Report by David Cowderoy – WineSkills Still Wine Production Mentor, August 2012

This report is comes after a visit to 10 wineries throughout the UK during August 2012. The comments are based on the observations at these wineries, from discussions with other UK wineries and from previous mentoring visits.

HARVEST 2012

As would be expected, the expectations for harvest volumes this year are pitifully small. The financial implications aside, there are also several key winemaking consequences of the bad weather then need to be taken into account.

Variability of ripening

The cool weather and extended flowering period has led to considerably variation in ripening, within a row, on a vine and within a bunch. There are various implications for quality and winemaking.

The normal practice of berry sample for assessing crop maturity may lead to significant inaccuracies. The very small berries can sometimes ripen much more rapidly, as was seen in 2011. In addition small unripe berries can bring the average down. It is hard to obtain a representative sample by trying to take the correct mix of small and normal berries. Taking whole bunch samples should give more accurate results, although at least 10 bunches from across the parcel will be necessary. Remove all the berries from the bunches before processing the fruit and analysis of the juice.

The less ripe, or unripe berries will be harder to press. With whole bunch pressing the first juice to be extracted will have a higher sugar level, from the riper grapes and so a quality selection can be made at the press. For still wines, consider using whole bunch pressing or set the jaws of the crusher wide to enable whole berry pressing.

Phenolic maturity of red varieties

Unless September is significantly warmer than the seasonal average, it is likely that harvest will be much later than normal. It is very probable that red varieties, particular later ripening varieties, will not achieve proper phenolic maturity. The unevenness of ripening will exasperate this problem.

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When making a crop maturity assessment, check also the phenolic maturity. Taste the skins, crunching then between the teeth to determine if the tannins are green/astringent and unripe. Examine the seeds; if they are very green then the tannins will be green also. Browning of the seeds is an indication of maturity.

For vinification of red wines from unripe grapes it will not be possible to produce a full bodied style. Consider instead a light style with a short fermentation on skins or using carbonic maceration. In such a cool year, producers should also consider only making rosé from the red grapes.

Acid levels

It is to be expected that acid levels will be very high. I would advise getting a malic acid analysis on at least some of the varieties, if not all. With very high malic acid levels if may be necessary to perform double salt de-acidification, even if malo-lactic fermentation is intended later. With high malic acid wines not only will mlf be more difficult to accomplish but there is the risk of excessive lactic characters in the wine plus high diacetly and acetoin levels.

Consider also using yeast that has some ability to metabolise malic acid. For instance Lalvin 71B and IOC 11-1002 and Laffort Actiflore Cerevisiae all of which, under the right conditions, can metabolise over 30% of malic acid.

Frost risk

Be wary of leaving the grapes too long on the vine to ripen. If there is a severe frost, the skins of the berries will become damaged with severe consequences. The day following a frost it will be possible to process the grapes without any major problems. However thereafter, the damaged skins will start to oxides and turn brown. The wine form frost affected fruit will have a characteristic of stale biscuits/dog biscuits that is almost impossible to remove or treat. The only successful treatment is carbon fining of the juice, but this will result in a wine which is neutral and almost colourless.

PRODUCTION ISSUES

Skin contact

Various growers have asked me about skin contact and the pros and cons for still wine production. Flavour compounds in the skin will be increased and done properly this can be a very useful tool for enhancing quality, especially with aromatic varieties. There are various important factors to consider:-

- The maximum advisable skin contact time is a direct function of temperature
  - >20°C – skin contact not advisable
  - 15 - 20°C – up to 6 hours. The norm is 3 to 4 hours.
  - 10 – 15°C – up to 12 hours with the norm 6 to 8 hours
  - <10°C – not advisable as it can result in green, vegetal characters.
- Adding pectolytic enzymes specifically designed for skin contact will reduce this time by 25%.

- Do not perform skin contact with mould affected fruit. A little noble rot is acceptable but even a small percentage of fruit affected with secondary pathogens can cause mouldy, mushroom like characters.
- In addition to increasing flavour compounds, skin contact will also increase phenolic extraction and so astringency. Preferably treat the juice and then make fine tuning to the finished wine. Finning agents such as PVPP, casein and isinglass work well and often a mix of all three better than one on its own.
- Avoid skin contact with grapes that are very unripe. It will only enhance the vegetal/green characters
- Varieties that respond well to skin contact are Bacchus, Schoenberger, Pinot Gris, Huxel and those that already have a high aromatic intensity. Those with a moderate intensity such as Reichensteiner, Madeleine Angevine and Chardonnay perform less well as the need to fine often outweighs the advantages of skin contact. Neutral varieties such as Seyval Blanc do not perform well.

Pre-fermentation bentonite addition

The current practice of most wineries in the UK seems to be that protein stabilisation is done relatively soon to bottling. Some of the 'shock' effect of this can be avoided by making additions much earlier on in the process. In addition if done before fermentation only grape origin proteins (unstable) will be removed and not yeast produced proteins (stable). This has an implication for foam stability in sparkling wines.

The optimum time to add bentonite, is to the juice after pressing and after the pectolytic enzymes have had sufficient time to work (enzymes are a protein which will be removed by the bentonite).

Sodium-Calcium bentonite works best as it has moderate protein removal capacity but also settles down relatively fast. Calcium bentonite settles very rapidly but has a very low ability to remove protein. Addition of sodium bentonite pre-fermentation is not advisable as the time required for settling is considerable, greater than that necessary for cold settling. The loss through lees will be significant.

If a winery does not have refrigeration, then only use bentonite pre-fermentation if the juice temperature is naturally very low; below 10°C. It will be necessary to leave the juice for 24hrs or more to settle. If the juice is above 10° then sodium bentonite could be added towards the middle of fermentation.

Calculating the required dose depends on prior experience with each different variety. If, post fermentation, a variety normally needs 40g/hl of Sodium Calcium bentonite then an addition pre-fermentation of 80% of this is pragmatic. If sodium bentonite is normally used post ferment then the equivalent amount of sodium calcium bentonite could be use pre-ferment (as it is less active).

It will still be essential to perform protein stability tests post fermentation. Even if it is still necessary to treat the wine, the dose rate will be much reduced and so a reduced impact on the wine.

Yeast nutrition

The approach of most wineries to yeast nutrition is still fairly rudimentary. Some only treat when there is a problem with H_2S during fermentation. Some add DAP early on in the fermentation and hope for the best. There are several key ways in which this approach can be improved.

- Correct yeast re-hydration and acclimatisation is absolutely essential for ensuring an optimal ferment. Yeast is a facultative anaerobe which it means that it can only survive without oxygen for a limited period of time and there are compromises to its metabolism. The use of micro-nutrients in the water prior to re-hydration is very effective in ensure the yeast is in the best possible condition for fermentation.
- Lack of nitrogen is most evident from the production of H_2S. However insufficient levels also give rise to lower aromatic compounds in the final wine. Correct levels are necessary to enhance the aromatic qualities.
- DAP is a source of ammonium nitrogen which is rapidly taken up by the yeast but cannot be stored within the cell. Reduction problems will be temporarily solved but there will be an associated increase in yeast activity and yeast biomass. A better approach is to make numerous small additions.
- There are commercial preparations available which are a source of nitrogen as amino acids. These can be stored in the yeast cell and so are longer term sources of nitrogen. Replacing DAP additions with one of these will give better results.
- A more precise approach to managing yeast nutrition is to analyse the juice for Yeast Available Nitrogen (YAN). With this information and the nitrogen requirement of the yeast strain chosen, additions of nitrogen can be pre-programed.

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