

OBSERVATIONS OF TREE DAMAGE AFTER HURRICANE WILMA FROM BOTH HAND AND MECHANICALLY HARVESTED TREES

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Does mechanical harvesting make citrus trees more prone to hurricane damage?

□ Assumptions

- Trunk shaker may cause more root damage
- Valencia more prone because last harvested prior to hurricane
- Long term shaking may lead to greater hurricane damage



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Survey

Harvesting History

- ✓ Only hand harvested
- ✓ Short term mechanical harvesting (≤ 2 yrs)
- ✓ Long term mechanical harvesting (≥ 4 yrs)

Blocks

- ✓ Valencia only
- ✓ 2 groves
- ✓ 9 blocks
- ✓ 551 acres

Damage levels

- ✓ Canopy loss greater than 25% (no trunk movement)
- ✓ Trunk leaning
- ✓ Tree blown over and reset (top buck-horned)



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Pruned Tree



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Leaning Tree



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Toppled Tree



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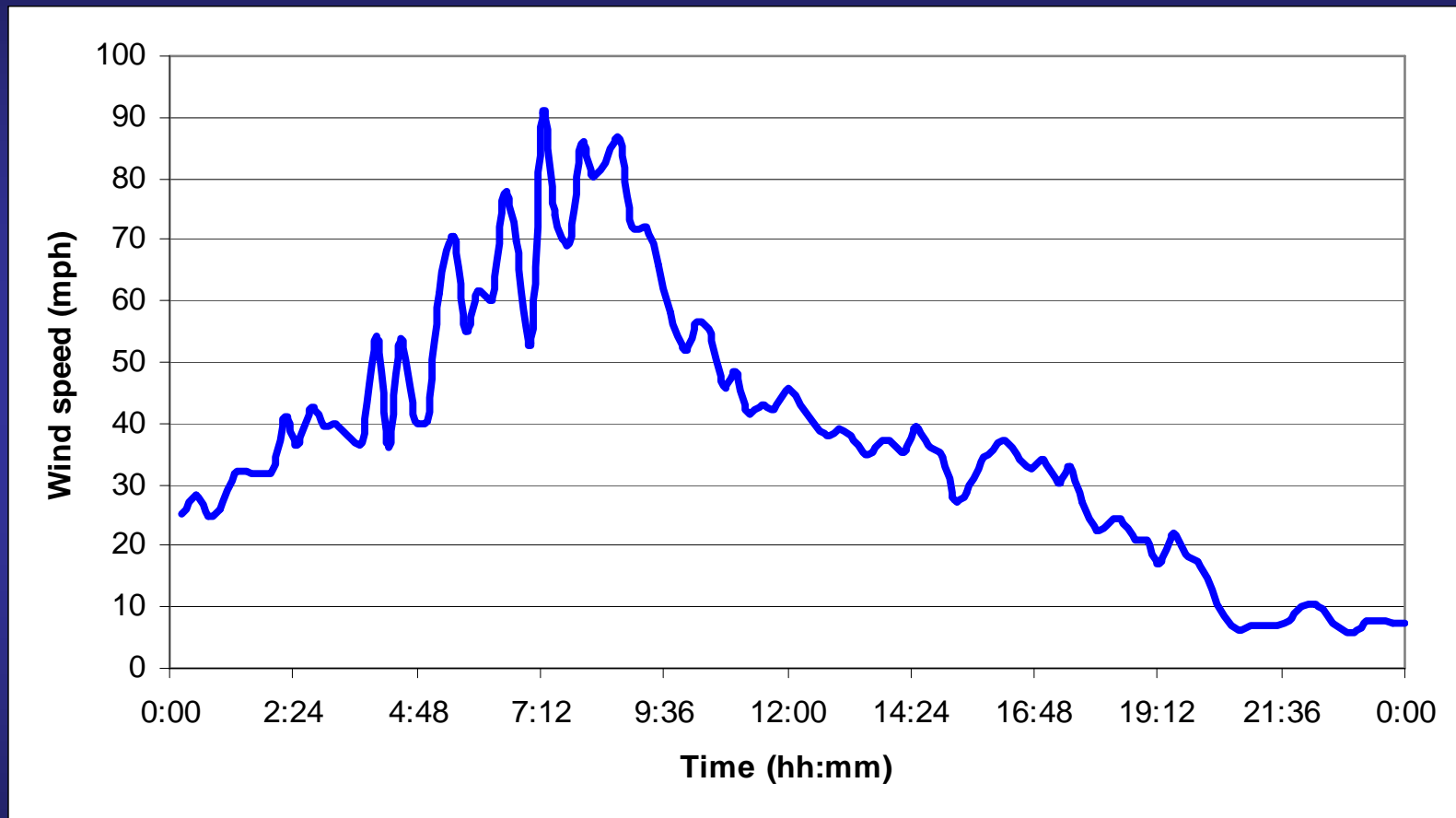
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Results - Block

Harvesting Method	Acres	Trees per Acre				Percent Tree Spaces			
		Pruned	Leaning	Toppled	Total	Pruned	Leaning	Toppled	Total
Hand	252	0.28	0.81	1.23	2.31	0.18	0.53	0.81	1.52
Short Term	148	0.74	0.84	3.17	4.75	0.49	0.50	2.23	3.22
Long Term	151	0.40	0.31	2.22	2.25	0.22	0.20	1.37	1.27



Hurricane Winds



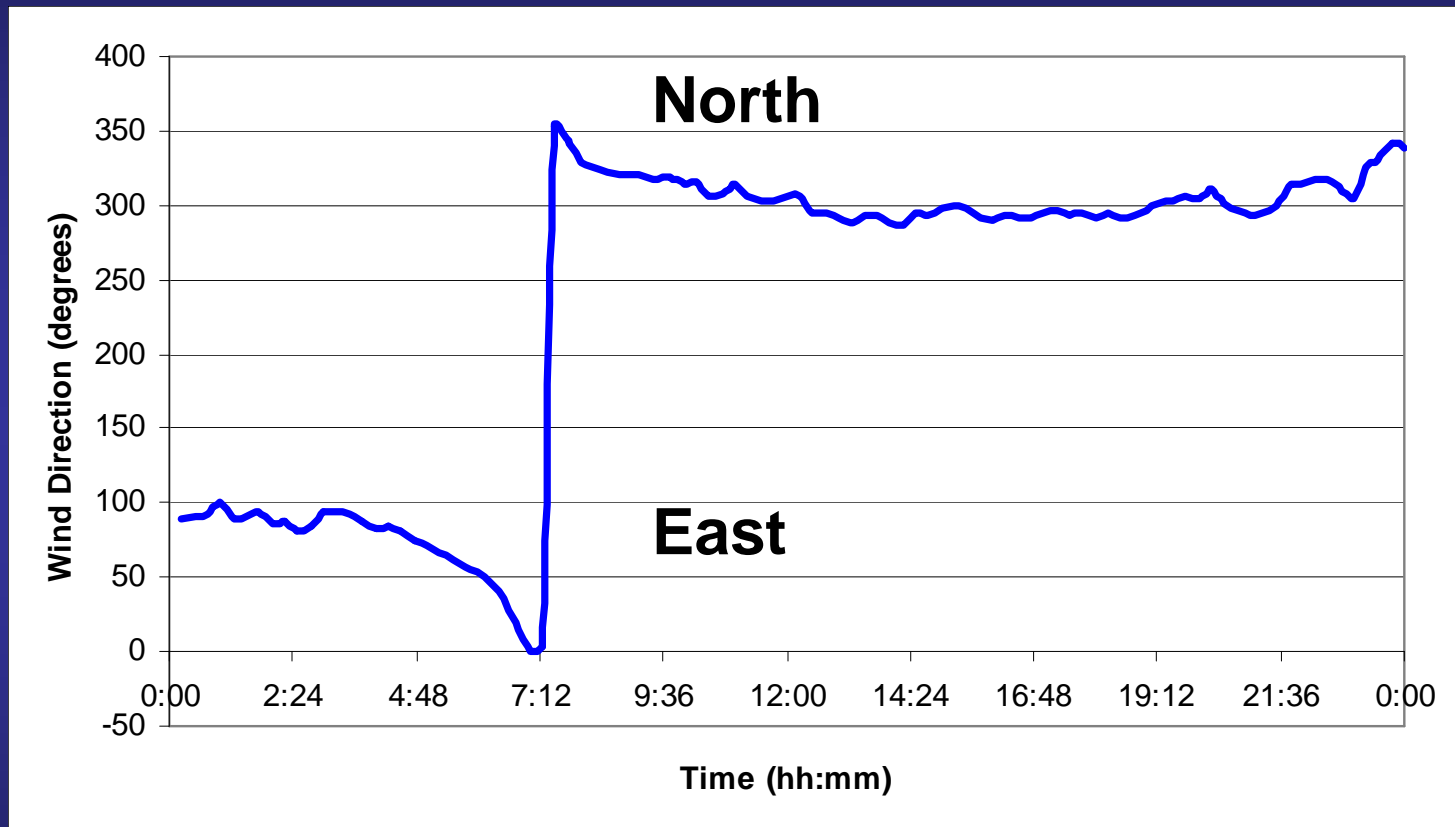
Source: SWFREC FAWN station



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Wind Direction



Source: SWFREC FAWN station



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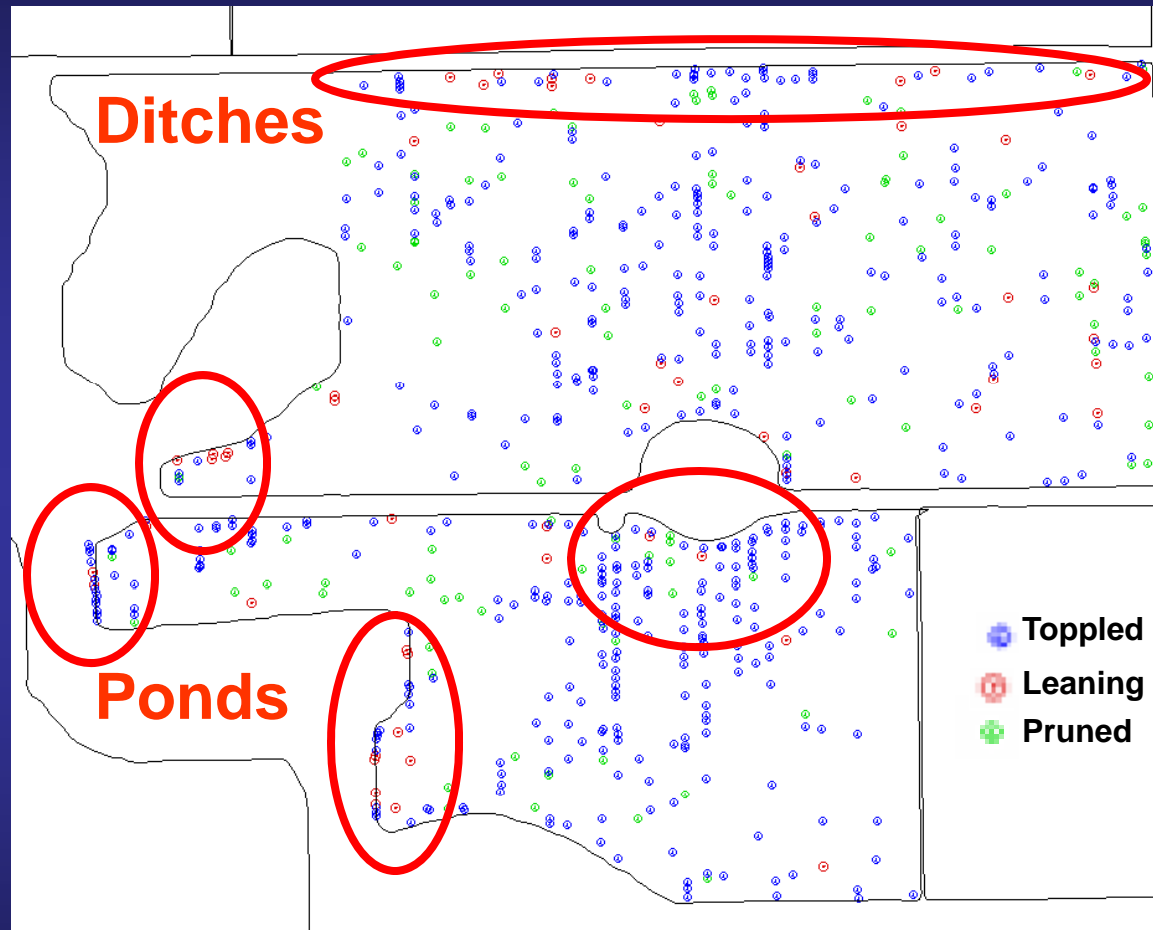
Edge Effect



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Effects of Open Areas



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Results – Exposed Areas

Harvesting Method	Acres	Trees per Acre				Percent Tree Spaces			
		Pruned	Leaning	Toppled	Total	Pruned	Leaning	Toppled	Total
Hand	15.6	0.32	2.33	3.66	6.31	0.10	1.31	1.91	3.32
Short Term	8.1	0.27	1.63	4.75	6.65	0.16	1.42	2.81	4.39
Long Term	9.1	0.37	2.25	9.52	12.14	0.21	1.25	5.29	6.75



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Conclusions

- ❑ Hurricane damage in mechanical harvested blocks was not significantly more severe than damage in hand harvested blocks.
- ❑ The exposed tree rows had about 3 times the amount of damage, but their damage was not significantly different from damage to trees in the rest of the block.



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