

Organic Wine Production – Cross Contamination with Pesticide Residues Caused by Filtration

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Introduction

Since 2002, the federal state of Baden-Württemberg in southern Germany has been conducting a special monitoring program on organic foods. As conventionally grown wine grapes are one of the crops most extensively treated with pesticides, CVUA Stuttgart monitored organic wines as well as conventional ones for comparison.

Previous Analyses and Results

From 2007 to 2010, wine grapes and wines/musts were analyzed for residues of more than 550 different pesticides and metabolites using the QuEChERS method. The analyses showed that wine made from organically grown wine grapes in wineries which exclusively process organic grown grapes contained either no detectable residues or only very small amounts of pesticide residues ($<<0.01$ mg/kg).



In 2010 and spring 2011 the focus was then on organic wines that were produced in wineries handling both organically and conventionally grown grapes. In contrast this survey showed a comparatively high amount of organic wines with striking residue findings (≥ 0.01 mg/kg). The level of detected residues was comparable to the residues usually present in conventional wines, both in type and amount.

Former studies have shown that if good agricultural practices are employed in conventional production the neighboring organic produce will not be affected. Therefore, in 2011 CVUA Stuttgart started to investigate causes of cross-contamination in wineries which produce both organic and conventional wine.

Summary

The experiment demonstrated that filtration by membrane filter can cause significant cross contamination with pesticide residues, if the same filter is used for both conventionally and organically produced wine. Only after intense cleaning of the filter was the contamination significantly reduced.

Literatur

<http://www.cvuas.de>

Experiment

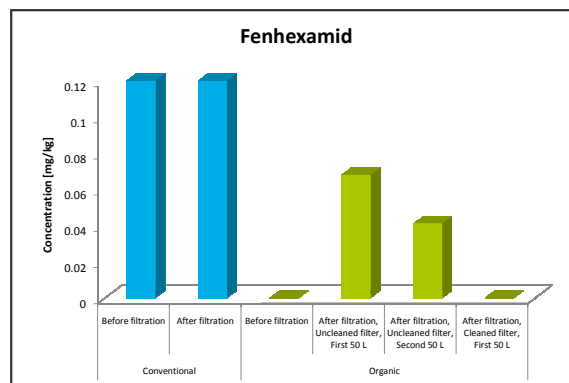
First of all the filtration step was checked as one possible cause of cross-contamination. For this purpose a wine made from conventionally grown grapes was filtered with a membrane filter. Directly afterwards, a wine made of organically grown grapes was filtered with the same uncleaned membrane filter. Samples of different volumes of wine were taken before and after filtration. After an intense cleaning step the same organic wine was filtered again.

Results

The following figure shows the residue amounts before and after filtration of conventional and organic wine

Processing and Sampling step	Conventional		Organic			
	Before filtration	After filtration	Before filtration	After filtration	After filtration	After filtration
				Uncleaned filter	Uncleaned filter	Cleaned filter
			First 50 L	Second 50 L	First 50 L	
Concentration	mg/kg					
Boscalid	0.025	0.021	-	0.021	0.019	0.004
Cyprodinil	0.018	0.01	0.004	0.018	0.008	0.003
Fenhexamid	0.12	0.12	-	0.068	0.041	-
Fludioxonil	0.005	0.002	0.001	0.003	0.002	-
Iprovalicarb	0.013	0.013	-	0.004	0.003	-

Cross-contamination of organic wine after filtration using the example Fenhexamid



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