

Controlling Astringency of Norton Wines

There are two apparent reasons that Norton grapes are popular with Georgia growers. They are native grapes and are more resistant to diseases than vinifera grapes; and winemakers want to produce products that are regional specialties. There is a long history of American winemakers trying to exploit the positive features of Norton grapes. The results have been and presently are mixed. I believe that the principal feature of Georgia Norton wines that makes them relatively unapproachable for the public is their astringency. My admittedly limited survey of local winemakers has revealed a number of approaches to dealing with the astringency problem. The most successful approach that I have encountered was presented at Three Sisters Winery last spring at the end of our pruning workshop there when attendees were invited to taste their Cynthiana (which they prefer to call what many others call Norton) that had been processed by their new micro-oxygenation system. As an approach to taming astringency the wine was a complete success. They pointed out, however, that micro-oxygenation systems are quite expensive. It therefore seems unlikely that this approach would have wide appeal because it is doubtful that one could soon recover the expenses of such a system by profits gained by selling non-astringent Norton. (There are far more uses of micro-oxygenation systems than reducing astringency. For an overview see Zoecklein's tutorial at http://www.apps.fst.vt.edu/extension/enology/downloads/wm_issues/Microoxygenation/Micro-Ox%20-) A second approach to taming astringency that other local winemakers use is a far older and less precise form of controlled oxygenation, i.e., aging the wine in oak barrels. Aging in oak certainly improves the wine, but the process is expensive, time consuming, and it does not lend itself to controlled reduction of astringency. A third approach making Norton wines more approachable is to blend them with other wines, usually those made from Bordeaux grapes. With this approach the reduced astringency that is achieved appears to be produced by dilution and perhaps by masking of the astringent agent by the added wine. In my experience this reduction is seldom far from completely satisfactory, but the blends can be far more appealing when the astringency in the Norton has been eliminated prior to blending. The approach that I suggest for removing the astringency is to use a fining agent.

Some fining agents have long been recognized to reduce astringency. It has also been long known that some fining agents can remove desired properties from wines. Vendors of fining agents routinely warn that it is necessary to do bench experiments to determine the appropriate dosage for achieving desired effects while minimizing unwanted effects. The necessity of such experiments may account for many winemakers' reluctance to attempt to control astringency in Norton wines using fining agents. In fact, such tests can be performed easily and quickly. Preliminary experiments have shown that fining agents can be used as a means of reducing or eliminating astringency with no or only negligible effects upon complexity or other positive features of the wines.

Three well established fining agents that work well are readily available in super markets. They are lactose-free milk (which is also non-fat), pasteurized egg whites, and non-flavored gelatin. The first two can be used directly from their cartons. A solution of gelatin can be prepared by sprinkling it onto the surface of an appropriate volume of room temperature water to produce the desired concentration and gently heating the water to ca. 80 degrees C with stirring. A desired volume of the fining agent is added to a small volume of wine (e.g., 50 ml) and stirred to uniformly distribute it throughout the wine. (Suggested final concentrations of fining agents in wine are: 500 mg/L eggwhite; 200 mg/L gelatin; 1.5 ml/L milk.) All three of the suggested agents flocculate when added to the wine but nevertheless bind to the astringent component in the wine (presumed to be a polyphenol). After 5 minutes the wine can be passed through a coffee filter and is ready to taste. Serial changes in the concentration of the added fining can then be done to achieve the optimal

concentration. Astringent agents produce an unpleasant sensation in the mouth and also quickly render the palate incapable of discriminating subtle differences between subsequent samples. The unpleasant sensation and the indiscriminability can largely be reversed by taking a sip of milk following tasting samples that are stringent. This makes it possible to test concentration effects without having to wait long periods for one's palate to recover.

It is necessary to follow federal regulations regarding concentrations of fining agents when deciding upon which suits one's needs. For example, my preliminary experiments suggested that 1.5% V/V of milk was necessary to completely remove astringency from the wines that I tested. This is noteworthy because the table of approved fining agents the Electronic Code of Federal Regulations web site (https://www.ecfr.gov/cgi-bin/text-idx?c=ecfr;sid=53560be2959a30d383d60a5f1b5e9094;rgn=div5;view=text;node=27%3A1.0.1.1.19;idno=27;cc=ecfr#se27.1.24_175) indicates that the maximum permitted milk concentration is 1%. However, there is no limit given for concentration of potassium caseinate, a salt of casein, the predominant protein in milk. Like casein, gelatin is rated as GRAS and no limit is given for the amount that may be used. The permitted concentration of egg white in the table assumes that it is prepared from powder, which may make it troublesome to calculate the equivalent concentration of liquid egg white obtained from a super market. It may simply be preferable to obtain the fining agents of choice from vendors that specialize in wine making supplies.

Filtering treated wine used in bench tests facilitates the testing process but when making large batches of wine filtering can be troublesome but is probably not necessary. One needs only add the fining agent at the concentration that was found to be optimal in the bench tests and rack the cleared wine when it is appropriate. It seems prudent to do a small scale tests to determine whether leaving a chosen flocculated fining agent in the wine long enough for it to form sediment produces a different end product than does the brief exposure period suggested above for use in bench trials.

An article concerning the virtues of Norton (Cynthiana) grapes appeared in WineMaker magazine in 2006 and is available on that website. (<https://winemakermag.com/534-norton-grapes-an-american-original>) There are several points made in that article that are of interest in the present context. Perhaps the most interesting point was that the demand for Norton wines by the public in Missouri exceeded the then current production levels. That is the kind of problem that Georgia growers would like to have. The second point of interest may help account for the popularity of the Missouri wines. That point was the assertion that Missouri Nortons are not astringent. It was pointed out that there can be marked qualitative differences in Norton grapes, depending upon where they are grown so it could be that Norton juice grown in Missouri lacks astringency. Evidence that this is not so is found in a thesis done at the University of Missouri. ([https://search.proquest.com/openview/f7e1a16bdb7a2cf01b178c2ab206978d/1.pdf?pq-origsite=gscholar&cbl=18750&dis.\(s=y\)](https://search.proquest.com/openview/f7e1a16bdb7a2cf01b178c2ab206978d/1.pdf?pq-origsite=gscholar&cbl=18750&dis.(s=y))) The study reported in that thesis was of the development of flavanoid compounds in Norton grapes. It included the statement that astringency of the wine was controlled using tannins. Details of that process were not included but it indicated that Norton grapes grown in Missouri are astringent. The use of tannins to control that astringency is an example of the fact that there are other agents than those mentioned above that can be used to increase the approachability of Norton wines. For example, the Scott Lab web site asserts that highly polymerized tannins are effective for controlling astringency. The purpose of this communication is to point out to Georgia growers that it is easy, cheap, and nearly effortless to reduce or eliminate astringency in Norton wines. The hope is that if this is done there will be greater demand for the wines.