

BASIC ADDITIVES FOR 1 GALLON

Essential 2 tablets Benerva (3 mg. Vitamin B tablets)

Advisable $\frac{1}{2}$ teaspoonful tannic acid or grape tannin
1 teaspoonful ammonium phosphate or 1 nutrient tablet

1 teaspoonful Pectinol, Pectolase

Optional $\frac{1}{2}$ teaspoonful potassium phosphate
 $\frac{1}{2}$ teaspoonful Epsom salts (mag. sulphate)
 $\frac{1}{2}$ teaspoonful succinic acid

ORANGE WINE

Ingredients:

	<i>British</i>	<i>Metric</i>	<i>U.S.A.</i>
Sugar	2 lb.	1 kg.	1 $\frac{1}{2}$ lb.
White grape concentrate	$\frac{1}{2}$ pint	280 mls.	$\frac{1}{2}$ pint
6 Jaffa oranges or 12 small oranges			
Additives as above			
White wine yeast—Hock, Bordeaux, Tokay			
Water to 1 gallon (4 $\frac{1}{2}$ litres)			

Method: Make a yeast starter with $\frac{1}{2}$ pint grape concentrate (140 mls.) plus a cupful of cold water in a clean wine bottle. Stir well and add yeast and plug bottle with cotton wool.

When starter is active, wash oranges and thinly peel half of them, taking care not to cut into the white pith, which has a bitter taste. Squeeze juice out of oranges with a juicer, and add it to the peel, sugar, additives and remaining grape concentrate in a plastic bucket. Add 6 pints of water (3 $\frac{1}{2}$ litres—5 pints U.S.A.). Stir well and add yeast starter. Cover and ferment at 70°–75° F. (21°–24° C.) for 3 days and then strain off through muslin or a nylon sieve into a gallon jar. Fit an air-lock and ferment to dryness.

3 CITRUS FRUIT RECIPES

	Quantity	Sugar (lb.)	Tart. Acid (Ts.)	Cit. Acid (Ts.)	Ammon. Phos.
Grapefruit	4	1 + 2 = 3	-	-	One tea- spoonful
Lemons	4	1 + 2 = 3	-	-	
Oranges	10	1 + 1 = 2	-	-	

W.S.S. 1964

GRAPEFRUIT WINE

Ingredients:

6 large grapefruit	1 gallon water
3 $\frac{1}{2}$ lb. white sugar	Yeast

Method:

Clean the fruit and grate the skins finely. Put the water, gratings and juice into a bowl, and add the yeast. Stand the bowl in a warm place (70 degrees F. is ideal), cover closely, and leave for five or six days, stirring thoroughly twice daily. Strain off the liquor through a nylon sieve, or two or three thicknesses of muslin, and dissolve the sugar in it. Put into fermenting jar and fit trap. Leave to ferment out, and when this has happened rack into clean bottles and cork firmly.

C.J.J.B. 1960

Rack into another jar, top up with water and add 1 Campden tablet (50 p.p.m. sulphite). Mature for at least 6 months, preferably, although it is often drinkable after a few weeks as a *vin ordinaire* and on the other hand will improve for up to 3 years with occasional rackings and sulphiting.

PINEAPPLE WINE

Ingredients: 1 pint canned or fresh pineapple juice ($\frac{1}{2}$ litre).

Remaining ingredients as for Orange wine. Method as for Orange wine, except that as no peel is involved, the ingredients can be mixed directly into a gallon jar once the starter is active.

LEMON WINE

Ingredients: $\frac{1}{2}$ pint lemon juice ($\frac{1}{4}$ litre metric and slightly less than $\frac{1}{2}$ pint U.S.A.). This can be bottled or direct from lemons.

Other ingredients as for Orange wine together with method, except that if bottled lemon juice is used the ingredients can be mixed directly in the gallon jar.

LIME WINE

Ingredients: $\frac{1}{2}$ pint lime juice (Roses) ($\frac{1}{4}$ litre metric— $\frac{1}{2}$ pint U.S.A.).

Other ingredients and method as for Orange wine except that ingredients can be mixed directly in gallon jar once yeast starter is active.

POMEGRANATE WINE

Ingredients: 8 pomegranates (6 U.S.A.)

Remaining ingredients as for Orange wine.

Method: Having made yeast starter as in Orange wine recipe, peel pomegranates and extract fruit, being careful not to include any of the yellow skin. Crush in a plastic bucket, add remaining ingredients and 6 pints of water (5 pints U.S.A.). Ferment on the pulp for 5 days, then strain off liquor into gallon jar and continue fermentation normally.

GRAPEFRUIT WINE

Ingredients: 1 pint canned or fresh grapefruit juice ($\frac{1}{2}$ litre metric—1 pint U.S.A.).

Remaining ingredients as for Orange wine. Method as for Orange wine, except that ingredients can be mixed directly into gallon jar.

B.A. 1971

CITRUS WINE

Ingredients:

1 lb. raisins	3 $\frac{1}{2}$ lb. sugar
3 grapefruit	Yeast; yeast nutrient
3 lemons	1 gallon water
3 oranges	

Method:

Firstly peel the fruit (do not squeeze the skins or include any white pith) keeping the peel as intact as possible so it can be retrieved easily later. Put water into a crock and add the chopped-up fruit and sugar, stirring thoroughly to dissolve the latter. Then add the yeast and yeast nutrient, cover closely, and leave in a warm place (about 70 degrees F.) for a fortnight, stirring daily. At the end of this period take out the peel and, having strained off the liquor, squeeze out the fruit pulp and add the resultant juice to the bulk. Put into fermenting jar and fit trap, and leave to ferment out. Siphon it into clean bottles when it has done so.

C.J.J.B. 1960

GRAPEFRUIT WINE

Rather expensive to make, this is a very simple wine and keeps the flavour of the fruit unusually well. It is most refreshing in summer. Make when grapefruit is good and comparatively cheap. Only the heaviest grapefruit are worth buying. These usually have thin skins and fewer seeds. Never forget that weight is the chief characteristic of good fruit. A lightweight orange, lemon or grapefruit is not worth anything.

12 grapefruit
7 quarts of water

$\frac{1}{2}$ oz. dried baker's yeast
4 lb. sugar

Stage One. Wash and scald the fruit. Pare the yellow rind from half the grapefruit, taking none of the pith, put into the water and bring to the simmer, simmering ten minutes. Pour it boiling through a sieve on the six unpeeled grapefruit and leave for thirty minutes. Then remove the peel and pith together, and take the pith from the pared fruit. Mash the flesh well, making the juice flow, and putting the tough, thin membranes after scraping the flesh and juice off them into a bowl. Pour a quart of the water over them to take up the last of the juice and strain back into the main bulk of water. Pour the juice in, and if this does not make up

the full gallon, add more boiled water. Put the juice, warmed to 98°F., into a fermentation jar which has been standing to warm in a room temperature of 65°-70°F.

Stages Two, Three, Four, Five, and Six 134

If at Stage Six the taste is not sufficiently grapefruity, grate the rind of half a grapefruit into the juice. Add also $\frac{1}{4}$ lb. large raisins if you are storing in a jar, or, if you must bottle, one large raisin to each bottle.

L.M. 1958

Grapefruit Wine

This wine should be made from the juice only of the fruit; by pouring boiling water over the fruit and leaving for 10 to 20 minutes it will peel very easily so that it is not difficult to separate the white felty mass from the fruit. The segments are pounded, some water added and the juice is strained off. To 7 or 8 large grapefruit allow 3-4 lb. of sugar; the bulk is made up to 1 gallon with water and an all purpose wine yeast added. This is then transferred to a gallon jar and fermented to completion. The wine is next tasted and if it is lacking in flavour some of the outer peel of the grapefruit is added to the wine, either in thin strips or grated. The wine should be tasted again after a few days and if sufficiently flavoured, the peel should be removed. Alternatively more may be required.

S.M.T. 1956

GRAPEFRUIT WINE

6 grapefruit • 1 lb. raisins • 4 lb. sugar
1 oz. yeast • 1 gallon water

Halve the grapefruit and squeeze the juice into the boiling water, and when the water boils again cut off the heat at once. Pour the hot liquid over the sugar and stir until all the sugar is dissolved. Then add the cut-up raisins. Allow the brew to cool and then sprinkle the yeast on top and stir in. Cover as directed and ferment for fourteen days; after which strain and proceed with bottling.

H.E.B. 1960

LEMON WINE

LEMON WINE

20 lemons 6 lb. sugar
2 gallons water 2 yeast tablets

Wash the lemons thoroughly, and peel the rind very thinly off 10 of them. Boil the water and sugar for 1 hour without a lid, then strain the syrup through muslin on to the peel. Cool, and add the strained juice of all the lemons. Prepare the yeast and add it to the liquor; cover, and leave for 48 hours. Strain, bottle, and cork loosely until fermentation ceases, then cork securely. Leave for a year before using.

G.H. 1961

This should be made when lemons are at their prime—large, thin-skinned and above all heavy. It is one of the strongly flavoured wines, and there is no mistaking what it is made from. Raisins mellow it and feed the yeast, so use any amount you can spare up to 1 lb. and put them in with the second lot of yeast. A cup or two of wheat grains can be added as well to increase the alcoholic content, but this may delay the maturing. Add the wheat with the raisins. The wine will throw more froth with these extra ingredients, and will be a heavier wine and a darker colour. You will also need a 1½ gal. vessel to ferment it.

10 prime lemons 1 lb. raisins
1 gallon water 1 cup or more wheat
4 lb. preserving sugar ½ oz. dried baker's yeast

Stage One. Pare the rinds off the lemons with no pith and put in a 1½-gal. fermentation jar. If possible, it should be one with a 4-6-in.-wide mouth, like a bung jar. You can put in and remove the bulky raw materials without trouble. Boil the water with 2 lb. of the sugar and when cooled to warm pour in. Let cool to 98°F. Meantime steep half the yeast in a little of the liquid at 98°F. for ten minutes to froth up and melt, and stir in. Squeeze the lemons and stir in the juice unstrained. Lightly cork and let ferment at 65°-70°F. room temperature for three days. If it froths over, top up. Then strain well. This is your basic juice.

Stages Two, Three, Four, Five, and Six as on p.134. Add half the remaining sugar and the rest of the yeast at Stage Two, filling jar to brim. If it does not froth over, proceed to Stage Three. The wheat and chopped raisins are added at Stage Two, and discarded at Stage Six.

L.M. 1958

LEMON WINE

6 medium-sized lemons • ½ lb. raisins
4 lb. sugar • 1 oz. yeast • 1 gallon water

(Note: eight or even ten lemons may be used if you like very strong flavours.)

Halve the lemons and squeeze the juice into one gallon of boiling water, and when the water boils again cut off the heat at once. Pour the hot liquid over the sugar and stir until all the sugar is dissolved. Cut up the raisins and add these to the liquid. Then grate the lemon rinds into the brew. Allow the brew to cool and then sprinkle the yeast on top and stir in. Cover as directed and ferment for fourteen days; after which, strain and proceed with bottling.

H.E.B. 1960

Lemon Wine

	BRITISH	U.S.A.	METRIC
Lemons	10	10	10
Sugar	3 lb	2½ lb	1½ kilo
Sultanas, minced	1 lb	¾ lb	½ kilo
Yeast Nutrient	½ teasp.	½ teasp.	½ teasp.
Campden tablets	1	1	1
All Purpose wine yeast			
Water up to	1 gallon	1 gallon	5 litre

Thinly pare the rind of the lemons and cover with 4 pints of hot water. Add the juice of the lemons, sugar and nutrient, make up to 1 gallon, add the wine yeast and ferment on.

Lime Wine (as Lemon)

S.M.T. 1969

I COULD hardly have made a worse choice for my first gallon than rhubarb. It is bulky and awkward to handle, and extracting the juice means cutting it up fine and pounding and mashing it, a process to which it offers the grimmest resistance. There follows a period of steeping, stirring and finally squeezing and wringing in a cloth which tempts one to scrap the lot and try a more co-operative raw material. No, for one's first gallon it is desirable to start with a fruit which yields its juice more gracefully.

Orange is such a fruit. The best time of year to make it is January, for the Seville orange, which adds something special to wine as it does to marmalade, comes into the market then. Besides, if you start in January you will with any luck be able to drink the wine at Christmas because it matures fairly quickly.

THE RECIPE

- | | |
|---|--|
| 12 ordinary sweet oranges
and 2 lemons
or | 3½ lb. preserving sugar |
| 6 Seville oranges and | ¼ oz. dried baker's yeast |
| 6 Jaffas and | ¼ oz. root ginger |
| 2 lemons | 2 black peppercorns |
| | Water to make with the
juice 1 gallon |

Choose heavy fruit, weighing each piece in your hand. Weight means juice, and juice is what you want. Three light-weight oranges are not half so good as one large heavy one. The same applies to lemons. You should get at least two pints of juice. Measure it to find out how much water you will need to make up the gallon. Halve the fruit with a stainless steel knife, and squeeze out the juice. Strain it and pour into the fermentation jar, laying in the cork at once. Place on a tray in a warm corner 65-70°F.

Put into a pan with 2 lb. of the sugar the amount of water necessary to bring the juice up to a gallon, and stir away the sugar while bringing it to the boil. Boil a minute or two and cool to blood heat.

Put the yeast into a teacup, half fill it with the sweetened water and let the yeast froth up and melt for ten minutes. It should puff up and be like cream. Stir it into the water, squeezing away with your hand any remaining bits of froth. Now pour it into the fermentation jar and gently stir it in, to mix well with the fruit juice. Fill the jar to just below the neck and replace the cork lightly. Pour any extra juice into a bottle marked

'Topping up', cork it lightly, and set beside the jar. It will probably ferment too, which is all to the good. If you have a kitchen thermometer, hang it near the jar and examine it morning and evening.

Soon, in an hour or so, the first and most dramatic stage of wine-making will begin. Bubbles will seep up round the cork and flow down the sides of the jar, and a humming, bubbling sound will start up and grow steadily louder. Your job now for a day or several days and possibly a week will be to keep topping up the jar to force the bubbles out. Watch carefully during the first hours, noting whether too much liquid is pouring out with the froth. If so, stop topping up. Only froth, and not liquid, should come out. The froth as it thickens may push out the cork. If so, drape a closely woven cloth over the jar, tying it around its middle. This will keep out infection and at the same time allow the froth to seep out. The tray should hold all the froth. If you run out of topping-up liquid, use freshly squeezed orange juice, and short of that, boiled and cooled water. But remember that adding water to wine at any stage weakens the alcoholic content.

L.M. 1958

ORANGE WINE

A recipe for this has been given in Chapter Five. But it is worth while giving the following from Mrs. Beeton, edition of 1899, recipe No. 2711. It still remains a classic, and quite a number of modern wine-makers have used it, reducing the proportions as always with Mrs. Beeton. *Ingredients.* 90 Seville oranges, 32 lb. of lump sugar, water. *Mode.* Break up the sugar into small pieces, and put it into a dry, sweet 9-gal. cask, placed in a cellar or other storehouse, where it is intended to be kept. Have ready close to the cask two large pans or wooden keelers, into one of which put the peel of the oranges pared quite thin, and into the other the pulp after the juice has been squeezed from it. Strain the juice through a piece of double muslin, and put it into the cask with the sugar. Then pour about 1½ gal. of cold spring water on both the peels and pulp; let it stand for twenty-four hours, and then strain it into the cask; add more water to the peels and pulp when this is done, and repeat the same process every day for a week; it should take about a week to fill up the cask. Be careful to apportion the quantity as nearly as possible to the seven days, and to stir the contents of the cask each day. On the *third* day after the cask is full—that is, the *tenth* day after the commencement of making—the cask may be securely bunged down. This is a very simple and easy method, and the wine made according to it will be pronounced most excellent. There is no troublesome boiling and all the fermentation takes place in the cask. When the above directions are attended to the wine cannot fail to be good. It should be bottled in eight or nine months, and it will be fit for use in the twelfth month after the time of making.

If you attempt to follow this recipe, you should make at least five gallons and have a 5-gal. oak cask. The cask it is that does it. You would also have to make it when Seville oranges are on the market.

L.M. 1958

ORANGE WINE

12 large, 15 medium or 20 small oranges
4 lb. sugar • 1 oz. yeast • 1 gallon water

Wipe the oranges clean with a damp cloth and cut them into small pieces. Pour the boiling water over them and leave to soak for two days. Crush well each day and work the peel between the fingers to extract the oil - doubling the peel over and pressing well (much flavour is obtained from this). Strain, and put the juice through a jelly-bag, warming the juice to assist the sugar to dissolve. Stir until all the sugar is dissolved, and when the brew is cool enough sprinkle the yeast on top and stir in. Cover as directed and ferment for fourteen days; after which, proceed with bottling.

HE.B. 1960

Orange Peel

A delightful wine can be made by adding half a pound of orange peel to most recipes. The prepared peel ready chopped, that one buys for Christmas cakes, is the type to use. Fermentation is conducted as indicated for the first recipe. As most of the recipes include citric or tartaric acid, these items should be excluded where the peel is added. Apple, pear and gooseberry wines are all improved by the addition, but it should not be included in a recipe where the identity of the fruit would be masked, such as apricot or raspberry. Rhubarb, maize, barley and vegetable wines generally are improved by the addition.

But some feel that preserved peel adds bitterness. It is all a question of taste.

W.S-S. 1964

Orange Wine

Orange juice ferments very well provided the peel is not added till the wine has fermented to completion. Many recipes suggest using the whole orange sliced but this produces a very bitter wine. To use the juice without adding water proves rather expensive. The juice is pressed out, strained through a coarse cloth and an equal volume of water is added. The gravity is then taken and an equal amount of syrup of a suitable gravity is added. Oranges may vary considerably in sugar content and hence the gravity will also range over a wide field. The amount of juice per orange will also vary but an average amount for a large sized, thin skinned, juicy orange is about four ounces. It will therefore require twenty oranges to produce half a gallon of juice. This can be used to make one gallon of a sweet wine but half this quantity, that is 2 pints, is sufficient to make a dry wine. A Campden tablet should be added and it will be necessary to adjust the acidity with citric acid. For a dry wine the gravity should be adjusted to 90 and for a sweet wine to 150. A Hock or a Sauterne yeast should be used. When the wine has fermented to completion some grated orange rind is added to give an orange flavour.

S.M.T. 1956

ORANGE WINE

13 oranges 1 gallon boiling water
3 grapefruit 2 lb. sugar to each gallon
3 lemons

Wash the fruit thoroughly and cut into slices, removing the pips. Pour on the boiling water, cover, and leave for a week, stirring frequently.

Strain, and add the sugar, allow to dissolve, then pour into the cask. Allow to ferment, and when fermentation has ceased, seal up. Bottle in 4 months' time.

G.H. 1961

Marmalade Orange Wine

Required: One tin (1 lb. 12 oz.) Beach's ready-to-use Marmalade Oranges. These are sliced oranges prepared with the juice to make into marmalade. (It is not a tin of jam!) You are saved the lengthy task of preparation and you could not do it cheaper if you bought the whole fruit to start with.

Empty the contents into a 1-gallon fermentation jar. Pour on sugar syrup made from a pound of sugar. Top up two-thirds full with water. Add one teaspoonful of ammonium phosphate and finally the yeast. That is all.

After ten days proceed to the SECOND STAGE, adding a sugar syrup made of 2 pounds of sugar and top up with water as explained in the preceding text.

Continue to the end. Nothing could be simpler or more rewarding at such small cost!

Note: Neither tartaric nor citric acid is required for this recipe.

W.S-S. 1964

ORANGE WINE

Ingredients:

12 sweet oranges	1 gallon water
3½ lb. white sugar	Yeast

Method:

Peel six of the oranges thinly, avoiding the white pith like the plague (it imparts a most bitter taste to the wine). Pour a quart of boiling water on to the rind and allow to stand for 24 hours, then strain off the water into a bowl containing three quarts of water and the sugar. Cut all the oranges in half and squeeze the juice into the bowl. Stir until the sugar is dissolved, and then add the yeast. If you use a general purpose wine yeast, which is to be recommended, the liquor can safely be strained from the crock into a fermenting jar, and fitted with a trap, within two or three days. Siphon it off the lees for the first time when it clears, and rebottle two or three months later.

SEVILLE ORANGE WINE

Ingredients:

24 thin skinned Seville oranges	8 lb. white sugar
4 lemons	2 gallons water

Method:

Peel 12 of the oranges and throw away the peel. Cut up oranges and lemons into slices and put in earthenware pan. Boil the water and pour on boiling. Place in moderately warm corner and when tepid add yeast, a good wine yeast or a level teaspoonful of granulated yeast; stir each day for a fortnight. Strain, then add sugar and stir until dissolved. Put in 2-gallon jar, filling up to top. Put surplus in black bottles (bottles must be dark or wine will lose its colour). Use this for filling up large jar. Ferment to completion under air lock, rack when it clears, and bottle two months later.

C.J.J.B. 1960

MIDDLESEX ORANGE TOKAY

This is a medium sweet sound wine designed to mature quickly and can be drunk within 6 months of bottling, although 1 year is recommended.

Ingredients:	British	Metric	U.S.A.
Orange juice	2 pints	1½ litre	2 pints
White grape concentrate	1 pint	½ litre	1 pint
Sugar	3 lb.	1½ kilos	2½ lb.

Plus 1 nutrient tablet

2 Vitamin B tablets (Benerva—3 mg. size)

Tokay yeast

Water to 1 gallon (4½ litres)

Method: Pour the orange juice into a gallon jar, add sugar and nutrients and 3 pints water. Add Tokay yeast and ferment for 1½ weeks at 70°–75° F. (21°–24° C.). At this point add the pint of grape concentrate, stir well to dissolve and ferment the wine to completion. It is an advantage to increase the temperature to 80° F. (27° C.) during the late stages of fermentation. While fermentation is proceeding, extract the zest from the thinly pared peel of 3 oranges with approximately ½ cup of vodka or brandy. When fermentation is complete rack the wine into a fresh jar and add the peel-flavoured spirit to the wine. Top up if necessary with water, and mature for at least 6 months.

B.A. 1971

Orange Wine

All the different varieties of oranges, clementines, mandarins, satsumas, tangerines and ortaniques can be made into wine. The one important point to remember is that all the white pith must be excluded. The wine is made from the juice and the very thinly pared rinds. Firm skinned oranges can be pared with a sharp potato knife. Loose skinned oranges are best peeled and cleaned from the inside by scraping away and discarding the pith until only the orange coloured skin remains. If white pith does get into the must, it imparts a distinct and unpleasant bitterness to the wine. It is also very rich in pectin and will cause the wine to be hazy. Once again it seems best to use a selection of different varieties. The bitter Seville orange for example is best used in equal proportions with sweet oranges like the 'Navel', rather than on its own.

10 sweet oranges	3.5 litres (6 pints)
250 g (¼ can) concentrated white grape juice	water
750 g (1½ lb) white sugar	Sauternes wine yeast and nutrient

Wipe over the oranges with a sulphited cloth, thinly pare them and chop the parings into small pieces. Halve the oranges and express the juice; strain this through a nylon sieve.

Mix the parings, orange juice, grape juice, sugar, water and activated yeast and nutrient together and when the sugar is quite dissolved, pour the must into a fermentation jar, fit an airlock and ferment out.

Rack into a sterilised jar, add one Campden tablet and store the wine until it is bright. Rack again and keep for one year before bottling. Serve this wine nicely chilled with duck, chicken or pork dishes.

B.T. 1983

ORANGE juice. A superlative wine is made from this recipe:

Grape juice	1 pint
Orange juice	$\frac{1}{2}$ pint
Sugar	2 lb.
Amm. phos.	1 Ts.

No tartaric or citric acid is necessary.

However, if expense is not to be considered, then increase the grape juice to one quart and reduce the sugar to 1 lb.—you will never regret the additional cost!

Another variation—which is more convenient because there is no reducing of packs, and a little more economical because of this—is as follows. A 2-gallon jar will be required as this recipe will make two gallons of wine.

Grape juice	$\frac{1}{2}$ gallon
Orange juice	1 pint
Sugar	1 lb.
Amm. phos.	2 Ts.

Always start the fermentation for this recipe without sugar, which is added at the second stage; there is sufficient sugar in the grape juice for the first stage.

W.S-S. 1964

ORANGE WINE



RECIPE 16

2 6-oz. tins frozen orange juice	$\frac{1}{4}$ tsp. grape tannin
1 gal. (160 oz.) warm water	2 Campden tablets
2 oranges, sliced	3 lbs. white sugar
1 lb. chopped raisins,	1 level tsp. yeast nutrient
<i>or</i>	Wine yeast
10 oz. White Grape Concentrate	$\frac{1}{2}$ tsp. pectic enzyme powder

Starting specific gravity should be 1.100, acid .65%.

Mix all ingredients except wine yeast in primary fermentor. Cover with plastic sheet. Add yeast when must is cool (70-75°F.) Stir once daily for 7 days. Siphon into gallon jug and attach fermentation lock. Rack in 3 weeks. Add 1 Campden tablet and top up jug (use water if necessary). Rack again in 3 months. When wine is clear and stable, bottle.

Age 1 year.

S.A. R.H. 1968

Orange Wine (Canadian recipe)

3 Imperial gallons water
3 12 oz cans frozen orange juice
6 fresh oranges
10 $\frac{1}{2}$ lb sugar
$\frac{1}{2}$ oz Yeast Nutrient
3 lb chopped raisins
5 Campden tablets
All Purpose wine yeast

Dissolve frozen orange juice in hot water. Pour over sugar and stir thoroughly. Add sliced oranges and raisins and stir in Yeast Nutrient. Crush and dissolve Campden tablets, stir in. Cover and leave for 24 hours. Add previously prepared yeast, cover. Stir every other day for 14 days. Strain and put in gallon jugs.

Recipe by courtesy of Messrs Wine Art, Vancouver, B.C.

Bitter Orange

4 Seville oranges (bitter)	3.5 litres (6 pints) water
4 Navel oranges (sweet)	Pectic enzyme and Campden tablets
4 cooking apples	Sherry yeast and nutrient
4 ripe bananas	
250 g ($\frac{1}{2}$ lb) sultanas	
1.375 kg (2 $\frac{3}{4}$ lb) white sugar	

Wash the apples, oranges and sultanas in a sulphite solution.

Thinly pare the oranges, halve the husks, express and strain the juice. Chop the peel and place it in a bin together with the juice, the water, the pectic enzyme and one crushed Campden tablet.

Chop the sultanas, peel and mash the bananas, crush the apples and add all these to the bin. Cover and leave it for 24 hours.

Add an activated sherry yeast and nutrient and ferment on the pulp for 4 days keeping the fruit cap submerged and the bin covered.

Strain out and press the fruit dry, discard the pulp, stir in half the sugar, pour the must into a fermentation jar, plug the neck with cotton wool instead of an airlock and ferment down to specific gravity of 1.002.

Stir in half the remaining sugar and again ferment down to specific gravity of 1.002.

Repeat this process and provided the fermentation is still active, stir in the rest of the sugar. Check the specific gravity regularly. The aim is to keep the fermentation going as long as possible, if necessary with a little more sugar, but to finish the wine with a reading of 1.000.

When the wine begins to clear, rack it into a clean jar, leaving some airspace above the wine. Do *not* add a Campden tablet nor use a bung. Instead, plug the neck of the jar with cotton wool. Any excess wine should be stored in a suitably sized bottle also plugged with cotton wool. Both jar and bottle should be filled only to the shoulder.

When the wine is bright, rack it again into similar containers and store it for at least one year and preferably two. It may then be bottled or kept in a Winemaid carton.

Serve this sherry-like wine slightly chilled with canapés.

B.T. 1976

GRAPEFRUIT APERITIF

Ingredients:	<i>British</i>	<i>Metric</i>	<i>U.S.A.</i>
Grapefruit (small)	9	9	9
Sultanas	½ lb.	250 gm.	½ lb.
Raisins	½ lb.	100 gm.	½ lb.
Sugar	2½ lb.	1 kilo	2 lb.

Plus 1 teaspoon ammonium phosphate or nutrient tablet
 1 teaspoon liquid pectic enzyme
 1 teaspoon Bentonite (Optional)
 2 gm. sodium metabisulphite or 2 Campden tablets
 General purpose wine yeast
 Water to 1 gallon (4½ litres)

Make the yeast starter by heating the juice of 1 grapefruit to boiling point with about 6 fl. oz. (200 mls.) of water and 1 dessertspoon sugar. Pour into a sterilised bottle, plug with cotton wool and leave to cool. When cool, add yeast and a little nutrient. Leave in a warm place (70°-75° F., 21°-24° C.) and shake the bottle now and then till fermentation commences, which should be within about 24 hours. Cut the rest of the grapefruit in half and express juice on a squeezer. Add 1½ gm. sodium metabisulphite or 1½ Campden tablets. Wash dried fruit thoroughly and mince. Add dried fruit to grapefruit juice with the pectic enzyme, nutrient and water to make up to approximately ¾ gallon (4 litres). Cover and leave 24 hours. Add working yeast starter and ferment on pulp for 3 days, stirring night and morning, otherwise keeping well covered. Strain into a gallon jar and add 1½ lb. (700 gm.) granulated sugar to give a specific gravity of 1080. Top up jar with water to three-quarters full. Fit airlock and agitate bottle night and morning until vigorous ferment dies down. Add further 1 lb. (450 gm.) granulated sugar (or enough to give a total starting gravity of 1110). Top up jar with water to neck. Fit airlock and leave to ferment to dryness. Rack into clean jar. Mix 1 teaspoon Bentonite with a little of the wine and blend or whisk with a hand beater. Add to the rest of the wine, stir well and leave to settle out in the refrigerator if possible. After about a week, rack into a fresh jar and top up if necessary with water or another similar sound wine. Add ½ gm. sodium metabisulphite (enough to cover a six-pence) or half a Campden tablet, leave to mature for 1 or 2 years, racking once or twice more as necessary. This wine can also be sweetened with ¼ or ½ lb. sugar per gallon once it has matured (25-50 gm. per litre).

B.A. 1971

Pineapple Wine

	BRITISH	U.S.A.	METRIC
Pineapples, chopped finely	3-4 lb	2¼-3 lb	1½-2 kilo
Sugar	3-4 lb	2¼-3 lb	1½-2 kilo
Campden tablets	1	1	1
Yeast Nutrient	½ teasp.	½ teasp.	½ teasp.
Grape tannin	½ teasp.	½ teasp.	½ teasp.
Citric acid	1 tablesp.	1 tablesp.	1 tablesp.
All Purpose wine yeast			
Water up to	1 gallon	1 gallon	5 litre

The pineapple should be chopped and covered with hot water, Campden tablet, 1 lb of sugar, citric acid and Nutrient are added.

Enough water is then added to bring this mixture down to blood heat before adding the yeast. Ferment on the pulp for three days then press. Add the rest of the sugar, using the smaller quantity for a semi-sweet wine. Make up to 1 gallon and ferment on. A delicious liqueur-like wine can be produced by doubling the fruit content but citric acid must be omitted.

S.M.T. 1969

ORANGE APERITIF

This is made with Seville oranges obtainable in the third week in January. You must be prepared to expect that this wine will appear completely undrinkable during the maturing period owing to its bitterness.

Ingredients:	<i>British</i>	<i>Metric</i>	<i>U.S.A.</i>
Seville Oranges	6	6	5
White grape concentrate	½ pint	½ pint	½ pint
Sugar	3 lb.	1½ kilos	3 lb.

Plus Nutrient tablet or 1 teaspoonful ammonium phosphate

One 3 mg. Vitamin B tablet (Benerva)

Wine yeast

Water to 1 gallon (4½ litres)

Method: Wash the oranges and peel 3 of them, taking care not to include the white pith. Boil up the peel in 1 pint of water and allow to stand for 24 hours to extract the zest. Extract the juice of the oranges and add it to the sugar, grape concentrate and nutrient in a gallon jar. Top up with water to the shoulder, stir to dissolve, add zest of orange peel and starter. Ferment to dryness, rack and mature. The wine will benefit by being racked from one jar to another every 3 months. It can be bottled after about 1 year, but may not assume its true aperitif flavour under 18 months. Ultimately it can be presented as a dry or sweet aperitif, the latter being made by adding ¼ lb. of sugar per gallon, or even as much as ½ lb. per gallon.

B.A. 1971

TANGERINE SPECIAL

12-15 tangerines • 3½ lb. sugar • 1 oz. yeast
 1 gallon water

Peel the tangerines and crush them by hand. Discard the peels. Pour the boiling water over the crushed fruit and leave to soak for twelve hours. Strain and warm the

juice to assist the sugar to dissolve. Pour the juice over the sugar and stir until all the sugar is dissolved. When the brew is cool enough sprinkle the yeast on top and stir in. Cover as directed and ferment for fourteen days after which, proceed with bottling.

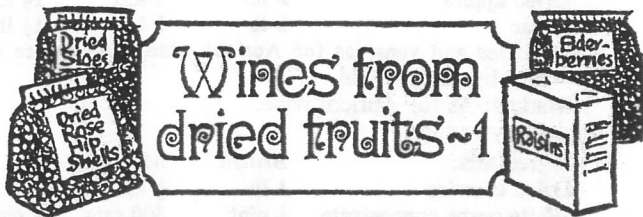
H.E.B. 1960

Pineapple

This is another delightfully flavoured wine.

Pineapples	2 fruit (about 5 lb)
Sugar	2½ lb.
Tartaric acid	½ Ts.
Citric acid	½ Ts.
Amm. phos.	1 Ts.

W.S-S. 1964



Wines from dried fruits

ADDITIVES FOR 1 GALLON

Essential	1 teaspoonful citric acid
	1 teaspoonful ammonium phosphate
	15 mg. Vitamin B1
	1 teaspoonful pectic enzyme
Optional	$\frac{1}{2}$ teaspoonful potassium phosphate
	$\frac{1}{4}$ teaspoonful magnesium sulphate

ELDERBERRY WINE

Ingredients:	<i>British</i>	<i>Metric</i>	<i>U.S.A.</i>
Dried elderberries	1 lb.	$\frac{1}{2}$ kg.	$\frac{3}{4}$ lb.
Sugar	2 lb.	1 kg.	1 lb.
Grape concentrate, white or red	$\frac{1}{2}$ pint	280 mls.	$\frac{1}{2}$ pint

Additives as above
Bordeaux or Burgundy yeast
Water to 1 gallon ($4\frac{1}{2}$ litres)

Method: Pour about 4 pints (2 litres) of boiling water over the elderberries and sugar in a plastic bucket, stir to dissolve. When down to room temperature add remaining ingredients including yeast. Ferment on the elderberries for 7 days, stirring the must at least once a day and keeping the bucket covered in between. Then strain must into a gallon jar, fit an air-lock and ferment to dryness.

Rack off into another jar, top up with water, add 1 Campden tablet and mature for up to 1 year with racking each 6 months.

The wine can be made into a sweet wine by the introduction of an extra pound ($\frac{1}{2}$ kg.) sugar during fermentation, preferably in syrup form. This will provide the extra alcohol

SPICED FIG AND DATE (By Mr. F. G. Spark, of Andover)

Ingredients:

2 $\frac{1}{2}$ lb. dried figs	1 lb. dates
$\frac{1}{2}$ lb. currants	$\frac{1}{2}$ lb. raisins
3 lb. apples	$\frac{1}{2}$ oz. pickling spice
1 gallon water	3 $\frac{1}{2}$ lb. sugar

Method:

Cut up the apples and put with the currants and raisins into three quarts of cool, boiled water; add sugar. Boil figs, dates and spice in another quart of water until the fruit is tender. Strain, and pour the liquid into that already in the bowl. When cool add the yeast and leave for three or four days, closely covered. Then strain into fermenting jar and fit trap. Leave until fermentation ceases, then bottle and keep for 12 months. The amount of spice can be varied according to taste, as can the sugar, which can be anywhere between 3 lb. and 4 lb. (spiced wines need to be sweet).

C.J.J.B. 1960

required and final sweetening can be done just before drinking. It is probable here that a little extra acid (say 1 teaspoonful per gallon) will be needed and tartaric acid is best for this purpose.

SPECIAL NOTE

Many of the fruits described on this and the opposite page are only obtainable from winemaking suppliers. Due to fluctuating supplies slightly mouldy berries are occasionally obtained. The mould cannot normally be seen but it can be smelled—a dank sort of smell which will carry through to the wine. Avoid these berries. Fortunately, with the increase in winemaking the turnover of fruit is becoming faster and this trouble less frequent.

BILBERRY WINE

Ingredients and method as for Elderberry wine opposite, substituting dried bilberries for the dried elderberries.

BANANA WINE

Ingredients:	<i>British</i>	<i>Metric</i>	<i>U.S.A.</i>
Dried bananas	12 oz.	350 gm.	10 oz.
Sugar	2 lb.	1 kg.	1 $\frac{1}{2}$ lb.
White grape concentrate	$\frac{1}{2}$ pint	300 mls.	$\frac{1}{2}$ pint

Additives and yeast as for elderberry wine

Method: Simmer the bananas in 3 pints of water ($1\frac{1}{2}$ litres) for half an hour and pour the liquor over the sugar. When down to room temperature add the remaining ingredients and continue as for Elderberry wine, except that fermentation can commence in jar when cool.

SULTANA OR WHITE RAISIN WINE

Ingredients:	<i>British</i>	<i>Metric</i>	<i>U.S.A.</i>
Sultanas (white raisins)	1 lb.	$\frac{1}{2}$ kg.	$\frac{3}{4}$ lb.
Bananas (fresh ones)	2 lb.	1 kg.	1 $\frac{1}{2}$ lb.
Sugar	2 lb.	1 kg.	1 $\frac{1}{2}$ lb.

Additives as for Elderberry wine, but increase the citric acid to 2 teaspoonfuls

Method: Boil the bananas without the skins for half an hour and strain the liquor over the sultanas and sugar. When cool add the remaining additives and continue as for Elderberry wine, except that the sultanas are strained off after 4 days only.

SWEET WHITE WINE (Tokay type)

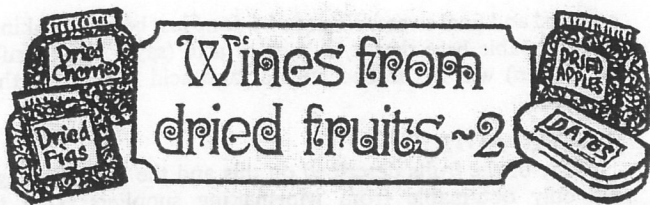
Although these days we can simulate almost any commercial wine, Imperial Tokay is one of the few remaining unconquered peaks. It is so magnificent a wine that it virtually just stands there laughing at our efforts to match it. The following recipe is about the nearest that we have yet managed to approach it. It is a prizewinning wine, but it only has the slenderest hint of Tokay.

Ingredients:	<i>British</i>	<i>Metric</i>	<i>U.S.A.</i>
Sultanas	2 lb.	1 kg.	1 $\frac{1}{2}$ lb.
White grape concentrate	1 pint	$\frac{1}{2}$ litre	1 pint
Sugar	2 lb.	1 kg.	1 $\frac{1}{2}$ lb.
Glycerol or glycerine	1 $\frac{1}{2}$ fl. oz.	40 mls.	1 $\frac{1}{2}$ fl. oz.
Tartaric acid	$\frac{1}{2}$ oz.	7 gm.	$\frac{1}{2}$ oz.
Malic acid	$\frac{1}{2}$ oz.	7 gm.	$\frac{1}{2}$ oz.

Plus 1 teaspoonful pectic enzyme

15 mg. Vitamin B1
1 teaspoonful ammonium phosphate
Sauternes or Tokay yeast
Water to 1 gallon ($4\frac{1}{2}$ litres)

Note. For reasons which I do not fully understand, certain Tokay musts are fermented at very high temperatures—around 90° F. (32° C.) even. Presumably it causes a certain “cooked” flavour which blends in during maturing to form part of the distinctive Tokay taste. Certain Californian wines have this flavour though achieved in a different manner. The experiment can be tried with a genuine Tokay yeast, but otherwise normal fermentation temperatures around 70° F. (21° C.) should be observed.



Wines from dried fruits ~2

ADDITIVES FOR 1 GALLON

- Essential** 2 teaspoonfuls citric acid
 1 teaspoonful ammonium phosphate
 15 mg. Vitamin B1
 2 teaspoonfuls pectic enzyme
- Optional** ½ teaspoonful potassium phosphate
 ¼ teaspoonful magnesium sulphate

APRICOT WINE

Ingredients:	<i>British</i>	<i>Metric</i>	<i>U.S.A.</i>
Dried apricots	1 lb.	½ kg.	½ lb.
Sugar	2½ lb.	1¼ kg.	2 lb.

Additives as above
 White wine yeast
 Water to 1 gallon (4½ litres)

Method: Pour about 4 pints (2 litres) of boiling water over the apricots and sugar in a plastic bucket. Stir to dissolve. When down to room temperature, and not before, add the remaining additives and yeast. Ferment on the pulp for 4 days stirring the pulp beneath the surface twice daily.

Strain off into a gallon jar, top up with water and fit an air-lock. Ferment at around 70° F. (21° C.) until complete. Rack into another jar, top up with water, add 1 crushed Campden tablet and fit a bored cork plugged with cotton wool.

Observe the jar after about 10 days, and if a heavy pulp sediment has formed, rack once more with topping up and a Campden tablet. Otherwise mature in a cool place and rack the wine after six months. It will probably be drinkable at this time but will improve for at least another year.

This is normally a medium sweet wine, but can be drunk drier or sweeter according to taste.

6 DRIED FRUIT RECIPES

	<i>Amount (lb.)</i>	<i>Sugar (lb.)</i>	<i>Tart. Acid (Ts.)</i>	<i>Cit. Acid (Ts.)</i>	<i>Ammon. Phos.</i>
Apricots	2	1 + 2 = 3	½		One teaspoonful
Currants	2	1 + 1½ = 2½	½		
Dates	2	1 + 1 = 2	½	½	
Figs	2	1 + 1 = 2	½	½	
Prunes	2	1 + 2 = 3	½		
Raisins	2	1 + 1 = 2	½	½	

Dried berries such as elderberry, bilberry, etc., are available (Messrs Semplex Ltd) and make excellent wines: 1 lb. to a gallon jar is about right.

W.S-S. 1964

Dried fruit like raisins, figs and dates contain much sugar and because they are dried must be resoaked in water and are preferably brought to the boil and then well-pulped before pressing.

APPLE WINE

Ingredients:	<i>British</i>	<i>Metric</i>	<i>U.S.A.</i>
Dried apples	2 lb.	1 kg.	1½ lb.
Sugar	2 lb.	1 kg.	1½ lb.

Additives and yeast as for Apricot wine, but replace citric acid by tartaric acid.

Method: As for Apricot wine.

CHERRY WINE

Ingredients:	<i>British</i>	<i>Metric</i>	<i>U.S.A.</i>
Dried cherries	1 lb.	½ kg.	1 lb.
White grape concentrate	½ pint	300 mls.	½ pint
Sugar	1½ lb.	¾ kg.	1½ lb.

Additives and yeast as for Apricot wine, but omit citric acid

Method: As for Apricot wine, but add grape concentrate when cool.

DATE WINE

Ingredients:	<i>British</i>	<i>Metric</i>	<i>U.S.A.</i>
Dates	2 lb.	1 kg.	1½ lb.
White grape concentrate	½ pint	300 mls.	½ pint
Sugar	1 lb.	½ kg.	1 lb.

Additives and yeast as for Apricot wine, but reduce citric acid to 1 teaspoonful

Method: As for Apricot wine, but add grape concentrate when cool.

FIG WINE

Ingredients:	<i>British</i>	<i>Metric</i>	<i>U.S.A.</i>
Dried figs	2 lb.	1 kg.	1½ lb.
Sugar	1½ lb.	¾ kg.	1½ lb.

Additives as for Apricot wine, but in addition add 1 teaspoonful grape tannin

Method: As for Apricot wine.

PEACH WINE

Ingredients and method as for Apricot wine, replacing dried apricots with dried peaches.

PRUNE WINE

Ingredients:	<i>British</i>	<i>Metric</i>	<i>U.S.A.</i>
Prunes	4 lb.	2 kg.	3 lb.
Sugar	2 lb.	1 kg.	1½ lb.

Additives as for Apricot wine, but in addition add 1 teaspoonful grape tannin

Method: As for Apricot wine.

B.A. 1971

Prune, Apricot and Raisin

1.5 kg (3 lb) best prunes	2 g (½ tsp) grape tannin
250 g (½ lb) dried apricots	30 g (1 oz) gypsum
250 g (½ lb) raisins	15 g (½ oz) cream of tartar
1.375 kg (2¾ lb) white sugar	Pectic enzyme and Campden tablets
10 g (2 tsp) citric acid	Sherry yeast and nutrient

Wash the prunes, apricots and raisins, cut them up, place them in a bin and pour hot water over them. Cover and leave to cool.

Add the acid, pectic enzyme and one crushed Campden tablet, cover and leave for 24 hours.

Add the gypsum, cream of tartar, tannin, nutrient and activated sherry yeast. Ferment on the pulp for 4 days keeping the fruit cap submerged and the bin loosely covered.

Strain out and press the fruit dry and discard the pulp, stir in half the sugar, pour the must into a fermentation jar and plug the neck with cotton wool.

Continue as described for Bitter Orange.

B.T. 1983

APRICOT WINE

If you are partial to apricots, this wine is a must, for it does keep the flavour. Dried or fresh fruit can be used, but the dried is safer if you don't grow your own apricots. The imported ones are not ripe enough, and do not ripen properly here. The same amount of fruit is used for the fresh as the dried.

2 lb. dried apricots	1 gallon water
2 lb. preserving sugar	$\frac{1}{4}$ oz. dried baker's yeast

Stage One. Put the fruit through a coarse mincer, or chop fine, and add to the water. Bring slowly to a low simmer and maintain it for two hours. Strain by letting drip through a jelly-bag overnight. Do not squeeze the bag. Stand the juice for another night to settle and clear, and pour or siphon it off the sediment. Put the unsqueezed pulp back into the pan, add a pint or two of water and simmer for about thirty minutes. If the juice has flavour, let it stand to clear for topping up. You now have your basic juice and topping up.

Stages Two, Three, Four, Five, and Six as on p. 134

Fresh apricot wine is made in the same way but the fruit needs to be prepared differently. The apricots must be fully ripe and soft. Cut them up coarsely, and add about a third of the stones, cracked. Cover with the water in a steeping crock, first slightly warming the water to help draw the juice. Squeeze and mash the fruit well with the hands. Steep for a week, stirring and squeezing as often each day as you can, and keeping close-covered. Let drip in a jelly-bag and do not squeeze the bag. Pour a pint or two of water over the used pulp to get some topping-up liquid. Then proceed as with dried apricots.

L.M. 1958

Apricot Wine

Apricots are rich in pectin so Pectozyme is required. 2 lb. of dried or 4 lb. of fresh apricots are brought to the boil with 4 pints of water till thoroughly soft. The brew is cooled to 30° C., 1 tablespoonful of Pectozyme, $\frac{1}{2}$ lb. sugar, an all purpose yeast and yeast energizer are added. It is then left in a warm airing cupboard for four days with stirring and strained off. 2 $\frac{1}{2}$ pints of syrup are next added and the brew made up to 1 gallon.

Another recipe uses only 2 lb. of dried apricots or 4 lb. of fresh apricots with 4 pints of boiling water and 1 lb. of sugar. Pectozyme is added and a sherry yeast is used and the fermentation carried out in the presence of the pulp for a week. The mixture is strained and made up to a gallon, a teaspoonful of yeast energizer and 2 $\frac{1}{2}$ pints of strong syrup are added and the brew is fermented to completion. (The strong syrup is made from 4 lb. of sugar added to 2 pints of water.)

Wine makers who do not like the strong flavour of apricot can mix about 2 lb. of apricots with 2 lb. of raisins and ferment this mixture.

S.M.T. 1956

APRICOT WINE

Ingredients:

2 lb. dried apricots	2 lemons (juice only)
1 lb. wheat	Madeira wine yeast (or
3 lb. white sugar	level teaspoonful of granu-
$\frac{1}{2}$ cup tea	lated yeast)

Method:

Cup up the apricots, put into one gallon of water, and bring to the boil; simmer for half-an-hour, then strain (without pressing). Add the other ingredients to the liquor and, when cool enough, add the yeast, and ferment for three weeks, closely covered, in a warm place, stir daily. Strain into a fermenting bottle, make up with cold water to one gallon, fit air lock, and ferment for a further month. Then strain, bottle, and cork tightly.

C.J.J.B. 1960

Apricot Wine Dry or Sweet

Apricots are the most valuable of fruits for the production of dry table wines and sweet dessert wine. This fruit is rich in pectin which must be removed by treatment with a pectic enzyme as described on page 27. For dry wine use the smaller amount of fruit given in the recipe. If fresh fruit is used it must be peeled, the stones removed and blemishes cut out. Dried fruit is soaked and boiled until completely soft. A pressure cooker is useful.

	BRITISH	U.S.A.	METRIC
Fresh apricots or Dried Apricots	1 (or 2 lb)	$\frac{3}{4}$ (or 1 $\frac{1}{2}$ lb)	$\frac{1}{2}$ (or 1 kilo)
Boiling water	2 pint	2 pint	$\frac{1}{2}$ litre
Cold water	2 pint	2 pint	$\frac{1}{2}$ litre
Pectozyme	1 tablesp.	1 tablesp.	1 tablesp.
Sugar	$\frac{1}{2}$ lb	$\frac{1}{2}$ lb	$\frac{1}{4}$ kilo
Yeast Energizer	1 teasp.	1 teasp.	1 teasp.
Campden tablets	1	1	1
All Purpose wine yeast			

Ferment on the pulp for 3 to 5 days. After straining add sugar for a dry or sweet wine.

Sugar	2 (or 3 lb)	1 $\frac{1}{2}$ lb (or 2 lb 6oz)	1 (or 1 $\frac{1}{2}$ kilo)
Citric acid	$\frac{1}{2}$ tablesp.	$\frac{1}{2}$ tablesp.	$\frac{1}{2}$ tablesp.
Grape tannin	1 teasp.	1 teasp.	1 teasp.
Water up to	1 gallon	1 gallon	5 litre

DRIED-APRICOT WINE

S.M.T. 1969

4 lb. dried apricots
8 almonds (which should be shredded)
3 $\frac{1}{2}$ lb. sugar • 1 oz. yeast • 9 pints water

Bring the water to boiling-point and pour in the apricots. Cut off the heat at once and allow the mixture to soak for forty-eight hours, stirring occasionally. Then crush well with the hands and strain. Into this liquid put the almonds and bring to the boil, boiling gently for two minutes. Pour the hot liquid over the sugar and stir until all the sugar is dissolved. Allow the brew to cool and then sprinkle the yeast on top and stir in. After fourteen days' fermentation proceed with isinglass and bottling.

H.E.B. 1960

CURRENT WINE

2 $\frac{1}{2}$ lb. currants • 2 grapefruit • 3 lb. sugar
1 oz. yeast • 9 pints water

Bring the water just to boiling-point and pour in the currants. Cut off the heat at once. Leave the mixture to soak for forty-eight hours, stirring occasionally. Then crush well with the hands and strain. Into this strained liquid squeeze the grapefruit and then bring the liquid just to boiling-point and simmer for three minutes. Pour the hot liquid over the sugar and stir until all the sugar is dissolved. When the brew is cool, sprinkle the yeast on top and stir in. Allow it to ferment for fourteen days and proceed with isinglass and bottling.

H.E.B. 1960

Currant Wine

Currants, raisins and sultanas contain about 60 per cent extractable sugar but are low in acid and require the addition of a vitamin yeast food such as Yeast Energizer.

	BRITISH	U.S.A.	METRIC
Currants minced	2 lb	1½ lb	1 kilo
Sugar	1½ lb	1 lb 2 oz	¾ kilo
Yeast Energizer	½ teasp.	½ teasp.	½ teasp.
Citric acid	4 teasp.	4 teasp.	4 teasp.
Grape tannin	½ teasp.	½ teasp.	½ teasp.
Campden tablets	2	2	2
Sherry or Tokay yeast			
Water up to	1 gallon	1 gallon	5 litre

Pour some boiling water over the minced fruit and beat well into the pulp. Add the remainder of the water, preferably luke-warm, sugar and other ingredients. Ferment on the pulp for 2 to 3 days, strain and ferment on.

Date Wine

Dates, like currants, contain about 60 per cent of sugar. The dates are disintegrated in hot water and the juice balanced with acid and tannin, both of which are lacking in dates.

	BRITISH	U.S.A.	METRIC
Dates	3 lb	2¼ lb	1½ kilo
Sugar	1-2 lb	¾-1½ lb	½-1 kilo
Citric acid	2 tablesp.	2 tablesp.	2 tablesp.
Grape tannin	1 teasp.	1 teasp.	1 teasp.
Campden tablets	1	1	1
Yeast Energizer	½ teasp.	½ teasp.	½ teasp.
Sherry yeast			
Water up to	1 gallon	1 gallon	5 litre

DATE WINE

S.M.T. 1969

Winter is the time for this. It is a cheap but very good wine. It is of course best made with whole dessert dates, but most of us will have to do with the cheap, stoned, and compressed variety. These are quite good enough, and with proper wine-making will turn out nearly as good as wine made with the best dates. Give the cheap ones a good picking over, discarding all black bits. Dates are so full of sugar that they require very little extra, but they are lacking in acid, which must be supplied by lemons or citric acid. If the wine is cloudy, use isinglass.

4 lb. dates	2 lemons or 1 oz. citric acid
1 gallon water	acid
1-2 lb. sugar	Spice to taste
¼ oz. dried baker's yeast	

Stage One. Put the dates and water in a heavy pan, add the rinds of the lemons or the acid, remembering to pare off the rind with no trace of the bitter white pith. Take an hour to bring to a simmer and maintain the simmer for four hours. Keep covered, but make up for any loss by adding more boiled water. Let drip through a jelly-bag, covered, as in Fig. 19. Squeeze the bag into another receptacle, and if you get a worth-while amount of juice let it stand to settle and pour or siphon off. Either combine with the dripped juice or use for topping up.

Stages Two, Three, Four, Five, and Six as on p. 134

Fig Wine

Figs, strange as it may seem, belong to the mulberry family. Both dried and fresh figs can be used for winemaking. The fruit is extremely low in acid and two tablespoons or 1 oz of citric acid must be added to each gallon. Sugar in the fresh fruit averages 10 per cent though it has on occasion reached 15 per cent. Allow 6 lb of the fresh fruit or 1½ to 2 lb of the dried fruit to the gallon and one tablespoon of pectic enzyme. The dried fruit has to be **Extracted with hot water and a yeast energizer added, while the fresh fruit is mashed and yeast nutrient suffices.**

	BRITISH	U.S.A.	METRIC
Figs, dry	1½-2 lb	1-1½ lb	¾-1 kilo
or			
Figs, fresh	6 lb	4½ lb	3 kilo
Sugar	2-3 lb	1½-2¼ lb	1-1½ kilo
Pectozyme	1 tablesp.	1 tablesp.	1 tablesp.
Yeast Energizer			
or Nutrient	½ teasp.	½ teasp.	½ teasp.
Citric acid	2 tablesp.	2 tablesp.	2 tablesp.
Campden tablets	1	1	1
Grape tannin	½ teasp.	½ teasp.	½ teasp.
Sherry yeast			
Water up to	1 gallon	1 gallon	5 litre

S.M.T. 1969

MIXED DRIED FRUIT WINE

This is a glorious, golden wine which is simplicity itself to make.

Ingredients:

3 12-oz. cartons of mixed dried fruit	G.P. wine yeast
1 lb. wheat	Yeast nutrient
3 lb. sugar	1 gallon boiling water
	½ oz. citric acid

mixed fruit here refers to raisins, currants and sultanas. it does not include any mixed peel.

Method:

Make up a starter bottle two days or so before you need it with half a pint of orange juice—it can be a little diluted to make up the quantity—1 oz. of sugar, a little yeast nutrient and the general-purpose wine yeast. Place it in a temperature of about 70 degrees F.

You can obtain your 12-oz. cartons of fruit (sultanas, raisins and currants) from Woolworths. Tip all the fruit, grain and sugar into a crock, and pour over them the boiling water, stirring to dissolve the sugar. When cool add the contents of the starter bottle and ½ oz. citric acid, and stir well in. Cover closely and leave in a warm place (65-70 degrees F.) for three weeks, stirring vigorously daily. Then strain into fermenting bottle and fit trap, and rack off for the first time when it clears. This wine can be drunk after six months and is doubly useful in that it can be made at any time of the year.

C.J.J.B. 1960

PRUNE WINE

3 lb. dried prunes • ½ lb. sultanas
2 grapefruit • 3 lb. sugar • 1 oz. yeast
9 pints water

Cut the prunes down one side, stone them, and put them in the boiling water. Cut off the heat at once. Allow the mixture to soak overnight, and then crush well with the hands and strain. Into this strained liquid squeeze the grapefruit. Bring the liquid to boiling-point and simmer for two or three minutes - no longer. Pour the hot liquid over the sugar and stir until all the sugar is dissolved. Add the chopped sultanas to this liquid, and allow it to cool. Then sprinkle the yeast on top and stir in. After fourteen days' fermentation, strain and proceed with isinglass and bottling.

H.E.B. 1960

RAISIN WINE

Raisins are of the greatest help in wine-making because they retain some of the virtues of the fresh grapes from which they are made. They are good too as a wine in their own right. For extra strength, wheat can be added, from half to a full pound, at Stage Two. If raisins are dirty, wash well.

2 lb. large raisins	2 lemons
1 gallon water	$\frac{1}{2}$ oz. citric acid
3 lb. preserving sugar	$\frac{1}{2}$ oz. India tea
$\frac{1}{2}$ oz. dried baker's yeast	8-16 oz. wheat as desired

Stage One. Warm half the water and steep raisins in it for three days until large and soft. Stir two or three times daily, and keep well covered with cloth, board, and weight. Bring remainder of water to boil with the tea (in a tea-bag) and boil five minutes. Now strain out raisins from the steeping vessel and pour the tea over them. When cool enough to get your hand in, mash the raisins. Then add the water in which the raisins were steeped. Froth up half the yeast for ten minutes in some of the juice at 98°F., melt 1 lb. of the sugar and stir in. Let ferment on a tray in a warm place for three days. Then strain in a jelly-bag overnight

squeeze the bag well in the morning, letting this juice stand separately to settle and clear. Stir in the strained fruit juice and the citric acid melted in a little of the juice, and pour this basic liquid into a fermentation jar which has been standing in a warm place.

Stage Two. Add rest of yeast and another pound of the sugar in the usual way, filling to within an inch of the brim. Keep topping up if it froths over. If not, proceed with next stage.

Stages Three, Four, Five, and Six as on p.134 Add last pound of sugar at Stage Four.

L.M. 1958

RAISIN WINE



RECIPE 12

3 lbs. raisins	5 level tsps. acid blend
1 gal. (160 oz.) warm water	2 Campden tablets
2½ lbs. white granulated sugar	Wine yeast
1 level tsp. yeast nutrient	

Starting specific gravity should be 1.090-1.095, acid .60%.

Chop raisins. Mix all ingredients except wine yeast in primary fermentor. When must is cool (70-75°F.) add yeast. Cover with plastic sheet. Stir daily for 5 or 6 days. Remove raisins and press. Siphon into gallon jug or carboy and attach fermentation lock. Rack in 3 weeks. Make sure container is topped up. Rack again in 3 months. When wine is clear and stable, bottle.

Age 6 months.

S.A. R.H. 1968

RAISIN WINE

Ingredients:

8 lbs. large raisins	Yeast; yeast nutrient
1 gallon water	1 Campden tablet

Method:

Clean the raisins thoroughly by washing them in a colander, then mince through a coarse mincer. Put them into a fermentation jar with a wide neck, pour on the cold water, and add one crushed Campden tablet. Keep the jar covered. Two days later add the yeast and yeast nutrient, and fit a fermentation trap to the jar. Alternatively cover the wide neck with a sheet of polythene secured by a rubber band, which will serve the same purpose. Keep the fermentation jar in a warm place (about 70 degrees F.) for a few days, and afterwards in a temperature of about 65 degrees F. until the ferment has finished. Each day give the vessel a good shake. When fermentation has finished strain the liquor off the raisins, which can then easily be removed (hence the need for a wide-necked jar, with a narrow-necked one it can be a fiddly business). Put into a fresh jar and leave for a further three months before racking (siphoning the wine off the lees) again and bottling.

By using some sugar one can reduce the amount of raisins required, although the wine will have nothing like the same body. Here is a recipe, however, using this method:

RAISIN WINE (2)

Ingredients:

2 lb. raisins	1 gallon water
2 lb. sugar	Yeast; yeast nutrient

Method:

Mince the raisins, put them in the water, and boil for an hour. Strain the liquor on to the sugar, stir well to dissolve, allow to cool to 70 degrees F. and pour into fermenting bottle. Add the yeast and yeast nutrient. Keep in a warm place until it begins to clear, then rack for the first time, into a clean jar, re-fitting trap. When the fermentation ceases completely siphon into clean bottles and cork.

FARMHOUSE TEA AND RAISIN WINE

Ingredients:

2 lb. large raisins	4 lemons
1 lb. wheat	1 gallon water
1 oz. tea	Yeast
2 lb. sugar	

Method:

Tie the tea loosely in a muslin bag. Pour the boiling water over it and let it mash, leaving it in the liquor until it is lukewarm. Remove the bag, and to the liquor add the chopped raisins, wheat, sugar and sliced lemons. Add a Campden tablet. Dissolve $\frac{1}{2}$ oz. of baker's yeast in the liquid and stir it in. Leave it to ferment in a closely-covered pan for 21 days, stirring often, then strain into fermenting bottle and fit trap. Siphon off into clean bottles when fermentation has ceased.

C.J.J.B. 1960

When making wine from dried fruits it is desirable to boil the fruit well with several lots of water so as to get a thorough extraction. The raisins should be well pounded or passed through a very coarse mincer. Half a gallon of boiling water is poured over 2 lb. of raisins, left overnight and then well pressed. The yield will be about 3 pints of a juice of gravity about 100. The pulp is leached again with another half a gallon of boiling water which on pressing will yield a further 4 pints of juice of a gravity between 40 and 50. By adding the two extracts together 7 pints of a juice with a gravity of about 70 are obtained. Some sugar is added to increase this gravity, for instance, about 1½ lb. of sugar will increase the gravity to about 130 and the volume of the wine to 7½ pints. A juice such as this was fermented with a Tokay yeast, and the gravity drops were as follows:

Date	Gravity
Apr. 30th	130
May 7th	51
May 17th	39
Sept. 19th	25

The wine was racked at this gravity and two Campden tablets added. It was of a very good flavour, matured well and was quite stable, but a little lacking in acid and tannin. Half an ounce of citric acid and two teaspoonsful of grape tannin effected a marked improvement. A similar juice fermented with a sherry yeast in the presence of air became nutty in flavour but fermented rather more slowly.

S.M.T. 1956

PEACH AND RAISIN WINE

This recipe, originally printed in the *Amateur Winemaker*, is repeated since it was a prizewinner for Mr. Harold Cox.

Ingredients:	British	Metric	U.S.A.
Peach slices	1½ lb.	700 gm.	1½ lb.
Raisins	1 lb.	450 gm.	¾ lb.
White grape concentrate	1 pint	½ litre	1 pint
Sugar	2 lb.	1 kilo	1½ lb.

Plus ½ teaspoonful tannin

Pectic destroying enzyme

Yeast nutrients—1 tablet or 1 teaspoon ammonium phosphate

Sherry yeast

Water to 1 gallon (4½ litres)

Method: Mince raisins and pour on them about 3 pints of boiling water. When cool add peach pulp, grape concentrate, pectic enzyme, nutrient and yeast. Ferment on the pulp for 5-7 days. Strain into a fermentation jar and add 1 lb. sugar (½ kilo) (in syrup form). After a further 7 days, add another pound of sugar and add grape tannin and top up with cool boiled water.

First rack when fermentation ends (3 weeks to 1 month according to the temperature of the room).

Rack again 4 weeks later. This leaves a good air space at the top of the fermentation jar, which should be plugged with cotton wool to allow oxidation and form a sherry type flavour. Leave for 5 to 6 months.

If kept at 45°-50° F. (7-13° C.) and the S.G. is 1000 or below, a sherry flor may form and so help to produce a fine sherry flavour. Rack for the third time. Bottle after 1 year. The finished wine is approximately 18% by volume or 31° proof, acidity 3.5

B.A. 1971

Raisin Wine

As far back as 1635, Thomas Chamberlayne obtained permission to make and sell wines from 'raysons'. They have continued to make good wine ever since. About two-thirds of their weight consists of fermentable sugar. One measure of raisins is the equivalent of 4 measures of grapes. Raisins vary in quality from year to year and also from one centre of production to another. As a result the wine can also vary slightly - from good to splendid!

2 kg (4 lb) raisins	5 litres (1 gallon)
5 g (1 tsp) citric acid	water, approx.
2 g (½ tsp) grape tannin	Madeira wine yeast

Wash the raisins in a sulphite solution, chop them up, place them in a bin with the citric acid and grape tannin. Pour on 4 litres (7 pints) of warm but not hot water. When cool add an activated yeast.

Ferment on the pulp for 10 days, keeping the pulp well submerged the whole time.

Strain out and press the fruit as dry as you can, discard and pour the must into a fermentation jar, top up with cold boiled water, fit an airlock and ferment out.

Rack the wine into a clean jar, add one Campden tablet, bung tight, label and store until the wine is bright. Rack again and store for a total of 6 months in bulk. Then bottle and store for a further 3 months or so.

Before serving this wine, sweeten it to taste with demerara sugar. It has a tawny-gold hue and is reminiscent of the wines from Madeira.

Sultana Wine

Sultanas make a lighter wine that is very attractive when chilled and served with gammon or baked ham. Use the same quantity of sultanas as recommended for raisins and make the wine in the same way as indicated for raisin wine.

B.T. 1976

PREPARATION OF RAISINS, ETC.

Raisins are dehydrated grapes. When water is re-absorbed the raisins are restored to the consistency of fresh grapes. When we make wine with these restored raisins, we are in fact making wine with grapes.

The juice of ideally cultivated grapes contains all the elements in exact proportion to meet the requirements of the yeast. The yeast is able to live in harmony in this pure juice to produce wine.

About 15 lb. of fresh grapes are required to produce a gallon of juice. We require about 12 lb. of raisins and a gallon of water to produce a gallon of 'juice' comparable with juice from 15 lb. of fresh grapes. When using raisins at a lower ratio, we compensate for deficiencies by adding cereals, sugar, 'salts', etc. Raisins should be prepared for fermentation as follows:

Clean and wash thoroughly but quickly under running water, to get rid of preserving powders and dirt. Bring to the boil with some water, remove immediately. Place colander on the bucket and tip the lot into the colander. Mangle the raisins with the vegetable masher. Pour the 'juice' into the fermentation jar, straining it through the sieve at the same time. Bring what is left of the raisins to the boil again and proceed as before, discarding the practically dry skins.

FIGS and dried BANANAS are treated in the same way; both require to be cut into small pieces before bringing to the boil. PRUNES and DATES are similarly treated, but without being cut.

W.S-S. 1964

RAISIN WINE

3 lb. raisins • 2 oranges • 2 lemons
2½ lb. sugar • 1 oz. yeast • 9 pints water

Chop the raisins and pour the boiling water over them. Leave to soak for forty-eight hours, stirring occasionally. Then crush well with the hands and strain. Into this liquid squeeze the oranges and lemons and bring the whole liquid just to boiling-point. Pour this over the sugar and stir until all the sugar is dissolved.

Allow it to cool and then sprinkle the yeast on top and stir in. After fourteen days' fermentation, proceed with isinglass and bottling.

H.E.B. 1960

Parsnip, Fig and Raisin

2 kg (4 lb) parsnips	30 g (1 oz) gypsum
500 g (1 lb) raisins	15 g (½ oz) cream of tartar
250 g (½ lb) dried figs	4 litres (7 pints) water
1.25 kg (2½ lb) white sugar	Pectic enzyme and Campden tablets
2 lemons	Sherry yeast and nutrient
10 g (2 tsp) citric acid	
4 g (1 tsp) grape tannin	

Scrub the parsnips, discard the crowns, dice and boil them with the thinly pared rinds of the lemons until they are tender. Leave to cool.

Strain out the vegetables and lemon rind, add the washed and chopped raisins and the washed and broken figs to the liquor. Stir in the citric acid, lemon juice, pectic enzyme and one crushed Campden tablet. Cover and leave for 24 hours.

Add the grape tannin, gypsum, cream of tartar, activated yeast and nutrient. Ferment on the pulp for 5 days keeping the fruit submerged and the bin loosely covered.

Strain out and press the fruit dry and discard the pulp, stir in half the sugar, pour the must into a fermentation jar and plug the neck with cotton wool.

Add the rest of the sugar during the fermentation as already described for Bitter Orange Wine. After 2 years this is a very good sherry-like wine. Serve it cold with savoury tit-bits.

B.T. 1983

RAISIN WINE (Light Table Wine)

Ingredients: 2 lb. raisins (1 kg. metric—1½ lb. U.S.A.).
Sugar 1 lb. (½ kg. metric—½ lb. U.S.A.).

Remaining ingredients as for Cherry wine, plus 1 heaped teaspoon citric acid. Raisins are best processed by mincing them before pulp fermentation in the plastic bucket. Otherwise method is as for cherry wine.

RAISIN WINE (Dessert Wine)

Ingredients: 3 lb. raisins (1½ kg. metric—2½ lb. U.S.A.).
Sugar 2 lb. (1 kg. metric—1½ lb. U.S.A.).

Remaining ingredients and method as above. The method can be improved by taking 1 lb. of sugar (½ kg. or ½ lb. U.S.A.) and making it into a syrup by boiling with ½ pint water (280 mls.). When cool this can be stored and be added to the fermenting must once it has absorbed its original sugar. In this way a very high alcohol content can be achieved.

Method: Mince the sultanas and place in a plastic bucket with the other ingredients and water. Stir well to dissolve sugar and add 1 Campden tablet. Cover and leave for 24 hours. Then add yeast and ferment on the pulp for 4 days. Strain off into a gallon jar and continue fermentation. When fermentation is complete, rack off into a second jar, top up with water and fit a bored cork, plugged with cotton wool. Mature for 4 months, then rack again and sweeten up to taste. Leave for a further period—preferably a year before drinking.

B.A. 1971

RAISIN WINE

It's easy to forget that raisins are just dried grapes. That's why raisin wine is among the easiest of all wines to make. You could make raisin wine from little more than sugar, raisins, and water — and many country winemakers do. But, like undried grapes, raisins carry wild yeast on their skins, so making wine from just these three ingredients won't give you the same result every time. That's why we usually kill off the resident yeast and add wine yeast from a known source when we make wine from raisins.

- 1³/₄ pounds large raisins (dark or light)
- 1³/₄ pounds sugar
- 1 Campden tablet (optional)
- 1 teaspoon citric acid or acid blend
- 1 teaspoon pectic enzyme
- 1 package wine yeast (5–7 grams)
- 1 teaspoon yeast nutrient
- 1¹/₂ cups orange juice

Boil the raisins in 2 quarts of water for 1 minute in a large, unchipped, enamel or stainless steel pot. Let the mixture cool to room temperature and strain the liquor onto the sugar in a 2-gallon plastic bucket or wastebasket. Add a Campden tablet to kill the wild yeast if desired and let the mixture stand, well covered, for 24 hours. Then add the acid, the pectic enzyme, and water to make a gallon. Make a yeast starter-culture by combining the wine yeast and yeast nutrient with 1¹/₂ cups tepid orange juice. Cover, shake vigorously, and let stand until bubbly (1–3 hours); then add to the must. Pour the mixture into an airlocked fermentation vat. When the wine has cleared, rack and return to a clean airlocked fermentation vessel and ferment to completion. Then rack into bottles, cork, and cellar the wine. Wait at least 6 months before sampling.

P.V. R.G. 1992

Dried fruits make interesting wines on their own but are often best used in combination with other ingredients. Currants, raisins and sultanas are classic examples. Dried peel is best avoided since it usually conveys a bitter taste to the wine. Dried apricots add body and subtle flavour, figs add strong flavour, dates add colour and body. Prunes are perhaps best used as a main ingredient, especially if you can get large ones. Dried elderberries, sloes and, occasionally, bilberries can be bought. They should always be washed in a sulphite/citric acid solution before use to remove the fungi, moulds and bacteria that will have settled on them. Generally speaking dehydration reduces the weight of the fruit by three-quarters and so one measure of dried fruit is approximately equal to four measures of fresh fruit.

It is customary to soak the fruit in hot water overnight to enable it to absorb the water and so dissolve its acids and sugars. The fruit must always be chopped or broken open to assist in the extraction of the goodness within.

Canned and bottled fruit juices may be used provided they have not been artificially sweetened. Manufacturers sometimes use saccharine for sweetening and this results in a sweet tasting wine. Canned and bottled fruits are usually packed in a light syrup which may be safely used.

Jams and preserves make good wine, provided the jam is pure and contains no preservative or added pectin. By its very nature jam needs a double dose of pectin-destroying enzyme. Marmalade is less successful since it is boiled with pips and pith and is often rather bitter in the finished wine.

2683.—GINGER WINE.

Ingredients.—To 9 gallons of water allow 27 lbs. of loaf sugar, 9 lemons, 12 oz. of bruised ginger, 3 tablespoonfuls of yeast, 2 lbs. of raisins stoned and chopped, 1 pint of brandy.



GINGER WINE.

Mode.—Boil together for 1 hour in a copper (let it previously be well scoured and beautifully clean), the water, sugar, lemon-rinds and bruised ginger: remove every particle of scum as it rises, and when the liquor is sufficiently boiled, put it into a large tub or pan, as it must not remain in the copper. When nearly cold, add the yeast, which must be thick and very fresh, and the next day, put all in a dry cask with the strained lemon-juice and chopped raisins. Stir the wine every day for a fortnight; then add the brandy, stop the cask down by degrees, and in a few weeks it will be fit to bottle.

Average Cost, 2s. per gallon. **Sufficient** to make 9 gallons of wine.

Seasonable.—The best time for making this wine is either in March or September.

Note.—Wine made early in March will be fit to bottle in June.

2684.—GINGER WINE.

(The Editor's own Recipe.)

Ingredients.—12 oz. of bruised unbleached ginger, 28 lbs. of loaf sugar, 12 lemons, 12 lbs. of raisins, 12 gallons of spring water, 6 tablespoonfuls of yeast, 1 oz. of isinglass, 3 pints of brandy.

Mode.—Boil the water, ginger, sugar and lemon-peel for half an hour; have the raisins ready chopped in a pan; pour the liquor over them when nearly cold; add the lemon-juice and the yeast; stir it every day for a fortnight, then add the isinglass, strain it, and put in the cask as soon as convenient.

Average Cost, 2s. per gallon. **Sufficient** to make 12 gallons of wine.

Seasonable.—To make in March or September; to drink in summer or winter.

Note.—If made in March this wine will be fit to bottle in June.

Mrs. B. 1867

GINGER WINE

1 oz. whole ginger (mild flavour)

or

1½ oz. whole ginger (fairly-strong flavour)

or

2 oz. whole ginger (strong flavour)

3½ lb. sugar • 2 oranges • 2 lemons

½ lb. sultanas • ½ lb. raisins • 1 gallon water

1 oz. yeast

Slice the lemons and oranges finely, bruise the ginger and put all together in the water. Bring slowly to the boil and simmer gently for fifteen minutes — no longer. Strain the liquid over the sugar (a jelly-bag is not needed here — three thicknesses of muslin will do), and stir until all the sugar is dissolved. Then add the dried fruit. Allow the brew to cool, then sprinkle the yeast on top and stir in. Cover as directed and ferment for fourteen days, after which proceed with straining and bottling. As the ginger has to be boiled, this wine may take rather longer than usual to clear, but a slight cloudiness will not be so noticeable because of the colour.

If you insist upon a crystal-clear wine, try using ginger essence as in the ginger wine (non-alcoholic) recipe

H.E.B. 1960

GINGER WINE

1 gallon water	8 oz. sultanas
4 lb. sugar	2 tsps. yeast
1 oz. bruised ginger	¼ oz. isinglass
Rinds of 2 lemons	¼ pint brandy

Boil together the water, sugar, ginger, and the lemon rinds. When the liquid is lukewarm, put it into a cask, together with the sultanas and yeast. Stir daily for 10 days. When it has ceased to ferment, add the isinglass and brandy. Bung the cask closely and leave for 2 months.

G.H. 1961

GINGER WINE

Those who are fond of ginger will like this wine. It can be very good. It is quick in maturing, has a pleasant sweet taste and makes a comforting toddy on a winter's night. It is easily made.

2 oz. root ginger	2 lemons
1 gallon water	2 oranges
3 lb. demerara sugar	8 oz. raisins
½ oz. dried baker's yeast	

Stage One. Put crushed ginger, 1 lb. of the sugar, and all the yellow rinds of the fruit carefully pared off the bitter white pith into the water and bring as slowly as possible to the simmer. Take at least an hour to do it, stirring away the sugar in the early stages. Simmer for twenty minutes, and let it cool slowly. Strain and pour over the fruit juices in a fermentation jar which has been standing in a warm place. Cork lightly.

Stage Two. Use 1 lb. of the remaining sugar and the other half of the yeast. This leaves 1 lb. sugar for Stage Four.

STAGE THREE. Frothing drops inside jar. Top up and insert lock. This stage of quiet humming and bubbling lasts three to five weeks.

STAGE FOUR. The water levels in the lock approach each other. Revive fermentation by adding remainder of sugar, melted in some of the juice. Re-insert lock, making it airtight. Fermentation lasts from three days to two weeks.

STAGE FIVE. Fermentation ceases. Water levels are even. Carry jar to a cold place and leave two weeks to settle and clear.

STAGE SIX. Bring jar back to kitchen and rack wine off the sediment. Allow sediment to settle, pour off the clear wine and add to bulk. Add spice if any, tannin if needed, and handful of raisins per gallon. Store in jar for first three months if possible, and longer if you can. Rack again at 3, 6, and 12 months, and then yearly. Top up each time as full as possible, using topping up or a mature white wine. When bottling, add a raisin per bottle.

L.M. 1958

Ginger Wine

To $\frac{1}{2}$ lb. of chopped up raisins add 2 oz. of crushed root ginger, 3 lb. of sugar and 1 gallon of water. Bring to the boil and when cool add the juice of 2 lemons and 2 oranges. Follow this by a teaspoonful of yeast nutrient and a wine yeast. Fermentation is allowed to proceed for a few days when the liquid is strained off from the raisins and ginger into a gallon jar and allowed to ferment to completion. This wine will be sweet.

S.M.T. 1956

Ginger Wine

	BRITISH	U.S.A.	METRIC
Ginger root, bruised	2 oz	2 oz	60 gram
Orange juice	10 oz	8 oz	300 gram
Lemon juice	4 oz	3 oz	100 gram
Citric acid	1 tablesp.	1 tablesp.	1 tablesp.
Sultanas, minced	1 lb	$\frac{3}{4}$ lb	$\frac{1}{2}$ kilo
Sugar	2-3 lb	$1\frac{1}{2}$ - $2\frac{1}{4}$ lb	$1-1\frac{1}{2}$ kilo
Yeast nutrient	$\frac{1}{2}$ teasp.	$\frac{1}{2}$ teasp.	$\frac{1}{2}$ teasp.
Grape tannin	1 teasp.	1 teasp.	1 teasp.
Campden tablets	1	1	1
All Purpose wine yeast			
Water up to	1 gallon	1 gallon	5 litre

The ginger is well bruised and a few pints of boiling water are poured over the root and gently simmered for half an hour. Strain, add the cold water and other ingredients and make up to 1 gallon. Ferment on.

S.M.T. 1969

Ginger Wine

Ingredient	Quantity per gallon	Quantity per 5 litres
Root ginger	3 oz	75 gms
White grape concentrate	$\frac{1}{2}$ pint	250 mls
Sugar	to SG 70	to SG 70
Bananas — skinned	2 lbs	1 kgm
Vitamin B ₁	6 mg	6 mg
Water	to volume	to volume

Chop the ginger roots into small pieces and place in a bucket with 5 pints (2.5 litres) water. Place the skinned chopped bananas in a pan with 1 pint (500mls) water. Boil until they are soft, strain the liquid into the bucket and add the other ingredients and nutrients. When cool add an active yeast starter. After about ten days rack into a demi john, make to volume and ferment to dryness under air lock. Rack again and mature for one year. Sweeten to taste.

P.M.C. 1988

Ginger Wine

100 g (3 oz) root ginger	1.5 kg (3 lb) brown sugar
250 g (8 oz) raisins	5 litres (1 gallon) water
2 lemons and 2 oranges	Wine yeast
2 g ($\frac{1}{4}$ tsp) cayenne pepper	

Bruise the root ginger with a hammer, wash and chop or liquidise the raisins, thinly pare the lemons and oranges, place them all in a bin with the cayenne pepper. Pour hot water over them and leave to cool.

Express and strain the fruit juice and add to the bin with an activated yeast. Ferment on the pulp for four days, then strain out, press and discard the solids and stir in half the sugar.

Pour the must into a jar, fit an airlock and continue the fermentation. After one week, remove half the must, stir in the rest of the sugar, return the sweetened must to the jar and the excess to a bottle alongside.

Ferment to a finish, then rack, add one Campden tablet and store for at least 6 months. Sweeten to taste if necessary before serving.

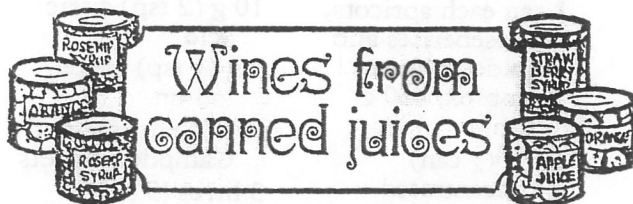
B.T. 1976

DRY GINGER WINE

- 3 ounces whole ginger root
- $\frac{1}{2}$ pint white grape-juice concentrate
- $1\frac{1}{2}$ pounds bananas
- 1 Campden tablet (optional)
- 1 package wine yeast (5-7 grams)
- 1 teaspoon yeast nutrient
- $1\frac{1}{2}$ cups orange juice
- 2 pounds sugar
- 1 teaspoon pectic enzyme

Start by cutting up the ginger root into pieces and adding it to the grape concentrate in a 2-gallon plastic container. Add 2 quarts of boiling water. Peel the bananas and force them through a strainer; add to the ginger mixture. Add a Campden tablet, if desired, and let sit well covered, for 24 hours. Make a yeast starter-culture by combining the wine yeast and yeast nutrient with $1\frac{1}{2}$ cups tepid orange juice. Cover, shake vigorously, and let stand until bubbly (1-3 hours); then add to the must. Add the remaining ingredients and water to make a gallon. Let the pulp ferment, loosely covered, for 10 days. Then rack into an airlocked fermentation vessel and let the mixture ferment for at least 3 months, racking as necessary to clear the wine. When fermentation is complete, bottle, cork, and cellar the wine. Wait 6 months or more before opening a bottle.

P.V. R.G. 1992



Wines from canned juices

ADDITIVES FOR 1 GALLON

Essential 1 level teaspoonful pectic enzyme
 1 level teaspoonful ammonium phosphate
 Advisable 6 mg. Vitamin B1
 Optional ¼ teaspoonful magnesium sulphate

Note. All these wines are intended for *vin ordinaires*. They should be made in 5 or 10 gallon lots for everyday drinking, and most of them are drinkable as an honest rough wine within weeks of the end of fermentation.

APPLE WINE

Ingredients:	British	Metric	U.S.A.
Canned apple juice	46 fl. oz.	1½ litres	40 fl. oz.
Sugar	2 lb.	1 kg.	1½ lb.
Citric acid	½ teaspn.	½ teaspn.	½ teaspn.

Additives as above

White wine yeast Water to 1 gallon (4½ litres)

Method: Pour all ingredients into a gallon jar and top up with water. Stir well to dissolve sugar and add yeast. Fit an air-lock and place in a warm place around 75° F. (24° C.). When fermentation has almost finished (about 2-3 weeks) add 1 Campden tablet and rack the wine into another jar about 5 days later. Top up with water, fit a bored cork plugged with cotton wool and place in a cool place.

The wine is normally drinkable as soon as it is clear, and this normally only takes a few weeks.

If it is intended to make a sweet wine, the sugar should be increased by 50% and the citric acid doubled. The wine is then finally sweetened just before drinking with ¼-½ lb. sugar per gallon according to taste (25-50 gm. per litre).

B.A. 1971

Pineapple and Grapefruit

1 large can unsweetened grapefruit juice (approx. 1.35 litres/40 fl oz)	250 g (¼ can) concentrated white grape juice 1 kg (2 lb) white or Demerara sugar
1 large can unsweetened pineapple juice (approx. 1.35 litres/40 fl oz)	1.5 litres (2½ pints) water Madeira wine yeast and nutrient

Mix all the ingredients together, pour the must into a fermentation jar, fit an airlock and ferment out to dryness.

Rack into a sterilised jar, add one Campden tablet, bung tight, label and store until the wine is bright.

Rack again and store the wine in a cool place until it is 6 months old. Bottle it and store for a few weeks longer or store it in a Winemaid carton. Serve it cold with savoury biscuits.

B.T. 1983

Note. In the following, the method of preparation is exactly as for Apple wine. In place of apple juice the following should be used, with slight variations in acid or tannin where noted.

	British	Metric	U.S.A.
APRICOT CONCENTRATE	¼ lb.	300 gm.	¼ lb.
BLACKCURRANT (Ribena, etc.)	12 fl. oz.	320 mls.	12 fl. oz.
GRAPEFRUIT JUICE Omit citric acid	1 pint	½ litre	1 pint
ORANGE JUICE Omit citric acid	1 pint	½ litre	1 pint
ROSEHIP SYRUP Increase citric acid to 1 teaspoonful	12 fl. oz.	320 mls.	12 fl. oz.
STRAWBERRY SYRUP Add ¼ teaspoonful grape tannin. See note below also.	12 fl. oz.	320 mls.	12 fl. oz.

The general principle in using canned juices is that they are very easy to use, are not in any way messy, which is important in city flats, and since the juices themselves are already sterile, the busy business man can prepare 5 or 10 gallons in a matter of minutes only. The wine must have virtually no problems, and can be left unattended until fermentation has finished, and there are rarely any clearance problems. These wines but seldom find their way to the prizewinners bench, but as a provider of general drinking wine in quantity they are almost unsurpassed.

A special word is required about strawberry wine. The flavour of this wine is so delicate that it is easily lost. Ideally the yeast starter should be prepared in advance with a little of the juice and water. Secondly, fermentation should be conducted at a cooler temperature (65°-70° F., 18°-21° C.) which takes a couple of weeks longer. Campden tablets are absolutely essential at racking times in order to prevent oxidation which can quickly ruin this otherwise very delicate wine.

Cherry Concentrate Wine (Semi-sweet). Recipe for 1 gallon*

1 20 oz tin Cherry Concentrate
1 teaspoon Yeast Nutrient
1 teaspoon citric acid
3 lb invert sugar
7 tins or 140 oz of water
Wine yeast
1 Campden tablet (optional)

This may be fermented in a 2-gallon plastic pail covered with a plastic sheet for 7 days, then syphoned into a gallon jar fitted with a fermentation lock.

Mix all the ingredients with warm water and when they have cooled to 70° F., add previously prepared wine yeast.

Rack off the sediment in 3 to 4 weeks, and top up with a sugar and water solution of a specific gravity of 100. Rack again in 2 months, sweeten if necessary to S.G. of 1.000 to 1.010. This wine should be clear and palatable in 3 to 5 months. Will continue to improve up to one year.

This recipe may be multiplied as many times as desired. The addition of ¼ teaspoon of grape tannin may improve the flavour for some tastes.

Warning.—Do not add wine yeast until temperature is down below 75° F.

S.M.T. 1969

Apricot Pulp Wine Sweet (2 gallon)

	BRITISH	U.S.A.	METRIC
Tin of Apricot Pulp	1 lb 12 oz	1 lb 12 oz	$\frac{3}{4}$ kilo
Pectozyme	1 heaped tablesp.	1 heaped tablesp.	1 heaped tablesp.
Yeast Energizer	1 teasp.	1 teasp.	1 teasp.
Citric acid	4 teasp.	3 teasp.	3 teasp.
Sugar	1 lb	$\frac{3}{4}$ lb	$\frac{1}{2}$ kilo
Grape tannin	1—2 teasp.	1 teasp.	1 teasp.
Campden tablets	2	2	2

All Purpose wine yeast.

Pour 3 pints hot water over pulp, cool to blood heat, add all the above ingredients and ferment on pulp for 3 to 4 days. Strain, add 3 lb of sugar, 1 gallon of water, ferment on then add further sugar as required from 1 to 2 lb dissolved in water and make up 2 gallons.

Water up to	2 gallon	2 gallon	10 litre
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Apricot Concentrate Wine—Recipe for 1 gallon of wine (semi-sweet)

- 1 20 oz tin of Apricot Concentrate
- 1 teaspoon Yeast Energizer
- 1 teaspoon Pectinol
- 4 lb Invert sugar
- 8 tins or 160 oz of water
- 1 Campden tablet (optional)
- Wine Yeast (previously prepared)

Mix all the ingredients with warm but not hot water, except the wine yeast, which should be added when the mixture has cooled to 75 degrees or less.

S.M.T. 1969

Canned Apricot, Gooseberry and Plum Wine

1 can each apricots, gooseberries and golden plums (approx. 450 g 1 lb)	10 g (2 tsp) citric acid
250 g ($\frac{1}{4}$ can) concentrated white grape juice	2 g ($\frac{1}{2}$ tsp) grape tannin
800 g ($1\frac{3}{4}$ lb) white sugar	Pectic enzyme and Campden tablets
	3 litres (5 pints) water
	Burgundy wine yeast and nutrient

Open each can of fruit and strain the syrup into a sterilised bottle; seal it and store it in the refrigerator until required.

Mash or liquidise the fruit and stir it into the water containing one crushed Campden tablet, the acid and the pectic enzyme. Cover and leave for 24 hours.

Stir in the syrup, concentrated grape juice, activated yeast, nutrient and tannin. Ferment on the pulp for 3 days keeping the fruit submerged.

Strain out the pulp, roll it round a nylon bag or sieve, but do not squeeze it. Discard pulp.

Stir in the sugar, pour the must into a fermentation jar, fit an airlock and ferment to dryness.

Rack the clearing wine, add one Campden tablet and store until bright. Rack straight into sterilised bottles and keep the wine until it is about 3—4 months old. Serve it nicely chilled as a wine aperitif or with light food. It is particularly refreshing on a hot day.

Apricot Nectar

Use one large bottle of apricot nectar instead of the canned fruit in the recipe above.

B.T. 1983

Mixed Soft Fruits Wine

In the early summer, a wealth of soft fruits becomes available to the winemaker. They include raspberries, strawberries, gooseberries, black, red and white currants, loganberries, garden blackberries, cherries and so on. The demands from the family to eat the fruit fresh is so difficult to resist that often there is only a small quantity of each fruit available for winemaking. Happily, a mixture of all these small quantities makes a delicious rosé wine that should not be missed. The important fact is to use as many different fruits as you can and not too much of any single fruit.

1.75 kg (3½ lb) mixed soft fruits	2.5 litres (4 pints) water
250 g (½ lb) concentrated grape juice	Bordeaux wine yeast and nutrient
825 g (1¾ lb) white sugar	Acid and tannin as necessary
Pectic enzyme and Campden tablets	

Remove stalks, wash, stone and crush the fruit and put it in a bin containing the water, pectic enzyme and one crushed Campden tablet. Cover and leave for 24 hours.

Stir in the concentrated grape juice of your choice – red, white or rosé, depending on the colour of the fruit. If the assembly contains blackberries and or blackcurrants, use white or rosé concentrate.

Add an activated yeast and nutrient and ferment on the pulp for 3 days keeping the pulp submerged.

Strain out, press and discard the fruit, stir in the sugar, pour the must into a fermentation jar, fit an airlock and ferment down to specific gravity 1.002. Alternatively, ferment the wine to dryness and sweeten it with one or 2 saccharine tablets per bottle just prior to serving it chilled.

Rack into a sterilised jar containing one gram (¼ tsp) of potassium sorbate and one crushed Campden tablet to terminate fermentation. Add some wine finings (see page 35) and as soon as the wine is bright, rack again.

Store this wine for one year before bottling, then keep for a few months longer.

Autumn Harvest

1 kg (2 lb) garden blackberries	1 kg (2 lb) white sugar
250 g (½ lb) blackcurrants	5 g (1 tsp) citric acid
250 g (½ lb) choice elderberries	4 g (1 tsp) grape tannin
250 g (½ lb) stoned damsons or black plums	3.5 litres (6 pints) water
1 kg (2 lb) mixed apples	Burgundy wine yeast and nutrient
250 g (½ lb) raisins	

Mixed Fruit Wine

250 g (½ lb) each of the following fruits: Blackberries, blackcurrants, cherries, gooseberries, plums, raspberries, redcurrants and strawberries	2 kg (4 lb) white sugar 5 litres (1 gallon) water Pectic enzyme and Campden tablets Wine yeast
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Wash, stalk, stone and crush the fruit.

Drop it as prepared into a bin containing the water, pectic enzyme and one crushed Campden tablet.

Cover and leave for 24 hours.

Stir in a quarter of the sugar and an active yeast. Ferment on the pulp for three days keeping the pulp submerged and the bin loosely covered.

Strain out and press the fruit, discard the pulp and stir in another quarter of the sugar and continue fermentation under an airlock. After one week stir in another quarter of the sugar and one week later stir in the rest.

When fermentation is finished, rack into sterilised containers and add one Campden tablet.

Store for 6–9 months before bottling. This is a splendid light red wine, fairly strong and medium sweet.

An alternative method is to liquidise the prepared fruit, strain out the solids, add the enzyme and Campden tablet to the juice and next day the sugar, water and yeast.

Remove stalks, wash, stone, crush or chop the fruit and place it in a bin of hot water. Cover and leave to cool.

Add the acid, pectic enzyme, and one crushed Campden tablet, cover and leave for 24 hours.

Add an activated yeast, nutrient and tannin and ferment on the pulp for 4 days with the fruit submerged.

Strain out and press and discard the pulp, stir in the sugar, pour the must into a fermentation jar, fit an airlock and continue fermentation to dryness.

Rack into a sterilised jar, add one Campden tablet and store until the wine is bright, then rack again.

Store this wine for a further year, at least, in bulk and another year in bottle.

This is a consistently good wine year after year, but it does need 2 years in which to mature. Make as much of this wine as possible, using whatever fruits are available to you. Fresh grapes could be included or a few bilberries, some ripe sloes and so on. The blackberries and blackcurrants can be cleaned and frozen as collected and kept until required. Thaw them only just before use. Fruits not available may be replaced by those that are.

Almond Wine

This is really an almond flavoured wine and sultanas are used to produce the base wine.

	BRITISH	U.S.A.	METRIC
Minced Sultanas	2 lb	1½ lb	1 kilo
Sugar	2 lb	1½ lb	1 kilo
Grape tannin	½ teasp.	½ teasp.	½ teasp.
Citric acid	½ tablesp.	½ tablesp.	½ tablesp.
Campden tablets	1	1	1
Yeast Energizer	½ teasp.	½ teasp.	½ teasp.
All Purpose wine yeast			
Water up to	1 gallon	1 gallon	5 litre

Ferment on the pulp for 2 to 3 days, stirring twice daily, using an All Purpose yeast. Strain, make up to 1 gallon, insert airlock and ferment on. When fermentation ceases, add 1 oz crushed bitter almonds which have been boiled with 3 to 4 oz of water. Leave the wine until clear and rack as required.

S.M.T. 1969

ALMOND WINE

A little like a mild amaretto, almond wine is wonderful with desserts, especially pound cakes and cream-filled pastries. But it's equally good with fruit tarts — especially cherry, a fruit that complements the nutty wine to perfection.

- 1½ ounces almonds
- 1 pound light raisins
- ½ pint white grape-juice concentrate
- 2¼ pounds sugar
- 2 lemons
- 1 Campden tablet (optional)
- 1 package wine yeast (5-7 grams)
- 1 teaspoon yeast nutrient
- 1½ cups orange juice
- 1 teaspoon pectic enzyme

Mince the almonds and raisins — a food processor works well. Put the almonds and raisins in a large, unchipped enamel or stainless steel pot and add enough water to cover. Simmer the mixture gently for about an hour, making sure to keep enough water in the pan to prevent scorching. Strain the liquid into a 2-gallon plastic bucket or

P.V. R.G. 1992

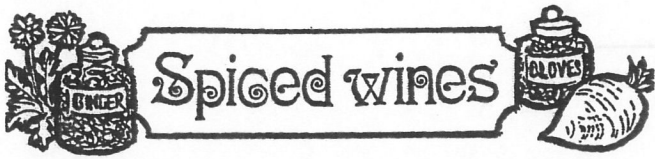
HAZELNUT WINE

- 1 1/2 ounces hazelnuts
- 1 pound light raisins
- 1/2 pint white grape-juice concentrate
- 2 1/4 pounds sugar
- 2 lemons
- 1 Campden tablet (optional)
- 1 package wine yeast (5-7 grams)
- 1 teaspoon yeast nutrient
- 1 1/2 cups orange juice
- 1 teaspoon pectic enzyme

First mince the hazelnuts and raisins — we use a food processor. Put the nuts and raisins in a large, unchipped enamel or stainless steel pot and add enough water to cover. Simmer gently for about an hour, making sure to keep enough water in the pan to prevent sticking. Strain the mixture into a 2-gallon plastic container and discard the solids. Add the concentrate and the sugar and enough water to make a gallon. Juice the 2 lemons and grate the outer rind, making sure you don't include the white inner rind. Add the lemon juice and the grated rind to the mixture. Add a Campden tablet, if desired, and let the mixture stand, well covered, for 24 hours. Make a yeast starter-culture by combining the wine yeast and yeast nutrient with 1 1/2 cups tepid orange juice. Cover, shake vigorously, and let stand until bubbly (1-3 hours); then add to the must. Add the pectic enzyme. Cover loosely and let the mixture ferment for about 10 days. Then rack it into an airlocked fermentation vessel and allow the wine to ferment to completion, racking as necessary to clear the wine. When you're sure the fermentation is complete, bottle, cork, and cellar the wine. Allow at least 3 additional months to pass before you sample.

P.V. R.G. 1992

Claves
Oranges
Lemons
Sugar
Campden tablets
Yeast
Yeast nutrient
Yeast up to



Country people value this wine as a tonic. Balm is a hardy herb and will grow in any garden. Its leaves are lemon-scented.

1 gallon balm leaves	1 orange
1 gallon water	1 lemon
3 lb. preserving sugar	$\frac{1}{2}$ oz. root ginger
$\frac{1}{2}$ oz. dried baker's yeast	4 black peppercorns

There are a number of traditional country wines, mostly for winter drinking. They are powerful, warming brews and very suitable for heating up for punches and bishops. The following recipes merely make them somewhat easier to make.

CLOVE AND BEETROOT

Ingredients:	British	Metric	U.S.A.
Beetroot	3 lb.	1 $\frac{1}{2}$ kg.	2 $\frac{1}{2}$ lb.
Sugar	3 lb.	1 $\frac{1}{2}$ kg.	2 $\frac{1}{2}$ lb.
Grape concentrate RED	1 pint	$\frac{1}{2}$ litre	$\frac{1}{2}$ pint
Vitamin B tablets (3 mg.)	3	3	3
Nutrient tablet	1	1	1
Citric acid	$\frac{1}{2}$ oz.	14 gm.	$\frac{1}{2}$ oz.
Cloves	4	4	3

Any wine yeast

Water to 1 gallon (4 $\frac{1}{2}$ litres)

1 teaspoonful Pectic enzyme, added with yeast

Method: First make a yeast starter using $\frac{1}{2}$ pint (140 mls.) grape concentrate plus 1 cupful of water in a clean wine bottle. Add yeast and plug bottle with cotton wool. Stand in warm place (75° F., 24° C.). When starter is active, scrub beetroots, slice thinly and boil in 5 pints of water (2 $\frac{1}{2}$ litres metric—4 pints U.S.A.) until tender but not mushy.

Allow to cool and pour over remaining ingredients in a plastic bucket. Add yeast starter and pectic enzyme when at room temperature, and ferment in bucket for 3 days. Strain off through muslin into gallon jar and top up with cold water if necessary. Ferment to dryness under an airlock and then rack into another jar. In actual fact, in view of the sugar content of this must, it is possible that some residual sugar will be left. This is not important since this wine has to be sweetened before drinking in order to achieve balance. Mature in ordinary way for preferably one year.

2676.—CLARY WINE.

Ingredients.—To 1 gallon of water, put 3 lbs. of sugar, 2 tablespoonfuls of yeast, 1 quart of fresh clary flowers and tops, $\frac{1}{2}$ pint of brandy.

Mode.—This well-known and popular beverage, with the higher classes in bygone days, is made as follows. Boil together the water and sugar, skimming thoroughly; let it cool, then put it into a cask. Mix a little of the liquor with the yeast, and when it is working well add it to the rest, and add the clary flowers and tops. Stir the mixture twice daily for 5 days, and bung up when the wine has stopped hissing. Let it stand 4 months, then rack it off, empty away the dregs, cleanse the cask and put the wine back again, adding the brandy. Bung it, and it will be ready for bottling in 2 months, and for drinking in 6. (As this wine leaves much deposit, the tap for drawing it off should be high up in the cask.)

Time.—12 months. **Average Cost,** 1s. 6d. per gallon.

Clove Wine

Allow about 1 oz of bruised cloves to 1 gallon. This and the thin rind of 2 oranges is put into a muslin bag and simmered in a few pints of water for 15 to 20 minutes. The juice only of the fruit is used.

	BRITISH	U.S.A.	METRIC
Cloves	1 oz	1 oz	25 gram
Oranges	4 large	4 large	4 large
Lemons	3 large	3 large	3 large
Sugar	3 lb	2 $\frac{1}{2}$ lb	1 $\frac{1}{2}$ kilo
Campden tablets	1	1	1
Yeast Energizer	$\frac{1}{2}$ teasp.	$\frac{1}{2}$ teasp.	$\frac{1}{2}$ teasp.
Water up to	1 gallon	1 gallon	5 litre

This wine is particularly useful for liqueurs.

BIRCH SAP WINE

This is a wine, which, intriguing by its novelty, is also an excellent wine in its own right. It is probably of Baltic origin and during the last century was a popular drink in

Ingredients:

1 gallon birch sap	3 lb. white sugar
2 lemons	(or quart of honey)
1 sweet orange	1 Seville orange
½ lb. raisins	Yeast

Method:

Obtain a wooden beer or wine-barrel tap, a piece of glass or plastic tubing, or even a piece of bamboo cane with the pith removed. With a brace and bit of the same diameter as tap or tube bore a hole into the trunk of the tree to just beyond the inside of the bark, and insert the tube, which should incline slightly downwards to allow the sap to run easily. In March, when the sap is rising, it should be possible to draw off a gallon or so of liquor in two or three days. Plug the hole afterwards.

Peel the oranges and lemons (discard all white pith) and boil the peel in the sap for 20 minutes. Add enough water to restore the volume to one gallon, then pour into a crock containing the sugar and chopped raisins. Stir until sugar is dissolved; when the liquor has cooled to 70 degrees F. add the fruit juice and yeast. Cover the crock with a thick cloth and keep in a warm place until fermentation has quietened. Then strain into fermenting jar and fit trap. Leave for about six months, then siphon off and bottle. Use strong bottles, tie down the corks, and store the bottles on their sides for at least another six months before sampling.

Sycamore and walnut sap wines can be made in the same manner and an excellent beer can be produced by reducing the sugar to 1 lb.

C.J.J.B. 1960

Birch Sap Wine

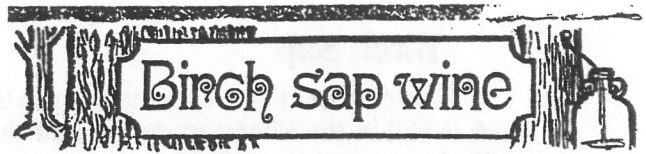
Birch sap is an ideal bland juice for the making of wine. The trees should not be too young, a circumference of 30 inches is desirable. If the tree is tapped only once every two years and not more than a gallon is collected in March, it should not be harmed.

The juice

(which should have been kept covered all the time during collection, which may take up to three days) is now sweetened with about 2 lb of sugar and ½ lb minced sultanas to each gallon. The usual additions are made—1 tablespoon citric acid, or the juice of 3 to 4 lemons, some Grape Tannin, ½ teaspoon of Yeast Nutrient and a Campden tablet. More sugar is added if a sweet wine is required.

To a gallon of the sap allow the juice of 2 lemons and 2 oranges, 3 lb. of white sugar and ½ lb. of chopped-up raisins. The whole is warmed to dissolve the sugar. When cool yeast nutrient and a wine yeast are added and left to ferment for about a week. The solid matter is removed by straining and the wine is fermented on till it clears after which it has to undergo several rackings to stabilize the wine and improve the flavour.

S.M.T. 1956



BIRCH SAP WINE

This wine is a classic among cuntry wines, of Baltic origin and of tremendous antiquity. Most of the instructions concern the preservation of the health of the Birch tree from which the sap is drawn.

The sap is drawn from a *large* birch tree (sycamore and walnut trees can be similarly tapped) in March or April. A one inch brace and bit is used to drill a hole just beyond the bark—not into the middle of the tree—and a bored cork is fitted with a piece of rubber tubing leading down into a gallon jar. The top of the jar is plugged with cotton wool to exclude insects. Six pints of birch sap can generally be collected in forty-eight hours at this time of the year. At this point a wooden plug must be driven into the tree to prevent the tree bleeding to death. If this is done the tree can be used again in succeeding years.

Ingredients:	British	Metric	U.S.A.
Birch sap	6 pints	3½ litres	5 pints
White grape concentrate	½ pint	140 mls.	½ pint
Sugar	2 lb.	1 kg.	1½ lb.
Vitamin B tablets	12 mg.	12 mg.	12 mg.
Citric acid	½ oz.	14 gm.	½ oz.
½ teaspoonful grape tannin			
Water to 1 gallon (4½ litres)			
Champagne yeast			

Method. Mix all ingredients in a gallon jar and add an active yeast. Ferment to dryness at around 70° F. (21° C.) and rack into another jar. Top up second jar with water and fit a bored cork plugged with cotton wool or an air-lock. This wine needs a few months maturing and will improve up to 2 years. Once mature, it is best drunk as a medium dry wine, and this is achieved by sweetening it with ½ lb. sugar per gallon (British and U.S.A.)—25 gm. per litre metric.

B.A. 1971

For birch sap wine perhaps we could substitute maple sap or maple syrup.

Birch Sap

An ointment or cream made from the oil extracted from the Birch is still in the Pharmacopoeia; and there is still a commercial medical preparation available.

The linament used by sportsmen and women *Oil of Wintergreen* is almost identical to the oil obtained from the birch.

Many parts of the Silver Birch tree are used in herbal treatments. From the winemaker's point of view, the only part of the tree that we can use is the sap, from which can be made one of the most popular wines early in the year.

To harvest the sap, use a 1" (2.5 cm) bit to drill a hole *just beyond the bark*; not deep into the tree (this may kill it). Place a bored cork with a suitable plastic tube in it into the hole. Lead the tube into a collecting jar whose neck has been plugged with cotton wool.

After approximately 48 hours, you will have collected up to six pints (3.75 litres) of sap. After this time drive a *hard wood* plug into your hole. This means that, most importantly, the tree will not die; and, secondly, you can use the tree year after year; harvesting it for your wines.

* Birch Sap Wine

Ingredient	Quantity per gallon	Quantity per 5 litres
Birch Sap	6 pints	3.75 litres
Grapefruit concentrate	5 oz	140 mls
Sugar	to SG 70	to SG 70
Citric acid	½ oz	15 gms
Grape tannin	½ teaspoon	2.5 gms
Vitamin B ₁	6 mg	6 mg
Champagne Yeast		
Water	to volume	to volume

Mix all the ingredients except sugar and check the SG. If within limits, add the permitted sugar. Add an active yeast starter. When fermentation has died down, make to volume; and ferment to dryness under air lock.

Rack and mature for six months at least. This wine can improve over as long as two years. Sweeten to taste when bottling or before drinking.

P.M.C. 1988

Folly

One of the more unusual wines, but a very successful one, is made from the leaves and shoots of blackberry bushes and grape vines. Much of the fruit flavour is also in the leaves and can be extracted. The name 'folly' is derived from the French word 'feuille' meaning leaf.

When pruning excess foliage from these plants in the summer, then, do not discard the young shoots and leaves, but turn them into wine. If it is not immediately convenient to do so, or if you have too few, they can be washed, sulphited, chopped up, packed into polythene bags and frozen for future use. Blackcurrant leaves also have a very strong flavour and can be blended in. Old or coarse leaves are not suitable. Use only young, tender and fresh looking leaves and shoots that have not recently been sprayed with a fungicide.

3 kg (6 lb) vine and/ or bramble shoots and leaves	14 g (2½ tsp) citric acid
250 g (½ lb) concentrated white grape juice	2 g (½ tsp) grape tannin
2 ripe bananas	4 litres (6½ pints) water
825 g (1¾ lb) white sugar	Hock wine yeast and nutrient

Wash the leaves and shoots, chop them up small and place them in a preserving pan of boiling water. Add the peeled and thinly sliced bananas and simmer gently for half an hour. Turn over or stir up the leaves from time to time. Leave to cool.

Strain out and press and discard the leaves and stir in the grape juice, sugar, activated yeast, nutrient and tannin. Pour the must into a fermentation jar, top up, fit an airlock and ferment to dryness.

Rack, add one Campden tablet and store until the wine is bright. Rack again and store in bulk for 6 months before bottling. Keep the wine for a few months longer, then serve chilled like any other white table wine. When slightly sweetened just before serving, this is an attractive wine to drink on its own.

B.T. 1983

BRAMBLE TIP

Ingredients:

1 gallon bramble tips	1 gallon water
3 lb. preserving sugar	Yeast

Method:

Place the tips in a crock and cover them with boiling water. Leave this to stand overnight, then bring to the boil and simmer gently for a quarter of an hour. Strain through muslin on to the sugar, add the yeast when it has cooled, and keep closely covered in a warm place for ten days. Then pour into fermenting jar and fit trap. Leave until wine clears, then siphon off and bottle.

C.J.J.B. 1960

Bramble Tip Wine

In earlier times, blackberry leaves were utilized as well as the fruit. The leaves were dried thoroughly in a pan near the fire, then used as a substitute for China tea, which was so difficult to procure in the depths of the Canadian wilderness. The brew was valued doubly when it was discovered to be a remedy for dysentery.

The new foliage of blackberries and raspberries has its uses too; for example, this light, clear, invigorating wine.

In late May or early June, when the blackberries have just come into full leaf, gather 3 qts. of the young leaves. Pour 1 gal. cold water over them and bring it to the boil, Simmer for 20 minutes. Strain, and stir in:

2 lbs. sugar
1/2 cup lemon juice
1 cup light raisins when lukewarm, yeast.

Let it work in the fermentation jar for 4 months, then strain, bottle and cork it. Forget it until next time the brambles get new leaves.

B. P-G. 1974

"FOLLY," OR VINE PRUNINGS WINE

Those of you who are growing vines—and all amateur winemakers should, or they miss a great deal of fun and enjoyment—will have not only grapes (in September) but, throughout the summer, a plentiful supply of vine prunings and leaves as the growing vines are cut back to ensure that the maximum nutrition goes into the bunches of grapes. Do not waste these prunings and leaves; they will make excellent wine! Cut only the green shoots and not ripe wood or the vine will "bleed."

Ingredients:

8 pints boiling water	3 lb. white sugar
5 lb. leaves and tendrils	Yeast and nutrient

Method:

Put the cuttings and leaves into a bowl and pour on to them the boiling water. Let this stand for 48 hours, but turn occasionally to submerge top leaves and keep prunings well under water. Keep crock closely covered. Pour off liquid and press out remaining leaves and tendrils. "Wash" the leaves with a pint of water and press again. Dissolve the sugar in the liquid, add the yeast and yeast nutrient, and pour into fermenting vessel and fit trap. Ferment right out in the usual way and siphon off when clear.

BLACKBERRY SHOOT WINE

An interesting wine this, reminiscent of blackberries but a pale colour instead of deep red. It can be coloured by the addition of a little blackberry juice later, in the blackberry season. It is made in the spring, and only six inches of the tips of the shoots are used.

1 gallon blackberry shoots	$\frac{1}{2}$ oz. dried baker's yeast
1 gallon water	2 lemons
4 lb. preserving sugar	4-6 black peppercorns

Stage One. Put the shoots in the water, bring slowly to a simmer, let cool slowly and strain. Let the rinds of the lemons, pared carefully off the white pith, simmer with the shoots, and add the juice when the liquid is cooled to 98°F.

Stages Two, Three, Four, Five, and Six as on p. 134

Wine from Grape Prunings

The author has made a very attractive white wine which was not unlike a hock from the prunings of greenhouse grapes cut off when they were about the size of peas. 3 lb. of these prunings occupied 48 oz. in volume. They were boiled with 48 oz. of water and the pulp pressed when cold. Two and a half pints of juice resulted and, as the acid was about 1 $\frac{1}{2}$ per cent, 3 pints of water, 2 $\frac{1}{2}$ lb. of sugar and 1 teaspoonful of yeast nutrient were added. This resulted in a juice of a gravity of 100. It was fermented with a sedimentary wine yeast and on completion a Campden tablet was added to the wine.

Grape Foliage Wine

Some purists do not consider wine made from anything but ripe grapes as wine, but the author has tasted a most delicious light hock made from the leaves and tendrils of an outdoor vine, the directions given to me being:

To make approximately one gallon.

Pour 8 pints of boiling water over 5 lb. of leaves and tendrils, leave for 24 hours, press and wash the cake with another pint of warm water. Dissolve in this 3 $\frac{1}{2}$ lb. of sugar. The gravity should be about 100. Add a Campden tablet, $\frac{1}{2}$ teaspoonful of yeast nutrient, a wine yeast and leave in a warm place for 2 days, then remove to a cooler place to ferment slowly using, of course, a fermentation trap and seeing that the containers are full. When it has clarified, rack, bung down and rack again prior to bottling. To ensure a sound fermentation it might be wise to add 1 lb. of raisins to the leaves because the latter are a little lacking in the natural yeast foods.

S.M.T. 1956

OAK LEAF WINE

Good wine, and most potent, can be made from many tree leaves and shoots. Oak leaves seem to produce it at every stage of their growth, but the favourite time for picking is the last week in June. Measure the leaves without pressing down. White sugar can be used instead of demerara.

1 gallon oak tree leaves	3 oranges
1 gallon water	1 lemon
4 lb. demerara sugar	$\frac{1}{2}$ oz. root ginger
$\frac{1}{2}$ oz. dried baker's yeast	A few black peppercorns

Stage One. Boil the water and pour boiling over the leaves, cover close with cloth, board, and weight, and leave twenty-four hours. Then strain and throw away the leaves. Pare off the thin yellow rinds of the fruit with no trace of the bitter white pith, add to the water with 2 lb. of the sugar and the well-bruised ginger, bring very slowly to the simmer and simmer for an hour. Let cool a little, strain, and add the fruit juice. This is your basic juice. By the time you have your yeast ready it should be in a fermentation jar in a warm place 65°-70°F., and at the right temperature, 98°F.

Stages Two, Three, Four, Five, and Six as on p. 134
Add the third pound of sugar at Stage Two and the last at Stage Four.

OAK SHOOT WINE

This is even more potent than the leaf wine. Take five or six inches of the young shoots. Do not press down in the measure, but drop them in. It is made by the same recipe and in the same way as OAK LEAF WINE.

VINE LEAF WINE

If you are lucky enough to have a grape vine or have a friend who has one you can put thinnings and cuttings of fruit, leaves and tendrils to good use in wine-making, for all parts of the vine contain valuable nutrients. A good wine can be made from the leaves. Do not take cuttings from a vine which has been sprayed with chemical powders or liquids. To measure, do not press down.

1 gallon grapevine cuttings	3 lb. preserving sugar
1 gallon water	$\frac{1}{2}$ oz. dried baker's yeast

Stage One. Put the cuttings in a steeping vessel, pour on the water boiling and stir well. Cover close with cloth, board, and weight, and stir daily. Let stand so long as the leaves remain fresh up to seven days. Then strain and squeeze all the juice out of the cuttings.

Stages Two, Three, Four, Five, and Six as on p. 134
Spice can be added at Stage Six. I suggest $\frac{1}{2}$ oz. root ginger and four to six black peppercorns.

L.M. 1958

Herbs & Spices

BEFORE the development of modern medicine herbs had a great reputation for their properties of healing. This lingered on in the countryside, where doctors were scarce and herbs were plentiful, until the middle of the 20th century. Indeed, the growth in recent years of the number of Health Food and Herbalist shops is an indication that many people still have faith in the concept that 'nature's cure' is best.

Herbs used in making wine may be bought dried from a Herbalist shop, grown in the garden, or gathered from the hedgerow. The time to harvest the herb depends on the part being used – flower, leaf, seed or root. Flowers should be gathered in warm sunshine just before they are fully out and 'blown' and when their scent is at the peak. Leaves should be gathered just before the flowers appear, for that is when their aromatic oils are most abundant. Seeds should be gathered by harvesting the flower at 'petal fall' and hanging the plant upside down in a paper bag to catch the seeds as they are released from the plant. Roots are harvested during the plants resting time, when they are full in their food. Because of their very nature herbs should always be handled gently so as not to bruise them and lose their volatile goodness.

Herbs may be used to make any type of wine – aperitif, table, social or dessert. Because most of them have a pronounced flavour, they are perhaps best used for aperitif or social wines, with the exception of parsley which produces an attractive table wine.

It must be remembered that, like flowers and leaf wines, herbs and spices provide only bouquet and flavour and that body (and indeed everything else) must be added. Accordingly, herbs can be used to give bouquet and flavour to vegetable, cereal or fruit wines that may be lacking in these qualities. For simplicity, a plain grape juice concentrate wine is suggested as the base in the following herb and spice recipes. Lactose will ensure a sweet finish to the wine.

BASIC RECIPE

White grape juice concentrate	1 kg (2 lb)
Sugar	500 g (1 lb)
Lactose	100 g (3½ oz)
Water	to 5 litres (1 gallon)
Herbs	
Activated All-purpose wine yeast.	

Adjust S.G. to 1.090.

AGRIMONY

This wine has a flavour akin to apricots.

Use 1 quart of fresh leaves lightly pressed down. Wash them in clean cold water, shake off the surplus water, measure and pour 3 litres of boiling water over them. Cover and leave for three days, stirring twice daily. Strain out the leaves, press gently and use only the liquor.

BALM

The smell of lemon is exuded by this plant which has been a popular culinary herb for centuries. Use 1 quart measure of the leaves, stripped from their stalks. Continue as for agrimony.

CHAMOMILE

Has a flavour akin to apple and banana.

Use 1 heaped teaspoonful of flower heads, placed in a Pyrex jug or similar. Pour on boiling water, cover and infuse until it is cool. Strain out the flowers and use the liquor.

CLARY

Has a sage-like smell, yet imparts a muscatel-like flavour. Use 3 pints of the blue flower heads. Continue as for agrimony.

COFFEE

Use 225 g (½ lb) freshly-ground coffee, simmer it gently for twenty minutes in 2 quarts of cold water, leave to cool, then strain into the must.

GINGER

Use 85 g (3 oz) whole root ginger, which should be well bruised so that the flavour can be leached out. Boil it in a quart of water for 20 minutes, together with the thinly pared rind of two or three lemons and/or oranges, depending on their size. A pinch of cayenne pepper emphasises the ginger flavour and should also be added, but *don't* overdo this. Leave the essence to cool, then strain and add the liquor only to the must.

MINT

There are many varieties of this herb, of which the best known are spearmint and peppermint, as well as the common garden mint. Use only the leaves pulled from their stalks and wash them clean. A litre measure or about 1¼ pint (USA 1 quart) is ample. Continue as for agrimony.

THYME

This is a very popular herb used frequently in kitchens for flavouring stuffing for poultry and the like. There are several varieties of which the best known is lemon-fl. However there is an orange-flavoured thym common garden thyme which are equally a Use one pint of flowers and leaves strip their stalks. Continue as for agrimony.

YARROW

This herb is widely used for flavouring beverages in many different parts of the world. It is rich in minerals and salts and has a hot, bitter taste which 'grows' on you. Use 3 quart measures of flowers and leaves stripped from their stalks. Continue as for agrimony.

Rosemary Wine

Although the young shoots can be treated like blackberry shoots, the scent of the rosemary is so strong that a very pleasant wine can be made by soaking some bruised shoots in a neutral wine such as an apple or pear wine. This makes a good aperitif.

HERBAL APERITIF

One of the commonest methods of making an aperitif in the commercial wine world, is to first make a grape wine and then steep various herbal mixtures in it until sufficient flavour has been extracted from the herbs. This is the purpose of this recipe. It allows you complete scope to develop an aperitif of your own, and the suggested herbal additions given after the recipe are merely a guide for your early experiments.

BASIC WINE

Ingredients:	British	Metric	U.S.A.
Red or white grape concentrate	2 pints	1½ litre	2 pints
Plus Sugar as required			
Vitamin B1 15 mg.			
Ammonium phosphate, 1 teaspoonful			
Burgundy or Bordeaux yeast			
Water to 1 gallon (4½ litres)			

Method: Empty the grape concentrate into a gallon jar, add the nutrients, top up jar to about the 6 pint level (3½ litres or 5 pints, U.S.A.) and add the yeast. Ferment in a warm temperature, 75°-80° F. (24°-27° C.). Meanwhile make up a sugar syrup solution by boiling 2 lb. sugar with 1 pint of water until it boils clear (1 kg. sugar with ½ litre water). Store this for use in a bottle. This syrup is used to increase the alcohol potential whenever the yeast has used up the sugar in the grape concentrate. Ideally this is done with a hydrometer, additions being made whenever the gravity falls to zero, but it can be done by tasting the fermenting wine every few days, and making the additions whenever the wine no longer tastes sweet. Additions are made at the rate of ¼ pint of syrup each time (140 mls. metric—¼ pint U.S.A.). By this method a very powerful wine can be made which obviates any later fortification (most commercial aperitifs are fortified).

When the yeast can take no more sugar (about 6-8 weeks) rack the wine into another jar, top up with water or wine if necessary, fit a bored cork plugged with cotton wool and mature in a cool place.

The wine matures and clears fairly rapidly, so that about 8 weeks after the end of fermentation is the time to add the herbal mixture to give the wine its aperitif character. The herbs are tied in a small muslin or nylon bag and inserted in the wine. This is best done by inserting a piece of glass tubing through the bored cork and tying the herbal sachet near the bottom of the tube. The top of the glass tube is stuffed with cotton wool. By this means the herbal sachet is well down inside the jar. Each day it is swirled up and down a few times to distribute the flavour. The time factor for this process of herb extraction depends on the herbs used and your palate. You therefore have to taste the wine each time until sufficient extraction has been obtained. Then the sachet is extracted from the wine and normal maturing continues. The final decision as to whether the aperitif is to be dry or sweet again depends on personal preference. If, however, you find that by accident you have extracted too much flavour from the herbs, sweetening the wine will help the imbalance to disappear.

HERBAL MIXTURES TO USE

First and foremost I must recommend the vermouth type mixtures sold by prominent winemaking suppliers such as

Herbs are rarely used by the amateur wine-maker, nor are spices other than in mulling wines and meads. Cereals are occasionally used, notably rice with raisins, but they are mainly used as an additive. First they should be washed and cracked or crushed and they should be fermented with a cereal yeast, a strain that has an enzyme for reducing starch to some extent. Wheat is the most popular cereal to use and some experiments have been made with breakfast cereals. The results, however, cannot be compared with fruit wines, and cereals are rarely used by the serious winemakers.

The Production of Vermouth

Dry wines, especially if they have gone a little dark and oxidized and have thus lost much of their fine fresh flavour, can be used to make vermouth. Herbs containing vermouth are obtainable, very little is needed to give a flavour to the wine. As little as 1 per cent of the herbs are soaked in the wine which is then sweetened according to taste with strong syrup. It is better to soak the herbs in the wine for a day or two rather than in water as the higher alcohol concentration is, the more stable will the wine be. It may be of interest to know the ingredients of a vermouth powder and many a wine maker will like to mix his own herbs. 1 ounce of vermouth (or wormwood) are mixed with 1 ounce of dried and powdered balm leaf, 1 ounce of powdered gentian, ¼ ounce of dried yarrow blossom, dried angelica root, dried camomile and dried tonka beans. Traces of cloves, nutmeg, cinnamon and thyme may also be added while some vermouth powders also contain spearmint or peppermint in very small proportions. The herbs can be put into a bag and soaked for a few hours with barely enough water to cover them, and then hung for a few days in the wine. An ounce and a half to 2 ounces of herbs to a gallon of wine are suitable. The sugar content of vermouth ranges between 4 per cent and 18 per cent and generally it is fortified to round about 18-22 per cent of alcohol by volume that is 31.4-38.5 per cent proof spirit.



The Six Stages of Wine-making

STAGE ONE. Stand a fermentation jar or bung jar in a warm place on an old tray with a thermometer leaning against it. Ideal temperature 65-70°F. Prepare raw materials, washing all fruit, including oranges and lemons. Scrub vegetables, remove bad bits but leave whole with the skins on. Take stems and most of green from flower heads. Thoroughly clean chicken grains. All materials should be picked in the sun and be absolutely dry. To draw goodness, steep, simmer, or pour boiling water over as indicated or desirable by you. Use press for fruit if possible. If heating, start with cold water, bring as slowly as possible to a simmer, and simmer for the required time in order to get the best out of the materials. Take only the thin yellow rind of oranges and lemons, with no shred of the white pith, which is bitter. Add rinds and citric acid if used at this stage, and let them steep or simmer with the materials. But wrap fruits with the pith still on and put in cold to keep fresh until the water is cool. Then add the juice. Stir water well with each addition, and melt the acid in some of the water before adding. Let juice stand overnight to settle if necessary, covered siphon off in the morning and proceed at once to the next stage. Do not let it stand about. Stand sediment for a while to see if it clears, and use the clear part. For most wines, this stage ends with a clear basic juice. Some wines cannot be quickly reduced to a juice, but must stand for a time on the raw materials. These wines, which are fortunately few, mean a little more work.

STAGE TWO. The first violent brief fermentation. Put the juice in a pan and bring to 98°F., stirring away in it two-thirds of the sugar. Put yeast in a cup, half-fill with the warmed juice and steep exactly ten minutes. It should froth up and look like thick cream. Stir into the juice. Now put a non-metallic funnel in the warmed fermentation vessel and pour the sweetened, yeasted liquid into it. The pouring action will stimulate the yeast. Fill the jar to the brim, and either lay a cork in or drape over the jar several layers of fine-meshed cloth, tying them tight around the middle of the jar. Soon, within an hour or two, frothing over will begin. Remove the cloth once a day and top up if necessary. If much liquid is pouring over with the froth, do not top up. It is the froth that you want to keep pouring over, not the liquid. Sometimes the froth is quite black with extraneous matter. Do the topping up at speed and leave the cloth off for as brief a time as possible. If there is very little froth, do not worry. It sometimes happens like this, and no harm done. If you have extra liquid which will not go in the jar, bottle it and mark it 'Topping up'. Keep it beside the jar. Leave your thermometer beside the jar and check it if the weather changes. This stage lasts from twelve hours to seven days.

STAGE THREE. The long quiet fermentation which builds up the alcoholic content. When the froth head falls inside the jar and the large bubbles of froth disappear, clean the outside of the jar well, leaving no tiny spot of juice to attract flies, clean up the whole corner and insert a fermentation lock. This should have been steeping in hot water for fifteen minutes

to swell the cork. Squeeze it gently in cloth and again in the squeezer, taking care not to break the glass, and insert carefully, pressing in firmly to make a tight fit. If the fit is not airtight, the lock will not work. You can tell very soon whether it is working because the gas inside the jar will immediately try to escape through the water in the lock, and as it condenses will push against the water, forcing it towards the exit and making the columns uneven. Now you can forget about the wine for several weeks or even two months, apart from an occasional glance at the levels of the water. As soon as the levels begin to approach each other, it indicates that fermentation is slackening.

STAGE FOUR. Reactivating the fermentation. Remove the fermentation lock, and pour out about a cupful into a small bowl. Stir away the remaining sugar in this. It will of course increase the volume at the rate of half a pint to each pound of sugar. So if necessary remove a little more from the jar before pouring in the melted sugar, and top up with the second lot you took out. If any is left over, add it to the topping-up bottle or bottle it separately. Re-insert the lock, making sure as before that it is an airtight fit. Check it a little later to see if fermentation has livened up. This may last a few days and sometimes weeks.

STAGE FIVE. Fermentation is over. The water levels in the lock become level, showing that there is no longer any pressure from gas on the water. As soon as you note this, carry the jar carefully, so as to leave the sediment undisturbed, and put it in the coldest place you can find. Let it stand for two weeks to settle and clear. The sudden change in temperature should bring this about in a week, but it is as well to give it the second week to make sure.

STAGE SIX. Racking. Carry the jar back again carefully as before to the kitchen. Siphon it off the sediment.

This is a vital part of the making, and should never be postponed because the dead yeast at the bottom of the jar may give the wine a bad taste. If there is only a small teacup of sediment, throw it away, but if there is more, stand it in a bottle lightly corked until it clears from the top. Then pour off and use as topping up or add to wine if needed. Meantime rinse the jar well and drain. The wine can then be funnelled back into it and the jar firmly corked, sealed, and stored in a cold, dry, dark place. A jar is the best storage vessel for the first three months. You may then, if you must, transfer it to bottles after racking it off. It is better to store in jars until just before using, racking from jar to jar at the end of the first three months. Rack again, unless it is the clean flower wine, at six and twelve months. It is far easier to rack from a jar than from bottles, and you lose much less wine. Add spices, if any, at this stage, and always put a handful of raisins in the jar to feed the wine, or a raisin per bottle if bottling. It helps with some wines to add at this stage a cup of strong black stewed tea to supply tannin and also give the wine a slight bite. The raisins will be racked out at three months, and more can be added if you find the wine a bit tart. Aim at three or four rackings in the first year, and then a yearly racking. Always rack on a fine sunny day. Leave the wine in cask or jar as long as you possibly can, bottling only a few weeks before using.

L.M. 1958

Summary of Six Stages for Quick Reference

STAGE ONE. Put fermentation jar or bung jar on tray in warm place 65°-70°F. Prepare basic juice, steeping or simmering the yellow rinds of lemons and oranges or citric acid with other ingredients in the water, and adding their juice when liquid is cool. Strain.

STAGE TWO. Temperature of juice should be about 98°F. Steep yeast ten minutes in a half-cup of the juice to froth up and melt, covered, in warm place. Stir away two-thirds of the sugar in the juice and then stir in the yeast, making sure the juice is still at 98°F. Pour into fermentation jar and let froth over. Keep topping up. This stage lasts from twenty-four hours to seven days. Some wines, especially flower wines, do not always froth over. In this case, insert lock after first few days.

STAGE THREE. Frothing drops inside jar. Top up and insert lock. This stage of quiet humming and bubbling lasts three to five weeks.

STAGE FOUR. The water levels in the lock approach each other. Revive fermentation by adding remainder of sugar, melted in some of the juice. Re-insert lock, making it airtight. Fermentation lasts from three days to two weeks.

STAGE FIVE. Fermentation ceases. Water levels are even. Carry jar to a cold place and leave two weeks to settle and clear.

STAGE SIX. Bring jar back to kitchen and rack wine off the sediment. Allow sediment to settle, pour off the clear wine and add to bulk. Add spice if any, tannin if needed, and handful of raisins per gallon. Store in jar for first three months if possible, and longer if you can. Rack again at 3, 6, and 12 months, and then yearly. Top up each time as full as possible, using topping up or a mature white wine. When bottling, add a raisin per bottle.

L.M. 1958

These are the methods for 1958. Now, 2001, we have wonderful glass equipment and stainless steel pans. Our yeasts don't froth over, are easy to rack, are very diverse and don't taste of bread. However, LM's methods are clear and orderly, still worth a read and may actually help.

Your Winemaking Questions Answered

Stuck ferments

If you have used the right amount of sugar and fermentation has apparently ceased too soon (the wine will be oversweet and its specific gravity too high) the fermentation is said to have "stuck." Possible causes: Too high or too low a temperature; the yeast has reached its limit of alcohol

tolerance (i.e. the wine is finished); the sugar has all been utilised (add more); too much sugar (dilute slightly); insufficient nutrient or acid (add more); insufficient oxygen (aerate by stirring and pouring); too much carbon dioxide (uncork and stir). If these and all other remedies fail make up a half pint starter with the juice of three oranges, water, 1 level dessertspoon sugar, yeast, and a pinch of nutrient. Get it going well, then add an equal quantity of the "stuck" wine. When all this is fermenting, again add an equal quantity of the wine and continue "doubling up" in this way until all is fermenting once more.

C.J.J.B. 1960

Q. What does the term "stuck wine" mean? What's the cure?

A. Winemakers say wine is stuck if the fermentation stops before the optimum amount of sugar is converted to alcohol, so that the wine is oversweet and, if you measure with a hydrometer

the specific gravity (see Glossary,) is too high.

Fermentation can stop for several reasons: Maybe the temperature is too low or too high. Maybe you inadvertently added too much sugar and the wine has reached its limit of alcohol tolerance. It may be that some organic nutrient is missing. If the wine "sticks" during the first fermentation, it may be lacking in oxygen. If the same thing happens during subsequent fermentations, the carbon dioxide may have become too concentrated and caused the wine yeast to stop growing.

If the problem is with temperature, you can usually restart the fermentation by moving the vessel to a warmer or cooler spot and adding a little starter-culture, just for good measure. If you've simply added too much sugar, dilute the mixture with water or juice so that the alcohol content is reduced and fermentation can resume. If you didn't add a yeast nutrient to your starter-culture, you may need to give your wine a little vitamin lift, either by adding some yeast nutrient to a small container of the wine and then adding it back to the must, or by adding just the tip of a teaspoon of epsom salts or 3 mg. of vitamin B₁ (thiamine). If all of these remedies fail, you'll probably need to solve the problem one step at a time. Just make a 1/2 pint of starter-culture and when it's working well, add an equal amount of the stuck wine. Wait until this mixture starts to ferment and repeat the process until all of your stuck wine has been added and the whole batch is actively fermenting.

P.V. R.G. 1992

Re-starting the ferment

Do not add the activated yeast to the stuck must, however, but slowly add the must to the yeast. Double the quantity each time you add some must, but do not add the next lot until the last lot is fermenting. Start by adding an equal quantity of must to the starter and when that is working add another equal quantity and so on until all the must is working again.

A good fermentation is obtained from an

active yeast colony in a must rich in acid and nutrient, not too heavy in sugar and situated in an even temperature. Wide fluctuations in temperature rising to the near maximum during the day, yet falling to just above freezing at night puts a strain on the yeast cells which they cannot tolerate.

B.T. 1976

See how SMT coped with a stuck blackberry wine page 3.

Stuck ferments

If fermentation should stop prematurely, something may have gone wrong. For example:

1. If there is insufficient acid or nutrient in the must the yeast will not be able to continue functioning. Reference to your record card will remind you of what was included and whether lack of acid or nutrient is likely to be the cause. If it is, stir in some citric acid and nutrient.

2. The must might have become too hot or too cold and has inhibited the yeast function. The ideal temperature for white wines is 16°C (61°F) and for red wines 20°C (68°F), but yeast will normally ferment between 10°C (50°F) and 30°C (86°F). Check the temperature and if it is too cool or too hot, move the must to a different position with the appropriate temperature.

3. The yeast colony may have become weak or inhibited by dissolved carbon dioxide. The remedy is to pour the must from one container to another in such a rough manner that carbon dioxide is pushed out and oxygen is absorbed. Repeat this process two or three times only.

4. Possibly the alcohol tolerance of the yeast has been reached. Reference to your record card will remind you of the original gravity and the amount of sugar added. All wine yeasts can ferment up to 12% alcohol, but if this figure is exceeded it may be a cause for fermentation to cease.

5. If fermentation stops soon after starting it may be that there is so much sugar in the must that the syrup is too heavy for the yeast to ferment and it has died in the attempt. Your record card will again remind you of the original gravity. Experience shows that fermentation is best when the initial specific gravity is not too high. It is better to calculate the total amount of sugar required and to add this in three or four doses rather than all together in one dose. Never exceed 1.090 as a

starting gravity. If too much sugar is the problem, make up another must without sugar and mix the two together. This will reduce the sugar to a level at which a new and active yeast can ferment.

6. If all tests prove negative – if you have satisfied yourself that there is nothing wrong with the temperature, that the must contained sufficient acid and nutrient and not too much sugar, and that all the sugar has not been fermented – and if you have aerated the must and still it will not ferment, then make up another yeast starter.

Conversion table

Specific gravity	Sugar in		Approx. probable % volume of alcohol after fermentation
	1 gallon	5 litres	
	oz	gram	
1.005	2 $\frac{3}{4}$	85	
1.010	4 $\frac{3}{4}$	150	0.4
1.015	7	220	1.2
1.020	9	285	2.0
1.025	11	350	2.8
1.030	13 $\frac{1}{4}$	415	3.6
1.035	15 $\frac{1}{2}$	485	4.3
1.040	17 $\frac{1}{2}$	550	5.1
1.045	19 $\frac{1}{2}$	615	5.8
1.050	21 $\frac{1}{2}$	680	6.5
1.055	23 $\frac{3}{4}$	745	7.2
1.060	25 $\frac{3}{4}$	810	7.9
1.065	27 $\frac{3}{4}$	875	8.6
1.070	30	945	9.3
1.075	32	1010	10.0
1.080	34 $\frac{1}{2}$	1075	10.6
1.085	36 $\frac{1}{2}$	1140	11.3
1.090	38 $\frac{1}{2}$	1205	12.0
1.095	40 $\frac{3}{4}$	1275	12.7
1.100	42 $\frac{3}{4}$	1340	13.4
1.105	44 $\frac{3}{4}$	1405	14.2
1.110	47	1475	14.9
1.115	49	1540	15.6
1.120	51 $\frac{1}{4}$	1605	16.3
1.125	53 $\frac{1}{4}$	1675	17.1
1.130	55 $\frac{1}{2}$	1740	17.8

Note 1 kg sugar increases the volume of a liquid by 0.62 litre. 2 lb sugar increases the volume of a liquid by 1 pint.

Keeping it warm

If you have to ferment your musts in an unheated room in winter, then use an immersion heater in the must, or a thermal belt around the jar, or stand the jar on a thermal pad

Wrap the jars up in insulating material if these facilities are not available.

These conditions are particularly important when you wish to make a strong wine. The sugar must be added in small doses as indicated by the reducing specific gravity. Never let the gravity rise very high and add a little more sugar as the gravity falls to near zero. Keep a note of the number of units fermented between each addition of sugar from the very outset, and add them up at the end of fermentation so that you can see from the conversion tables approximately how much alcohol the wine contains.

B.T. 1976

Testing for Hazes

If a wine is not completely clear it is said to have a haze. The causes of this problem are many and varied. Most are preventable by the use of the correct equipment, ingredients, and care in the making of the wine.

Starch Hazes

Starch hazes may cause a problem in wines made from cereals, potatoes, and apples, unless precautions are taken to prevent this trouble.

Starch is a compound made up of thousands of glucose molecules joined together in chains. Because wine yeasts do not contain any enzyme capable of breaking down the starch, wines made from ingredients such as potatoes or grain will be likely to be hazy. Another likely wine to suffer from this is apple.

The use of a commercial preparation of *amylase*, the starch destroying enzyme, will avoid the problem. As with any protein, do not add it to a hot solution.

If you suspect a starch haze, take a small portion of wine and add one or two drops of *iodine*. If the solution turns any shade of purple, then the presence of starch is confirmed.

The treatment of this haze is with *amylase*. Again, do not add it to a hot solution. Carry out a test run on a small amount of the wine. This checks that the treatment works, and also allows you to see how much of the enzyme will be needed to treat the whole batch of wine.

Using tannin may increase the effectiveness of the enzyme; or it may prove a sufficient cure alone — thus avoiding 'additives'.

It is possible to minimise the likelihood of a starch haze by the use of *Diastatic Malt Extract* in your recipes if a starch haze seems likely. Using it in the *Starter Bottle* will provide a fair amount of the enzyme in the must; thus reducing the chances of a starch haze.

Pectin Hazes

Pectin is a complex molecule made up of long chains of *galactonuric acid*; it has side chains of *methyl alcohol*, which are the source of the small amounts of methyl alcohol to be found in all wines. Pectin is an important part of the plant cell wall structure. When heated, it goes easily into solution, and 'gels' — a property used in the making of jams.

One advantage of using pectic enzyme preparations is that, because the enzyme breaks down the pectin, it follows that more of the fruit wall is destroyed. Thus, the yield of juice will be greater. But, beware. The chance of oxidation in the wine is increased unless strict anaerobic conditions are maintained.

If much more than a trace amount of pectin enters a wine, it will form a haze. Most fruit contain a small amount of *pectin destroying enzyme*. If this is not heated, it will help to prevent, or at least minimise, pectin hazes. (Do not forget that heating, as well as increasing the amount of pectin in solution, will destroy any protein).

Thus, the avoidance of heat during must preparation will reduce the chances of a haze. If, however, you use a fruit that has a high pectin content, it is probably wiser to use a commercial pectin destroying enzyme. If any 'additive' is taboo, then use no heat during must preparation.

Pectin is a substance found in all fruit in greater or lesser amounts where it is an important component in cell wall structure. It is soluble in hot water. Hence the use of heat to extract flavour, colour, and juice, will increase the pectin content of a wine. Most fruit have a small amount of pectin destroying enzyme on their surface which, provided no heat is used (which destroys protein), will help minimise pectin haze formation.

Most wine recipes advocate the use of one of the commercially available *Pectin Destroying Enzyme* preparations.

P.V. R.G. 1992

A. Wines become cloudy for a number of reasons. First, if you disturb the sediment at the bottom of the container when you rack the wine, some of the suspended particles might be mixed back into the wine. If this happens, an additional racking several days later, taking care to leave the sediment undisturbed, is all that's required to clear the wine. Wines that clear naturally, with careful racking, are always better than wines that overzealous home winemakers have tried to clear by filtering them through filter paper (such as coffee filters) or aquarium charcoal filters. We don't recommend filtering because in addition to sediment, the process often removes other components of the wine, such as its elusive bouquet, subtle flavor, or characteristic color. And it often exposes the wine to additional air, which can lead to oxidation and spoilage.

Sometimes wines remain stubbornly murky, and in that case the culprit is usually pectin, starch, or protein in the wine. Most of the recipes in this book call for pectic enzyme because it is much easier to prevent pectin cloudiness than to cure it. Similarly, another enzyme, *amylzyme*, will turn starch, which can't be fermented, into sugar, which can. Treating your wine with this enzyme will clear it if starch is the problem. Protein cloudiness is usually treated by *fining* — using a substance such as Bentonite to clear the wine. Fining usually requires a rather exact dosage based on the amount of protein in the wine and for that reason is not frequently used by amateur winemakers.

A. Generally speaking, *enzymes* are naturally occurring substances that aid plants and animals in breaking down complex substances such as sugars and starches into simpler forms. Pectic enzyme helps to break down *pectin*, a complex molecule found in many fruits, into simple sugars. When you add pectic enzyme to your wine recipes, then, you are making sure that any pectin that's present in the fruits you've used for your wine is turned into sugars, which fermentation will turn into alcohol and carbon dioxide. Not only will you have a more complete fermentation using pectic enzyme, but you'll also have a clearer, more brilliant wine.

P.V. R.G. 1992

Q "Help, the wine is no longer bubbling in the air lock but the hydrometer says there is still (x)% sugar! It's been weeks!"

A Fruit wines take a long time for the secondary fermentation, as long as 3 months to a year. It will be very quiet, and you won't get the "blup blup blup" you are used to in the primary fermentation, or when you are making beer. Be patient. Test the wine every month or so; be careful about sanitation and keep the wine topped up.

Some wines, parsnip and plum among them, are notorious for their slowness to clear, and it should be noted that it is usually where the ingredients have been boiled that this occurs, for boiling releases pectin to cause hazes in the wine. These hazes, however, should not be confused with the thick cloudiness of the early stages of fermentation.

Q. What causes cloudy wine, and how can I get my wines to clear?

Q. What is pectic enzyme and why do you add it to wine?

PECTIN HAZES. Many hazes in wines are due to gelatinous solutions formed by pectins in fruits, and are aggravated by initial boiling. They can be avoided by using a pectin-destroying enzyme such as Pektolase, Pectozyme, Pectinol, etc. To improve the yield of juice when making fruit wines the enzyme should be added to the pulp of the fruit, using $\frac{1}{4}$ oz. to each 8 lb. pulp ($\frac{1}{4}$ oz. each 5 lb. blackcurrants). If the juice is allowed to stand at room temperature overnight or longer the enzyme will act satisfactorily, and the juice will clear.

A check that any haze is caused by pectin can be made by adding 3 or 4 fluid ounces of methylated spirit to a fluid ounce of wine. If jelly-like clots or strings are formed, then the haze can be regarded as pectin and the remaining wine treated with Pectozyme. For each gallon of wine $\frac{1}{4}$ oz. of Pectozyme should be added to $\frac{1}{2}$ pint of wine and the wine kept warm (70–80 deg. F.) for four hours, stirring at intervals. Strain through muslin and add to the bulk of the wine. Leave the wine at 60–70 deg. F. for several days. The pectin haze should clear but if it does not use asbestos filtering medium.

STARCH HAZES. Treat with another enzymatic preparation, Amylozyme. Mix $\frac{1}{2}$ oz. Amylozyme 100 with 2 to 3 oz. water and leave for two hours, stirring or shaking, if in a bottle, at intervals. Meanwhile put the wine in a preserving pan and heat to 170 degrees F., and hold this for 20 minutes. Cool the wine to 110 degrees F. and stir in the diluted enzyme. In about one hour the reaction will be complete and the temperature of the wine should again be raised to 170 degrees F. and held for ten minutes. After cooling the haze will settle out and the wine should be racked.

COLOURED HAZES. Usually the result of metallic contamination, copper, zinc and iron being the usual causes. Containers or implements of these metals should be rigorously avoided for fermentation purposes or white, dark, purplish or brown hazes may appear, often after a sudden drop in temperature, which renders the solutes less soluble. Remedy: For iron or copper hazes add a little citric acid; this often works.

Q. What are Campden tablets exactly, and what are they for?

A. A Campden tablet contains about 7 grains of potassium metabisulfite. When you dissolve a tablet in any slightly acid solution, such as wine must, it releases approximately 4 grains of sulfur dioxide. At that rate, one tablet in a gallon of wine results in about 60 parts per million of sulfur dioxide. It's an effective sterilizing agent at that rate because it stops the growth of wild yeasts and spoilage organisms but doesn't affect the taste of the wine except to make it marginally more acid, which is almost always a plus.

P.V. R.G. 1992

Pectic enzyme

All fruit musts should first be treated with a pectic enzyme for 24 hours to break down the pectin. One Campden tablet per 5 litres (1 gallon) should also be added to protect the must from infection and oxidation during this period. This advice is relevant whatever method of juice extraction is used. The enzyme works best in a warm environment. Too much sugar will spoil its effect.

DARKENING—is most commonly caused by *oxidation*. If a glassful of finished wine darkens after 24 hours exposure to the air it is not fully stable. If the cause is enzymatic, darkening can be prevented by adding 2 Campden tablets per gallon as a stabiliser. Darkening may also be due to the presence of iron, which can be corrected by the addition of a little citric acid ($\frac{1}{4}$ oz. to 5 gals.).

TOO MUCH COLOUR. If you wish to decolour a white wine use clean eggshells which have been immersed in boiling water and crushed, or the charcoal treatment under "Taints and Smells."

C.J.J.B. 1960

Sometimes a clear wine will suddenly become hazy again. This is nearly always due to a bacterial infection. It could have been prevented by the addition of a Campden tablet when the wine was racked. Add two crushed Campden tablets per 5 litres (1 gallon) and rack the wine again when it clears.

Unsulphited wine may also develop a shiny, oily appearance and this too is due to a bacterial infection. Pour the wine into a bin, beat it well to break up the chains of bacteria and add two crushed Campden tablets. Pour the wine back into a sterilised jar and a few days later rack it from the deposit.

Fortunately these infections are few and far between. They can always be prevented by the wise use of Campden tablets.

Pectic enzyme is another ingredient that is always used by the makers of quality wines. It is available both in liquid and powder form and contains a mixture of the two enzymes that break down the pectin in fruit and vegetables. It is marketed under a number of different trade names such as Pectolin, Pektolase, Pectozyme or Pectolytic Enzyme. The quantity to use varies slightly with the brand but instructions are always given on the label. Usually one teaspoonful per 2 kg (4 lb) fruit is sufficient. It is so helpful in the process of juice extraction and the prevention of haze that it should always be used.

B.T. 1976

A small quantity of tannin will vastly improve the taste of most wines, giving them a zest or "bite" which is otherwise lacking, particularly in flower, root and grain wines. It is the tannin in a wine which gives an impression of dryness in the mouth after drinking; if the right amount of tannin is present, the wine will be supple and zesty, if too little, flat, insipid and characterless, if too much, harsh, astringent and bitter. Tannin is also an essential constituent if a wine is to have good keeping qualities.

Tannins come from the skins and stems of fruit—particularly red fruit, and wines made from all red fruit, and from elderberries, bilberries, sloes, damsons, plums, apples, pears, grapes, and oak leaves are liable to be rich in tannin, and usually need none added. In flower and grain wines add one teaspoon of grape tannin, a few oak leaves or pear peelings, or one tablespoonful of strong tea per gallon. It is not really practicable for the amateur to test for tannin content.

Sometimes, particularly with elderberry wines, one has an excess of tannin. This is caused by using too much fruit, by soaking for too long a period, or pressing too hard. If a finished wine is a little too harsh, it can often be vastly improved by the addition of a little sugar or glycerine, but if it is far too harsh it should be fined with gelatine or blended with another softer wine.

C.J.J.B. 1960

Another ingredient that you'll find listed in some of our recipes is *tannin*, or grape tannin. A component of the skins and stems of some fruits — especially red fruits like grapes, plums, apples, and elderberries — tannins do a number of nice things to your wine. First of all, they give wine a certain zip by creating a hint of dryness in the mouth when you drink it. Without tannins, wine becomes a ho-hum beverage, common as soda pop. Equally important, tannins improve a wine's keeping qualities.

So in country-wine recipes that are likely to be short on tannins — wines made from flowers, herbs, grains, or vegetables — we add them. This need for tannins is one of the reasons that so many country-wine recipes call for raisins — dried grapes that retain tannins on their skins. Old-time winemakers may not have known why raisins made their wines taste better, but they knew that they did. And there are other ways to add tannins to your wines. A tablespoon of strong tea or even a couple of oak leaves added to the must gives added zest to recipes that you've found a bit dull. Or you can add commercial tannins, available from winemaking suppliers.

Q. What are tannins and why are they added to some wine recipes?

A. Wines that have no tannins are generally dull and flat. But if you've ever tasted wine that draws your mouth into a pucker — usually a dark red one — you know that too much tannin can make a wine bitter and astringent-tasting as well. As with most wine elements, the trick is to balance the tannins with the other ingredients. Tannins are naturally occurring substances that are present

in some fruits, in the membranes between nutmeats in some varieties of nuts (especially hickory nuts), and in tea. In those recipes in which we've added tannin, it's because the wine seemed a bit characterless, probably because the particular set of ingredients was lacking in this essential element. If you find that your wine seems to lack character or zest, you can add tannin (or a tablespoon of strong tea to a gallon of wine), and you'll be surprised at the improvement.

P.V. R.G. 1992

Acid

Three acids are found in fruits – citric, malic and, in grapes alone, tartaric. Grapes contain all three acids other fruits contain mainly citric or mainly malic acid. When acid needs to be added to a wine, however, most wine-makers add only citric acid. It is less expensive than the other two, aids fermentation and produces a good flavour. Citric acid is therefore recommended in the following recipes. The enthusiast, however, is aware of the type of acid in the fruit being used and adds the appropriate acid to make up a blend of all three. The results, although more marginal than significant, are a hallmark of the perfectionist.

Acid is essential to a wine and without it the result is bland and medicinal. Yeast will not ferment without acid and almost every wine needs some additional acid. The acid not only assists fermentation and improves the flavour of a wine, but also assists in the preservation of the wine and participates in the maturing process. Acid is the cornerstone of bouquet and flavour and should never be omitted.

Tannin is another element that in small quantities improves a wine and gives it character. Tannin is found in grape stalks, skins and pips and to some extent in pear skins, black fruits and tea leaves. Indeed, some wine-makers recommend the addition of half a cup of cold tea to a must to provide the necessary tannin. Grape tannin powder can be readily bought and a level teaspoonful added to a red must and half a level teaspoonful added to a white must makes a noticeable improvement in the finished wine.

B.T. 1976

Q. What is an acid blend and why do I need to add it to my wine?

A. The ideal wine has an acid content that is in balance with the tannins and sweetness of the wine. Some fruits that make an otherwise delicious wine are lacking in sufficient acid for good taste. When the acid component in the must is too low, fermentation is poor and the wine develops a mediciney taste. That's when adding an acid blend is important.

Most acid blends contain 1 part citric acid, 2 parts malic acid, and 3 parts tartaric acid. All of these are natural acids, found in various fruits. Fruits rich in citric acid include most of the citrus fruits, currants, strawberries, raspberries, and tangerines. Since citric acid also adds a nice fruitiness and brilliance to the wine, some winemakers routinely use citrus juice as their only acid component. Those who opt for acid blend, including malic acid and tartaric acid, say that these two acids help to speed fermentation and improve the vinous character of the wine. Malic acid is found naturally in apples, apricots, blackberries, dark cherries, plums, gooseberries, nectarines, and rhubarb. Tartaric acid usually comes from grapes.

P.V. R.G. 1992

Acidity

... plays a vital part in determining wine quality. Lack of acid will mean a poor fermentation, and a "medicinal" taste in the finished wine, which will also lack character and seem insipid. In any wine it is essential that acidity, tannin content and degree of sweetness should be "in balance" according to the type of wine being made (a sweet wine will need more acid than a dry.) A quarter of the original acidity of a must disappears during fermentation (so that tasting one's must affords some guide) and a finished wine should have between 5 parts per thousand (dry) and 7 parts per thousand (sweet). This, in most recipes, will be obtained by adding the juice of one, or two, lemons, or $\frac{1}{4}$ – $\frac{1}{2}$ oz. citric acid.

ACIDS

Acids serve several valuable purposes. They inhibit hostile bacteria, aid fermentation on its normal course, become paramount during maturing, and finally influence the flavour of the finished wine. The acids we are concerned with are fruit acids of which there are at least 36 in wines. Only four of these are used in this book as adjustments and one other for maturing.

Acids

Citric acid. This is the main acid in fruits such as oranges, currants, grapefruit, elderberries, strawberries, etc. It is liked for its flavour and does help promote a fast fermentation, but is of little use in maturing.

Malic Acid. This is the main acid in apples, apricots, blackberries, rhubarb, etc. It helps fermentation and is of great assistance during maturing. Although a prominent acid in the grape it is rarely used on its own because in excess it produces a somewhat sour flavour in the wine.

Tartaric Acid. This acid is found in quantity only in grapes and grape products (raisins, etc.). Grapes, because of their natural sugar content are supreme for winemaking, and this, their main acid, imparts a flavour which makes it important, even though it is a poor fermenter and maturer.

C.J.J.B. 1960

Acid

There must always be an adequate amount of acid present and if there is insufficient natural acid then some acid crystals should be added

FRUIT WINES OF VARIOUS TYPES

It is desirable, when making wine from various fruits to take some cognisance of the fact that some fruits lend themselves better to one type of wine than others. For instance, if it is desired to make a port type of wine, richly coloured red fruit like damsons, bilberries or elderberries are more suitable than, for instance, strawberries or light-coloured cherries. Fruits which have a very penetrating flavour, such as raspberries, should be used for a sweet wine and, as far as possible, the characteristic flavour of the fruit should be retained. Fruits which are very lacking in flavour, like white currants and pears, lend themselves better to a white table wine than would, for instance, the juice of a crab apple or a strongly flavoured dessert apple. On the other hand, one can make use of apples for table wine production by reducing the flavour by the addition of syrup or choosing a cooking apple with very little characteristic flavour. Fruit wine making is more difficult because one can overdo the addition of syrup by not having tested the juice for its sugar concentration, but provided a little care is taken every bit as good wines can be made from English fruits as are made from grapes.

Anyone interested in wine making will decide the type of wine they like and choose fruit accordingly. For instance, for dry red wines bilberries are used very extensively on the Continent and these also make a very attractive sweet wine similar to a port. Another fruit which is suitable for red wine is red currants provided some blackcurrants or some elderberry juice is added as otherwise the wine would be quite pale. It is possible to make a wine from red currants which looks and tastes like a claret and after sufficient maturing even experts cannot detect that the wine has not been made from grapes. Apples will make a very nice dessert wine or can be used for producing sweet and dry sherrys. Rhubarb is particularly good for dessert wines of the sauterne type or for sparkling wines similar to champagne. From green gooseberries one can make dry table wine or champagne, while apples are also used for sparkling wines. Plums lend themselves very well to dessert wines and so do blackberries, loganberries and raspberries. Strawberries and ripe gooseberries both tend to give a wine of sherrylike quality. Orange wine is produced from the juice of oranges to which some syrup and perhaps extra acid has to be added; the peel should not be added to the wine until it has finished fermenting as the orange oil sometimes stops fermentation. Raisins, dates and figs can all be used for wine making but acid has to be added and the minced fruit must be thoroughly soaked in boiling water to extract all the sugar from it. Full details of the various wines, arranged in alphabetical order,

are given in the following, but it must be remembered that the same recipe can give different results as the sugar content of fruits can vary considerably and the sugar-juice mixture should be tested by the wine maker prior to fermentation. Provided the sugar addition is right, a pure wine yeast is used and both acid and yeast nutrient are added where necessary, the production of both sweet and dry wines should present no difficulties.

PREPARATION OF PLUMS, ETC.

The juice from all stone fruit is easily extracted. Wash thoroughly, then drop the fruit into boiling water for a few minutes. Put a few fruit at a time into the colander which is supported on the bucket. Mangle the fruit with the wooden vegetable masher. The strained juice is then poured into the fermentation jar.

PEACHES, GOOSEBERRIES, BLACKBERRIES—in fact all SOFT FRUITS—are treated in the same way.

W.S-S. 19

Balancing the must body

Before the yeast is added consideration must be given to the balance of the must. The right amount of fruit of different kinds must be included to provide sufficient body and flavour. Bananas are of great advantage in this respect. Dried apricots, too, are beneficial. Some acid fruit should be included if available, particularly a few cooking apples rich in malic acid. This provides a fruity freshness in the bouquet and flavour. Don't forget to include some concentrated grape juice, sultanas, raisins, fresh grapes or even vine leaves and prunings to add vinosity.

Better wines are made if:

- The fruit content is kept low;
- Campden tablets are used;
- The wines are racked at recommended intervals.

Recipes will be given in:

- British measure 1 gallon = 8 pints = 160 oz; 1 pint = 20 oz.
- U.S.A. measure 1 gallon = 8 pints = 128 oz; 1 pint = 16 oz.
- Metric measure 5 litres (4½ litres = approx. 1 British gallon.)

Note. The Campden tablets mentioned in these recipes are the number to be added at the start of the fermentation. Extra tablets are required at racking time.

Getting the flavour

THERE are several ways of extracting the required flavour from our fruit or vegetables—pressing, using juice extractors, or boiling, soaking in hot or cold water, and fermenting on the pulp—and there are advantages to each; which one uses depends on the wine being made and the equipment available (which usually means how much one is prepared to spend!).

Sometimes one first extracts the juice from all the ingredients and starts the fermentation right away. The straight juice may be fermented, but for reasons of economy (to avoid using too large a quantity of fruit) and so as not to have too strong a flavour, it is more usual for the juice to be diluted with water.

Alternatively, the fruit is pulped, the must prepared, and the yeast introduced, so that the fermentation begins immediately, and the liquor is not strained from the solids until, say, 10 days later. This is more convenient for those who do not wish to buy the more expensive equipment. Whichever system is used, the quantities advocated in the recipes remain the same.

In the latter case it is a great help to extraction to add 1 teaspoonful of pectin-destroying enzyme such as Pectozyme, Pektolase or Pectinol, to hasten the breakdown of the fruit (and, incidentally, ensure a clear wine). It should be added 24 hours before the yeast, and only when the must or juice is cool or cold. (Boiling water will destroy the enzyme.)

Pressing: ideal for grapes (which must first be broken), fruit and berries.

Boiling: (necessary with some root and fruit wines) is a method that has to be used with care, for if the ingredients (particularly parsnips and plums) are overboiled it may later prove difficult to get the wine to clear. The liquor is then strained off the solids, cooled, and fermented.

Cold water soaking: the fruit is pulped or the must prepared, the yeast is introduced, and the liquor is not strained from the solids until, say, ten days later. This can be used with hard fruit as a preliminary to pressing. All you really need is a large crock or dustbin.

Hot water soaking: boiling or near-boiling water may be poured over the ingredients, which are then left to soak for three or four days, the yeast having been introduced when the must has cooled to 70 deg. F. (21 deg. C.). The liquor is then strained off.

Where boiling water is used the must will have been purified, for any wild yeast which may have been present will have been killed, but if pressing or the cold water method are employed it is as well to add one Campden tablet per gallon, and to wait 24 hours before adding one's chosen yeast. The sulphur dioxide of the tablet will dispose of unwanted wild yeasts but 24 hours later its action will have

Abated to allow your selected yeast to start working satisfactorily.

SUGAR

ADJUSTING THE MUST

In addition to the basic juice or extraction, some or all of the following are also needed to provide a balanced must:

- Sugar
- Acid
- Nutrients and Growth factors
- Pectic enzyme
- Tannin

Let's have a look at each of these!

Sugar

There may be a certain amount of sugar in the juice already extracted. Grape concentrate is so rich in sugar that when it is used as the main ingredient it is often unnecessary to add any more. Dried fruits such as raisins often have half a pound of sugar per pound of raisins.

It is the total of sugar in the juice plus added sugar which decides the amount of alcohol which can be formed (up to the fermenting power of the yeast).

Very roughly, each pound of sugar dissolved in a gallon of must will produce about 5% alcohol by volume, or approximately 9 degrees of proof spirit. One pound per gallon is beer strength, two pounds per gallon is right for a table wine and three pounds per gallon is approaching a dessert wine.

It is not often advisable to have a higher amount of sugar per gallon than this. If, for instance, you put in four pounds per gallon it is probable that the yeast will only be able to ferment out three, leaving you with a very oversweet concoction which can hardly be called a wine. In case this has saddened you, let me reassure you that there is a special method of fermenting which often will allow you to obtain very high amounts of alcohol. This is outlined in the dessert wine section.

C.J.J.B. 1960

For straining fruit pulp a well boiled pillowcase works.

Preparation of the must

There are three processes in the making of wine; preparation, fermentation and maturation. In the preparation process the ingredients are assembled and prepared for fermentation, i.e. the adding of an active yeast to start converting the sugar into alcohol and carbon dioxide. Fruits, in particular, need careful attention. The preparation of flowers and vegetables have already been described.

Removing the stalks

All stalks should be removed from fruit before use as they add a bitter taste to wine. Blackcurrants and elderberries must be cleaned so that none of their tiny stalks adhere to the berries, similarly with grapes. It is better to add grape tannin powder than to leave the stalks on the fruit. Removing the stalks can be quite a tedious process, but experience shows that it is important to start with a bowl full of ripe fruit, free from stalks and unripe berries.

Washing the fruit

After removing the stalks the fruit should be washed in clean, cold, running water, to flush away the dust and many of the invisible microbes adhering to the surface. If the fruit is a little over-ripe or unsound, it is wise to give it a minute or two in a sulphite and citric acid solution before draining it.

Removing the stones

Next, the fruit should be stoned, if necessary. It is usually possible to cut the fruit in half so that the stone can be removed and discarded. The inclusion of the stone often produces a taste rather like nail varnish in the finished wine. Small pips do no harm; apple and grape pips, for example, may be left in, but care should be taken not to cut or crush them and so expose the bitter substance within them. This includes marrow and melon seeds, too.

Removing the pith

Citrous fruits must be handled with great care. The white pith is extremely bitter and can quite spoil a wine if it is included. The skin may be thinly pared with a potato peeler or rubbed off with lumps of sugar. Another method that is effective with loose skinned tangerines and the like, is to peel the fruit and then scrape away the white pith from the inside with the edge of a knife. Since only the juice of the citrous fruit is required as well as the thin skin, it is often easy to cut the husk in half and to squeeze out the juice on a pointed and fluted mould. The juice is then strained through a nylon sieve to remove the pips and pieces of pithy membrane. The pithy husk is discarded.

Crushing the fruit

Hard fruits must be crushed or cut up into small pieces. Apples and pears can be something of a problem, but a power driven crusher is now available to do all the hard work for you.

Soft fruits can be crushed with a potato masher or liquidised electrically.

Gooseberries and similar hard small fruit are best softened with hot water and then crushed. The berries can be crushed between your fingers or the water can be strained off temporarily while the berries are crushed with a potato masher.

Sultanas and raisins should always be washed and chopped or liquidised to release the sugar and acids within them.

Heat treatment

The extraction of the colour and goodness from elderberries, blackberries, sloes and the like can often best be achieved by heating the crushed fruit to 85°C (175°F) for a quarter of an hour. This extracts all the colour from the skins without giving the fruit a stewed taste. After the heating, leave the fruit to cool, then strain and press it. Discard the pulp and use only the juice to make the wine. Do NOT boil the fruit.

B.T. 1976

PREPARATION OF OTHER FRUITS

The extraction of juice from any fruit will follow the pattern of one of the methods described above. Provided the fruits are fully ripe, there should be no difficulty.

It is better to avoid fruits that are too hard or that will not soften by dropping them into boiling water. But should this be your problem, then they will have to be either simmered for a few minutes or soaked in the boiled water as for hips, before pressing through the colander, or use the sliced method described under 'Preparation of Apples'. I would, however, prefer to avoid such non-yielding fruit, for there is a wide selection to choose from.

The automatic electric juicer-mixer previously referred to may also be used for instantly pulverizing fruits by using the mixer attachment provided. The pulp may then be fermented in the manner described for the marmalade orange wine.

Fruits particularly adaptable are apples, pineapples, pears, berried fruit and also stone fruit, provided the stones are removed first.

Naturally, as there is so much volume, the first stage of fermentation should be conducted in the 2-gallon jar, continuing in the 1-gallon jar for the second stage.

There is no problem with CITRUS fruit. They are simply cut in half and the juice squeezed out by hand.

W.S-S. 1964

Freezing helps to break down stubborn fruit.

Wine yeasts

ONE of the big strides which has been made in wine-making is that there are now available to the amateur many excellent varieties of special wine yeasts, in either culture or tablet form. Their value is unquestioned, for there are innumerable varieties of yeasts, all with different characteristics, and just as some are more suitable for baking or beer-brewing, so others are better for the production of quality wine. A good wine yeast has a high alcohol tolerance (i.e., it will allow the wine to ferment further and be that much stronger before it succumbs) it will form a firmer sediment, making racking much simpler, and it will be less prone to impart "off" flavours to the wine.

It is possible to obtain Port, Sherry, Madeira, Tokay, Malaga, Champagne, Sauterne, Pommard, and Burgundy yeasts, to mention only a few.

These yeasts are laboratory-cultured from the yeasts on the grapes in the place of origin, and it is great fun to experiment with them, and see the different nuances of flavour that they confer.

But do not imagine that you will obtain, say, a port simply by using a port yeast. The ingredients must be suitable as well. If they are, you are certainly more likely to obtain a port-like wine by using a true port yeast; the flavour will be unimpaired, and you will have the other advantages already mentioned.

It is naturally advisable, when using these specialised yeasts, to employ them in musts which will be sympathetic to them, i.e. a Port or Burgundy yeast in a red wine such as elderberry, sloe or damson, and a Champagne yeast in a sparkling wine. The beginner will do best, however, to experiment first with a good general-purpose wine yeast. One can also obtain a fairly good range of yeasts especially suitable for lager, beers and ales.

C.J.J.B. 1960

Q. How do I know which kinds of wine yeasts to buy?

A. Wine yeasts come from the skins of grapes, with each variety of grape having a slightly different variety of yeast. These yeasts are collected and cultured and sold by the packet. A good rule of thumb in choosing wine yeasts is to look at the kind of grape wine that each yeast makes. You'll find yeasts for port, sherry, Tokay, Madeira, Malaga, Sauternes, and Burgundy among others. If you are making a dark red wine — from elderberries or blackberries, for example — you'll probably want to choose a yeast that makes a dark red grape wine, like port or Burgundy. We like to use a champagne yeast for honey wines because we like the taste. Since wine yeasts are relatively inexpensive and you can extend what you buy by making your own yeast starter-cultures, we suggest that you experiment — it's part of the fun of making your own wines!

Yeast

Wine cannot be made without yeast to ferment the sugar. There are countless strains of yeast and only a few of them are suitable for making wine. Of these the best is undoubtedly the true wine yeast indigenous to the various regions where vines are grown. It is available in a number of strains developed for particular purposes. For example, champagne yeast is able to ferment under pressure and imparts distinctive bouquet and flavour to sparkling wine. Sherry yeast has a high alcohol tolerance and imparts a distinctive flavour in certain

circumstances. Sauternes yeast produces rather more glycerine than other yeasts and so helps to produce a smooth-sweet-tasting wine. It is always advantageous to use the yeast appropriate to the style of wine you wish to make.

Yeast is a tiny botanical cell, invisible to the naked eye. It reproduces itself in the presence of oxygen in a matter of three hours and will do this some thirty times or so before it dies. As soon as a cell is fully grown it begins to reproduce itself and so a very large colony is soon established. When you cut off the oxygen supply with an airlock, the yeast is forced to obtain the energy it requires to remain viable from the acid/sugar/nitrogen solution around it. In doing so it converts the sugar to alcohol and carbon dioxide. The gas comes off in the form of tiny bubbles and the alcohol remains in the solution.

To function effectively, yeast needs a slightly acid solution; a sugar solution that is not too heavy — hence the addition of sugar in several doses in the recipes — and nitrogen. This is usually available in fruits, but since they are usually diluted, additional nitrogen must be added in the form of what is called 'nutrient'. This consists of one or both of the ammonium salts — ammonium sulphate or ammonium phosphate — sometimes mixed with a little vitamin B1.

Sachets of dried yeast usually contain some nutrient salts to start the yeast working. Non-fruit wines often need an additional half to one level teaspoonful of nutrient salts per 5 litres (1 gallon). If nutrient salts are not provided with the yeast, half a teaspoonful should always be added to the must to help produce a dry wine free from off flavours.

B.T. 1976

P.V. R.G. 1992

It was generally believed at one time that to exist all forms of life required oxygen as an energy source. It was believed that in a covered must the yeast obtained oxygen from sugar as a result of fermentation. It is now certain, that wine yeasts do not require oxygen as an energy source. The energy they require is that released by the fermentation and they take no oxygen.

Otto Myerhoff conclusively proved in 1948 that yeast only required oxygen for reproduction; it can live without oxygen but will not reproduce itself. This oxygen is obtained from the air or from the oxygen dissolved in a solution. Thus the sole purpose of fermentation, as far as the yeast is concerned, is to provide itself with energy not oxygen.

The optimum conditions for maximum fermentation and the production of the best wines are accordingly as follows:

- 1 the use of a pre-activated wine yeast;
- 2 a constant temperature between 16 and 21°C;
- 3 the correct balance of acids, nutrients and sugars;
- 4 the exclusion of air by means of an air-lock.

The duration of fermentation of wine under optimum conditions is approximately three weeks, but for no apparent reason may be quicker or continue for many weeks longer. Unfavourable conditions in one form or another can protract fermentation to six or nine months, or even longer.

If the conditions are unfavourable various micro-organisms can attack the wine, either during fermentation or maturation. They continue the process of decay, either by oxidation or fermentation. Spoilage actions cause the wine to have off-flavours, develop hazes, become vinegar, or, finally, to be reduced to carbon dioxide and water. The one exception is the malo-lactic fermentation which is permitted to occur in wines of high malic acidity in order that it may be reduced; even so, the wines can be spoilt by a 'mousey' taste. Prevention of spoilage fermentations is achieved simply by the exclusion of air and the use of sulphite.

Fermentation of sugars in a solution often produces frothing and bubbling. In the beginning and at the higher temperatures, the bubbling can be so vigorous that the must appears to boil. Hence the derivation of the word fermentation from the Latin *fervere* – to boil.

Some wines develop visible signs of fermentation in the Spring after their production. This has given rise to the idea that a wine may act in sympathy with its parent plant, e.g. gooseberry wine starts fermenting again with the blossoming of the gooseberry bush. However, in fact it is not that they act in sympathy, but that both activities are the result of the same factor – the rise in temperature. Wines kept in a constant temperature do not develop the 'sympathetic' fermentation. These Spring fermentations are more frequently produced by enzymes and micro-organisms, such as lacto-bacilli, than by yeast fermentation of sugar.

When the last bubble of carbon dioxide has passed through the air-lock on a jar of fermenting wine, the period of maturation begins.

To make sure that fermentation has actually finished and not just stuck, however, it is advisable to check the specific gravity. If it is not what it is expected to be from the kind of fermentation conducted, then the fermentation may be inhibited and incomplete. A fermentation can stick for any of the following reasons:

- 1 The wine has become too warm and the yeast has become lazy.

Remedy: move the jar to a somewhat cooler place with an air temperature of around 20°C (68°F).

- 2 The wine has become too cold and the yeast has become lazy.

Remedy: move the jar to a somewhat warmer place with an air temperature of around 24°C (75°F).

- 3 There was insufficient nutrient in the wine and it has all been used.

Remedy: add some yeast booster consisting of a broad range of nutrients and vitamins.

- 4 There was insufficient or no acid in the must and the yeast is inhibited.

Remedy: dissolve a teaspoonful of citric acid in a bottle of the wine and stir it into the bulk.

- 5 If too much sulphite was used in the preparation of the must, or the yeast was added too soon, or not first activated, then the yeast colony may have been too weak and thus may nearly have died off.

Remedy: aerate the wine by pouring it into another jar in such a manner as to expose the wine to as much air as possible. In this way any sulphur dioxide will be dissipated and oxygen will be absorbed. The yeast colony should then be able to reproduce and enlarge. If fermentation doesn't soon start, a new yeast culture will be necessary.

- 6 If the specific gravity of the must was not checked it may be that the total content of sugar, from that added and that already in the fruit, is too much for the yeast to ferment.

Remedy: If the specific gravity is in excess of 1.100 the must should be diluted with cold boiled water.

- 7 If all the remedies have been tried and the fermentation remains stuck, then prepare a new yeast starter from a yeast with a high alcoholic tolerance such as Tokay or Madeira.

B.T. 1976

Q. What are yeast nutrients, and why do you add them to wines?

A. Yeasts need certain organic compounds to grow and reproduce efficiently, just as all plants and animals do. Most of the time, wines made with fruit have these organic nutrients because the fruit provides them. But some wines, especially those made with honey, are lacking in these compounds. If you fail to provide them in some way, the yeast will grow for awhile and then quit, just as plants will turn yellow and quit growing if nitrogen is absent in the soil, or humans will fail to thrive without essential vitamins. When yeast stops growing, the wine never reaches its full alcohol potential, and it becomes vulnerable to spoilage. Since it's difficult to measure just how much of each nutrient may be present in the must, we generally add yeast nutrient as a kind of insurance policy against "malnutrition," just as mothers sometimes give their children vitamins "just in case." Even in those kinds of wine that have essential growth nutrients, fermentation is often faster and more efficient if yeast nutrients are added.

Yeast nutrients may contain any of the following: ammonium sulfate, magnesium sulfate, potassium phosphate, diammonium phosphate, ammonium chloride, and thiamine. Most of these substances are available from your pharmacist or are sold as yeast nutrients — often a blend of several — through suppliers of wine-making equipment. We often use them because they're quick and easy, but if you've formulated your wines — primarily flower and honey wines — with juices to supply these nutrients, you won't need them at all.

Q. Why do you stir the must for several days to introduce oxygen into the wine and then put it into an airlocked vessel to keep oxygen out?

A. During the first fermentation, the yeast in your wine grows rapidly, using oxygen and producing alcohol and carbon dioxide. But the level to which the yeast can grow in the presence of air is limited by the amount of alcohol in the mixture. Aerobic fermentation proceeds until the concentration of alcohol stops the process, leaving a lot of unused sugar in the must and your wine sticky sweet and vulnerable to spoilage. Once the container is airlocked, however, the yeast switches to a new mode of growth, one in which more alcohol is produced — a condition that is tolerated by the yeasts once oxygen is no longer present. Aerobic fermentation alone will not produce enough alcohol to ensure that the wine will keep well. Thus both processes are necessary for good aging and keeping qualities — and of course, good taste.

Q. How important is temperature when wine is going through the fermentation process? Can I speed it up by using heat?

A. Your wine will bubble along happily at the same temperatures that make you comfortable, although most experts put the best temperature for fermentation at about 60–65°F.

Get it too warm and the yeast will stop growing or die. Then, if you hope to salvage your ingredients at all, you must start at the beginning again, adding a yeast starter-culture and waiting. Finally, a "too energetic" fermentation usually means that some of the aromatic parts of the wine — the parts that give it its bouquet — are bubbled off with the carbon dioxide. The result is that your wine has much less bouquet than if you fermented it at a cooler temperature.

Q. Most recipes call for yeast starter-cultures. Why not just add the yeast directly to the wine?

A. We like to use a yeast starter-culture for a couple of reasons. First, since a yeast starter-culture is prepared ahead of time — usually 1 to 3 hours before you add it to the wine — the yeast is already actively growing and fermentation of the must starts immediately. We think that gives us fresher-tasting wines. Second, starter-cultures conserve wine yeast, and if you use an all-purpose one, such as an orange-juice culture, you can keep it going, much as pioneer cooks — and some modern ones — kept a sourdough starter going, through several batches of wine. Just add more juice and nutrients to a little of the culture that's left — about 1/2 cup — and keep it in the refrigerator until a couple of hours before you'll need it. Then bring it into a warm room and wait for fermentation to begin. Although a sourdough starter can be kept for years, we don't recommend keeping your starter-culture too long — perhaps just over the course of a summer's winemaking. The possibility of contamination with airborne wild yeasts as the bottle is opened and closed always exists. Finally, we use a yeast starter-culture because it reduces the possibility of having a stuck fermentation since the yeast is already viable and actively growing in a starter-culture.

Essentially, a yeast starter-culture is made by inoculating a small quantity of fruit juice with wine yeast (and yeast nutrients) so that the yeast begins to multiply rapidly. When you add this starter-culture to your wine, it is already filled with growing yeast cells so fermentation is more efficient. It's simple. Just add a package of wine yeast (5–7 grams) and a teaspoon of yeast nutrient to 1H cups of tepid fruit juice in a small, sterilized container. Cover, shake vigorously, and let stand at room temperature for a few hours (1–3 hours) until it gets bubbly. Orange juice makes an all-purpose starter-culture, because the orange flavor is mild enough that you can use it in any kind of wine without affecting the final flavor, so we generally use that. But you may substitute an equal amount of juice from the fruit you're using in your wine if you prefer.

If you increase the ingredients in your wine recipe to make a larger amount of wine — say, five gallons instead of one — you do not have to add additional starter-culture. The yeast in your wine is alive and growing, and it will continue to grow in the must until it has converted the sugar to the maximum concentration of alcohol that a given yeast will tolerate. Once the alcohol content reaches that point, fermentation will stop and whatever sugar remains in the solution gives the wine its sweetness. Dry wines have little sugar remaining in them; sweet ones have more. (If you prefer a sweeter wine than the one you've made, all you need to do is add more sugar than the recipe calls for in your next batch. You can even add more sugar to a finished wine, but doing so may cause an additional fermentation if the maximum alcohol content hasn't been reached. In that case, return the wine to an airlocked vessel and wait until it stops fermenting before you re-bottle. Remember, though, that a little sugar goes a long way in a finished wine. Add only small amounts and taste frequently so you don't overdo it.)

Sweet wines

Strong wines can be fermented to the very limit of the alcohol tolerance of the yeast and after racking they can be sweetened to suit your palate. Sweet table wines of lower alcohol content can be made by terminating the fermentation at an appropriate point. A sweet table wine needs 11 to 12% alcohol and a residual sweetness equivalent to a specific gravity of between 1.016 and 1.026, depending on your palate and the wine.

When a sufficient quantity of alcohol has been formed, rack the wine into a sterilised jar, sweeten it to suit your palate and add one Campden tablet containing sodium metabisulphite and one Vingard tablet containing potassium sorbate to each 5 litres (1 gallon) of wine. These two tablets will prevent re-fermentation and will ensure that the wine remains stable. Either tablet is insufficient on its own. As soon as the wine is bright, rack it again but further tablets are not necessary.

When fermentation finishes, the specific gravity of a dry wine should be between 0.998 and 0.990. Medium and sweet wines can be terminated as just described at any specific gravity you wish. There is much to be said for fermenting all wines out to dryness, attaining the alcohol content of your choice. When the wine has been clarified it can be sweetened to suit your palate, treated with the two tablets just mentioned and left for a while longer to mature.

B.T. 1976

Q "How do I know the wine is done?"

A Cleverly, you used a hydrometer when you first started the wine, and know what percent Potential Alcohol is in the wine, right? All you do is wait till it gets to around 0 and there you go.

What, you didn't use a hydrometer? Well, look up how much sugar per gallon you put in the wine to begin with. Generally 2 lbs will give you a very dry wine, 2 1/2 lbs a medium wine, and 3 lbs a sweet wine, depending on the fruit you used. Taste the wine to see how sweet is it. Tap the jug gently to see if any bubbles still come up. If they do, chances are it's still fermenting.

Even if you didn't check the P.A. when you started, you can go out and get a hydrometer at a supply place for under \$10.00 and check to see how much sugar is left in there, assuming you didn't overload it with sugar to begin with. Some old recipes recommend five lbs of sugar per gallon(!), which will never ferment out completely.

Blending

Sadly, not every wine turns out to be a 'cracker-jack' any more than commercial wines. This fact is usually revealed when you are about to bottle the wine. Out of ten wines, three may be very good, six may be average and one may be disappointing. There may be nothing more wrong with this last wine than a poor flavour due to poor fruit. Do not despair, however, there is a simple remedy.

Provided the wines are clean and sound and free from infection of every kind, they can be blended together. The result is almost always a greatly improved wine infinitely superior to the wines that went into it. Blending wines is something of an art. If some gardeners have green fingers, some wine makers certainly have a purple thumb, especially when it comes to blending.

First taste the wines that you are thinking of blending and assess their virtues and defects. Pour into a large glass jug a measure of each wine, stir gently and taste. It may be necessary to add an extra half or whole measure or more of certain wines until you achieve a blend to your liking. Now mix the wines in the proportion worked out in the jug, stir gently and put the blend into clean, sterilised containers. Add one Campden tablet per gallon and fit airlocks to the containers. Some fermentation may take place, there will certainly be some chemical reactions and a deposit may be thrown.

After a month or two the wine should be

Ready for drinking.

By far the most convenient for general use is the All Purpose Wine Yeast. This is a sedimentary type, that is it settles readily on standing so that the wine can be easily decanted or syphoned off without much waste and with almost complete separation from the yeast. It is easily the best for white table wines and entirely suitable for red table wines but for the very deep red wines the Pommard yeast will retain the colour even better and give a characteristic flavour.

The All Purpose Yeast will also make a satisfactory Champagne but it will not be possible to remove the yeast formed in the bottle by the usual champagne method; to do this a Champagne yeast is essential.

For the sweet, strongly flavoured white dessert wines Sauterne or Tokay yeasts are advocated.

Sherries, whether dry or sweet, can be made with various yeasts provided the sherry technique is followed, but the best flavours are always obtained by the use of a proper Sherry yeast.

The fortified types of sweet wines such as Port, Malaga, Madeira, whether or not the amateur intends to fortify, are most successful if made with the appropriate yeast.

For cider a fast-working yeast is desirable and Herrliberg is recommended. Alternatively a Champagne yeast is suitable and either yeast can be used for perry.

Wine yeasts are not suitable for beer making and of the many beer yeasts which exist the sedimentary Lager Beer yeast is strongly recommended.

Recommended Wine Yeasts

All Purpose, Chablis, Hock	For Table Wines, White and Rosé
Pommard, Burgundy	For Red Wines
Sauterne, Tokay	For Sweet White Dessert Wines
Port	For Port
Malaga, Madeira	For Fortified Sweet Wines
Sherry, Sherry Flor	For Sweet and Dry Sherries
Champagne	For Champagne
Herrliberg	For Sparkling Wines, Cider, Perry
Maury, Mead	For Mead, but All Purpose Yeast preferred

Your local store will keep all the latest wine yeasts.

Most people like the characteristic flavour of raw fruit to remain in the finished wines and, personally, I like this in most wines; indeed, it would not seem like wine if I could not detect at once the fruit used in its making. (With root wines this does not apply: potato wine never tastes of potatoes.)

H.E.B. 1960

Do

- Keep all your equipment spotlessly clean.
- Keep your first ferment closely covered.
- Keep air away from the secondary fermentation.
- Always use fermentation traps.
- Keep all bottles full to within $\frac{1}{2}$ in. of cork.
- Strain liquor off must slowly and thoroughly.
- Make wines too dry rather than too sweet: sugar them later.
- Use yeast nutrient regularly, and reliable yeast.
- Add sugar by stages. Keep detailed records.
- Rack at least once, and preferably twice or thrice.
- Taste the wine you are making, at intervals.
- Always use new corks or stoppers, and boil old ones.
- Keep red wines in dark bottles, or they will lose their colour.

Don't

- Sell or distil your wine.
- Allow a single vinegar fly access to your wine at any stage.
- Use any metal vessel if the wine will be long in contact with it.
- Use any tools or containers of resinous wood.
- Omit to stir a must twice daily.
- Use too much sugar initially.
- Try to speed a fermentation by too high a temperature.
- Be impatient; making wine takes time.
- Let your wine stand on dead yeast or sediment.
- Filter unnecessarily or too soon; most wines will clear of their own accord.
- Put wine in unsterilised bottles or jars.
- Bottle your wine whilst it is still fermenting.
- Use screw-stoppered bottles.
- Drink too much!

Winemaking summarised

1. Extract flavour.
2. Add sugar and yeast and ferment for up to 10 days in a bowl or crock, closely covered, at about 70 deg. F. (This may be simultaneous with (1)).
3. Strain off, put into fermentation jar or bottle fit trap. Fill to bottom of neck. Temperature about 60 deg. This fermentation will be much quieter and will proceed for some weeks.
4. Rack the cleared wine. Repeat this about two months later, and, usually, a third time after a further month. By then the wine should be quite stable, with no risk of burst bottles later on.
5. Bottle when the wine is about six months old. Store bottles, on their sides, preferably in a room of 55 deg. temperature or below.

C.J.J.B. 1960

WHILST something must be said about faults and diseases of wine, it should be emphasised at once that several of these disasters which can befall your wines are rarely encountered. Observance of commonsense precautions will ensure that your wines are sound, and you may never need to refer to these particular pages. I hope you do not!—but "just in case" there are listed here some of the disasters most probable to be encountered.

ACETIFICATION . . . or formation of vinegar. This will normally only occur in conditions of extremely bad storage, and in the presence of air. Therefore keep your bottles full. If it is noticed in the early stages—there is a very slight smell of vinegar and an acid taste—it can probably be halted by adding one Campden tablet per gallon, waiting 24 hours, and then introducing a vigorously fermenting fresh yeast. In the later stages the smell of vinegar will be pronounced, and indeed what you now have is wine vinegar. Remedy: Use it for cooking or pour it down the drain!

Sometimes a wine will smell vinegary but not taste acid, and this is the effect of ethylacetate, produced by wild

yeasts present on the fruit. Prevent this by adding one Campden tablet per gallon 24 hours before your chosen yeast.

OVER-SWEETNESS. The bugbear of the beginner. It can be avoided by not using too much sugar initially and always using a nutrient. Remedy: Blend the wine with one from similar ingredients which is over-dry, or with dry rhubarb wine, which will take up its flavour. See also "Low Alcohol Content."

LOW ALCOHOL CONTENT. Usually allied to over-sweetness. If it is the result of a fermentation having ceased prematurely, adding fresh yeast direct will rarely succeed, since it will be inhibited by the alcohol present. Remedy: Make up half-a-pint of fresh juice with 1 oz. sugar and some fresh yeast and nutrient as a "starter." When it is fermenting vigorously add an equal quantity of the low-alcohol wine. When all is fermenting well, again add an equal quantity of the wine, and continue the process until the whole is fermenting once more. Adding nutrient to the bulk and keeping in a temperature of 70 deg. F. will help.

OVER-ACIDITY. A slight over-acidity can often be corrected by stirring up any yeast deposit and causing a malo-lactic ferment. With a strong wine slight dilution will help to reduce acidity, and with a weak, dry one the over-acidity can often be masked (but not *corrected*) by the addition of a little sugar. BEST Remedy: Add glycerine, at the rate of 5%, or 1 pint to 2½ galls. A third of an ounce of precipitated chalk to 1 gallon (preferably added before fermentation) will also correct over-acidity. Added afterwards it may leave a taste. (See Rhubarb Wine recipe.)

MEDICINAL FLAVOUR. The result of insufficient acid in the must. If the fault is but slight the addition of a little citric acid to the finished wine may help, but if the flavour is pronounced little can be done.

MUSTY FLAVOUR. Some writers describe this as a "mousey" taste, but I have never tasted a mouse! Actually this is probably a corruption of the French wine term "moisi," or mouldy. Caused by wine standing overlong on dead yeast, particularly baker's yeast. Prevent this fault occurring by methodical attention to racking. Once a *firm* yeast deposit has formed—rack! Remedy: See "Taints and Smells."

HARSH FLAVOUR. Add glycerine to taste, or treat as for "Darkening," or use gelatine finings

FILTER-PAD FLAVOUR. Caused by failing to wash the filter pulp with water or wine before filtration. The first wineglassful of wine through the filter should always be thrown away.

FLATNESS OR INSIPIDITY. The result of insufficient tannin in the wine. Remedy: Add grape tannin or a small quantity of strong tea (up to 1 tablespoon per gallon).

THINNESS, or lack of "body." Due to using insufficient fruit as the basis of the wine. Naturally thin wines, such as plum, can be improved by adding up to 1 lb. of wheat, barley or maize to the gallon when making. Thinness in a finished wine can only be overcome by judicious blending with one of considerably more body. Marrow wine and robust grain wines are excellent for this purpose, since they usually have good body. Regularly using a Campden tablet per gallon in the must 24 hours before adding the yeast will also improve the wine by putting into it a little glycerine.

FLOWERS OF WINE. Powdery, whitish flecks appear on the surface of the wine and if left unchallenged will rapidly increase and will turn your wine first to carbon dioxide and then to water. It is caused by an organism like yeast, mycoderma, an aerobic bacterium, and is usually the result of admitting too much air to the fermenting vessel. Remedy: Remove as much of the surface flecks as possible, filter through unmedicated cotton-wool or filter papers, introduce some vigorous fresh yeast, and fill the fermenting bottle as full as possible to exclude all air. If a substantial film has been formed there is no remedy.

ROPINESS. The wine takes on a repellent, oily appearance, and pours very slowly, like treacle, but the taste is unaffected. The wine will look rather like the raw white of an egg and in it will appear rope-like coils—hence the name. This is the work of the lactic acid bacterium. Remedy: Whip the wine into a froth in a polythene bucket, add two crushed Campden tablets per gallon, and filter through asbestos pulp or filter paper.

TAINTS AND SMELLS. Not always readily identifiable; they can be caused by damaged fruit, bacterial action, tainted plastic containers, bad casks, or proximity of wine to strong smells (onions, paraffin, etc.). They can occasionally be removed by charcoal treatment but it is necessary to experiment to discover how much charcoal is needed. Add a small quantity to a measured quantity of wine, stir two or three times during first 24 hours. Allow to settle. Leave a further day, then rack, and filter to remove particles of charcoal. Some of the flavour and colour may also be removed. If dose is satisfactory treat bulk of wine in the same way.

METALLIC FLAVOUR. Sometimes encountered when wines have been made with tinned fruit, juice, or concentrate, or when ferrous metals have been allowed prolonged contact with the wine. Remedy: Avoid "unsafe" metals.

FAILURE TO CLEAR. Usually the result of over-boiling ingredients (see PECTIN HAZES) or of hastening unduly the initial straining, which should be both slow and thorough. Remedy: Move wine into cold place for two or three weeks and see if it clears. If not, try filtering

or using a good wine finings, such as Serena. If all of these fail, try pouring into the top quarter of the bottle some *clear* wine of the same variety. This will often carry down the suspended solids. Isinglass or gelatine as finings are tricky, and not recommended for the beginner.

Carbohydrate and Calorific Content of Common Winemaking Ingredients

Ingredient	Calories/ 100 gm	Amount of ingredient containing 100 carbohydrate	Amount used/ gallon of wine	S.G. of grape juice	Approx. number of ounces of sugar to be added to one gallon to increase alcohol (by vol.) to:		
					10%	14%	18%
Apple Cooker, Dessert	35, 50	120 gm	Variable	1050	11	20	32
Apricot Fresh, Dried	28, 183	180 gm, 30 gm	2 lb	1055	9	17	29
Banana without skin	77	60 gm	2 lb	1060	7	15	27
Blackberry	30	160 gm	3½ lb	1065	5	13	25
Cherry	46	120 gm	6 lb	1070	3	11	23
Currant	21-29	180 gm	3 lb	1075	..	10	21
Damson	34	150 gm	4 lb	1080	..	8	20
Dates whole stoned	214, 248	20 gm, 15 gm	1 lb	1085	..	6	18
Fig Green, Dried	41, 214	120 gm, 20 gm	2 lb	1090	..	4	16
G'berry Unripe, Ripe	17, 37	300 gm, 120 gm	4 lb	1095	..	2	14
Grapes	60	60 gm	15 lb	1100	..	..	12
Greengage — stoned	45	90 gm	4 lb	1105	..	..	10
Oranges Jaffa	35	4 fruit, 130 gm	6 fruit	1110	..	..	8
Peach Fresh, Dried	37, 213	120 gm, 20 gm	3 lb, 1 lb	1115	..	..	6
Pear	30-40	120 gm	4 lb	1120	..	..	4
P'apple Fresh, Tinned	40, 70	90 gm	4 fruit, 1 lb 3 oz	1125	..	..	2
Plum	20-30	120 gm	4 lb	1130	..	..	..
Prunes	161	30 gm	6 lb				
Raisins	247	15 gm	3 lb				
Raspberry	25	180 gm	2 lb				
Rhubarb	6	800 gm	3 lb				
Strawberry	26	180 gm	4 lb				
Sultanas	249	15 gm	3 lb				
Grapefruit juice	24	180 gm	1 pint				
Lemon juice	1.6	625 ml	½ pint				
Orange Unsweetened	38	100 ml	1 pint				
Pineapple Unsweetened	53	75 ml	1 pint				
Beetroot	30-40	120 gm	6 lb				
Carrot	20	240 gm	4 lb				
Parsnip	50	90 gm	3 lb				
Potatoes	90	60 gm					
Glucose	318	10 gm	No				
Honey	288	15 gm	more				
Sucrose	394	10 gm	than will				
Syrup	297	15 gm	give an				
Treacle	257	15 gm	O.G. of 70				
Bilberry	10 approx	Likely to be in	Up to 4 lb				
Elder	10 approx	excess of 200 gm	Up to 4 lb				

TABLE I

THE SUGAR CONTENT OF VARIOUS FRUITS

Grapes both red and white contain from	15%—35%	of sugar
Red Currants contain from	3%—7%	"
White Currants	4½%—5½%	"
Black Currants	7½%—8½%	"
Gooseberries	3½%—7½%	"
Strawberries	5%—7%	"
Apples	9%—15%	"
Plums	4%—12%	"
Blackberries	5½%—6%	"
Raspberries	4½%—7½%	"
Cherries	7½%—12½%	"
Figs	approx. 50%	"
Raisins	60%	"
Dates	70%	"

TABLE II

THE ACID CONTENT OF VARIOUS FRUITS

Grapes both red and white contain from	0.3%—2.5%	Acid
Red Currants contain from	1½%—3%	"
White Currants	1½%—3%	"
Black Currants	1½%—3%	"
Gooseberries	1%—1½%	"
Strawberries	¾%—1%	"
Apples	1%—1½%	"
Plums	1%—1½%	"
Blackberries	¾%—2%	"
Raspberries	1½%—2½%	"
Cherries	1½%—1¾%	"
Figs	Low	"
Raisins	"	"
Dates	"	"

WINE INGREDIENTS CHART

Fruit	Weight of fruit to yield 1 gal.	Preparation of fruit	Water	Acid blend	Campden tablets	Yeast nutrient	Sugar	Raisins	Pectic enzyme	Grape tannin	Wine yeast
Apples	8 lbs.	Crush	1 gal.	4 tsp.	2	1 tsp.	2½ lbs.	None	½ tsp.	¼ tsp.	1 pkt.
Apricots	3 lbs.	Destone	1 gal.	2 tsp.	2	1 tsp.	3 lbs.	None	½ tsp.	¼ tsp.	1 pkt.
Blackberries	4 lbs.	Crush	1 gal.	1 tsp.	2	1 tsp.	3 lbs.	None	½ tsp.	None	1 pkt.
Blueberries	2 lbs.	Crush	1 gal.	3 tsp.	2	1 tsp. energizer	3 lbs.	1 lb.	½ tsp.	None	1 pkt.
Sweet cherries	4 lbs.	Crush	1 gal.	3 tsp.	2	1 tsp.	3 lbs.	None	½ tsp.	¼ tsp.	1 pkt.
Sour cherries	3 lbs.	Crush	1 gal.	2 tsp.	2	1 tsp.	3 lbs.	None	½ tsp.	¼ tsp.	1 pkt.
Cranberries	4 lbs.	Crush	1 gal.	None	2	1 tsp.	3½ lbs.	1½ lbs.	½ tsp.	None	1 pkt.
Concord grapes	6 lbs.	Crush	1 gal.	None	2	1 tsp.	3 lbs.	None	½ tsp.	None	1 pkt.
California grapes	20 lbs.	Crush	None	1 tsp.	2	None	None	None	None	None	1 pkt.
Loganberries	2 lbs.	Crush	1 gal.	2 tsp.	2	1 tsp.	3½ lbs.	None	½ tsp.	None	1 pkt.
Peaches	3 lbs.	Destone	1 gal.	3 tsp.	2	1 tsp.	3 lbs.	None	½ tsp.	¼ tsp.	1 pkt.
Plums	4 lbs.	Destone	1 gal.	2 tsp.	2	1 tsp.	3 lbs.	None	½ tsp.	⅛ tsp.	1 pkt.
Raspberries	3 lbs.	Crush	1 gal.	2 tsp.	2	1 tsp.	3 lbs.	None	½ tsp.	¼ tsp.	1 pkt.
Strawberries	5 lbs.	Crush	1 gal.	2 tsp.	2	1 tsp.	3 lbs.	None	½ tsp.	¼ tsp.	1 pkt.

Note: all teaspoon measures in this table are level teaspoons.

S.A. R.H. 1968

Generally speaking, flowers and vegetables have little acid of their own and wines made from these ingredients need about 2 teaspoons of acid added per gallon. To help you estimate how acid your ingredients are, look at which ingredients fall into the low, medium, and high acid levels on the chart below:

Low Acid	Medium Acid	High Acid
beets	apples	blackberries
dates	apricots	gooseberries
figs	cherries	loganberries
rose hips, petals	grapes	quinces
flowers	juice concentrates	raspberries
herbs	plums	strawberries
dried fruits	nectarines	most citrus
elderberries	oranges	currants
pears	peaches	rhubarb
	tangerines	

RECIPES GALORE

The following are STRAIGHT recipes from which the *must* is confected in accordance with the text. All quantities are for a 1-gallon fermentation jar.

Ts. is an abbreviation for a standard size teaspoonful or part thereof.

To arrive at $\frac{1}{8}$ Ts., place a teaspoonful of crystals on a sheet of paper in the form of a rough square, and then divide it up with a knife, first into halves, then into quarters and finally into eighths.

Under the heading *Sugar*, the first figure shown is the quantity required for the confecting of the *must* and the second figure is the quantity required for the second stage of fermentation followed by the total.

The above examples will meet all the requirements of the average winemaker. With a little ingenuity anyone may create a hundred or more recipes by mixing the fruit of two or more together or by introducing the 'juice' from cereals, hips, dried fruits and so on, or by merely adding some orange peel.

EXAMPLES:

Apples	2 lb.	Blackberries	2 lb.
Cherries	2 lb.	Orange peel	$\frac{1}{2}$ lb.
Plums	2 lb.	Sloes	1 lb.
Apples	3 lb.	Barley	1 lb.
Gooseberries	2 lb.	Rose hips	$\frac{1}{2}$ lb.
Pears	3 lb.	Figs	1 lb.

And so on, *ad libitum*.

W.S-S. 1964

24 FRESH FRUIT RECIPES

	Amount (lb.)	Sugar (lb.)	Tart. Acid (Ts.)	Cit. Acid (Ts.)	Ammon. Phos.
Apples	4	1 + 1½ = 2½	$\frac{1}{8}$		
Apricots	3	1 + 2 = 3	$\frac{1}{8}$		
Bilberries	3	1 + 2 = 3	$\frac{1}{8}$		
Blackberries	4	1 + 1½ = 2½	$\frac{1}{8}$		
Black currants	4	1 + 1½ = 2½	$\frac{1}{8}$		
Bullaces	3	1 + 2 = 3	$\frac{1}{8}$		
Cherries	4	1 + 1½ = 2½	$\frac{1}{8}$		
Crab Apples	3	1 + 2 = 3	$\frac{1}{8}$		
Damsons	4	1 + 1½ = 2½	$\frac{1}{8}$		
Elderberries	2	1 + 2 = 3	$\frac{1}{8}$		
Gooseberries	4	1 + 1½ = 2½	$\frac{1}{8}$		
Grapes (ripe)	15	Nil	$\frac{1}{8}$		
Grapes (unripe)	5	1 + 2 = 3	$\frac{1}{8}$		
Greengages	4	1 + 1½ = 2½	$\frac{1}{8}$		
Loganberries	3	1 + 2 = 3	$\frac{1}{8}$		
Mulberries	4	1 + 1 = 2	$\frac{1}{8}$	$\frac{1}{8}$	
Peaches	4	1 + 1½ = 2½	$\frac{1}{8}$		
Pears	5	1 + 1 = 2	$\frac{1}{8}$	$\frac{1}{8}$	
Plums	4	1 + 1½ = 2½	$\frac{1}{8}$		
Quinces	4	1 + 2 = 3	$\frac{1}{8}$		
Raspberries	5	1 + 1½ = 2½	$\frac{1}{8}$		
Red currants	3	1 + 2 = 3	$\frac{1}{8}$		
Sloes	3	1 + 2 = 3	$\frac{1}{8}$		
Strawberries	4	1 + 1½ = 2½	$\frac{1}{8}$	$\frac{1}{8}$	

One teaspoonful

One teaspoonful

Glossary of Winemaking Terms

Acid

The sharp taste in a fruit or wine. The common acids found in fruit are citric, malic and tartaric. Citric acid is most pronounced in lemons, malic in apples, and tartaric in grapes. The one acid to avoid is acetic acid which tastes of vinegar. Acid is an essential ingredient. Without it yeast cannot ferment the sugar.

Aerobic and Anaerobic

The presence or absence of oxygen. Also a description applied to micro-organisms such as yeast, which can live with or without air.

Aerobic fermentation: Fermentation in the presence of air. Aerobic fermentation usually occurs at the beginning of the fermentation process, before the wine is transferred to an airlocked vessel, where *anaerobic fermentation* (see below) will take place. Aerobic fermentation is usually a short, vigorous fermentation.

After-dinner wines: Wines such as port, muscatel, or Malaga, often fortified, but always sweet, consumed after a meal is completed.

Aging: Holding the wine in an airlocked vessel or bottle for 6 months to a number of years in order to allow time for changes that occur after fermentation that make the wine mellow and more pleasing to drink.

Alcohol: Ethyl alcohol is the component in wine that acts as a preservative and an intoxicant. About half the weight of the sugar in the must will be converted to alcohol.

Anaerobic fermentation: This fermentation, in the absence of air, occurs in the fermentation vessel once an airlock has been affixed. Any air that was present in the bottle is quickly expelled through the airlock and replaced with carbon dioxide, a by-product of the fermentation process. Anaerobic fermentation is usually a long fermentation and the one in which almost all of the alcohol in a wine is produced.

Antioxidant: A substance that prevents excess oxidation in wine — usually ascorbic acid — added to wine at the time it's bottled. Also called a *stabilizer*. A good test to see if you need to add ascorbic acid when you bottle your wine is to pour some wine into a glass and let it sit for 24 hours. If it turns brown, add 1/2 to 1 teaspoon of powdered ascorbic acid to a gallon of wine before bottling.

Apéritif: Apéritif wines are usually dry, high-alcohol wines served before a meal as an appetizer.

Aldehydes

A group of chemical compounds formed by the partial oxidation of an alcohol. The most important in wine is acetaldehyde which is formed during the yeast fermentation and is a major contributor to the bouquet and flavour of wine.

Atmosphere: Often used as a measure of the pressure created inside the bottle of a sparkling wine like champagne. An atmosphere is about fourteen pounds per square inch, and some champagnes are under six to seven atmospheres of pressure. That's why you need special bottles for sparkling wines.

Bacteria: Microorganisms that can be found in wines or on equipment that is not sterilized. Bacteria are usually responsible for wine spoilage or for wine turning to vinegar. You can usually tell if your wine is spoiled by bacteria because it will develop unpleasant (or vinegar) odors, and often a scum will form on top of a finished wine, indicating that oxidation has taken place.

Balance: A wine is said to be balanced when the components of the wine, including alcohol content, acidity, and residual sugar, as well as the flavor components of the wine, are in harmony with each other.

Body: The texture or fullness of a wine, the way it feels in your mouth. Body probably results from the alcohol and glycerine content — not the sweetness — of the wine.

Bouquet: A complex, rich smell that develops in wines as they age. Winetasters usually pick up a stemmed glass of wine, swirl it around gently, and smell the wine before they taste it. After sipping and swallowing a wine, if you breathe out gently through your nose with your mouth closed, you'll enjoy a second aspect of a wine's bouquet.

Campden tablet: Each containing about 7 grains of potassium metabisulfate, Campden tablets are dissolved in must or wine, where they release sulfur dioxide, which acts as a sterilant and antioxidant.

Cap: A term used in two ways by winemakers. The first, most obvious definition involves sealing the bottles against outside air once fermentation is complete. Those winemakers who cap their wine usually use a capping machine to apply the caps. Most country winemakers prefer corks, which can be applied with ease. The second use of the term refers to the somewhat firm layer of grapes or other solids that rises to the surface of the must during the primary fermentation. Some recipes call for "punching a hole in the cap" to admit oxygen. The cap, as well as any sediment in the bottom of the fermentation vessel, is left behind at the first racking.

Capsule: The foil or plastic sleeve placed over the cork and neck of a wine bottle to make a secure closure and improve the appearance of the bottle.

Clarifying: The process by which the suspended particles in a wine are removed — including filtration, racking, and *fining* (see below).

Clarity: A term used to describe the transparency or clearness of a wine. Wine should be clear and sparkling, not cloudy.

Campden Tablet

A white tablet made from sodium metabisulphite which releases a gas called sulphur dioxide when dissolved. 1 tablet forms 50 parts per million of gas in 1 gallon.

Carbon Dioxide

The gas formed during fermentation. It rises in tiny bubbles to the surface of the must and bursts with a slight hissing sound. It is also formed during the bottle fermentation of sparkling wines. When it rises in the glass it is called 'the bead'.

Demijohn

The standard glass fermenting and storage jar. It has a capacity of 8½ pints (4.8 litres) and fills 6 standard wine bottles.

Diastase

A complex of enzymes which convert starch to sugar. Sometimes marketed as 'Fungal Amylase'.

Color: A broad term used to describe the hue of the wine. Wines vary from nearly colorless white wines to deep burgundy red wines with golden, pink, and all the shades of red in between. Clarity and color are part of the visual experience of enjoying wines.

Concentrates: Juices prepared commercially by removing water. In some cases, concentrates are mixtures of juices from different varieties of grapes or blends of fruit juices. Others are pure juices of one variety or kind of fruit. Be sure to read the list of ingredients or the label before using them in your wines. Concentrates packaged specifically for winemaking will tell you on the label how much wine results from that quantity of concentrate. Usually water is added even to regular-strength juices in winemaking, because they are too intensely flavored and too expensive to use in large quantities of wine. Concentrates need even more additional water.

Dessert wines: Served with desserts, these wines are usually sweet and have a high alcohol content. Fortified wines (often served with dessert) have added alcohol to balance the alcohol with the sweetness. (See *fortification*.)

Dry: The term used by winetasters to describe a wine with little residual sugar. A dry wine causes the slight puckering of the mouth that winetasters use as a criterion for measuring sweetness. Wines may be brut (very dry), dry, semi-dry, semi-sweet, or sweet, depending on the amount of sugar left in the wine once the fermentation is complete. Most dry wines have about 1 percent residual sugar, but the percentage difference between sweet and dry is slight.

Energizer: Another name for a yeast nutrient, usually containing phosphates plus vitamin B₁ (thiamine).

Enzymes: Organic compounds that make possible chemical reactions that would fail to occur if they were not present. In winemaking, enzymes are important in several chemical reactions that take place during the fermentation process. You don't have to add them, however, as they are present in the ingredients you use. (See *pectic enzyme*.)

Fermentation: The process by which yeast turns sugar into alcohol and carbon dioxide.

Fermentation lock: A device used by winemakers to prevent air from entering the fermentation vessel while allowing carbon dioxide to escape. Also called an *airlock* or a *fermentation trap*.

Filtration: The process of running wine through paper or other material to physically remove suspended materials.

Fining: A term used to describe a process of clarifying wine by removing the sediments and other agents that keep it from having a brilliant, sparkling appearance.

Ester

A volatile compound formed by the combination of an alcohol with an acid. The most common in wine is ethyl acetate, an important part of the bouquet.

Fining

The process of clearing a cloudy wine with a substance that coagulates the suspended matter and deposits it on the bottom of the jar.

Flor

A wrinkled greyish skin that forms on the top of a wine from which the air is not perfectly excluded.

Fortification

The addition of vodka or grape spirit to a wine to increase its alcohol content. Sometimes used when imitating port, sherry or madeira-type wines.

Gallon

8 pints each of 20 fl. oz. (160 fl. oz.) make 1 Imperial gallon. A so-called 'gallon jar' usually contains 8½ pints. The U.S.A. gallon consists of 8 pints each of 16 fl. oz. (128 fl. oz.). The metric equivalent of an Imperial gallon is 4.5 litres.

Invert Sugar

A simple mixture of the two mono saccharides fructose and glucose, sometimes called levulose and dextrose. Invert sugar is immediately fermentable and is widely used in brewing beer.

Invertase

An enzyme secreted by yeast and which by its presence causes sucrose to separate into fructose and glucose. Its proper name is sucrase.

Fixed acids: Acids generally present in grapes and other fruits — such as malic, tartaric, citric, tannic, and phosphoric acids. They are called *fixed* because they are nonvolatile.

Flocculation: Name given to the process of coalescence and settling of yeast cells into a firm deposit.

Fortification: The process of adding distilled spirits to a finished wine in order to increase its alcohol content, keeping qualities, or flavor.

Hydrometer: A device used to measure *specific gravity* (see below) in order to determine alcohol content or potential alcohol content of wine. Using a hydrometer allows the winemaker to adjust the amount of sugar in the must for greater control of the sweetness or dryness of the wine. Hydrometers are available from many winemaking-equipment suppliers and come with complete instructions for their use.

Lees: Sediment made up of precipitated solids and dead yeast cells that collect in the bottom of a fermentation vessel in wine-making. Occasionally, if you're careless about racking or if you bottle just a little too soon, you may also find lees in your bottled wines.

Mead: Any wine whose primary energy source (sugar) and flavor are derived from honey. Honey wines need added yeast nutrients to complete the fermentation process, since these are not present in sufficient quantities in the honey itself.

Melomel: Any wine based on honey whose primary flavor is derived from fruit.

Metabisulfite: Sodium or potassium metabisulfite releases sulfur dioxide as a sterilant or antioxidant when added to must or wine in the form of crystals or a Campden tablet.

Metheglin: Any wine based on honey whose primary flavor is derived from herbs or spices.

Must: The term used to describe wine in its beginning stages, when there are large fruit particles, yeast, and juice present in the mixture.

Mycoderma: A spoilage organism that consumes alcohol and in the process impairs the flavor of the wine.

Nose: The aroma or bouquet of a wine, the smell that is released when the wine is swirled around in a wineglass or warmed by the heat of the sipper's hand. A good "nose" is part of the enjoyment in wine drinking.

Palate: A term often used by winetasters to describe the taste experience of a wine.

Malo-Lactic Fermentation

Malic acid is converted into lactic acid and carbon dioxide by lactobacilli in un sulphited wine. It usually occurs during storage and sometimes causes a blown cork. Lactic acid is less sharp tasting than malic acid and so the flavour of the wine is often improved.

Nutrient

The name given to yeast food. It consists mainly of ammonium phosphate, vitamin B1 and traces of minerals, salts and amino acids.

Pectic enzyme: An enzyme often added to wine to digest the pectin in the solution. Winemakers use pectic enzyme to convert pectins to sugars, because otherwise these waxy substances stay suspended in the wine and cause cloudiness.

Pectin: A substance present in some fruit, particularly underripe fruit, that is responsible for the jelling action in jams and jellies. In wines it stays suspended and causes cloudiness. It can be eliminated by pectic enzyme.

pH: This term is used to describe the relative acidity of a solution. Since some acidity is desirable in wine, a pH below 7 is wanted; a pH above 7 (neutral) indicates a basic solution.

Press: a device for forcing juice out of fruit pulp

Primary fermentation: Occurs in the presence of air and is also called *first fermentation* or *rapid fermentation*. The most energetic of the fermentation processes, the primary fermentation quickly converts sugars to alcohol and carbon dioxide, causing a rapid drop in *specific gravity* (see page 163) in the solution. The length of and ideal conditions for the primary fermentation depend on the kind of wine that's being made. (See *aerobic fermentation*.)

Proof: A term used to describe the alcohol content of wines and spirits. It is equal to twice the percentage of alcohol in the solution, hence a wine with 10 percent alcohol is a 20-proof wine.

Racking: The name given to the process of syphoning cleared wine from a fermentation vessel into a clean container. Racking gives wine its clarity, as fruit solids, impurities, and yeast residue are left behind in the sediment.

Residual sugar: The amount of sugar left in the wine after the fermentation is complete. In wines, fermentation stops either when all of the available sugar has been used up, or when the concentration of alcohol reaches a point at which further yeast growth is inhibited. The residual sugar that remains gives the wine its sweetness.

Rosé: A pink wine, usually made by allowing only part of the first fermentation to take place with the skins of red or purple grapes in the must. The skins are removed before they impart their full color to the wine.

Secondary fermentation: The slower, second fermentation, which takes place in the absence of air, creating more alcohol as the yeast grows. (See *anaerobic fermentation*.)

Specific gravity: A term used to describe the density of a solution. When the wine has not yet begun the fermentation process, the specific gravity is high due to the suspended sugar particles in the must. As the wine ferments, the sugar is converted to alcohol and carbon dioxide, and the specific gravity of the solution lowers. Specific gravity can be measured with a *hydrometer* (see above), a device many winemakers use to determine the alcohol or potential alcohol content of wine.

Proof

The measure of alcohol in wine, liqueur or spirit. 100% Proof is equal to 57.06% alcohol by volume. Wines or liqueurs that are 30, 40, 50, etc degrees proof are that percentage of 57.06%. It follows that a wine that is 21° Proof contains 12% alcohol by volume.

Saccharomyces Cerevisiae: Variety Elipsoideus

The true wine yeast marketed for use by home winemakers in a variety of different strains.

Sparkling Wine

One in which a secondary fermentation has created a pressure of carbon dioxide which is released when that wine is poured.

Stuck fermentation: Term used to describe a fermentation that stops without having converted all the available sugar to alcohol, usually due to some imbalance in the winemaking ingredients.

Sulfites: Sulfur residue left over from the chemical reaction that produces sulfur dioxide when a Campden tablet is added to wine, for example. Usually harmless in the minute quantities in which it occurs in wine, but may cause allergic reactions in some people.

Sulfur dioxide: A gas released by Campden tablets and other metabisulfites that sterilizes and prevents oxidation in must and wine; the gas dissipates, but the chemical reaction produces sulfur salts, or sulfites, which remain in the wine.

Sweet wine: Any wine that has enough residual sugar — usually more than 1 percent — to give it a sweet taste. (See *dry*.)

Table wine: A wine that is served with meals. It may cleanse the palate, stimulate the appetite, and provide subtle contrasts with the food flavors. Any wine that helps accomplish these things — in short, any wine whose flavor, bouquet, and consistency pleases you — may be served with food. Usually white wines are served with light-colored meat or fish, rosés with chicken or other poultry dishes, and red wines with red meats, such as steak or roast beef, but these choices represent popular preferences only, not hard-and-fast rules.

Tannin: An astringent substance found in grape pips and stems, oak leaves, and tea. Needed in small quantities to improve the keeping quality of wines and to provide balance.

Topping up or topping off: The addition of a sugar-and-water syrup or wine from a reserve supply to fermentation vessels to keep the container full. The process reduces the possibility of oxidation. Also used at the bottling stage to completely fill a bottle.

Yeast nutrients: The substances that yeasts must have in their “diets” so that they remain healthy and growing. Some country-wine recipes, especially for some of the honey-based wines, are deficient in naturally occurring yeast nutrients, so these must be added in order for the yeast to continue to grow and produce alcohol from the sugars present in the must.

Sulphite

The short name for both sodium and potassium metabisulphite. The sulphite kills weak bacteria, moulds, fungi, wild yeasts etc., and inhibits the growth of others. It prevents oxidation and is more effective when used in conjunction with citric acid. It is used for sterilising equipment as well as for must and wine. See also *Campden tablet*.

Yeast

A botanical cell, invisible to the naked eye, which secretes enzymes which act as catalysts in reducing sugar to alcohol and carbon dioxide. There are many different varieties of yeast of which only a few are beneficial to the winemaker and brewer.

Wort

The name given to a liquid prior to fermentation into beer.

Zymase

A complex of enzymes secreted by yeast and which by their presence cause fructose and glucose to be reduced to alcohol and carbon dioxide.

TOXIC FLOWERS

Among the herbs and plants mentioned in herbals that are not recommended for winemaking are the following. As always, if in doubt about the safety of any plant, do not use it.

Bryony, White	Horehound, White	Mouse-ear
Chestnut, Sweet	Horseradish	Mullein
Cudweed, Marsh	Horsetail	Plantain
Echinacea	Ipecacuanha	Pleurisy Root
Ephedra	Irish Moss	Ribwort
Euphorbia	Jimson Weed	Squill
Garlic	Linseed	Sundew
Germander, Wall	Lobelia	Valerian
Grindelia	Lungwort	Wild Cherry Bark
Henbane	Marshmallow	

Q. I'm concerned about making wines from flowers and herbs because I know some of them are poisonous. You mention oleander and lily of the valley. Are there other plants that I should avoid?

A. Yes. The area of greatest concern is probably flowers. Since most people use flowers only for decoration, written information about them doesn't usually say whether they are toxic in food or beverages. Here are some plants to avoid ingesting: acacia, alder, aquilegia, azalea, belladonna, black nightshade, bluebell, buttercup, carnation, chrysanthemum, columbine, Christmas rose (hellebore), clematis, cotoneaster, crocus, cyclamen, daffodil, dahlia, delphinium, foxglove, geranium, hemlock, henbane, holly, honeysuckle berries, laurel, lilac, lobelia, lupins, marsh marigold, meadow rue, mistletoe, monkshood, peony, poppy, rhododendron, rhubarb leaves, and sweet pea. There are undoubtedly others, so, as we said earlier, a good rule of thumb is: if you're not sure, don't use it. In addition to these plants, avoid fungi of any kind, even mushrooms, and be sure to check an herb encyclopedia before you make herbal wines; the properties of herbs are usually well documented.

Personally I wouldn't use the potato either as part of its alcohol Production is methanol

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