



Wine Taints Originating in the Vineyard



The following is a recap of the talk given by Linda Bisson,
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Sources of Vineyard Taints

- ◆ Grapes
- ◆ Vineyard residues
- ◆ Vineyard microbiota
- ◆ Harvest contaminants

Grape Taints

- ◆ Undesired varietal character
 - Vegetal taints
 - Floral taints
 - Mushroom taint
- ◆ Atypical varietal character
 - Atypical aging characters: concord grape notes
- ◆ Non-typical character
 - Smoke taint

Vegetal Taints in Wine

Food- related

- ◆ Bell pepper
- ◆ Chili pepper
- ◆ Olive
- ◆ Fresh vegetable
- ◆ Canned vegetable
- ◆ Cooked vegetable

Non-food

- ◆ Herbaceous
- ◆ Tea leaves
- ◆ Tobacco
- ◆ Grassy
- ◆ Stems
- ◆ Leafy
 - Fresh leaf
 - Dried leaf

GRAPE TAINTS

UNDESIRE D VEGETAL TAINTS FROM METHOXYPIRAZINES

- **“Bell Peppers” / “Vegetative” / “Green”**
 - ✓ Extremely Low Thresholds of Detection. “One drop in a swimming pool”.
 - ✓ Location in Berry: Stem / Skin / Seed / Flesh.
 - ✓ Easily Extracted During Processing and Fermentation.
- **Factors Affecting Levels:**
 - ✓ Variety / Maturity / Climate / Temp / Sunlight / Light Exposure
 - Vineyard Practices.
- **Degradation Factors:**
 - ✓ Sun Exposure on Vine and Bud / Enzymatically by Carotenoid Dioxygenase during growth / Glycosylated by Glycosyltransferases.

UNDESIRE D VEGETAL TAINTS FROM C13-NORISOPRENOIDS

- **Contribute Tea / Tobacco / Honey / Violet / Kerosene / Other Aromas**
 - ✓ Over 40 Compounds Found in this class.
 - ✓ Found in Most Grape Varietals.

UNDESIRE D VEGETAL TAINTS FROM C6-COMPOUNDS

- **Green / Grassy / Soapy Characters**
 - ✓ Formed from Lipid Breakdown (β -oxidation, lipoxygenase enzymes).
 - ✓ Six carbon (and higher) Alcohols, Aldehydes.

UNDESIRE D VEGETAL TAINTS FROM PLANT SULFUR COMPOUNDS

- **Grapefruit / Passion Fruit / Box Tree (cat pee) / Cooked Leek Aromas**
 - ✓ Are Varietal Polyfunctional Thiols.
 - ✓ Derivatives of Cysteine.
 - ✓ Found in Sauvignon Blanc, Riesling, Gewurtztraminer, Riesling, Colombard, Semillon, Cabernet Sauvignon, Merlot.

FLORAL TAINTS

UNDESIRE D/DESIRED FLORAL TAINTS

- **Grape Sources of Rose Characters – Terpenes / Norisoprenoids**
 - ✓ Phenethyl Alcohols/Terpenes: **Rose**.
 - ✓ Diethyl Succinate: **Musty, Floral, Fruity, Earthy**.
 - ✓ Nonanoic Acid/Ethyl Ester: **Fruity, Rose, Waxy, Rum**.
 - ✓ Santene: **Sandalwood**.
 - ✓ Vitispirane: **Chrysanthemum, Fruity, Earthy, Woody**.

- **Microbial Sources of Rose Characters – Yeasts**
 - **Terpene Sources of Floral Taints (Desired/Non-Desired)**
 - ✓ From Grapes: Fruity, Floral.
 - ✓ By Yeast (Not *Saccharomyces*) and Molds.
 - ✓ Derived from Isoprene units.
 - ✓ May be Bound or Unbound (as glycosides)
 - ✓ Only unbound Glycosides can be detected.
 - ✓ Can be Hydrocarbons, Alcohols, Aldehydes, Ketones, Esters.
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MUSHROOM TAINTS

UNDESIRED MUSHROOM TAINTS

- **Vary by Season and Cultivar**
 - **Sources:**
 - ✓ C8 Compounds.
 - ✓ Octanol.
 - ✓ Octen-3-one.
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VINEYARD RESIDUE TAINTS

TAINTS from SURFACE RESIDUAL

- **Elemental Sulfur Residue from Mildew Sprays**
 - **Other Sulfur Containing Agent Residues**
 - **Residue Modulating Microbial Activity**
 - **Why is There an Impact on Aroma?**
 - ✓ Microbes must try to detoxify residue.
 - ✓ Residue may simply be metabolized by microbial enzymes.
 - ✓ Residue may inhibit a primary pathway, forcing a secondary, taint producing pathway to be used instead.
 - ✓ Residue may simply be altered chemically, due to the reductive conditions established by yeast metabolism.
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VINEYARD MICROBIOTA TAINTS

“BAD” LACTIC ACID TAINTS

- **Produce Acetic Acid** – off taste/aroma.
- **Produces Fatty Acids** – easily oxidize, turning rancid.

- **Produces Diacetyl** – unwanted “buttery”/cheesy flavors.
- **Produces Vegetation Notes / Fecal Notes / Moldy Rag Taint**
- **Has Negative Impacts on Yeast Metabolism**

“BAD” ACETIC ACID TAINTS

- **Produces Acetic Acid** – off taste/aroma.
- **Produces Ethyl Acetate** – nail polish off tastes/aromas.
- **Has Negative Impacts on Yeast Metabolism**

NON-SACCHAROMYCES YEAST TAINTS

- **Produces Ethyl Acetate** – nail polish off tastes/aromas.
- **Produces Strong Ester Notes** – unpleasant floral smells.
- **Produce Atypical Off-Esters**

MOLD TAINTS

- **Have Oxidase Activity** – Botrytis Browning.
 - **Produce Moldy Off-Characters** – Blue Cheese / Cork Like.
 - **Produce Earthy/Soil Taints** – could also come from bacteria.
 - **Can Impact Yeast Metabolism**
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HARVEST CONTAMINANT TAINTS

INSECT TAINTS

- **Asian Lady Beetles and Earwig Larva** – taste awful.

PLANT MATERIAL TAINTS

- **Non-Grape Leaves / Tree Sap (Eucalyptus)** – taste awful.
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