Protecting Tree Plantations From Fire

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Disclaimer

• Every site is different – fire threat varies
• Up to you to evaluate risk
• Insurance, banks, incentive programs, environmental review might call for some sort of fire plan
• Better safe than sorry – plan for the worst now and worry less later
Why Worry About Fire in Hawaii?

• Statewide there were 659 “wildland” fires reported between 1996 and 2000
• 61,446 acres burned
• Resource value $85 million
• Mostly brush and “untended” forest
• No figures for privately owned tree plantations - how come?
My Trees Live Where It’s Too Wet

- Good sites for trees = fast growth of grass and brush, especially before canopy closure
- Drought and high winds can happen at any time during the year
- High elevation and leeward sites often subject to low humidity
Fire Jargon

- Prevention
- Pre-suppression
- Suppression
Prevention

Don’t let it start in the first place!

• Ignition sources:
  – Power tools
  – Mowers
  – Catalytic converters
  – Heavy equipment
More Things That Start Fires

- Welding
- Smoking
- Missing Spark Arrestor
Fire Danger

- Follow the weather
- If it’s dry, close the area
Catch The Fire Before It Gets Away

- Fire extinguisher
- Water
- Fire tools
- Phone on site
- Keys to the Dozer
Life on the Plantation

- Protect the trees from the burning house and vice-versa
- 30 foot buffer
- Wildland-Urban Interface
What About...

- Roadside starts
- Arson
- Idiot neighbor
- Big wildfire in the neighborhood
Pre-suppression = Plan Ahead

• Fuels
• Access
• Water
Fire Triangle

Heat

Oxygen

Fuel

FIRE
Fire Behavior Triangle

Topography

Weather

Fuel
Fuel

- The only component that you can really control

- Availability to burn and fire behavior depend on:
  - Moisture
  - Loading
  - Arrangement
  - Continuity
  - Size

- Live trees aren’t fuel; the dead stuff on the ground is
Fuel Moisture

- Fine, Dead Material Carries Fire
- Subject to Rapid Changes
- Depends on Weather
Fuel Arrangement

• More available oxygen makes a hotter burn
Fuel Size and Loading

- Heavy fuels mean prolonged heat
- Damage to base of trees
- Harder to put out
Loading

• Site Preparation
  – Cat piles
  – Chip mounds
Continuity - Vertical

- Remove “ladder” fuels
- Canopy not likely to burn unless supported by surface fire
Continuity - Horizontal

- Preheating ahead of fire – dries fuels
- Increased intensity
Vegetation Management

- Plantation is more than just trees
- Select for less fire-prone understory
- If you can’t keep the fuel under control, then you need breaks
Breaks

Fire

Fuel
How Wide?

- Short answer = 2 times fuel height
Location of Breaks

• Perimeter

• Compartments

• Build into Harvest Plan
Orienting Breaks

- Fires are wind driven
- Perpendicular to prevailing wind
- Lee side of ridges
Access

• Address posted
• Gates and locks
• Contact phone #
• Maps
Access

- Roads
  - Condition
  - Width
- Bridge loads
- Vehicle turn-outs
- Safety zones

Part of Harvest Planning
Water

• Sources
  – Hydrants
  – Ditches
  – Reservoirs
  – Natural bodies
  – Water tanks
  – Fold-a-tanks
  – Tank trucks
Water Is No Help If You Can’t Get to It!

- Standard threads on pipes
- Deepen streams or ditches
- Harden edge of reservoirs or install standpipes
- Helicopter dip access
Suppression

Will almost always be the County Fire Dept.

- Life and structure protection
- Wildfire experience varies
- Have other things to do
What if it’s a BIG Fire?

- Cooperative agreements between County, State and Federal agencies

- DOFAW role to protect State lands and watershed
Tactics

• Direct Attack
  – Kill the fire while it’s small
  – Response time is key
Tactics

• **Indirect Attack**
  
  – Defending the fire line

  – “Fighting fire with fire”

  – Backing fires have lower intensity than head fires

  – Ways to protect trees
Take Home Points

• Mow your grass

• Plan for the worst

• Make friends with the Fire Department
Thank You – Any Questions?