



# **Screening Natural Corks by Their Releasable TCA: Does it Work?**

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- 1. What is Releasable TCA?**
- 2. RTCA from bulk vs. individual cork soaks**
- 3. Bulk Soaks as a screening tool**
- 4. Relation with bottled wine TCA**

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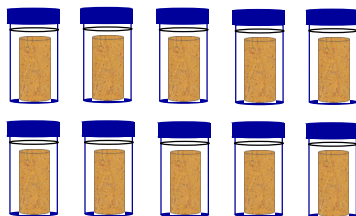
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## Releasable TCA

### “Traditional” QC



**Cork soaks + sensory**

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**ETS**  
LABORATORIES

**Releasable TCA**

## TCA Extraction

### Headspace/SPME:

- Environmentally-friendly
- Selective extraction volatile compounds
- Precision (if correct IS)
- Automation

Labels in diagram: Plunger, Plunger retaining screw, Adjustable needle guide/depth gauge, Fiber attachment needle, Septum-piercing needle, Septum, Vial, Fiber, Sample, Stirring bar, Aluminum block heater.

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**ETS**  
LABORATORIES

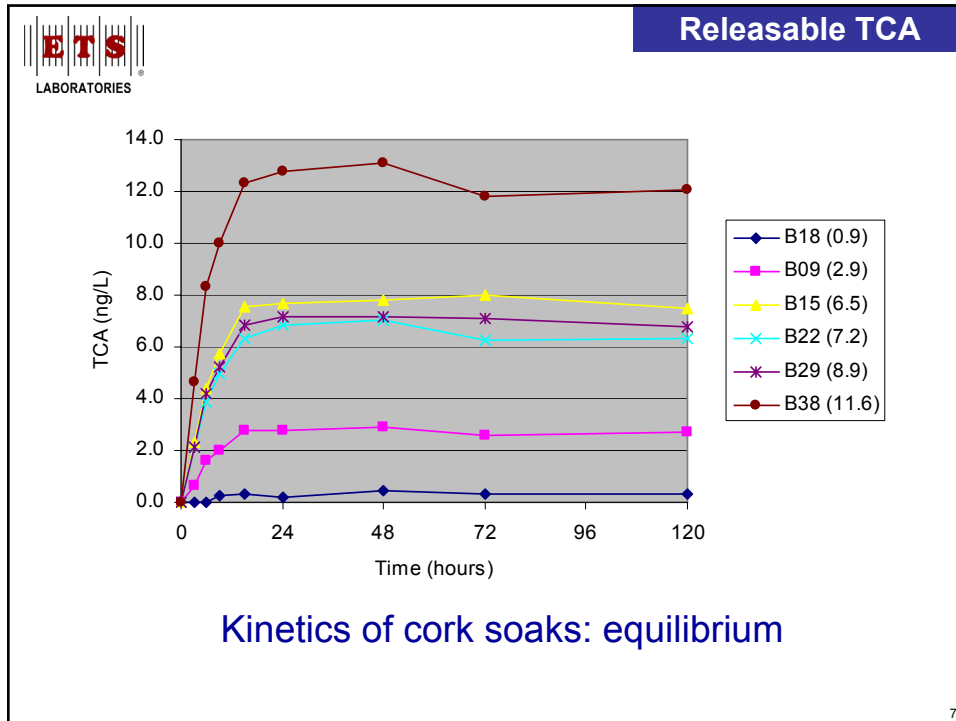
**Releasable TCA**

## TCA Analysis

### Gas Chromatography / Mass Spectrometry:

- Selective detection
- Sensitivity
- High throughput (80+ / 24h)

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**ETS LABORATORIES**

**Releasable TCA**

**Releasable TCA (RTCA)**

*For a cork, or group of corks, the concentration of TCA reached at equilibrium in a wine soak. Expressed in ng/L (or ppt).*

(Hervé E., Price S. and Burns G. - ASEV 1999)

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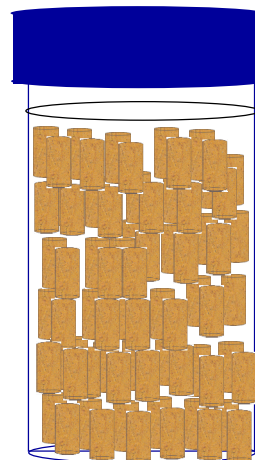
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### Bulk vs. Individual

Bulk (group) soaks

Individual soaks



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## Individual Cork Soaks

- . Labor intensive, costly
- . Sensory evaluation only
- . Excessively large lot sizes


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## Bulk Cork Soaks

- . TCA analysis possible, but...
- . “Good” corks may absorb TCA
- . Doesn't tell % of “bad” corks

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Bulk vs. Individual

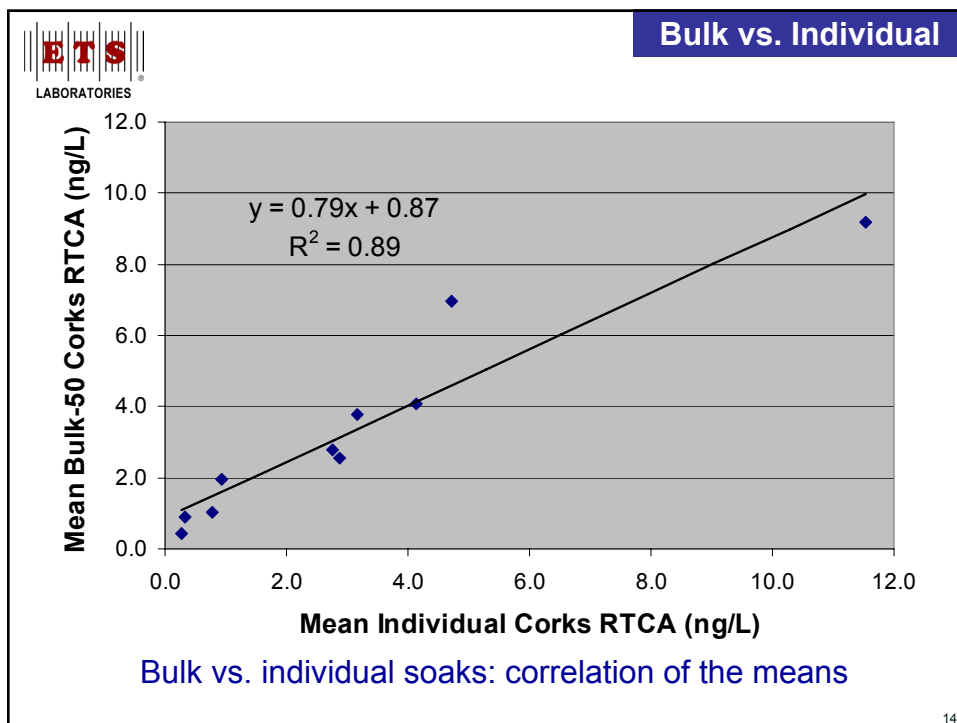
## AVF Study

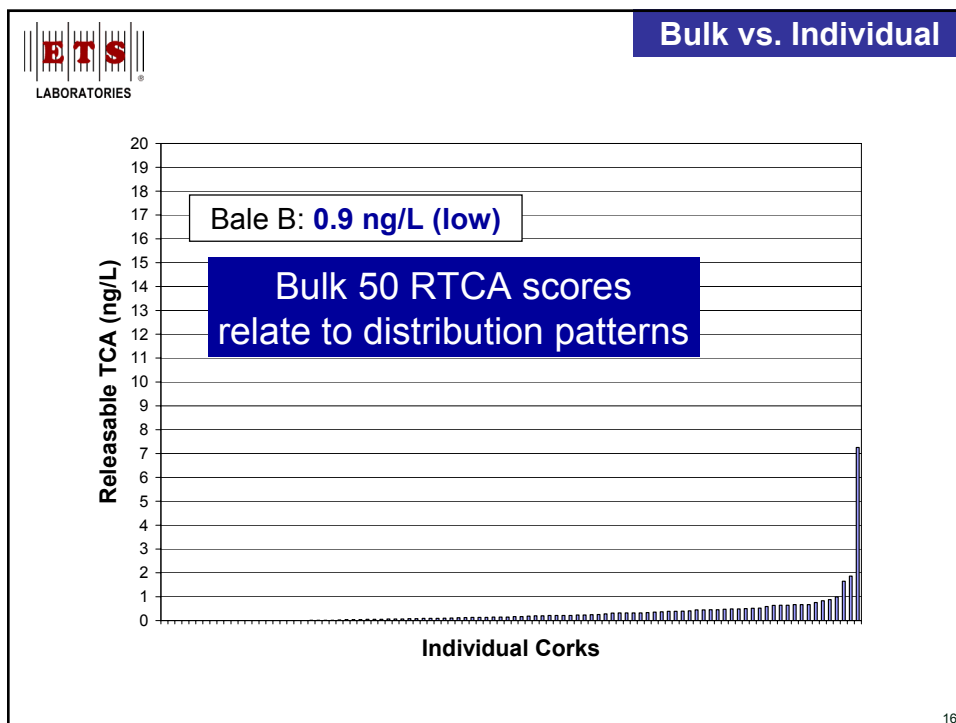
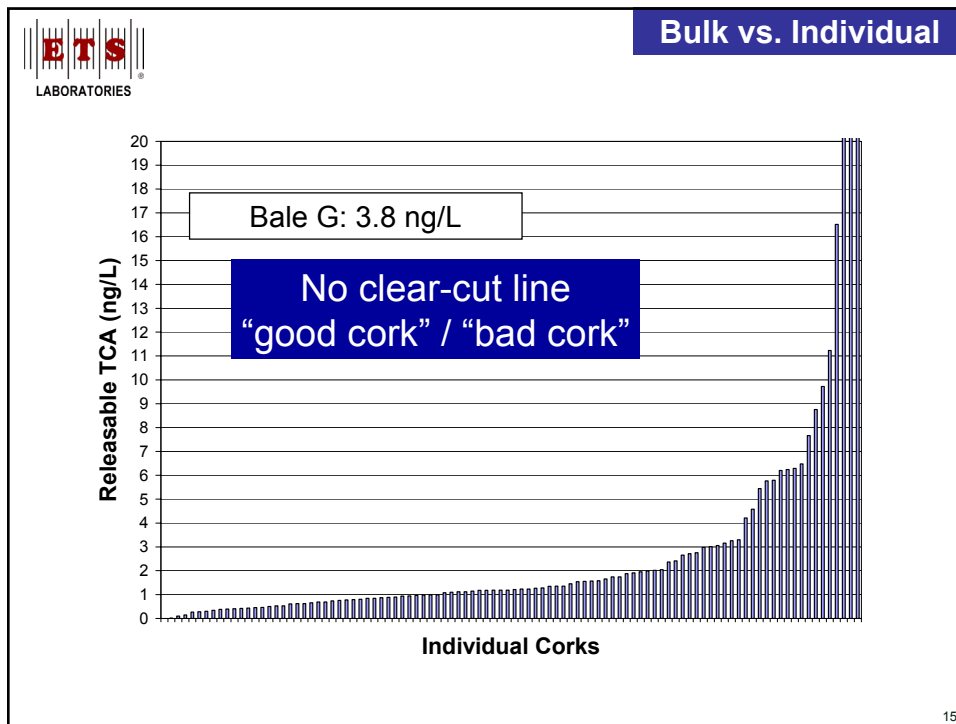
**10 Bales commercial corks  
pre-selected (bulk 50 RTCA low to high)**

**Each Bale**

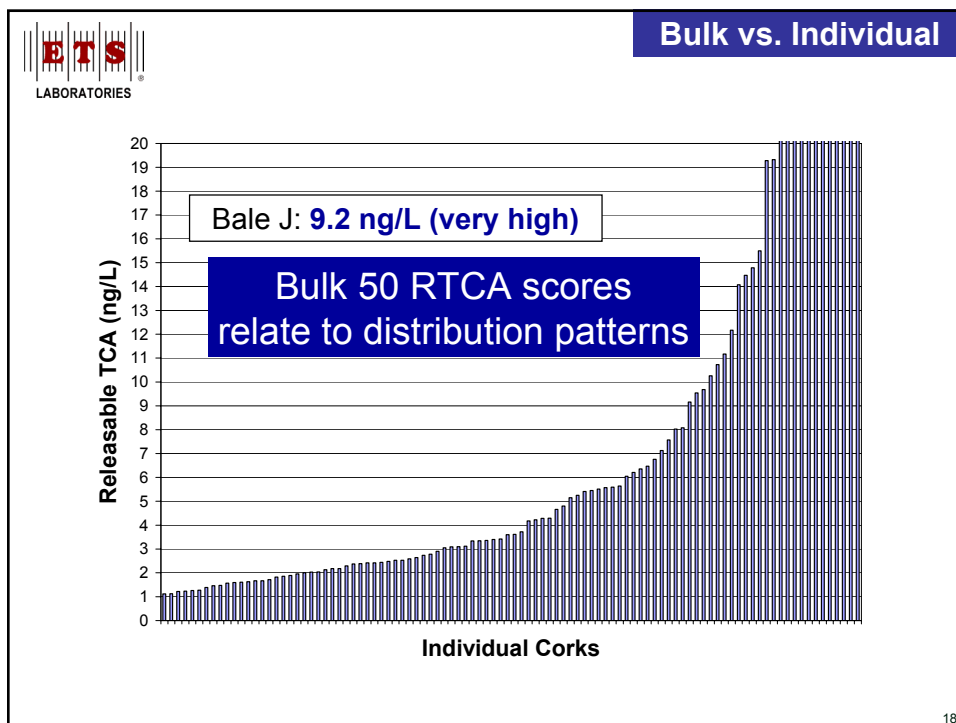
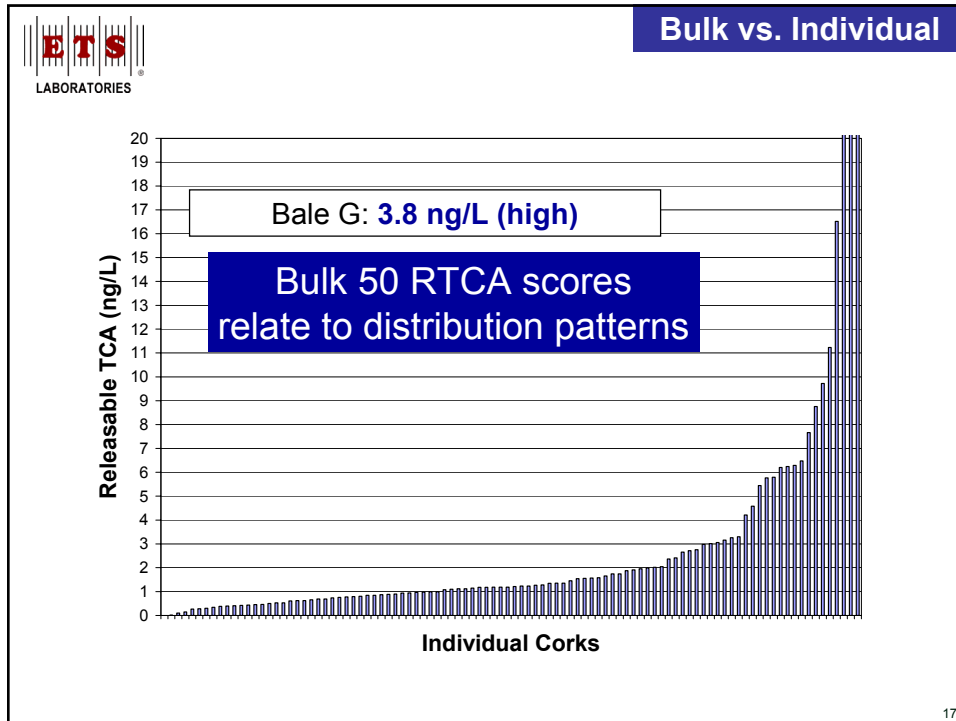
- 100 x individual cork RTCA (distribution)**
- 10 x bulk 50 cork RTCA (precision)**
- 200 x bottled wine TCA (validation)**


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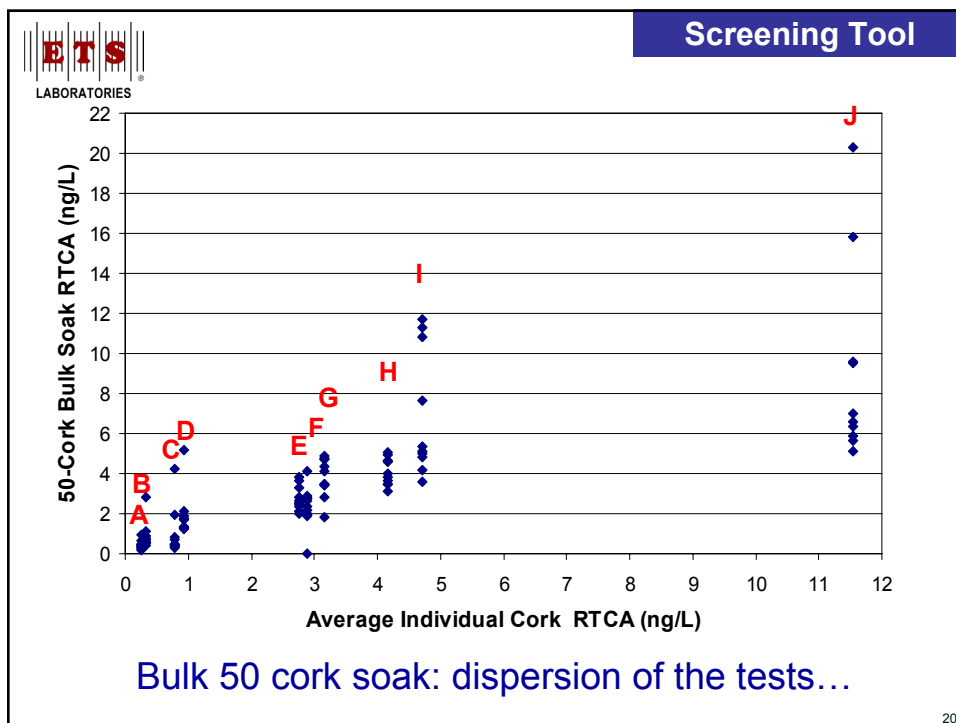


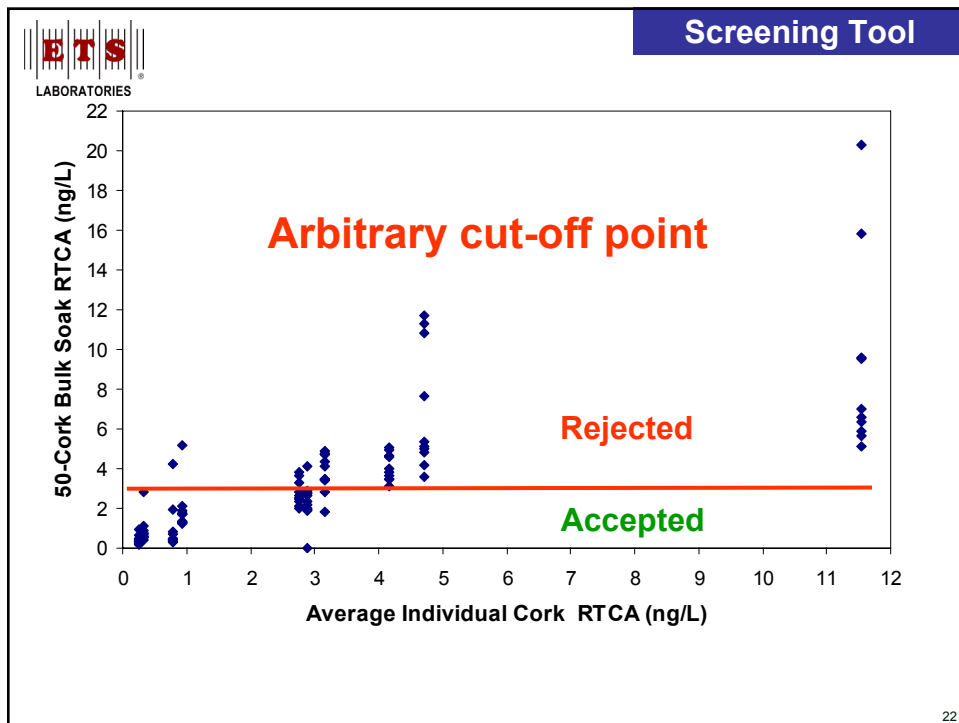
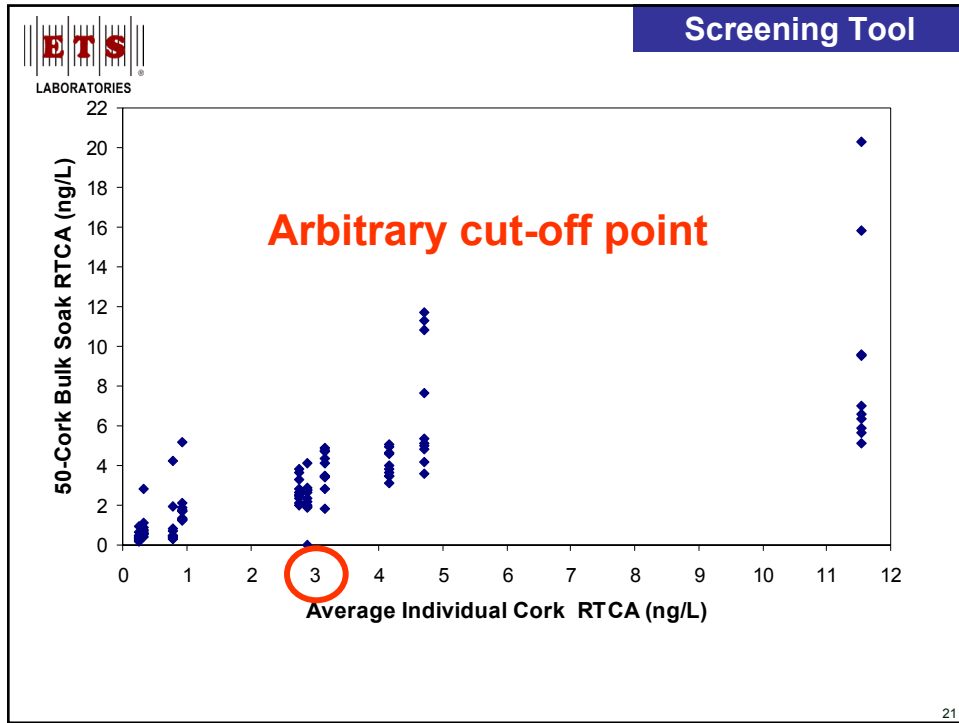


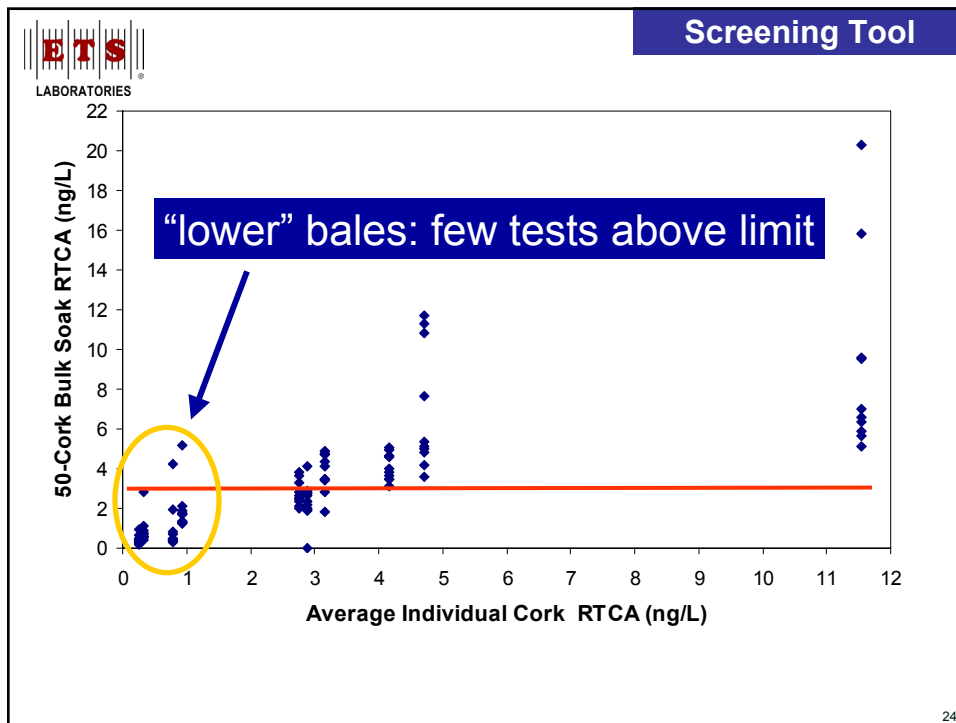
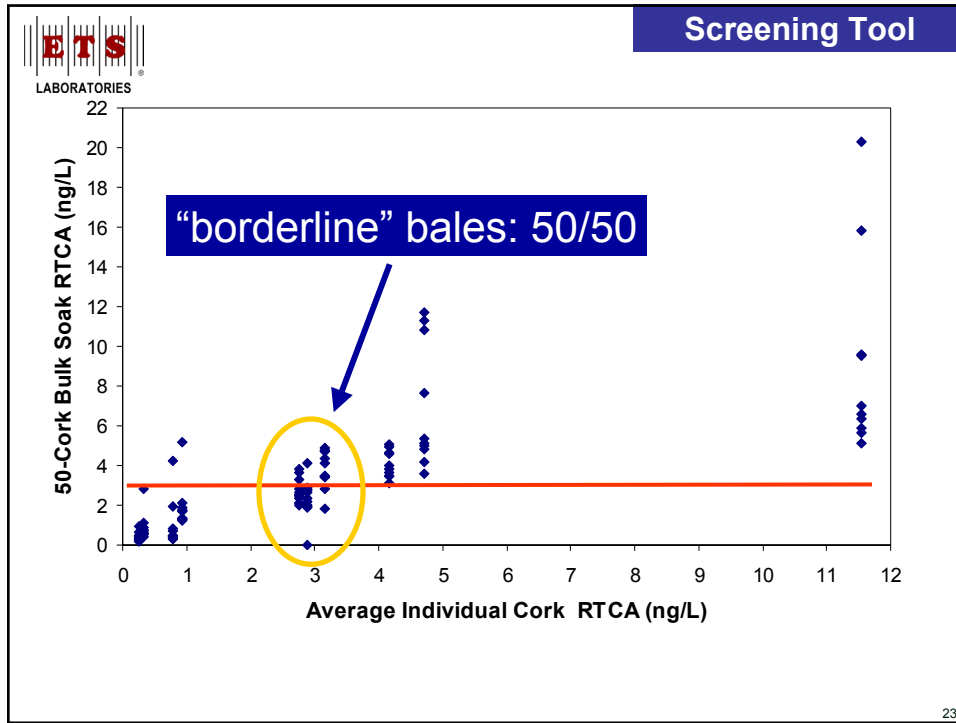


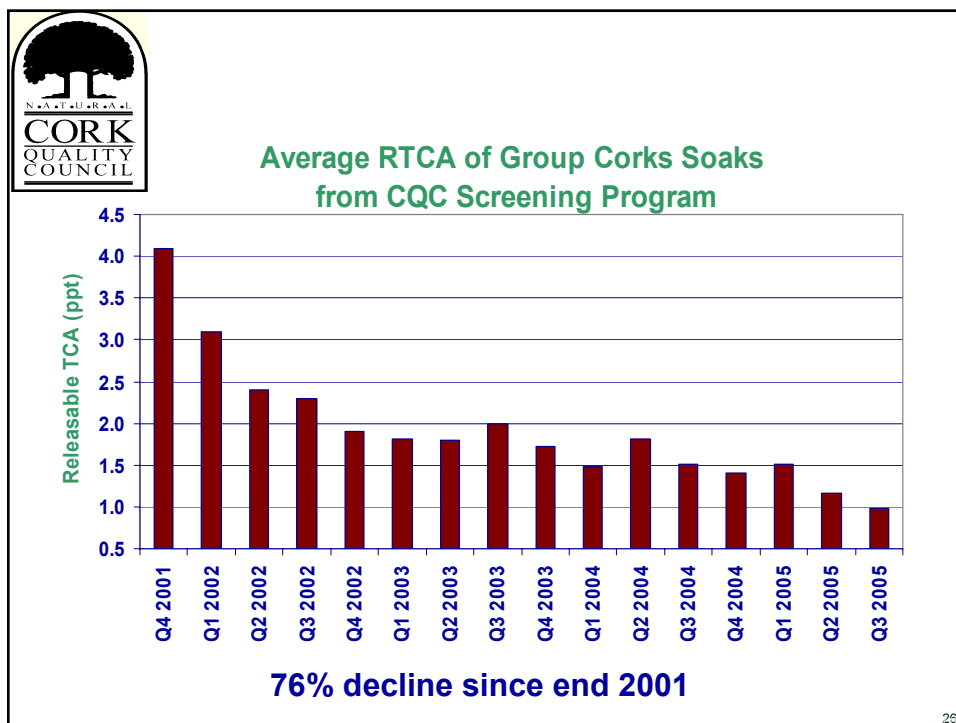
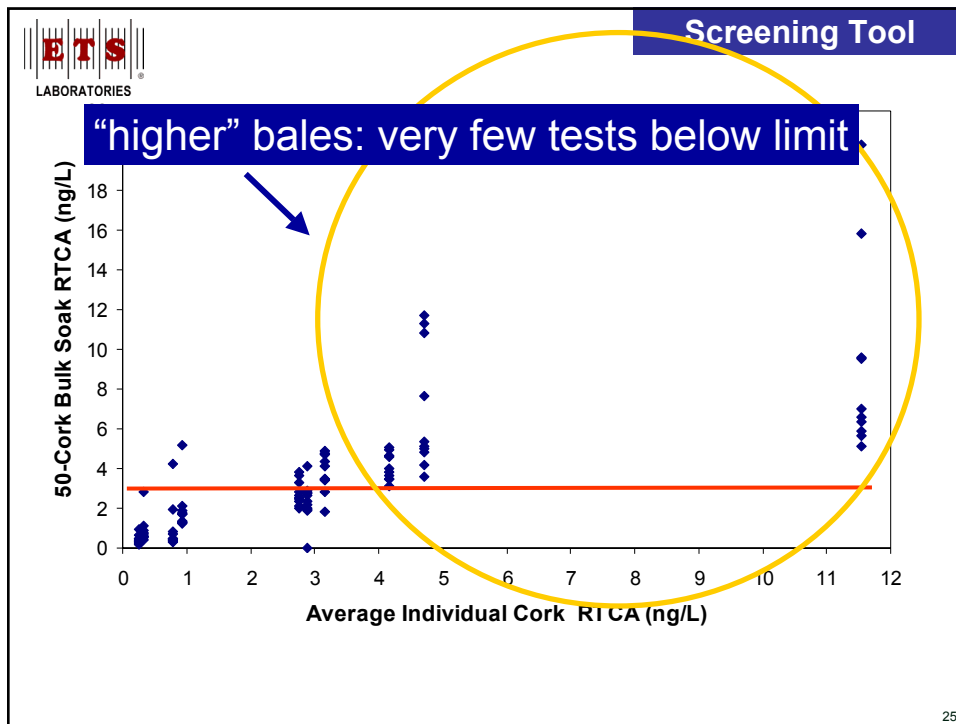
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## Screening Tool

### Ongoing Study

**10 Bales commercial corks:**  
pre-selected (bulk 50 RTCA low to high)

**Each Bale:**  
100 x individual cork RTCA (populations)  
10 x bulk 50 cork RTCA (precision)  
**200 x bottled wine TCA (after storage)**

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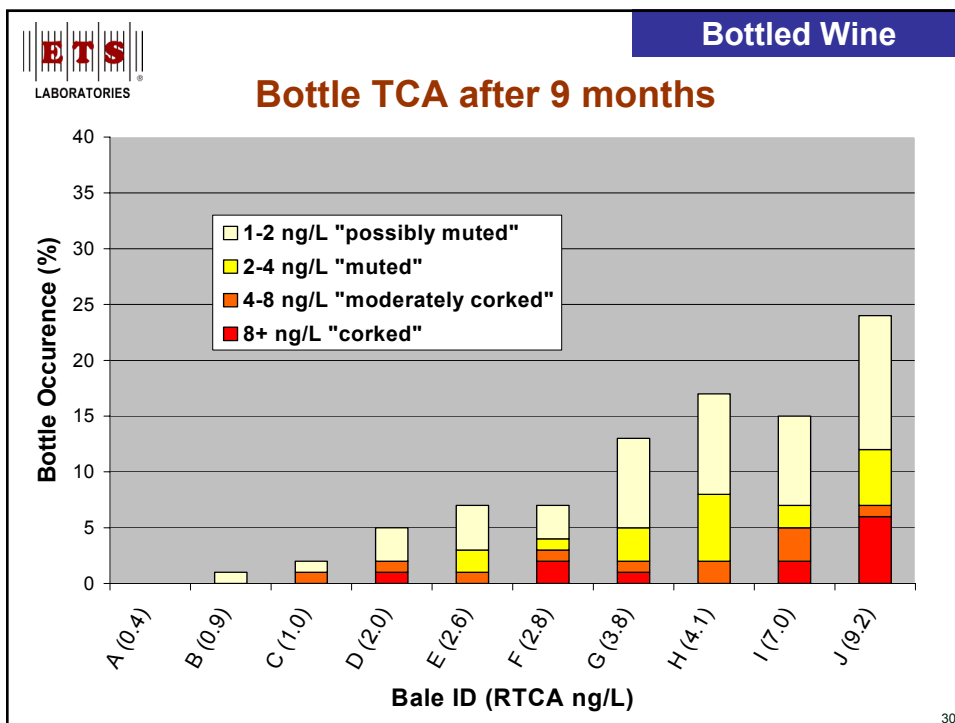


Bottled Wine

## After 9 months: 100 bottles/bale analyzed

Arbitrary Classes	Probable Sensory Effect
1 - 2 ng/L	<i>“possibly muted”</i>
2 - 4 ng/L	<i>“muted”</i>
4 - 8 ng/L	<i>“moderately corked”</i>
> 8 ng/L	<i>“corked”</i>

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## Thanks To:

- The American Vineyard Foundation
- The Natural Cork Quality Council
- Beringer Blass Wine Estates