

## Certification Program For Horticultural Soil Products

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## Substrate Problems



## Retail Products



## Retail Soils: Prior to 2000

- ❁ No regulation
- ❁ Good to poor quality
  - ❁ Top soil
  - ❁ Soil conditioner
  - ❁ Soil amendment
  - ❁ Potting soil
- ❁ Commodity pricing





### Mulch & Soil Council

- ❁ Manufacturers' association
- ❁ Producers of
  - ❁ Potting Soils
  - ❁ Soil Amendments
  - ❁ Mulches
- ❁ Focus is on retail products
- ❁ Wanted help on standards



### Certification Program

- ❁ To certify the quality and authenticity of mulches, soil amendments, and potting soils
- ❁ Criteria
  - ❁ Weights and measures
  - ❁ Label specifications
  - ❁ Physical & chemical parameters
  - ❁ Plant growth
  - ❁ Wood species

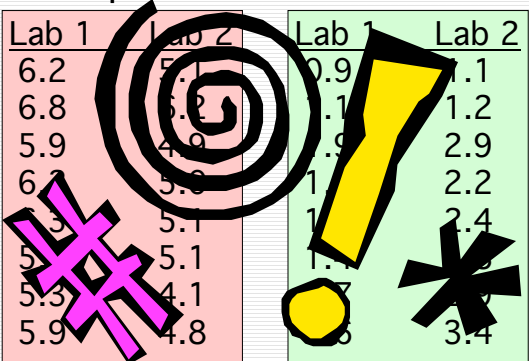



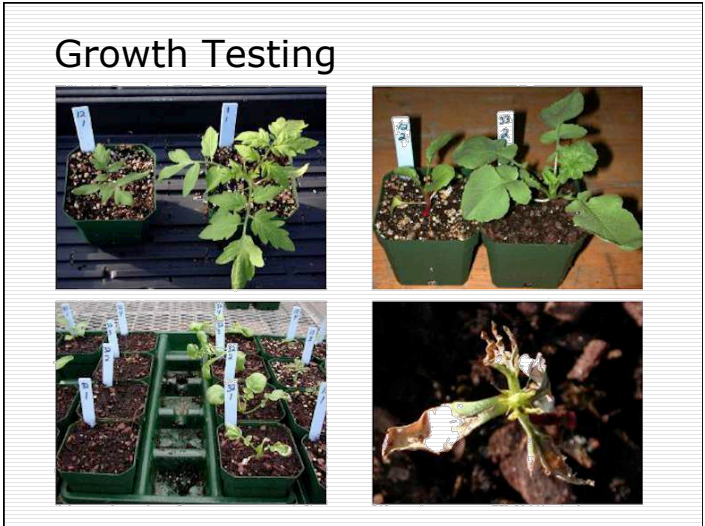
### Standards: Phys. & Chem. Values

Item	Standard	Premium
pH	4.5 - 7.5*	5.5 - 7.0
EC**	≤ 5.5 mmhos	1.0 - 5.5 mmhos
NO <sub>3</sub>	NA	10 - 200 ppm
P <sub>2</sub> O <sub>5</sub>	NA	≥ 3 ppm
K <sub>2</sub> O	NA	≥ 25 ppm
Ca	NA	≥ 30 ppm
Mg	NA	≥ 10 ppm
Na	NA	≤ 130 ppm
Cl	NA	≤ 200 ppm
Water HC	≥ 50%	≥ 65%
Air Space	≥ 5%	≥ 8%
Hydration Index	NA	≥ 0.80

### Testing From Multiple Labs

pH		EC	
Lab 1	Lab 2	Lab 1	Lab 2
6.2	5.1	0.9	1.1
6.8	5.9	1.1	1.2
5.9	4.9	1.9	2.9
6.2	5.8	1.1	2.2
5.3	5.1	1.1	2.4
5.1	5.1	1.1	2.4
5.3	4.1	1.7	2.7
5.9	4.8	1.8	3.4





### New Standards

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Seedling Survival

Control	20 Seed	
	95% Confidence	99% Confidence
20	16	15
19	15	14
18	14	13
17	13	11
16	12	10
15	11	9
14	10	8

Classic Test of 2 Proportions

Control Soil

### Certification Program

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- ❁ Standards for
  - ❁ Premium potting soils
  - ❁ Standard potting soils
  - ❁ Landscape soil amendment
  - ❁ Mulches
  - ❁ Specialty soils



### Certification Testing

- ❁ Label Claims
- ❁ Volume
- ❁ Grow Test
  - ❁ Seedling survival
  - ❁ Plant growth
- ❁ Initial tests
- ❁ Annual audits



### Volume Testing



### Volume Testing



### "Red Mulch Causes Cancer" 2005



## Red Mulch Problem

- ❁ Red mulch contained arsenic
- ❁ Red mulch base was ground pallets
- ❁ Ground pallets contaminated with additional pressure treated wood



## CCA Contamination

- ❁ Wood treated with CCA
  - ❁ Chromated copper arsenate
- ❁ CCA is a pesticide
- ❁ When ground, CCA leaches out
- ❁ Illegal to grind CCA-treated wood



Chemical Composition of CCA-C

All Wolmanized® Heavy Duty™ wood is treated with CCA-Type C, which is composed of the following:

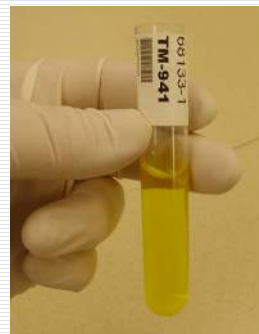
Hexavalent Chromium (CrO <sub>3</sub> )	47.5%
Copper (CuO)	18.5%
Arsenic (As <sub>2</sub> O <sub>3</sub> )	34.0%

## CCA Protocol

XRF Screening



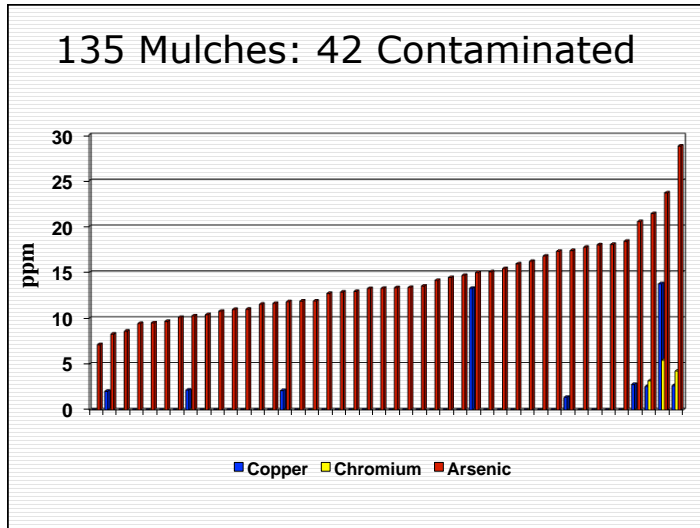
ICAP/MS



## XRF Protocol

- ❁ Used to screen substrates for CCA contamination
- ❁ Detection with XRF triggers ICP/MS testing







Certified Products in:

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Certification Program 2014

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- ❁ 1.5 million bags with logo
- ❁ Largest voluntary program of its kind in the US
- ❁ Testing
  - ❁ Initial application
  - ❁ Annual audit
  - ❁ 1,000 bags per year



CERTIFIED PRODUCT	
✓	Premium Potting Soil
	Standard Potting Soil
	Landscape Soil & Soil Amendment
	Specialty Soils
	Mulch

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