Delestage

An Attempt to Balance Flavor and Finish

by Dr. Tom Cottrell

Delestage is a great French word, pronounced 'del-ess-TAHJ,' meaning a specific fermentation management process for red wine. It is also known as "rack and return." Originally aimed at shortening the time for red wine to reach the market, *delestage* certainly moves the wine in the right direction, but not all the way. However, extended maceration, also aiming at faster maturity, could work with *delestage* and standard fermentation manipulations to achieve not only a wine ready for market early, but with high quality and aging potential.

***Delestage* Defined:**

Delestage means the process of fermenting red wine with skins and seeds, and doing sub-heroic treatments to the fermenting mass to insure not only a complete fermentation, but to achieve a finished wine with good fruit, soft tannins and stable color. Part of the motivation to study and to perform the process called *delestage* is the advancement of the date of marketability of the red wines treated this way. Simply put: *delestage* may enhance not only wine quality, but cash flow as well. Professor **Bruce Zoecklein** at **Virginia Tech** has done some excellent research on the quality of the results of this process. In detail, the *delestage* procedure is as follows:

1) The de-stemmed and crushed red grapes are pumped or dumped into a fermenter. The fermenter is usually open-topped, and equipped with a drain valve at the edge or the center of the tank bottom.

2) The fermentation is begun in the standard way.

3) The *delestage* really starts here: the first step is to drain the tank through a bottom valve, into an intermediate container by letting the juice/wine flow freely across a screen to capture and remove some of the seeds, a step known as seed deportation. (Seed deportation is not really a part of the word *delestage*. However, seed removal is so important in the improvement of the wine that I think of it as an integral part of the process.)

4) From the intermediate container, a pump then sends the juice/wine to a second tank.

5) This trip is done with some fanfare: the wine entering the second tank goes in over the top to become aerated, read that 'sprayed,' into the receiving tank. Magnificent aromas fill the fermenting room as a result.

6) The seed-catching screen is emptied as necessary to keep a good flow without spilling the juice out of the screen or the small intermediate container.

7) After all the juice/wine has been removed from the starting tank it is, in fact, returned to starting tank, where the huddled mass of grape skins waits.

8) The returning wine also goes in over the top, with spraying, to accomplish a second aeration.

Whether the *delestage* process is performed once a day, or twice a day, or every other day, seems to vary from winery to winery. The amount of seed deportation varies as well, being somewhat dependent on the slope of the tank bottom and the location of the drain valve used. The fermentation is normally completed in five to seven days.

Benefits of the Process

Several beneficial things occur in this process:

First, in any red fermentation the major reason for disturbing the fermenting must (grape pulp and skins) is to re-distribute the heat being produced by the yeast while it converts sugar into alcohol and carbon dioxide. That is what both punching down, or '*pigeage*,' pronounced 'pidgee-AHJ,' and the alternative process, pumping over, are all about. Formation of bad flavors on theas extended maceration was more in vogue, designed to achieve some of the same results: the combination of early marketability and improved wine quality. In this method, after the normal management of red wine fermentation, as the fermentable sugars were nearly consumed, the winemaker would seal the red wine tank with all the must and seeds inside, providing only a vent for the final blasts of carbon dioxide to escape. And wait. Different producers processed the pomace (fermented must) at various lengths of time after closing the tank.

The measurements I observed in my fermentations were that the tannin components continued to increase over 14 days or so, and then stabilized. At that day 14, the wine was the harshest in its history. During the next two weeks, the chemically measurable amounts of tannins would remain constant, but the harshness of the wine, as perceived by tasters, would decrease gradually.

At the 30-day point, the rate of change was slow, and therefore the date for pressing was not very critical. At one winery, the pace was so relaxed that the extended maceration went on for 90 days! With the tank lid closed, and with no peeking allowed, there seemed to be no hazard of forming acetic acid, or vinegar, on the top layer of the wine/pomace. However, during such a long contact time, the seeds gave up a lot of harsh tannins to the immediately surrounding wine. The wine at the bottom of the tank was extremely bitter and harsh. Fortunately, the tannins were sequestered in a small amount of wine in the immediate vicinity of the seeds.

When it was time to draw off the wine, a gentleman named **Jack Gerstenberg** was given the task of tasting the highly tannic, bitter effluent from the bottom outlet, to determine when the majority of the tannin over-dosed wine was removed. He performed this tasting penance chore for a while, and finally signaled that the wine was soft. That point of noticeable decrease in tannins is now known at this winery as "The Gerstenberg Cut-off."

The high tannin fraction of the wine was set aside in a small container. It then went through a self-fining that greatly reduced its harshness, to the point that this small portion could be blended back into the main batch with no ill effect. Here, the self-fining is taken to mean that the harsh molecules formed into combinations that precipitated or were soft enough to be acceptable.

In Concert

In normal extended maceration, the pressing is done close to day 30, with the result that color and fruit are quite alive and the tannins are quite soft. Both *delestage* and extended maceration achieve a part of the desired result, but each accentuates only a part of the wine development. *Delestage* does well to introduce oxygen into the early process to stabilize fruit and color, and to encourage the joining up of harsh tannin molecules into bigger, softer ones. *Delestage* also minimizes the impact of seed tannins. On the other hand, extended maceration is sparing of oxygen in the early part of fermentation with either *pigeage* or pumping over for heat re-distribution. In the extended skin contact period all oxygen addition is stopped, and development of larger, softer tannin molecules goes on anyway, in the presence of grape skins and pulp, in a process that is still not well understood.

Meanwhile, with standard fermentation practices, wines are produced with less fruit and color than *delestage* can elicit, but with harsher tannins than either *delestage* or extended maceration develop. However, the mid-palate sensation, or body, is fuller, more mouth filling, than either of these other two methods can generate.

Future Trials

What sort of experimentation should be done in 2003? I hope to see some combinations of these methods. For instance, I would like to see a process that starts with *delestage*, switches to punch-down or pump-over part way through and concludes with extended maceration. If this is done with a system that is very good at seed exportation, with a good slope to the tank bottom, then the less-than-desirable seed tannin fraction might be avoided during the extended skin contact period. The success of such a system will have to be augmented with some time in barrels to allow settling of the fine particles that coalesce in red wines, followed by a cold stability treatment. I expect that a red wine treated in this manner will be ready to bottle in mid-spring, and be drinkable by early summer. Potentially, nice cash flow acceleration. I also expect that the wine will have the tannins to be both mouth-filling and to age well. **wbm**