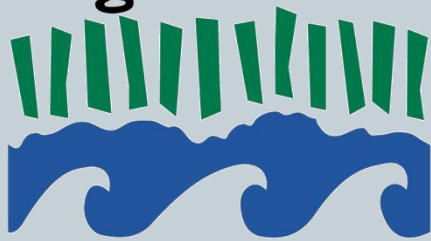


# Wind-Resilient, Florida-Friendly™ Landscape Design & Management



**Florida Yards &  
Neighborhoods**



UNIVERSITY OF  
**FLORIDA**

IFAS EXTENSION

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WORKSHOP

MAY 12, 2011

BROWARD BLVD



# What should we plant?



**Important to remember:**

**#1: No magic list.....**

**#2: Properly planted, properly managed, healthy trees are the closest thing to a “hurricane-proof” tree**



## Tsunami villagers give thanks to trees

By Sunil Raman  
BBC News, Tamil Nadu

In 2002, a village in India's Tamil Nadu state planted 80,244 saplings to enter the Guinness World Records book.

Little did they realise at the time that the trees would save their lives.

When the tsunami roared into the coast of southern India on 26 December many villages and towns were crushed as the giant waves swept across open beaches.

But the people of Naluvadapathy in Vedaranyam district, south of the Tamil Nadu's worst affected areas around Nagapattinam, remained almost unscathed.

### Mini-forest

Unlike other coastal areas in Tamil Nadu, Naluvadapathy is shielded by a kilometre-thick tree cover.

" Tell others to plant trees "  
Marimathu, villager

Casuarina, coconut and other varieties of trees have turned the place into a mini-forest.

Walking towards the sea, you can hear the crashing waves but not see them.

Only after walking through a considerable amount of thick vegetation do you reach the Bay of Bengal.

The village has about 600 houses but suffered minimal damage and few deaths. More than 10,000 people were killed in India.

Villagers talk animatedly about how water engulfed the area.

In spite of being located on a higher elevation, the huge waves flooded their homes, paths and farms.

But the thousands of trees helped break the impact.

### Trembling

Nagappan, an old farmer, says the village has always had trees but the numbers increased vastly

“We were saved by these trees. Other coastal villages should also create a tree cover for their safety.”

when the local administration sold the idea to villagers to create a world record three years ago.

"We were saved by these trees. Other coastal villages should also create a tree cover for their safety," he says.

Seventy-year-old Marimathu trembles as she recalls the events of 26 December.

"I was on a hilltop and saw this giant wave come towards the shore... I managed to run to safety but this place was inundated with water."

She adds: "Trees have been planted over a period of time by my grandparents and others. I have been in this village all through my life but this tree cover expanded in the last 15 years.

"Tell others to plant trees," says Marimathu.

A stretch of coast near Kanyakumari with its sandbanks, an area near Nagapattinam with its mangroves and another near Pondicherry with green cover protected some other villagers from the wrath of the tsunami.

But Naluvadapathy had enough protection for the entire village.

# Wind-Resilient, Florida-Friendly™ Landscape Design



- Choose the right tree for the right place
- Choose appropriate, wind-resilient species
- Plant in groups
- Plant for diversity
- Use planting strips instead of small islands
- Plant trees with quality structure
- Care for tree properly

# Choose the right tree for the right place



# Right Tree, Right Place



- Plan to avoid conflict between trees and hardscapes
- Match planting space to full-size of tree
- Be aware of full- grown height, shape, and spread of tree- including root space requirements
- Locate utilities both overhead and underground
- Consider buildings, lights, signs, sidewalks, roads and driveways

**Wrong Tree,  
Wrong Place!**





# Wrong Tree, Wrong Place!



**Wrong Tree,  
Wrong Place!**



**Wrong Tree,  
Wrong Place!**



**Wrong Tree,  
Wrong Place!**



# Choose appropriate, wind resilient species



# Some recommendations....



- Many palms
- Live oak
- Southern magnolia
- Sweetgum
- Holly
- Sycamore
- Swamp chestnut oak
- Spruce pine
- Baldcypress
- Gumbo limbo
- Blackgum



# Plant in groups



# Plant in Groups



- 5+ trees considered a group
- Groups plants from grasses to large canopy trees
- Reduces the portion of the tree exposed directly
- Groups create sheltering effect
- Reduce the effect of surface winds





**Single specimen trees tend to fail!**



**Groupings resist failure!**



**Groupings resist failure!**



**Groupings resist failure!**

# Groupings resist failure!



# Plant for diversity



# Plant for Diversity



- Different species grow and mature at different rates
- Diversity= sizes, species, age
- Minimizes potential risks associated with a monoculture
- The more diversity, the less chance for loss of all → applies to storms, diseases, pests



**Diverse plantings resist failure!**



# Use planting strips instead of small islands





**Larger planting  
areas are better  
than small islands!**





# Plant trees with quality structure



# Sound Structure



- Straight, single leader
- Evenly spaced branches and full, even canopy
- Free of pests, disease, and injury
- Roots grow away from the trunk; do not circle or girdle



**Look for single, straight, central leaders**

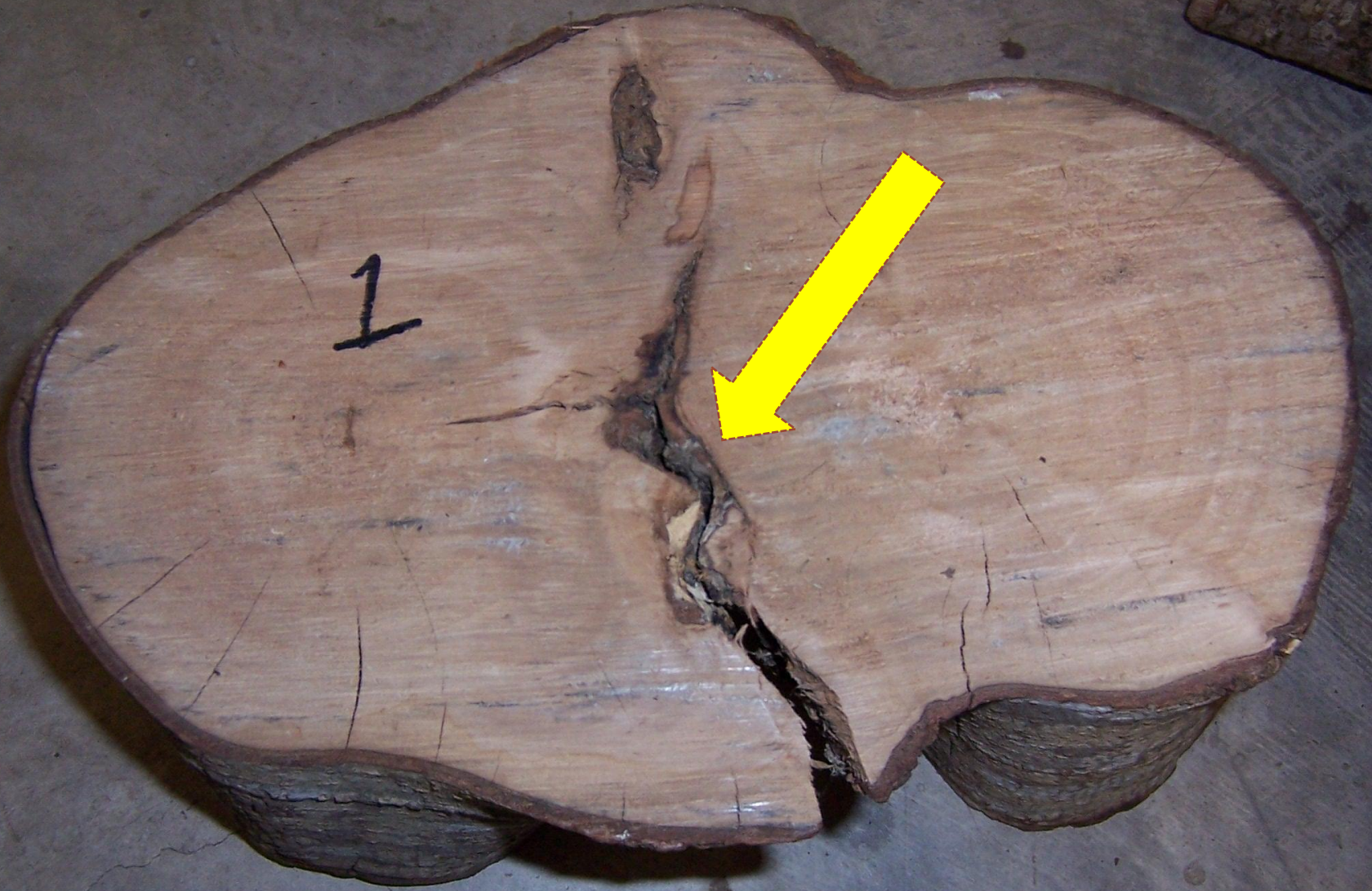


This  
codominant  
stem could be  
easily  
corrected  
with one  
small  
pruning cut.  
If not  
addressed  
now....









1



**Storm failure due to  
codominant trunks /  
included bark**





**Storm failure due to  
codominant trunks /  
included bark**







**Circling / Girdling  
root systems often  
cause failure**





**Circling / Girdling  
root systems often  
cause failure**









# Care for tree properly



# Proper Tree Care



- Remove staking materials
- Proper pruning: no flush cuts, hatracking, or removing more than 20% of a tree's crown
- Proper water and fertilizer
- Protect trees from damage
- Don't allow soil to become overly wet
- Allow aerial roots to remain on tree

# Failure to Remove Staking Materials



Rebekah D. Wallace, , Bugwood.org



# Failure to Remove Staking Materials



Brenda Lucas, , Bugwood.org

Andrew Koeser, International Society of Arboriculture, Bugwood.org



# Overlifted Tree



**Center of Gravity**



**Storm failure due to  
overlifting**



**Storm failure due to  
overlifting**



**Storm failure due to  
overlifting**









... para libretos  
... emias

1518

Black Aluminium  
Aluminium Noir  
de Aluminium Negro

61









# In conclusion...



- Properly planted, properly managed, healthy trees are the closest thing to a “hurricane-proof” tree
- Plan for right plant, right place
- Plant in groups!
- Plant for diversity!

# References/Resources



- **Urban Forest Hurricane Recovery Program series:**  
[http://edis.ifas.ufl.edu/topic\\_series\\_urban\\_forest\\_hurricane\\_recovery\\_program](http://edis.ifas.ufl.edu/topic_series_urban_forest_hurricane_recovery_program)
- **UF / IFAS Trees and Hurricanes: Lessons Learned:**  
[http://hort.ifas.ufl.edu/treesandhurricanes/lessons\\_learned.shtml](http://hort.ifas.ufl.edu/treesandhurricanes/lessons_learned.shtml)
- **Landscape Diversity: Debra P.C. Peters and Sarah C. Goslee:**  
<http://usda-ars.nmsu.edu/biblio/pdf/00-020.pdf>
- **Urban design for a wind resistant urban forest: Ed Gilman and Traci Partin:**  
<http://hort.ufl.edu/woody/documents/EP309.pdf>
- **Interaction of Hurricanes and Coastal Landscape Features:**  
<http://www.mvd.usace.army.mil/lcast/pdfs/o8URSHurricaneReport.pdf>

Thank you!



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