

Using Compost in Commercial Wine Vineyards



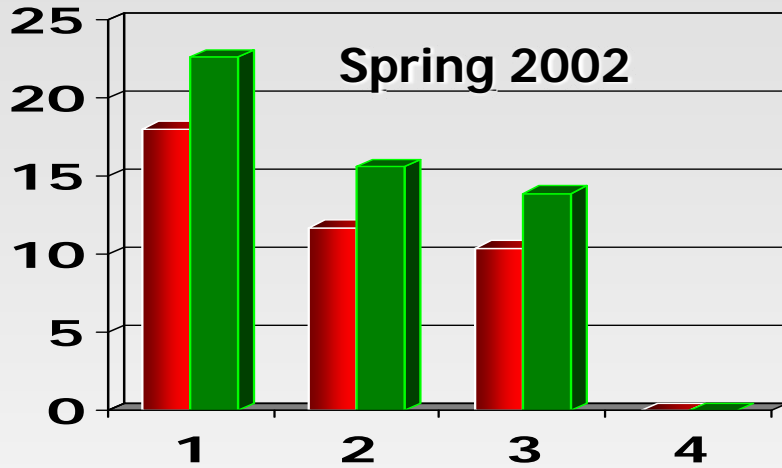
*James Travis, Noemi Halbrendt,
and Bryan Hed*

Location 1: Manatawny vineyards

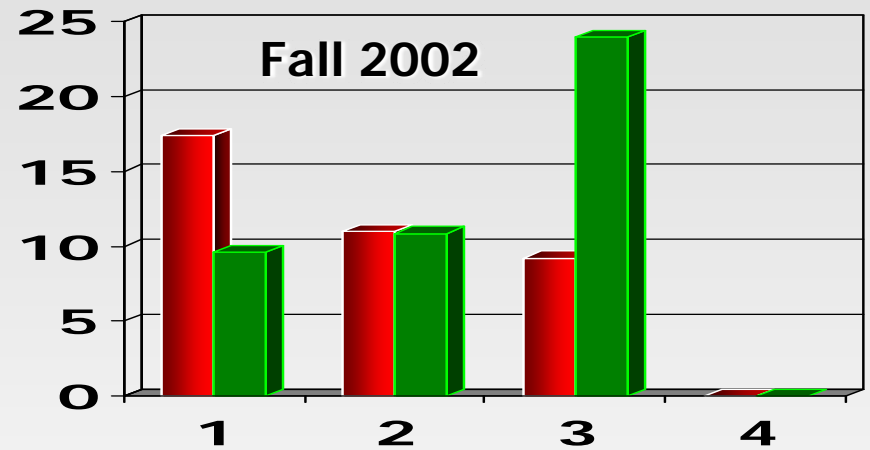
- **4-year-old Chambourcin, Chardonnay**
- **YT, AM, MS, or no compost; broadcast at 20 Tons/A (2001), then 40 Tons/A (2002).**
- **24 vine plots x 4; center 4 vines used for evaluation, RCB**
- **Soil microbial activity**
- **Vine vigor: pruning wts.**

% Increase in Microbial Activity (= B-glucosidase activity) 1. Manatawny Vineyards

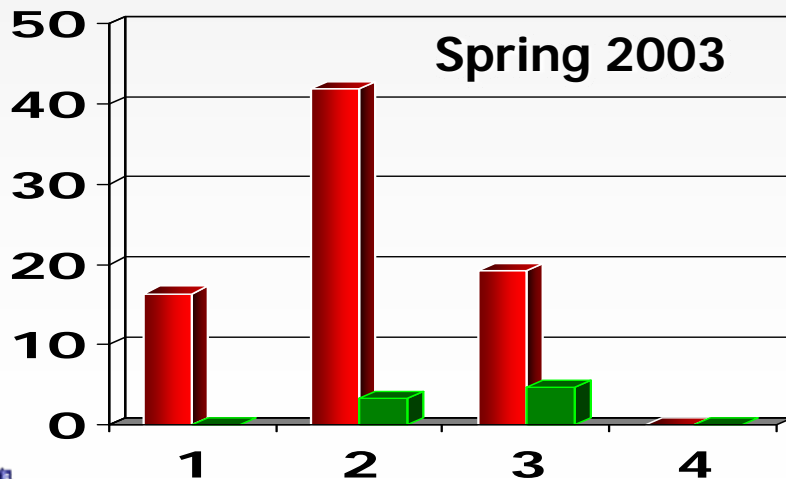
■ Chambourcin ■ Chardonnay



■ Chambourcin ■ Chardonnay



■ Chambourcin ■ Chardonnay

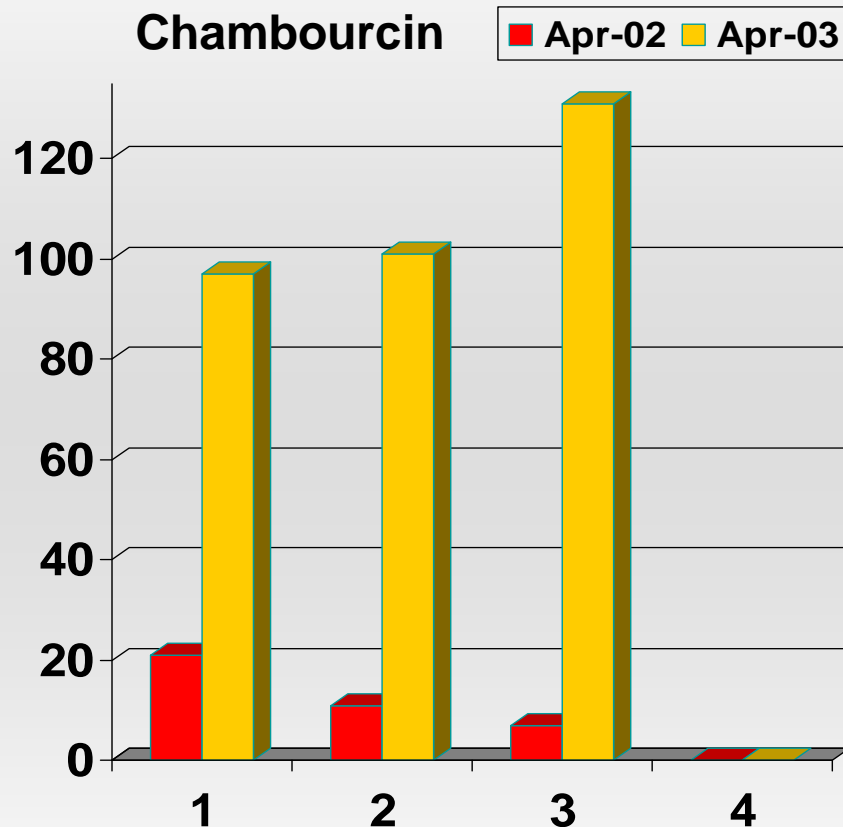
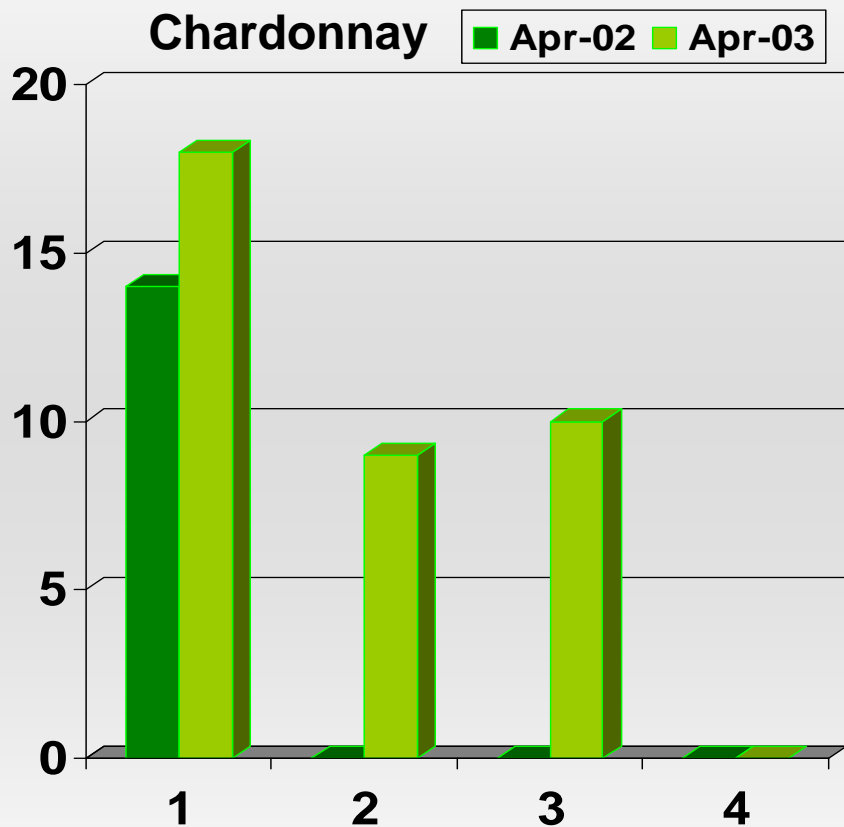


	2001	2002
1. Yard	20 T/A	40 T/A
2. Dairy	20 T/A	40 T/A
3. Mushroom	20 T/A	40 T/A
4. No Compost	0 T/A	0 T/A

Travis et al. PSU, FREC, 2002.



% Increase in Pruning Weights: Manatawny Vineyard in 2002 & 2003



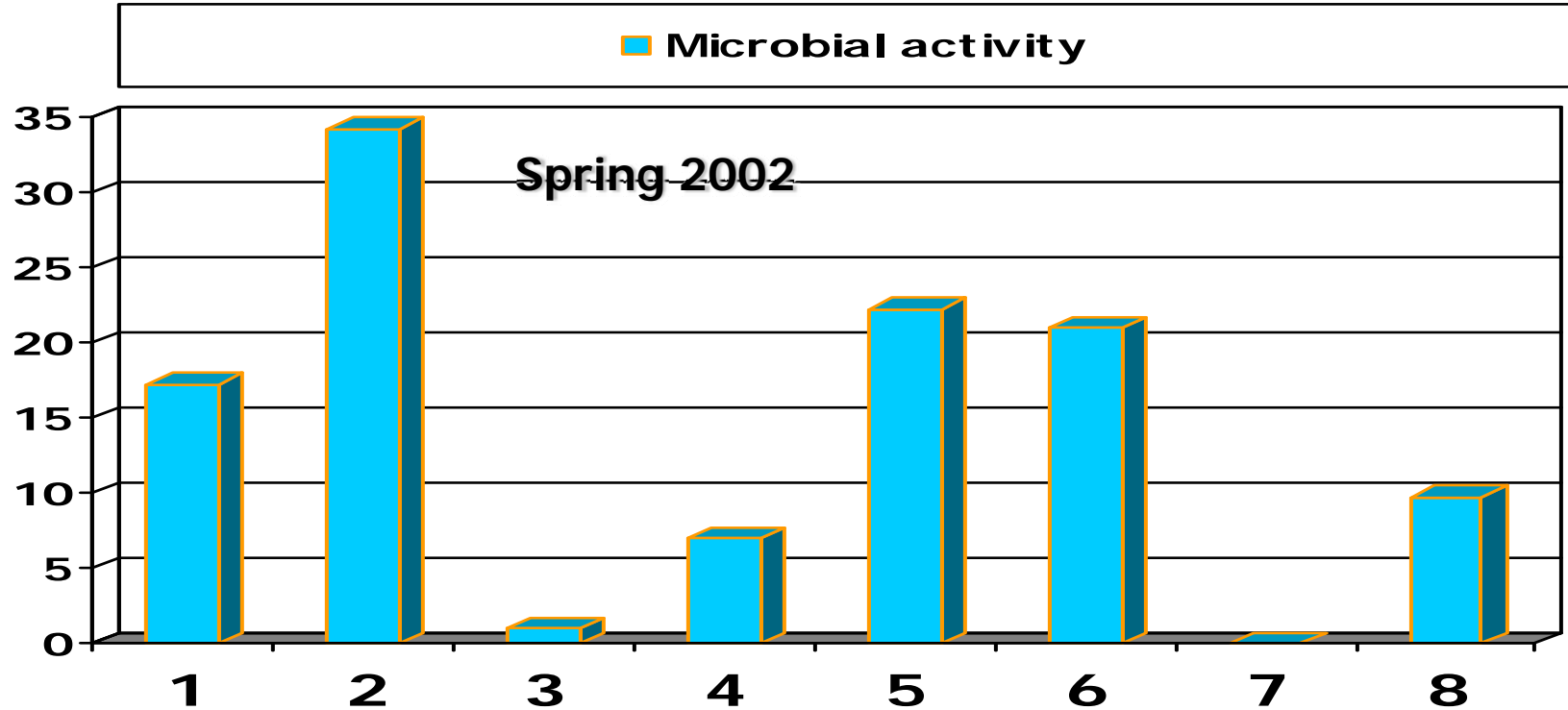
Compost Treatments

1. Yard 2. Dairy 3. Mushroom 4. Nontreated Ck

Location 2: Slate Quarry vineyards

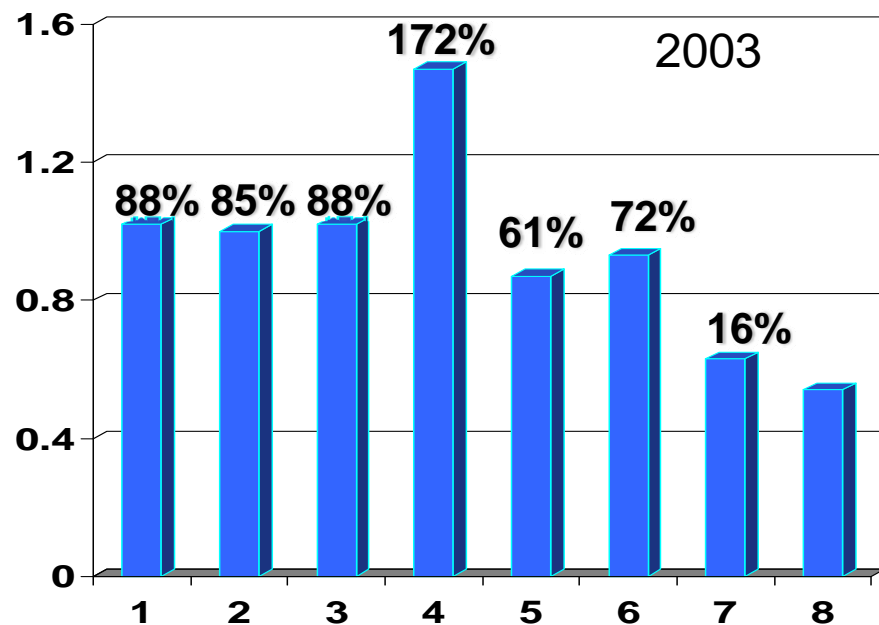
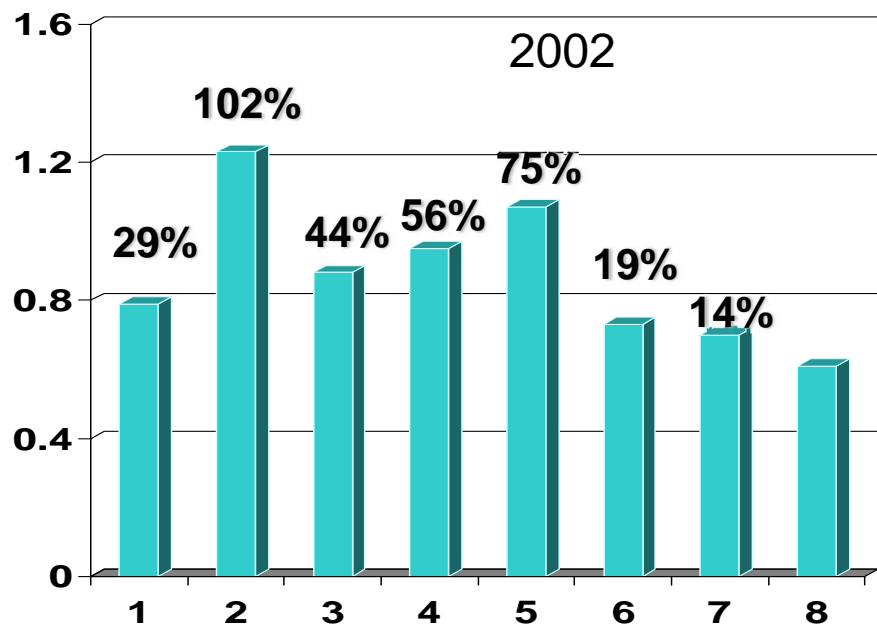
- **8-year-old Chambourcin**
- **YT, AM, MS, or no compost; broadcast at 7 or 20 Tons/A (2001), then 30 or 60 Tons/A (2002).**
- **36 vine plots x 4; center 3 vines used for evaluation, RCB**
- **Soil microbial activity**
- **Vine vigor: pruning wts.**

% Increase in Soil Microbial Activity (B-glucosidase activity) 2. Slate Quarry Vineyards



Treatment	T/Acre	Treatment	T/Acre
1. Yard	7 T/A	5. Mushroom	7 T/A
2. Yard	20 T/A	6. Mushroom	20 T/A
3. Dairy	7 T/A	7. Fertilizer Ck	0 T/A
4. Dairy	20 T/A	8. No Fertilizer Ck	0 T/A

% Increase in Pruning weights. in 2. Slate Quarry Vineyards: Chambourcin 2002 - 2003



<u>Treatment</u>	<u>2001</u>	<u>2002</u>
1. Yard	7 T/A + 30 T/A	
2. Yard	20 T/A + 60 T/A	
3. Dairy	7 T/A + 30 T/A	
4. Dairy	20 T/A + 60 T/A	

<u>Treatment</u>	<u>2001</u>	<u>2002</u>
5. Mushroom	7 T/A + 30 T/A	
6. Mushroom	20 T/A + 60 T/A	
7. Fertilizer Ck		0 T/A
8. No Fertilizer Ck		0 T/A

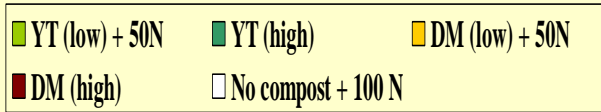
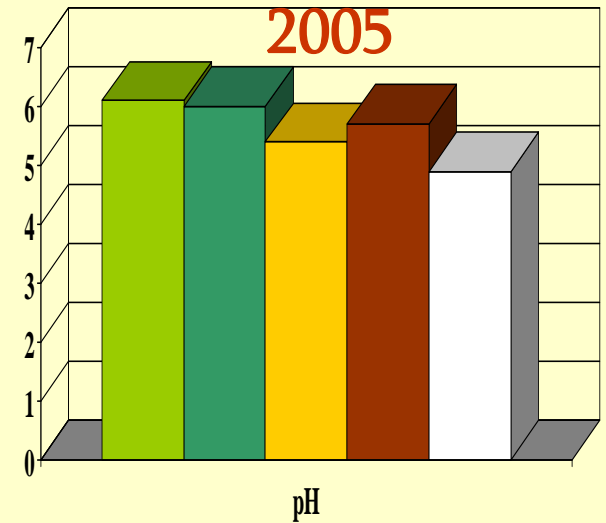
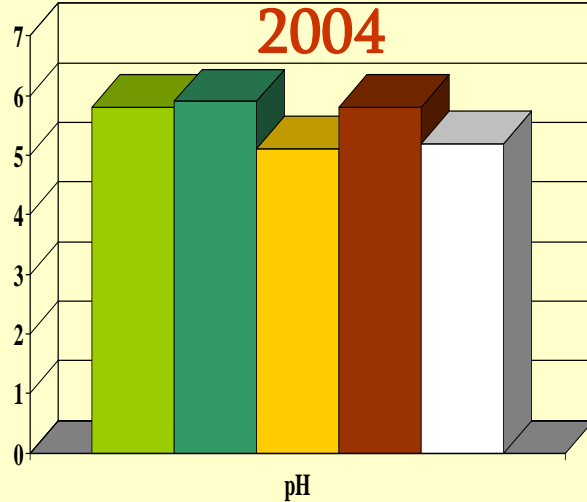
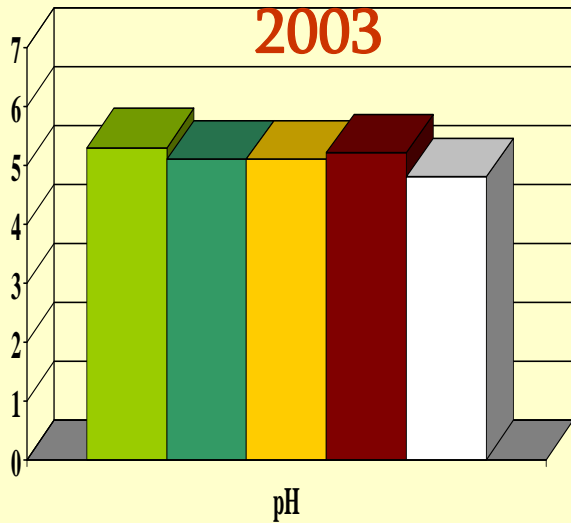
Location 3 Erie Co: Lake Erie Regional Grape Research and Extension Center

- Concord: AM or YT; broadcast at 7 or 20 T/A (2001), then banded at 30 or 60 T/A (2002). 36 vine plots x 4; center 6 vines used for evaluation, RCB
- Vignoles = AM broadcast at 100 T/A in 2001. 27 vine plots x 4; center 3 vines used for evaluation, RCB
- Chancellor = YT broadcast at 100 T/A in 2001. 36 vine plots x 4; center 4 vines used for evaluation, RCB

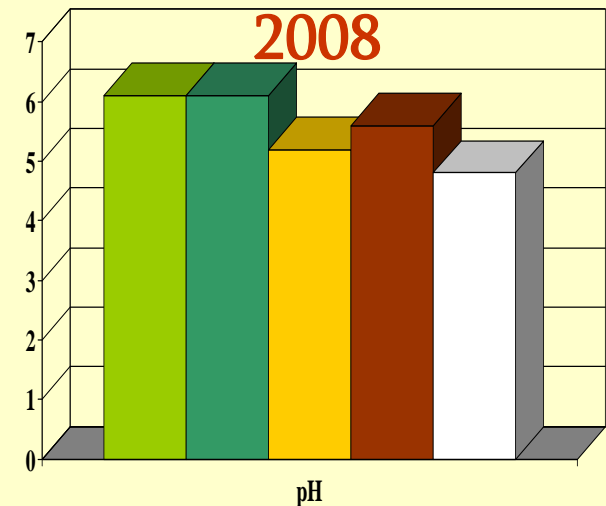
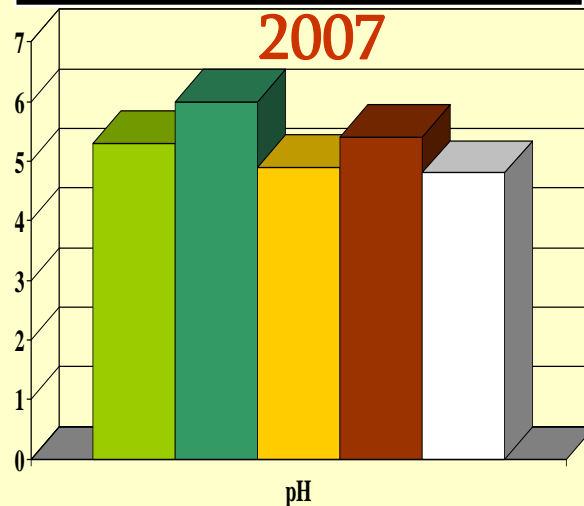
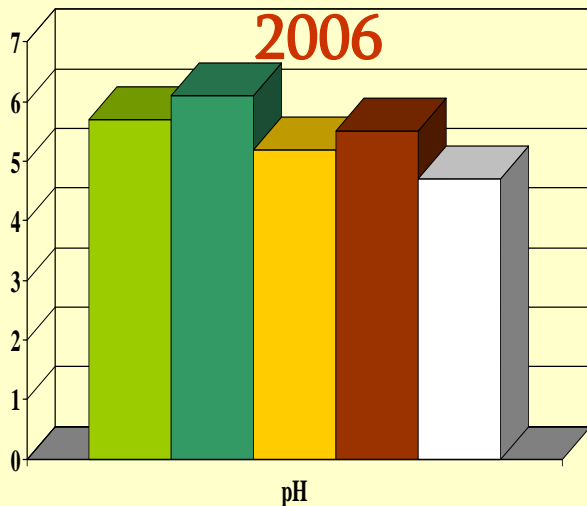
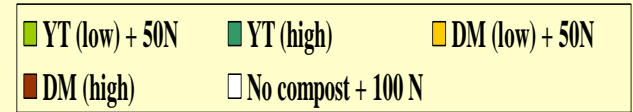
- Soil health: pH, OM, nutrients, moisture, microbial activity

- Vine vigor/health: petioles, pruning wts, yield, disease

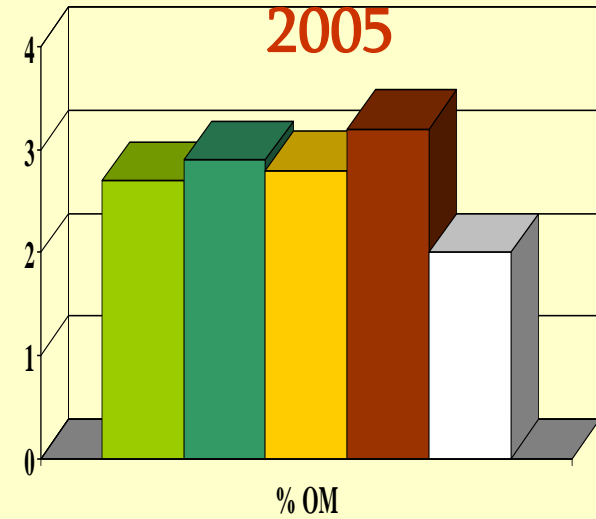
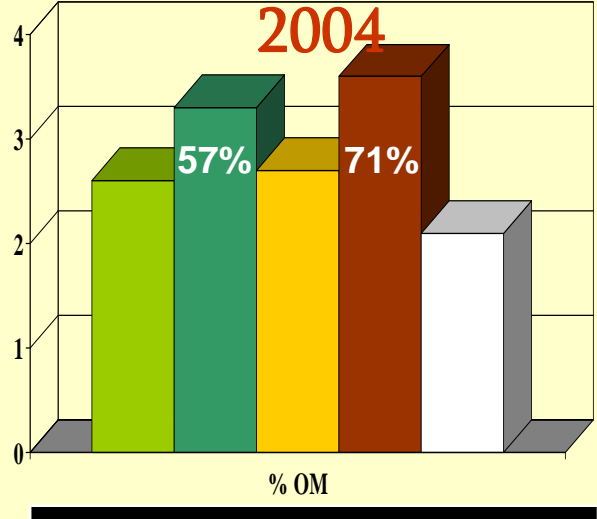
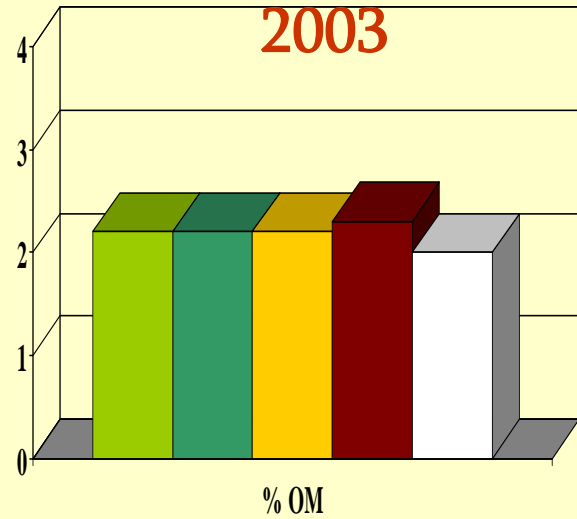
Compost Effects Soil pH: Concord (Erie)



**YT > DM > check
High > Low > check
Compost = Optimum**



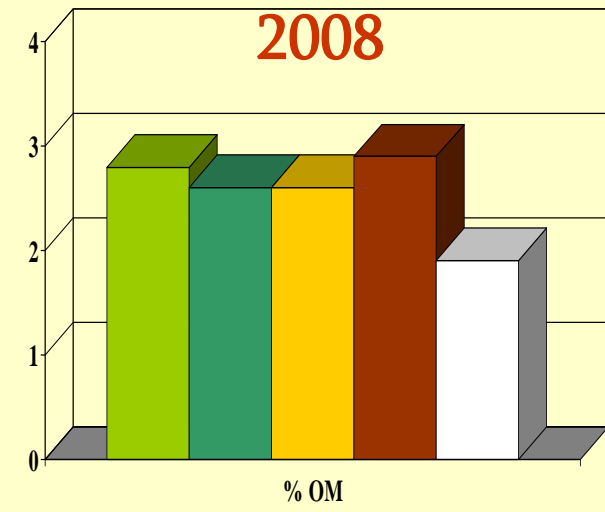
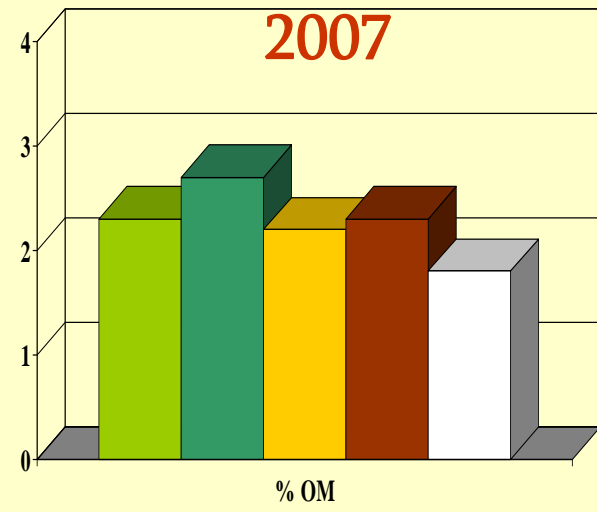
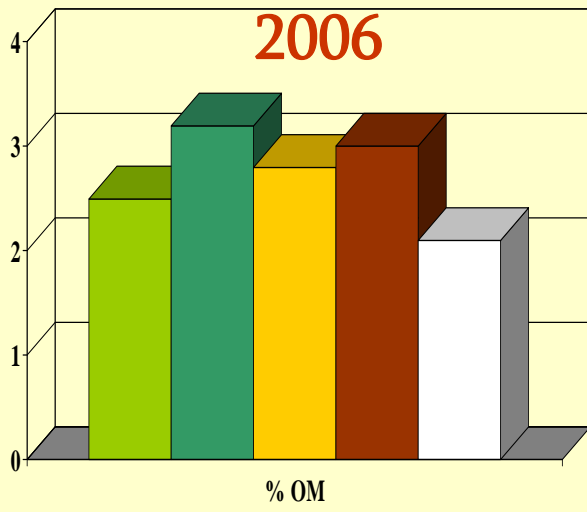
Compost Effects Soil Organic Matter: Concord (Erie)



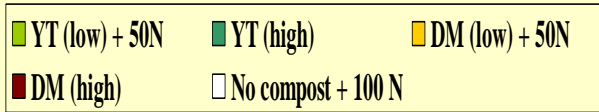
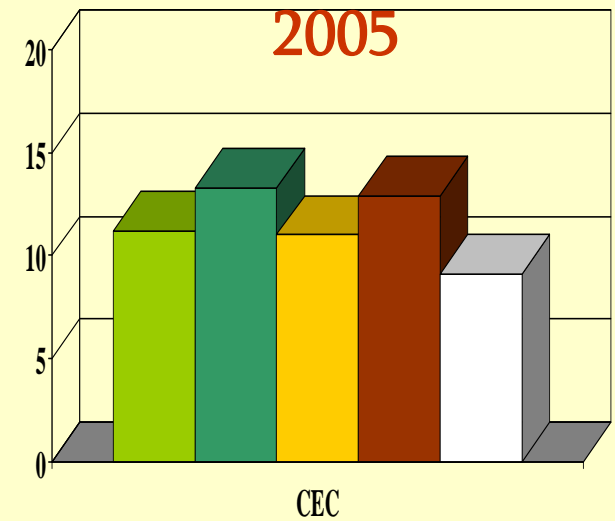
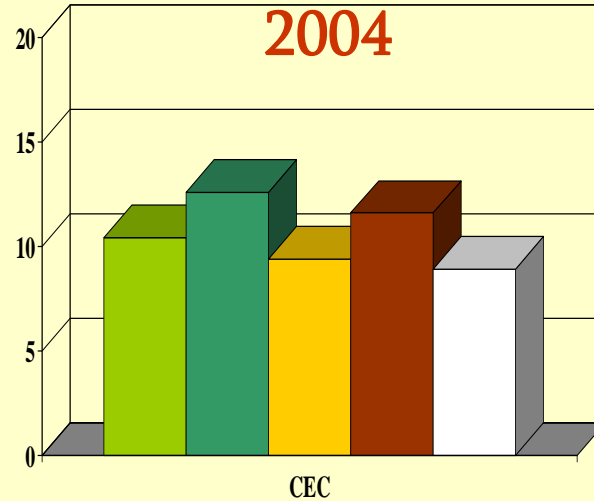
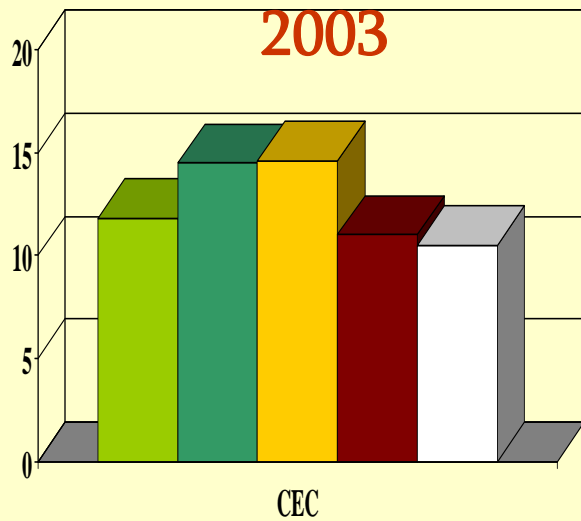
■ YT (low) + 50N
 ■ YT (high)
 ■ DM (low) + 50N
■ DM (high)
 ■ No compost + 100 N

**High > Low > check
Compost = Optimum**

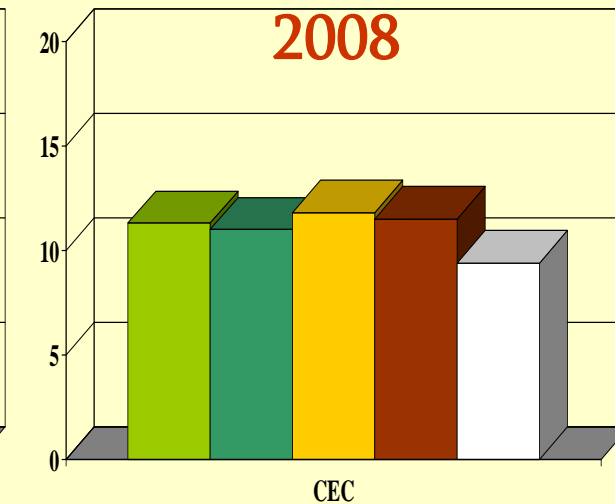
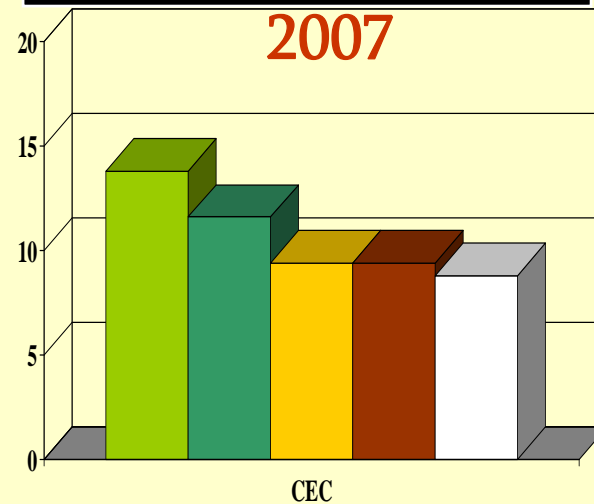
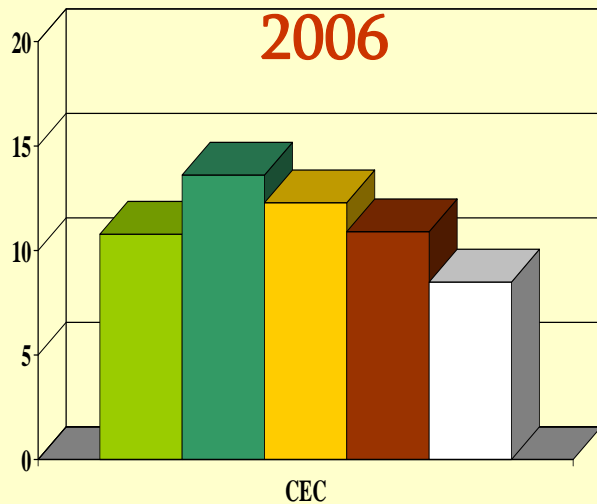
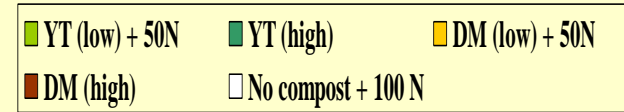
■ YT (low) + 50N
 ■ YT (high)
 ■ DM (low) + 50N
■ DM (high)
 ■ No compost + 100 N



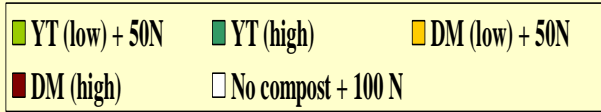
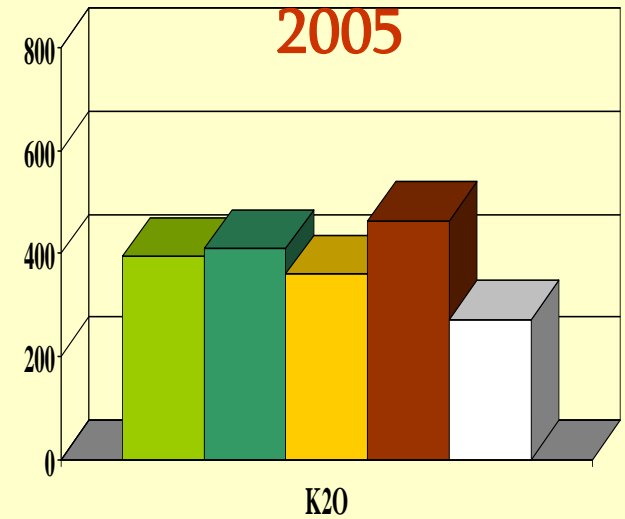
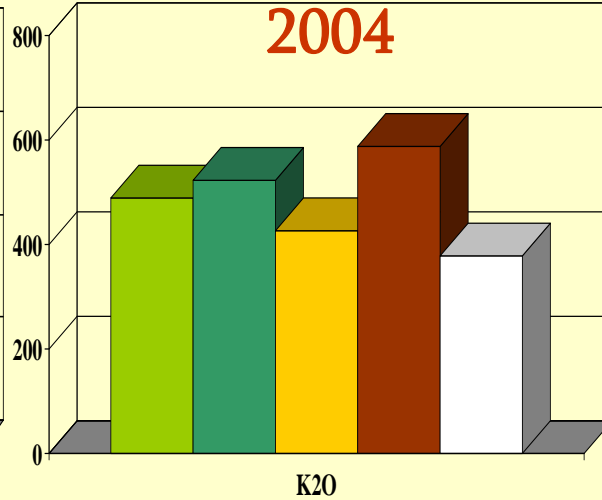
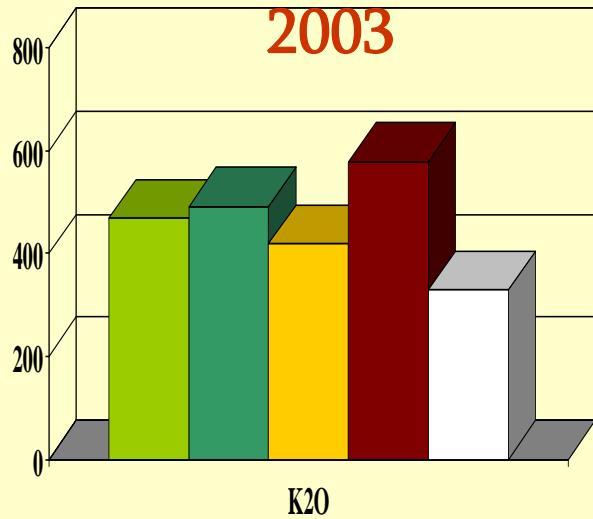
Compost Effects Soil CEC (meq/100g): Concord (Erie)



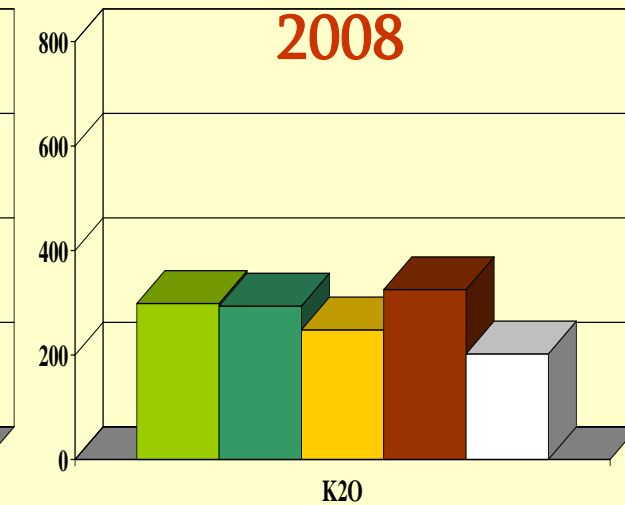
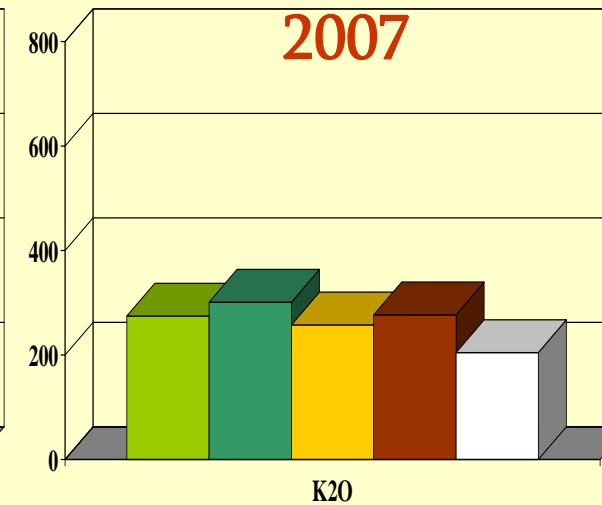
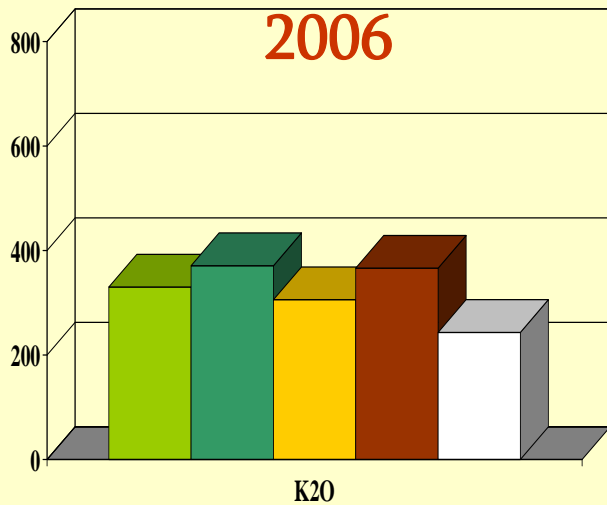
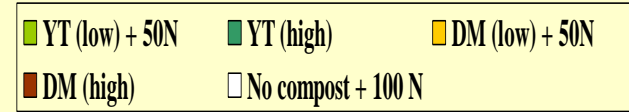
**Compost > check
High > Low?
YT > DM?**



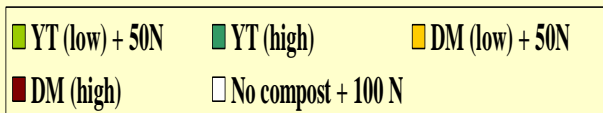
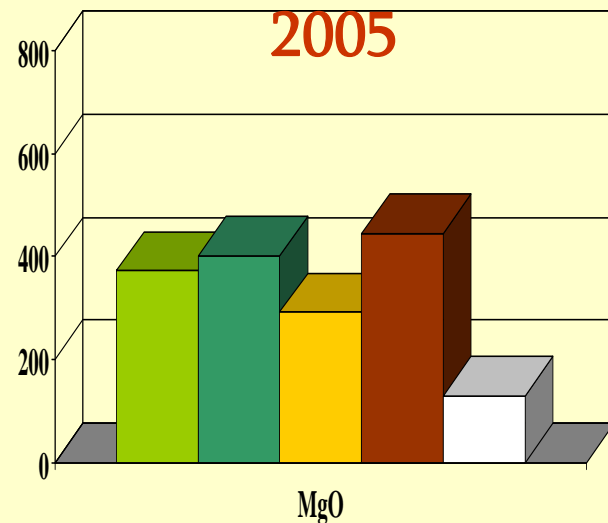
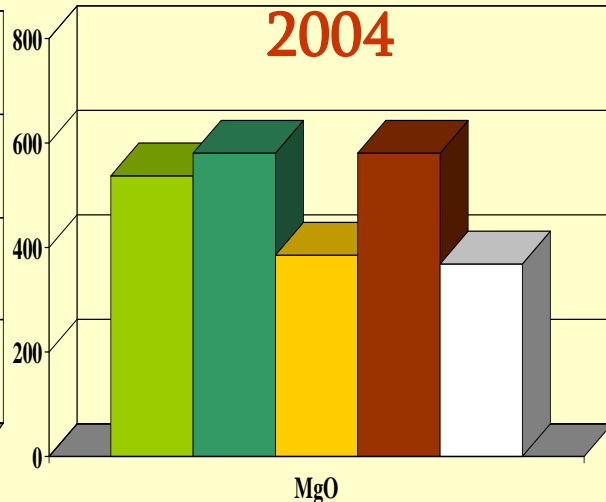
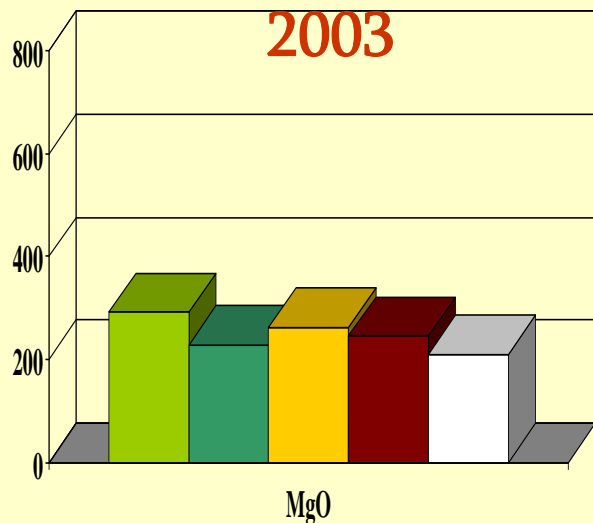
Compost Effects Soil K₂O (lbs/A): Concord (Erie)



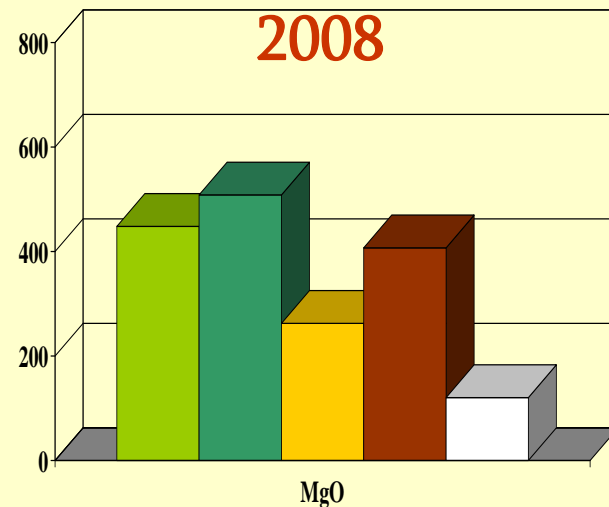
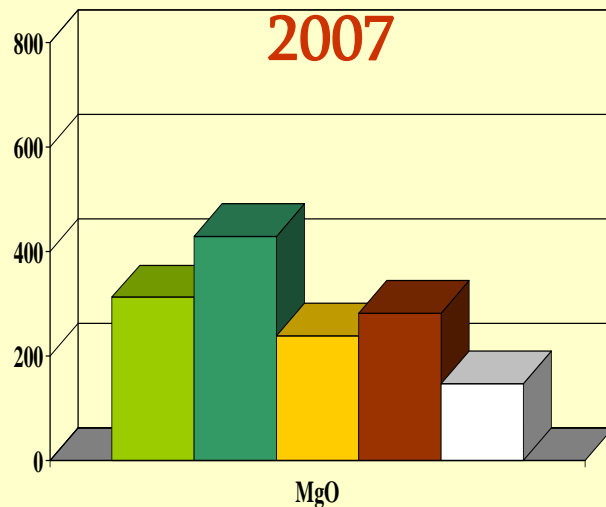
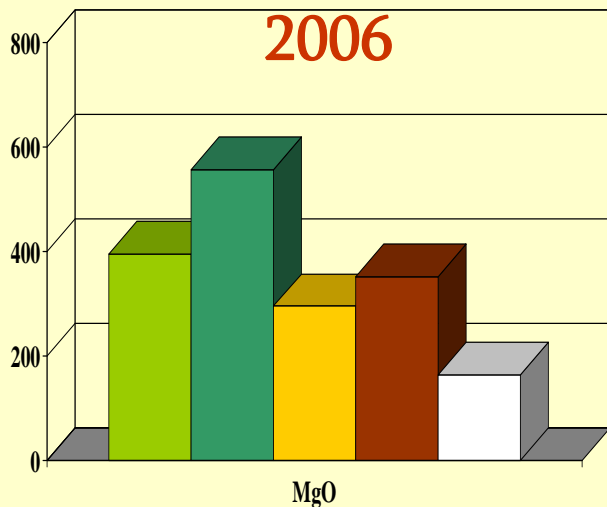
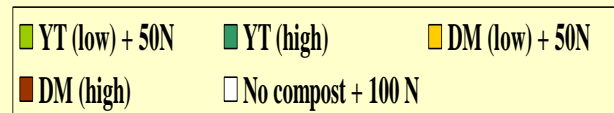
DM > YT (?) > check
High > Low > check



Compost Effects Soil MgO (lbs/A): Concord (Erie)



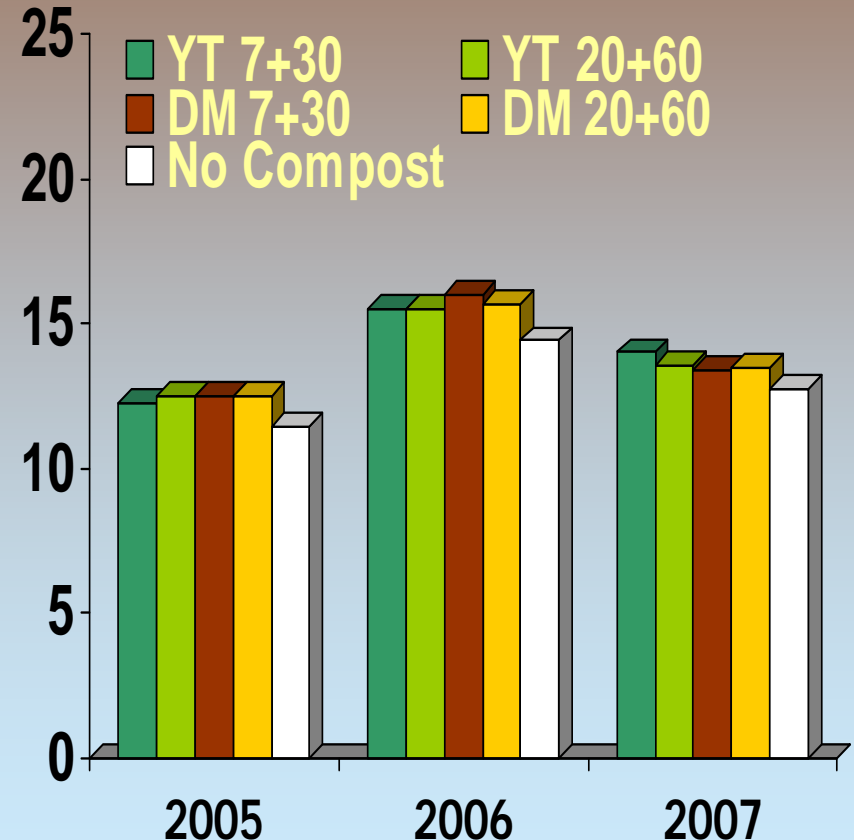
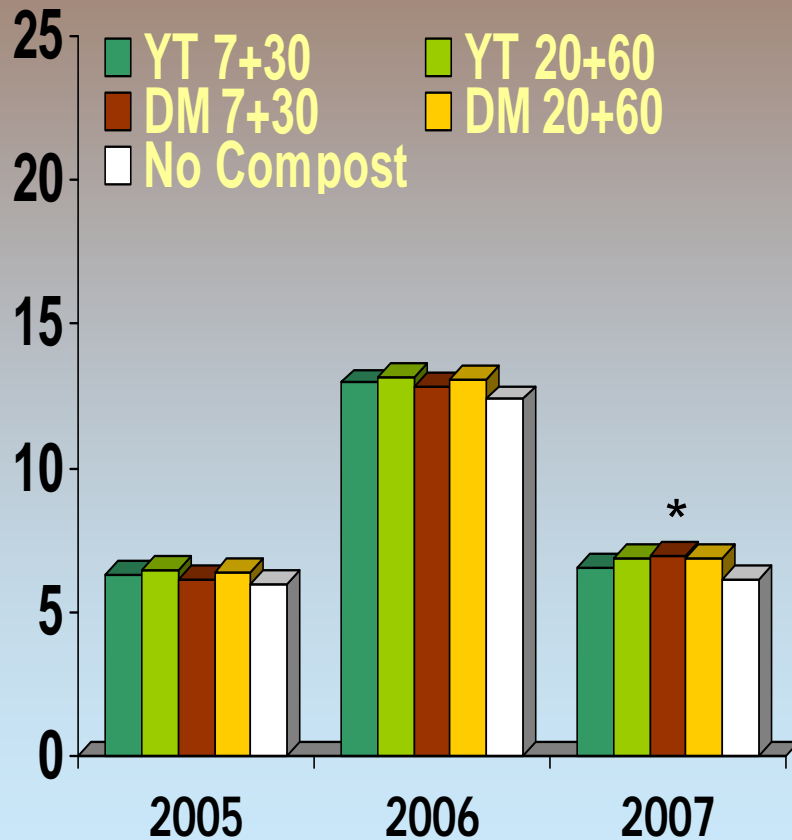
YT > DM (?) > check
High > Low > check



% Soil moisture: Concord

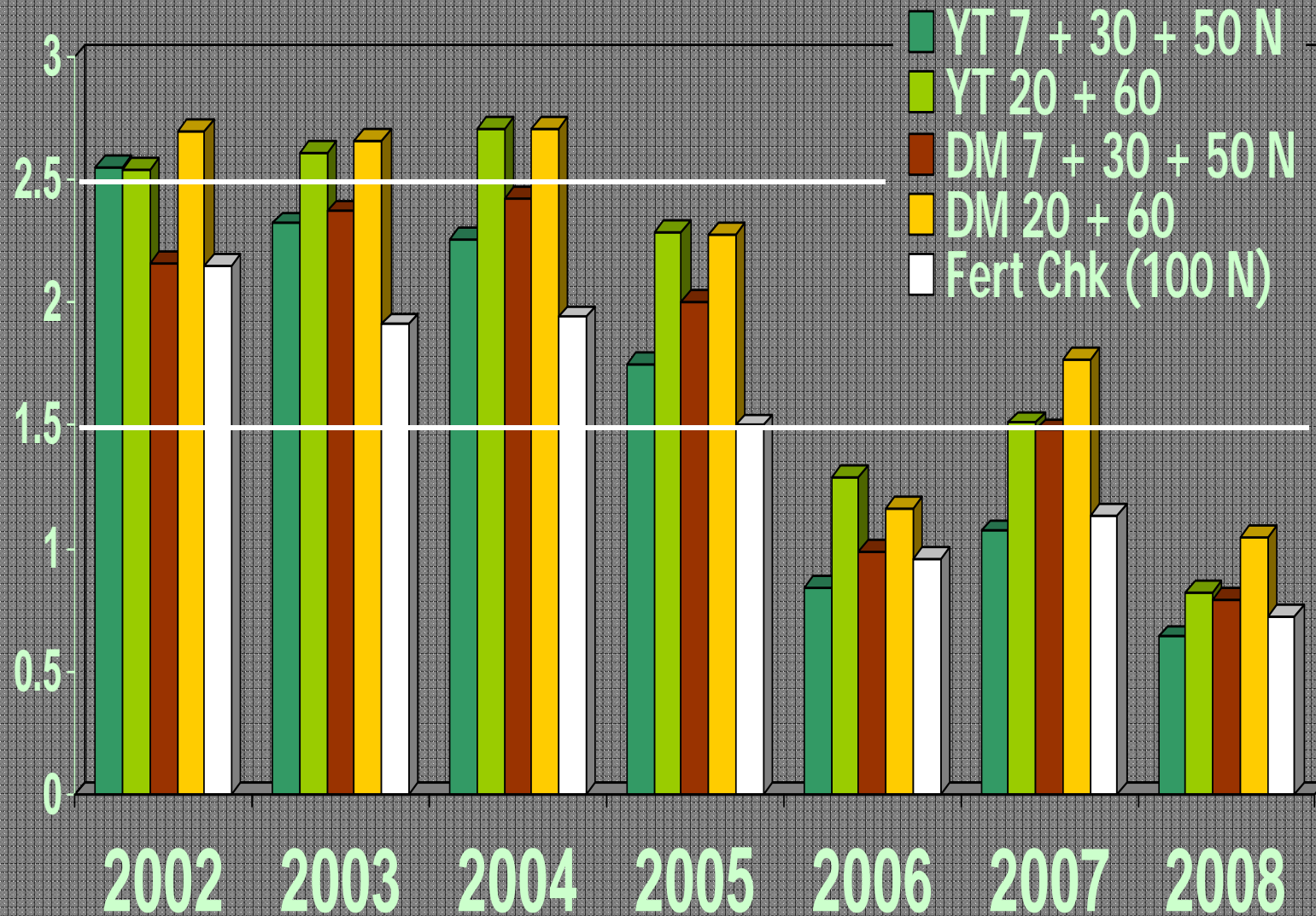
July

Oct/Nov

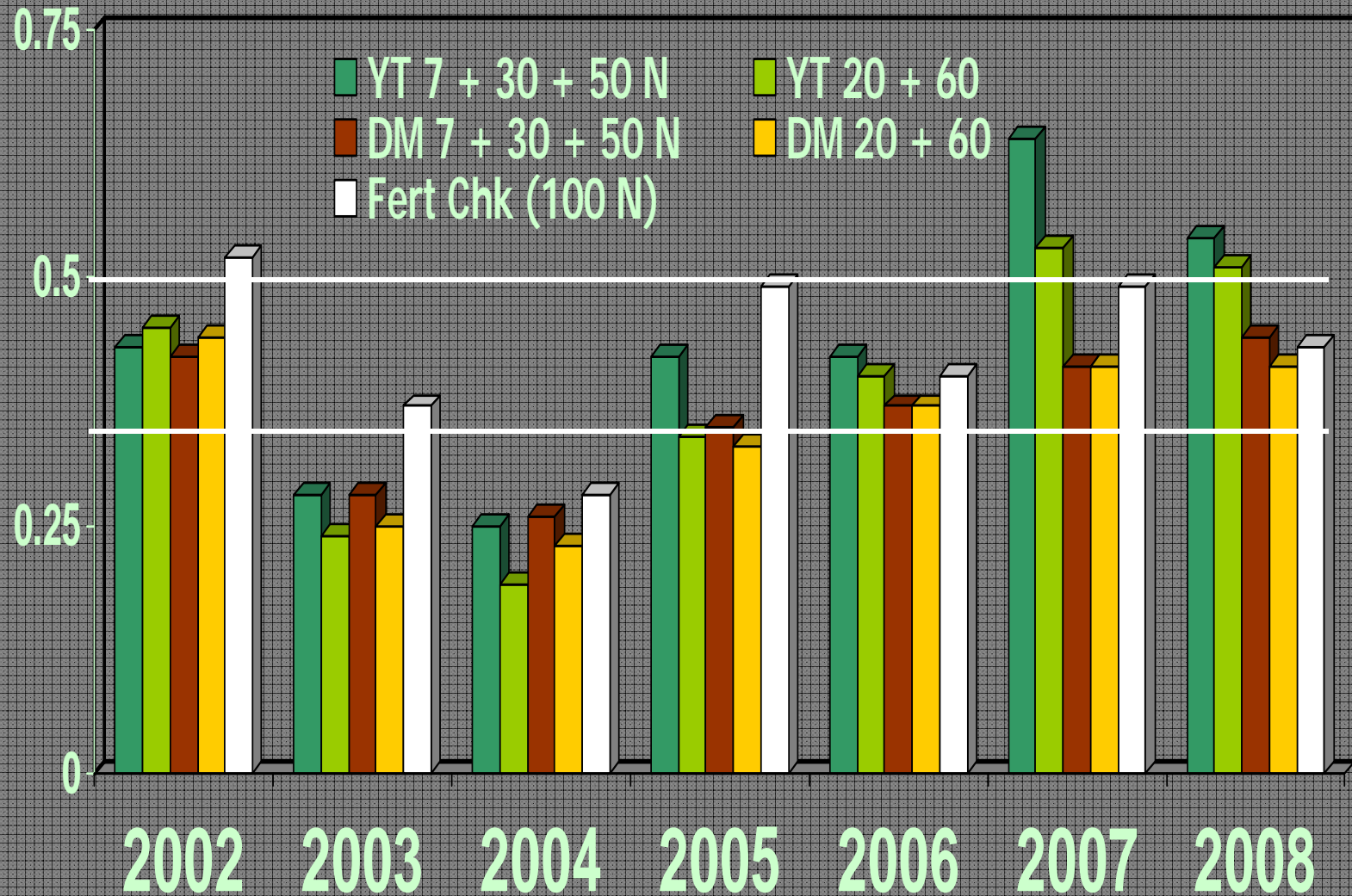


Compost increased soil moisture by 2.5 to 13.4* %

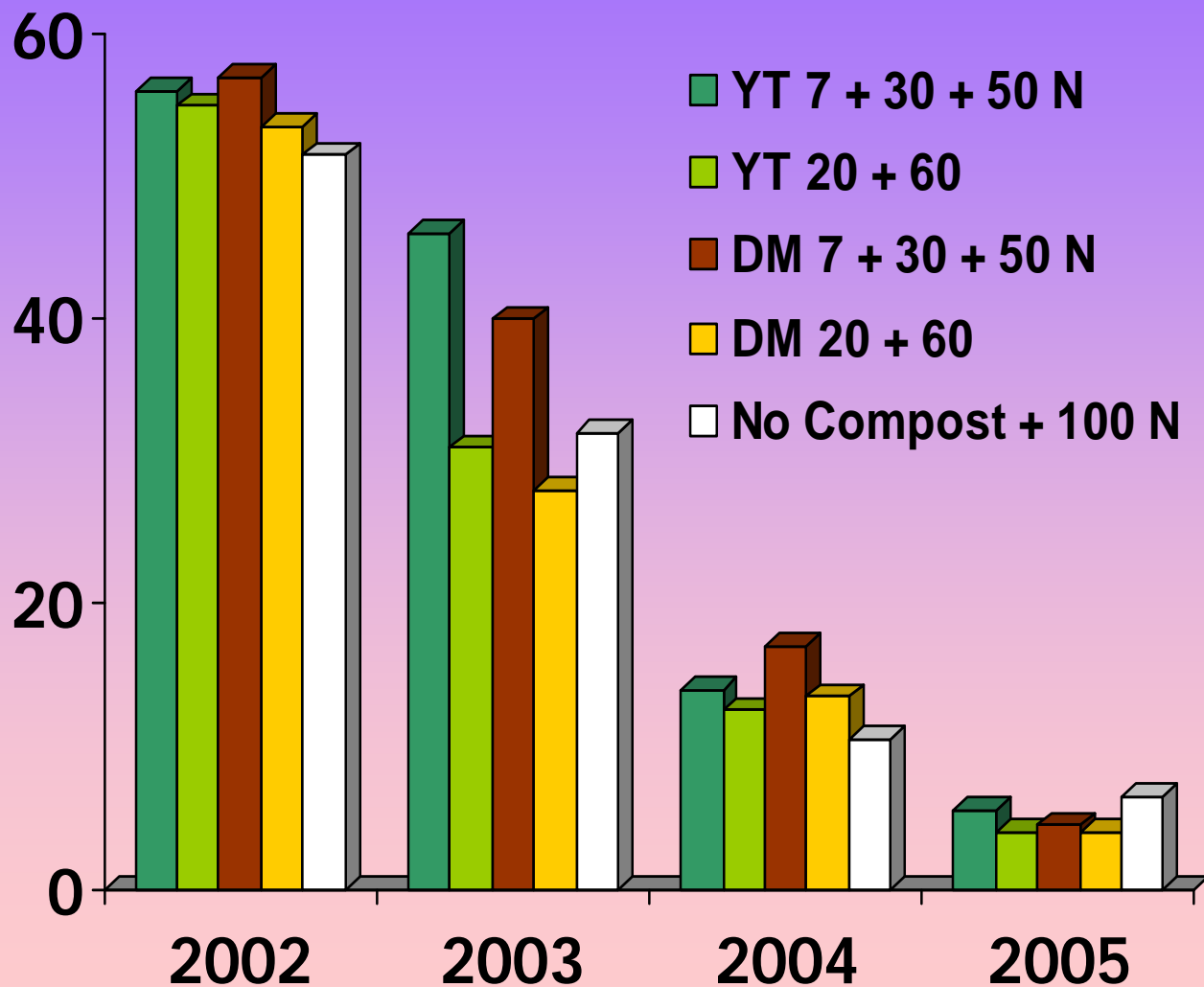
Petiole analysis: K: Concord



Petiole analysis: Mg: Concord



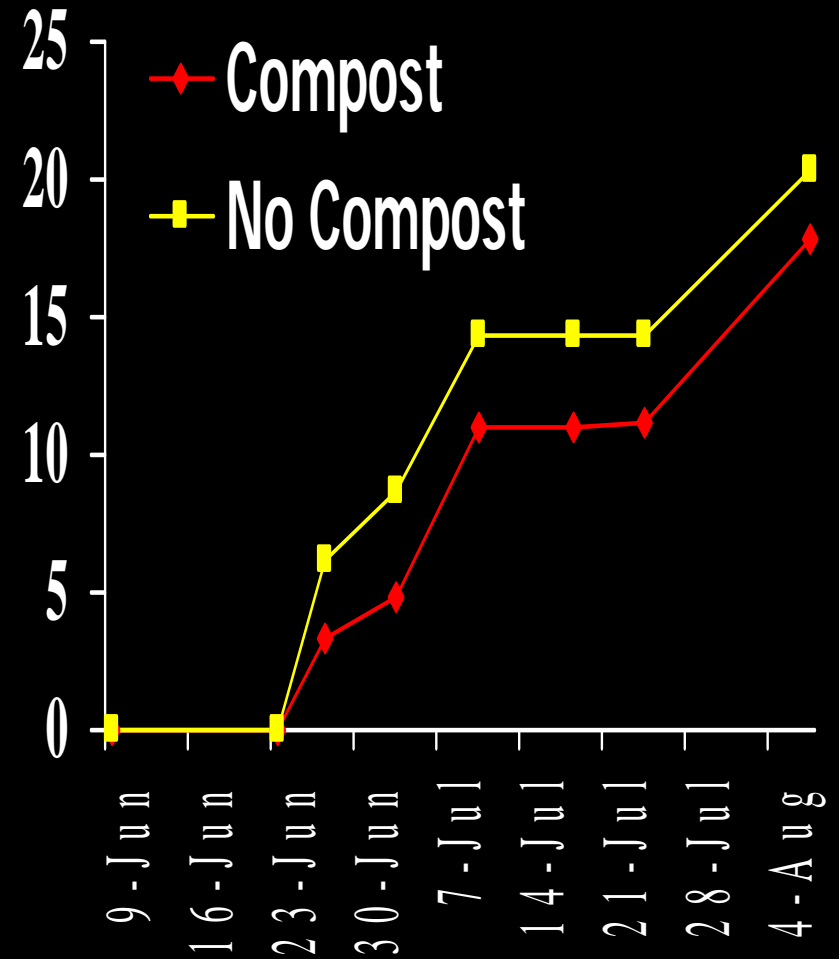
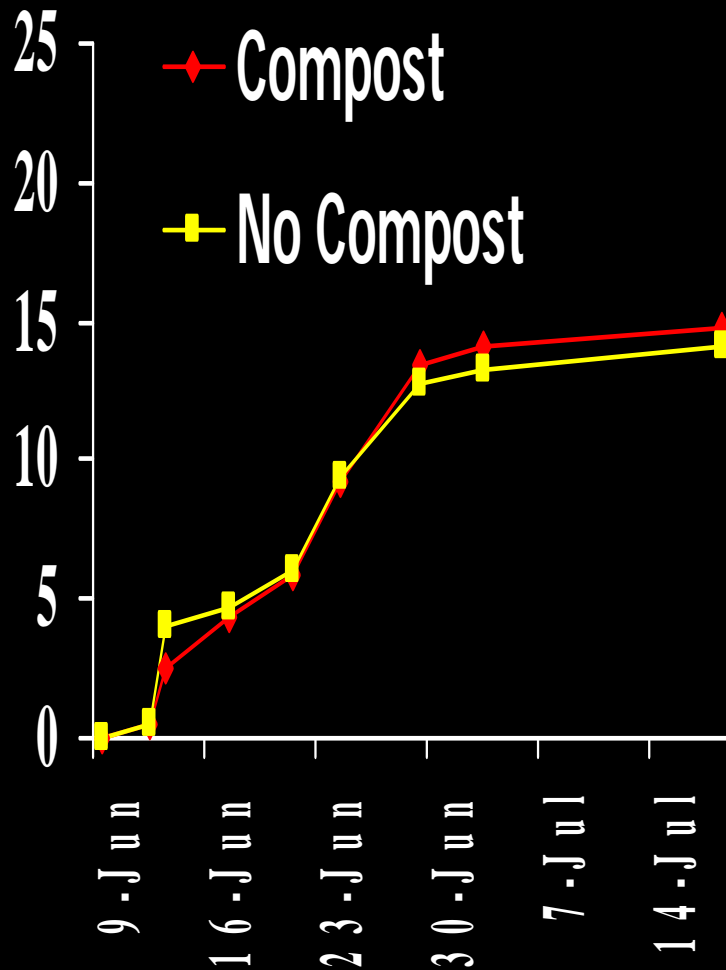
Incidence of Clusters with Powdery Mildew Fruit Infections: Concord



Downy Mildew on Chancellor

2002

2003



**Botrytis on
Vignoles;
bunch rot at
harvest
2002-2004**



	% clusters infected			% berries infected		
	2002	2003	2004	2002	2003	2004
DM 100T/A	87.2	88.8	79.2	27.5	23.8	17.6
No compost	88.0	87.1	77.4	23.9	22.1	16.4

How much should I apply?

Rate – Rules -of-Thumb

- High vigor site (3 - 4 T/A) alt. years ~30 lbs N 2 yrs
- Mod vigor site (5 – 7 T/A) monitor growth
- Low vigor site (10 T/A 1st year) band application
- About 22 tons compost in a semi (4-5 A)
- \$200 to \$250/A

- Compost can have long term impacts.

A Practical Guide to the Application of Compost in Vineyards



<http://fpath.cas.psu.edu/compostguide.pdf>



Further Information?

[www.http://fpath.cas.psu.edu/compostguide.pdf](http://fpath.cas.psu.edu/compostguide.pdf)

“Compost Application”

