



Forest Health Initiative:

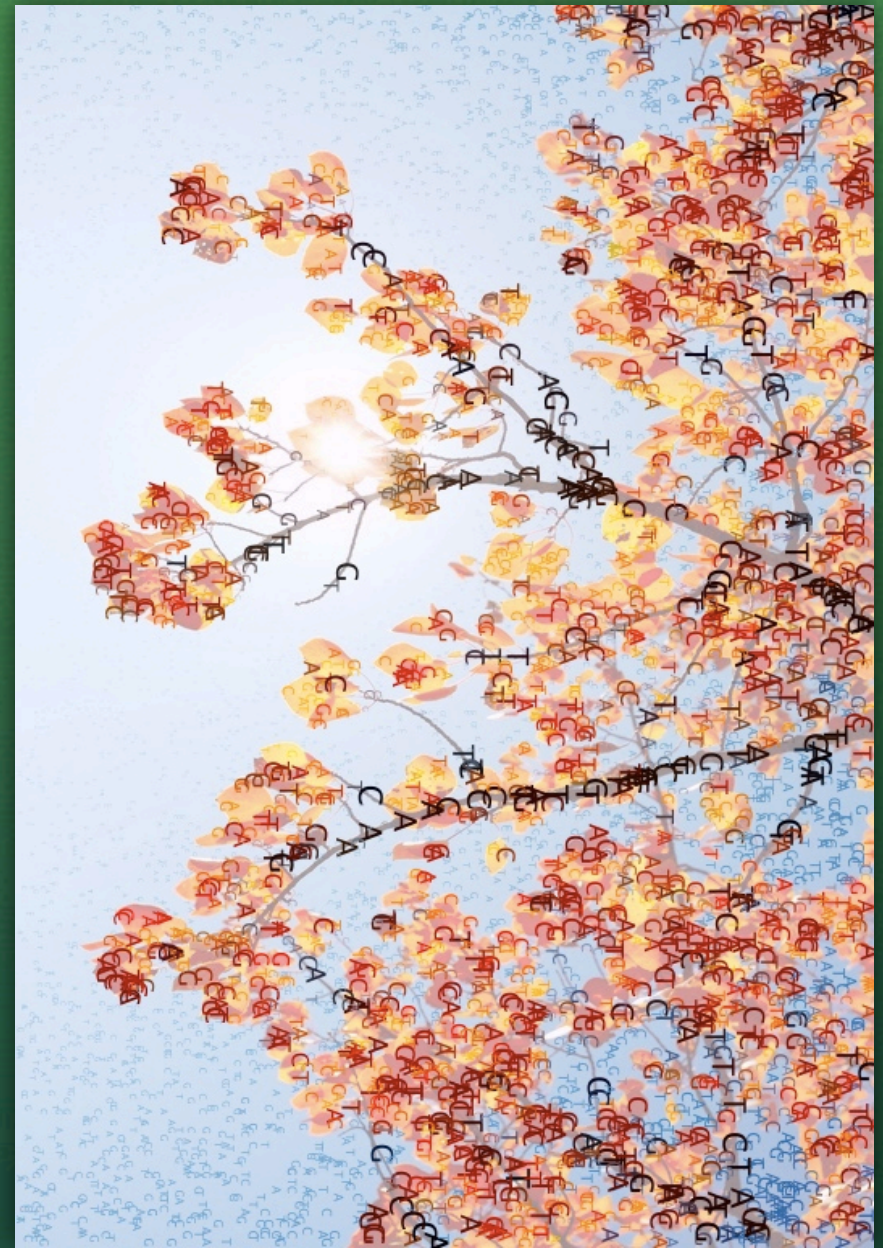
Risk + Benefit \approx Policy

Forest Health Initiative
Policy Group Presentation
Annual Meeting, August 9, 2012

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FHI Policy Group

- Focus is on biotech trees*
- Main interface with U.S. agencies
- New collaborative model with regulators
- Designing next stage field trials
- Members:
 - Adam Costanza
 - Susan McCord
 - Lori Knowles
 - Tom Redick



* *Biotech trees* are trees developed through genetic engineering or which contain discretely engineered DNA, and their offspring.

Accomplished

- ✓ Dialogue with agencies
- ✓ Intellectual Property (IP) review
- ✓ Biological dossier
- ✓ Review regulatory landscape
- ✓ Roadmap activities
- ✓ Ongoing agency Q&A

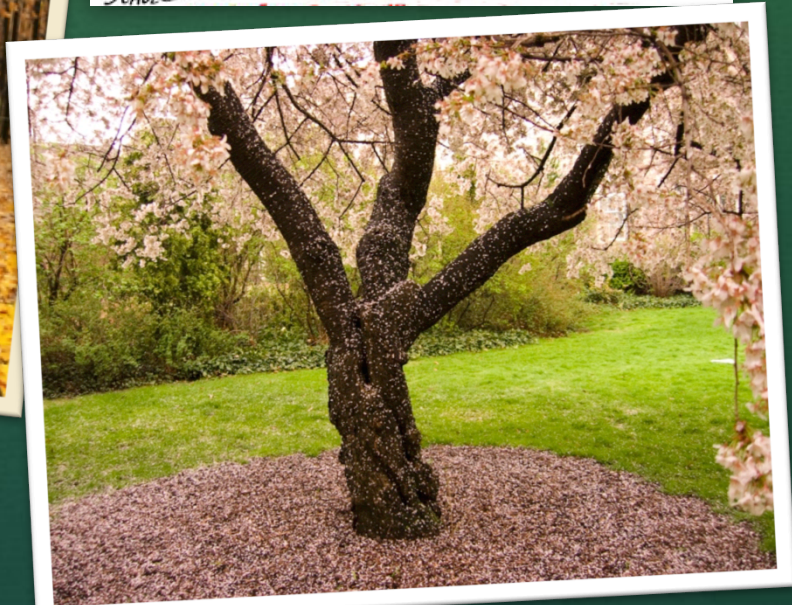
To Do

1. Permits & approvals
2. Field trials
3. **Risk review**

Why?



Everyone Loves Trees!

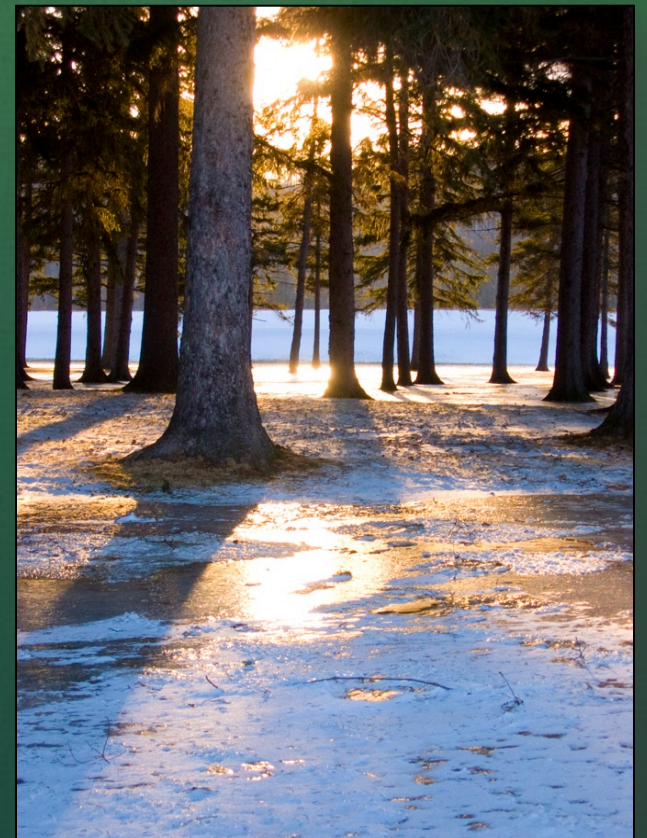


Regulatory Policies: Designed to Protect

Biotech trees will affect society and the environment

- What are we protecting?
 - Social values, beliefs, cultural narratives, forest-based communities...
 - Forest health, human health, productivity, forested lands...
- Risk has two sides:
 - Risk of using forest biotechnology
 - Risk of NOT using forest biotechnology

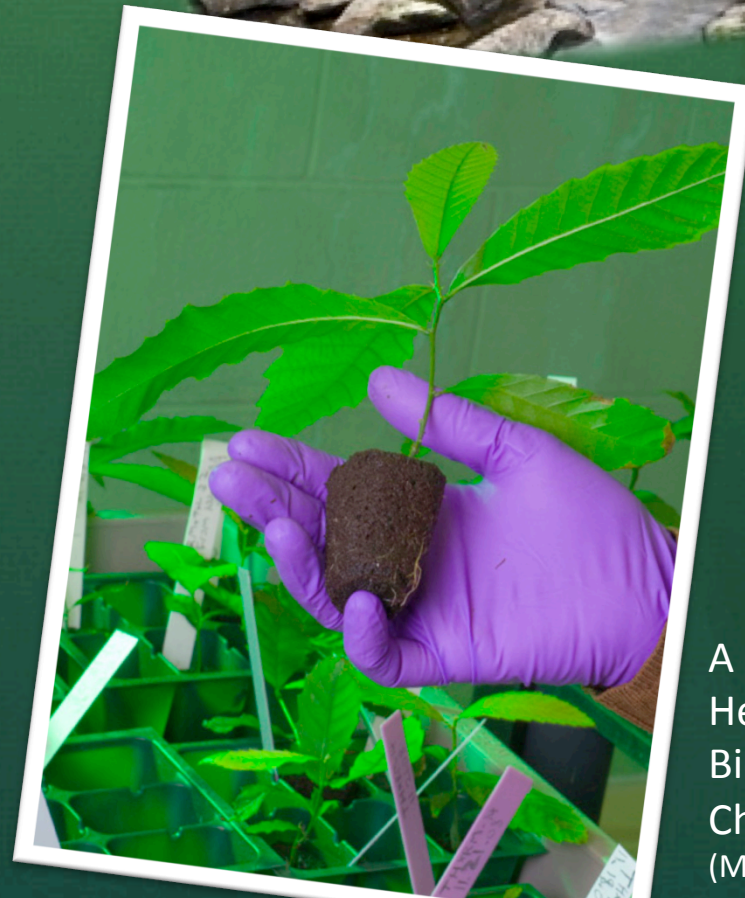
What *is* risk?



Probability x Severity = **Risk**

- It is natural for people to estimate risk non-linearly
- Difficult to accurately estimate severity of an action on an ecosystem
- Political tolerances for risk shift with new officials
- Lawsuits pose additional challenges
- Risk aversion changes both nationally and locally
- **It is all possible to manage**

Start with what we know



A Forest
Health Initiative
Biotech American
Chestnut
(Merkle, UGA)

Using Biotech Trees for Forest Health

Expected

- Gene flow & introgression (expected to propagate)
- Harming target species (blight, phytophthora)
- Ecosystem change (more target tree species)
- Restoring or protecting Heritage Trees
- Slow mortality, assist restoration efforts, reduce forced animal migration...

Unknown

- Related species gene flow & introgression?
- Affecting non-target species?
- Unanticipated ecosystem change?
- Out compete other trees? (weediness?)
- Pleiotropy, epistasis, position effects, allelopathy...

What is the probability? What is the severity?

Not Using Biotech Trees for Forest Health

Expected

- Higher tree mortality
- Lower biological diversity
- Ecosystem shifts
- High short-term management & removal costs
- High Long-term economic losses from wood products

Unknown

- Loss of a species?
- Loss of cultural significance?
- Increased fire hazard?
- Would natural resistance prevail over time?

What is the probability? What is the severity?

“I never worry about action, but only inaction.” – Winston Churchill

Where do we go from here?

1. Permits and approvals

- FHI is a goal-oriented process driven by stakeholders for social and environmental benefit, not profit.

2. Field trials

- We are seeking expert input to the questions we should be asking
- We will put resources in place to find answers

3. Risk review

- Address both sides of the risk coin: action & inaction
- Provide excellent information to the public, regulatory agencies, and congress

✓ **Hope is not a strategy. We will act decisively and thoughtfully!**



Too big to let fail



Stay Engaged!

- The FHI Website will continue to post the latest documents and work products
- We want your feedback - email us directly or leave anonymous feedback on the FHI's online contact form

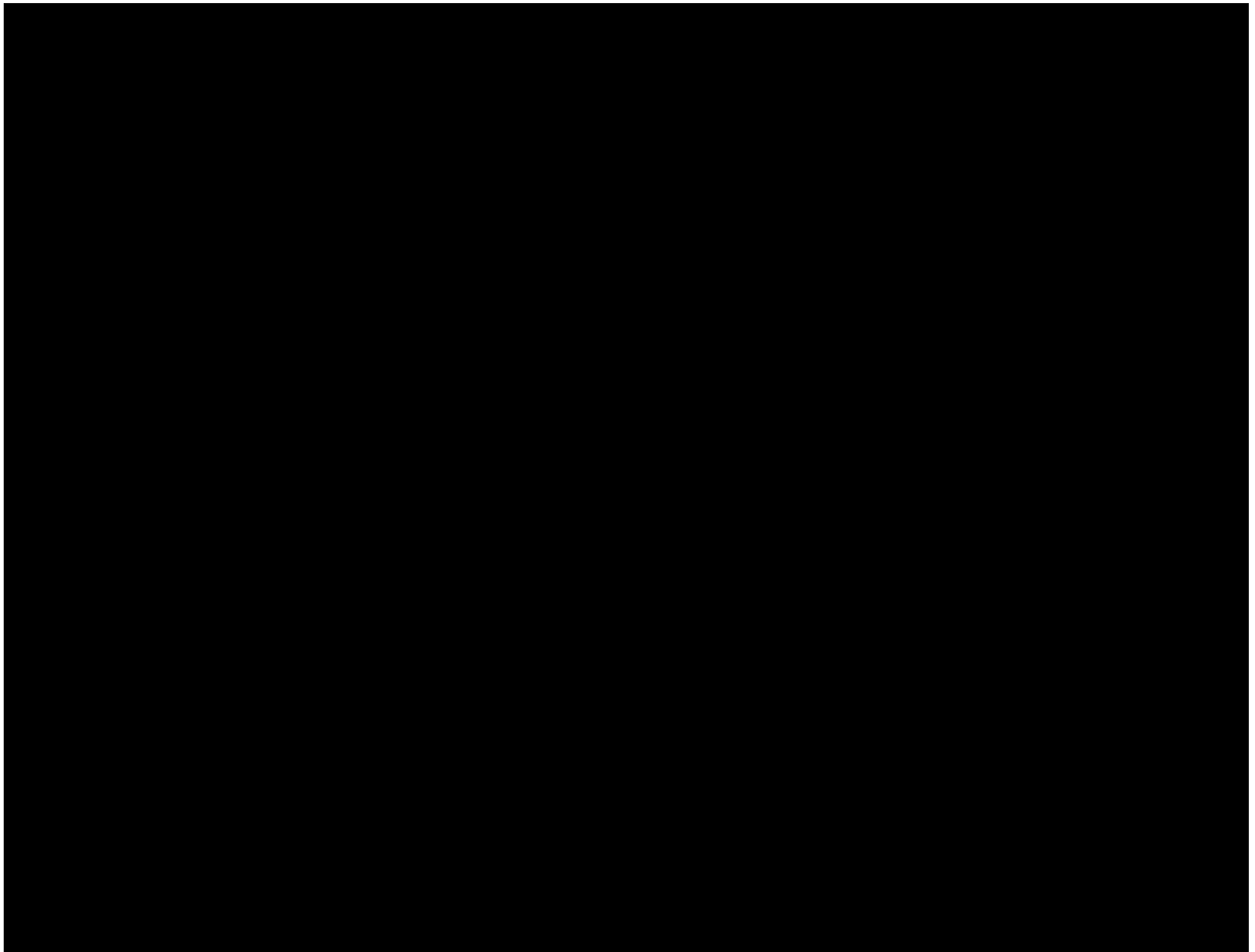
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Can We Use Biotech Trees Responsibly?

We think so!

Core beliefs of Responsible Use Principles:

- Biotech trees should benefit people, the environment, or both
- Risks and benefits of biotech trees must be assessed
- Transparency is vital and stakeholders must be engaged
- Social equity and indigenous rights are important and must be respected
- Biotech tree use must follow regulations in the country of their application

Responsible Use: Biotech Tree Principles

*A publication by the Institute of
Forest Biotechnology*