

Commercial Winemaking Production Series

Cork Quality Control

Winemakers should check carefully for tainted corks

By Christian Butzke

Enology Professor

Department of Food Science
Purdue University

butzke@purdue.edu

The rate of cork taint — the musty, moldy off-odor in wine, stemming by and large from the growing, processing and shipping of natural bark corks — has been significantly reduced in recent years. This significant development within the wine industry is due to pressure from winemakers and subsequent improvements in the production process and quality control at cork manufacturers, distributors, and associated wine laboratories. In the mid-1990s, the taint rate was estimated between 3 percent and 5 percent of bottles, about one in every other case. As a consequence, by 2009, at Purdue's Indy International Wine Competition, the use of bark corks as bottle closures had dropped to less than two thirds of all 3,000+ entries, as winemakers switched to synthetic corks and screw caps. The problem of TCA (2,4,6 trichloroanisole), the main impact component for cork taint, has not completely disappeared,

much to the dismay of winemakers and consumers alike. So if your winery continues to have problems with tainted closures, below are the proper sampling procedures to keep the taint rate below 1.5 percent. This translates into one out of 67 bottles, an occurrence that — even for a “super core” consumer who drinks wine at least several times a week— will be rare enough to be arguably acceptable.

Sampling protocol

Simply put, if one wanted to assure that only one in 67 corks is bad, one would have to sample at least one out of 67 corks. In larger lot sizes, the actual sampling size increases slightly to decrease the statistical probability of accepting a large lot of tainted corks. For each 5,000-cork bale and when using the simplest fixed-sample-size plan applicable to wine closures (ANSI/ASQC Z 1.4-1993 sampling plan for normal



A wine bark cork after 30 years in a bottle

inspection, general inspection level I; supplier with good track record), the winemaker has to sample, soak, and sniff 80 corks. If four or more of those 80 corks were tainted, the lot should be rejected and sent back to the supplier.

Corks are a natural and renewable product from the bark of the cork oak tree. Therefore, the sampling of such a naturally variable part of wine packaging cannot be compared to, e.g., ammunition, which is mass-produced by precision machinery. Using reduced sampling protocols — such as the old military specs MIL-STD-105E, which may be applicable to M16 bullets — will not work for wine corks.

Cork soaking

Medium:

- Dilute 40 percent alcohol (80 proof) generic vodka to 10 percent alcohol by volume with distilled water (1 part vodka plus 3 parts water).

Procedure:

- Place ONE cork in a 50 mL disposable centrifuge tube.
- Fill with vodka-water mix; close.
- Soak for 24 hours at room temperature.
- Smell opened tube for musty, moldy TCA off-odor.
- Discard tube, cork, and testing solution.

Advanced sampling protocols

More flexible but slightly more involved quality control plans include the recommended Fraction Defective Sampling Plan, and the Sequential Probability Ratio Test. All three plans are valid as long as the protocols are applied correctly. None of the above plans can circumvent the principles of applied statistics.

Outsourcing

Few winemakers are likely to have the time to sample and test 80 corks for each 400 cases of wine they

bottle. Any sampling shortcuts, however, are a complete waste of the enologist's time. If the winery lab does not have the time or resources to conduct a full sampling and sensory evaluation test, then the burden must be passed on to the manufacturer or distributor of the closure. Both trust and verification are essential to a lasting relationship between winemaker and closure manufacturer. The perfect closure is what makes wine different from all other beverages, complements its special value-added image, and remains a conversation topic in itself among educated consumers. However, it should never compromise the great work that the winegrower and winemaker have created.

Tasting room staff training

Finally, it is crucial that the tasting room staff is trained to recognize TCA immediately when a new bottle is opened, as it could affect up to 25 potential customers who taste their 30 mL sample of a tainted wine. An appropriate training protocol can be found in the publication below, which also includes detailed sampling options:

Cork Sensory Quality Control Manual

C. Butzke and A. Suprenant

University of California ANR Publication Number: 21571

ISBN-13: 978-1-60107-343-3, Copyright Date: 1998

<http://books.google.com/books?id=uTQEEAWTKFkC&printsec=frontcover>

Reviewed by:

Richard Linton

Professor of Food Science and

Director of the Center for Food Safety Engineering

Department of Food Science, Purdue University

Bruce Bordelon

Viticulture Professor

Department of Horticulture & Landscape Architecture, Purdue University

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