G. of say 1040 then it is heavier than water & 1 litre would weigh 1.040Kg or 1040g (at this point you will probably be highly delighted that I've adopted Metric & not Imperial, or even worse, U. S. units!). Similarly a liquid whose S.G. is 993 is lighter than water, 1 litre weighing 0.993Kg or 993g.

Original Gravity (O.G.) is the gravity (S.G.) of a liquid before fermentation; Final Gravity (F.G.) is the gravity (S.G.) after fermentation. Gravity drop is the difference between these two gravities, & the ABV (alcohol by volume) is approximately equal to Gravity drop/7.45 (the number 7.45 is variable depending on the Original Gravity of the brew – around 1080, 7.6 is a more accurate figure to use for beers & ciders around the 1040 mark).

The scale is read from the bottom of the meniscus.

Note:- The hydrometer is described as having magical properties by Dave Line as the scale always faces away from you!

The hydrometer is usually made of glass & consists of a cylindrical stem & a bulb weighted with lead shot or similar, to add ballast & make it float upright.

I you like & use "Pete's YoBrew Calc's", please donate a little bit extra to charity when you first pass a collection box.

Thank you!

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