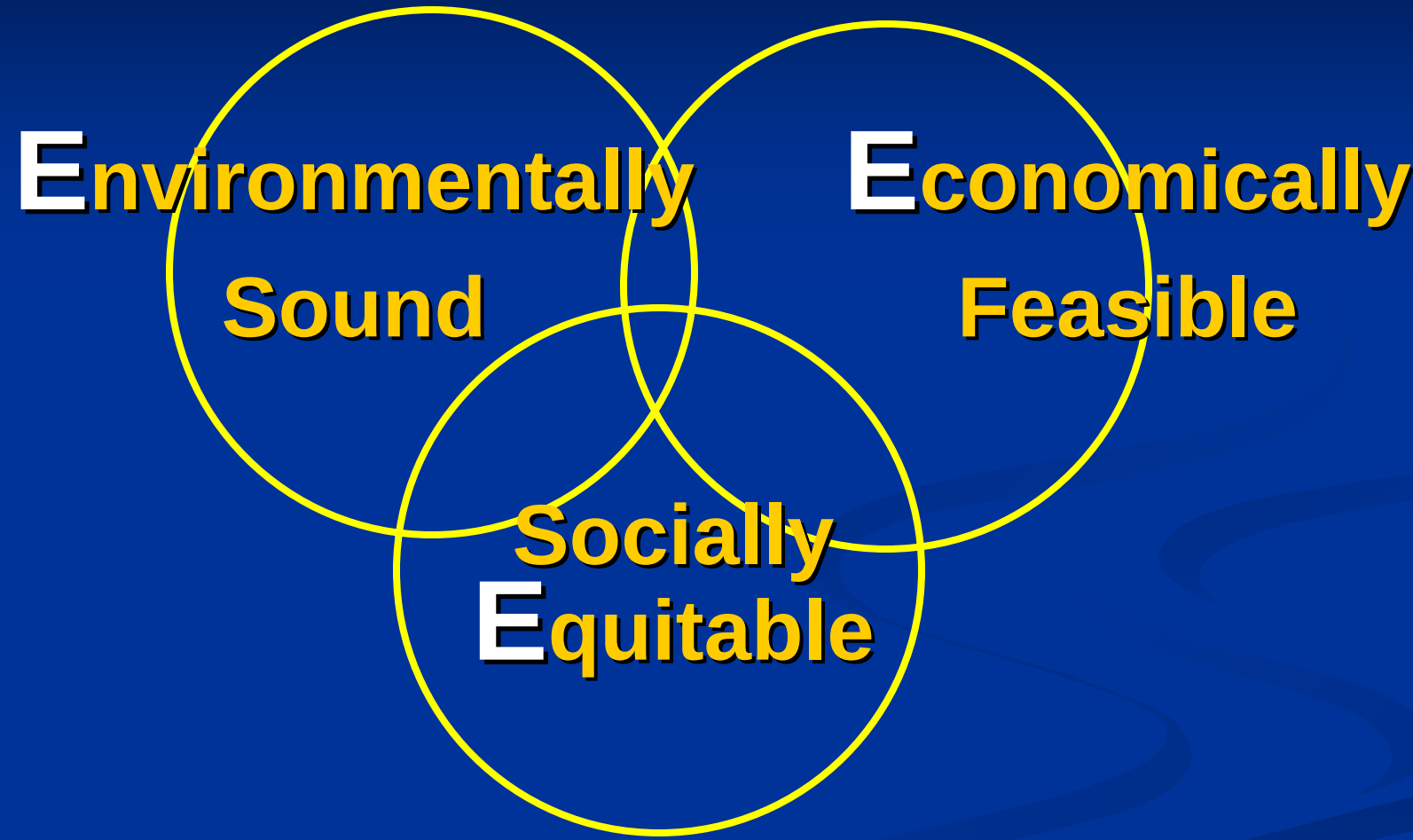
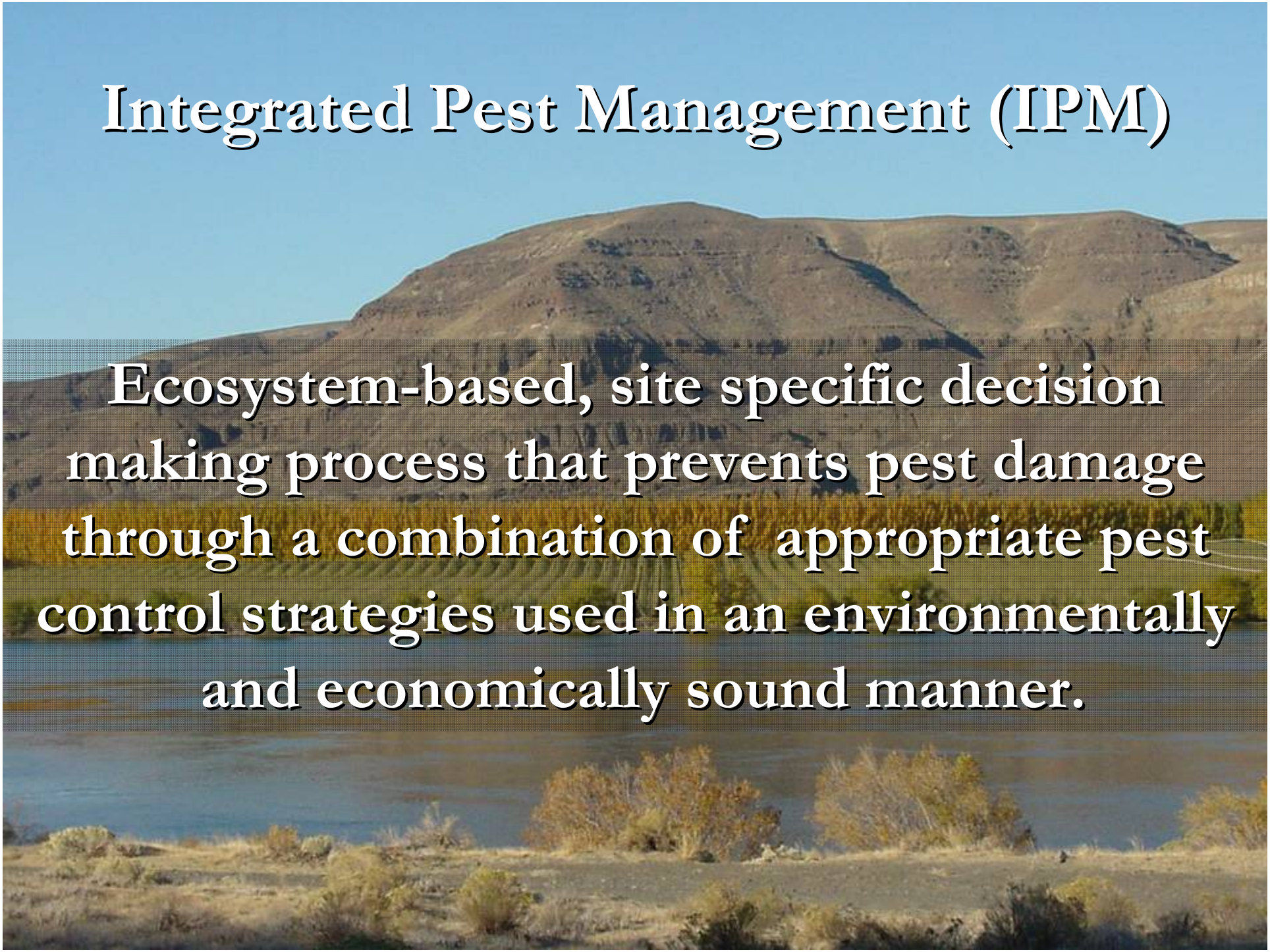

# Lose 10 Pounds of Pesticide in 10 Minutes!

# Principles of Sustainability




**The 3 E's are the Triple Bottom Line**



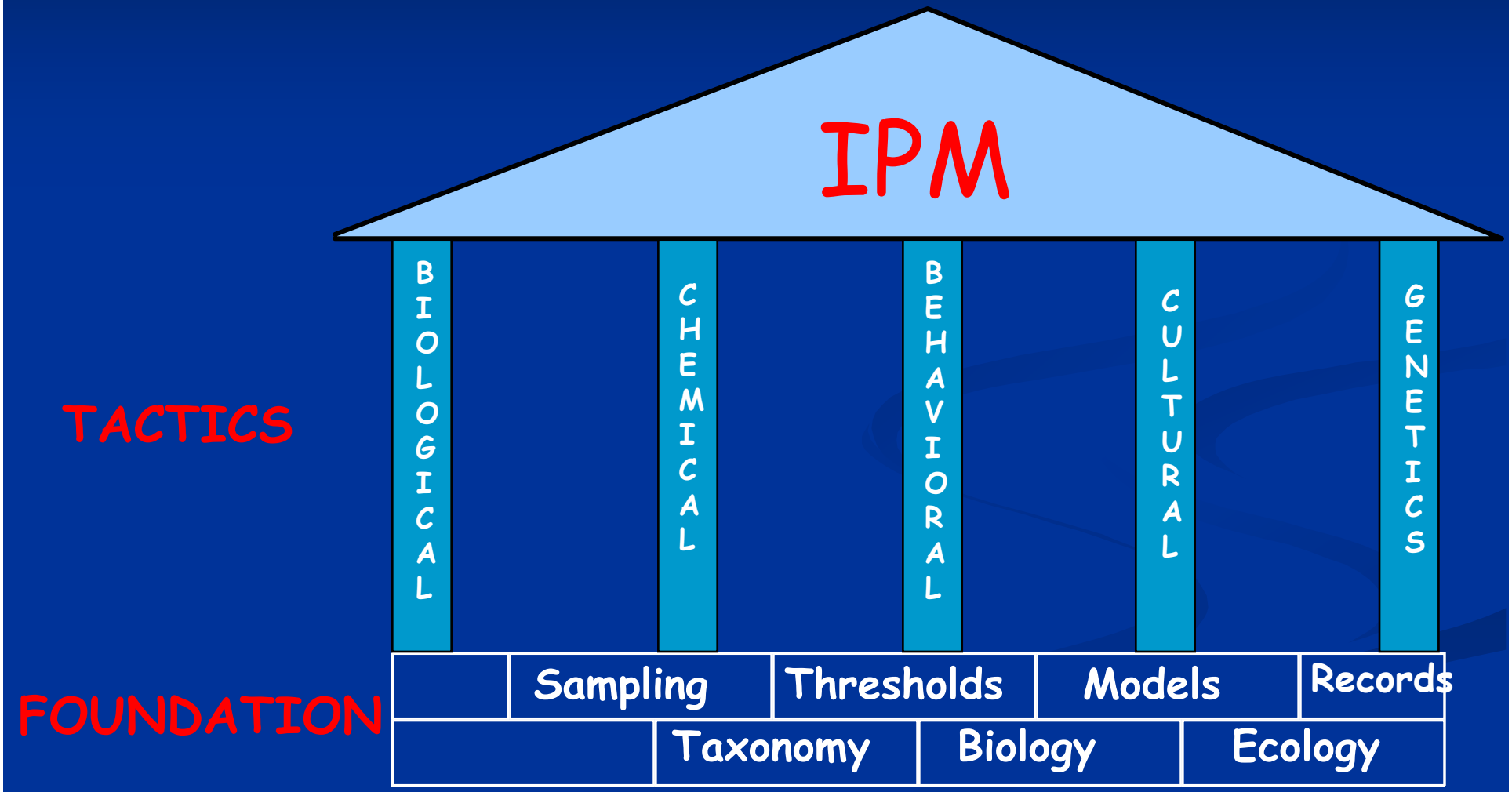
# Integrated Pest Management (IPM)

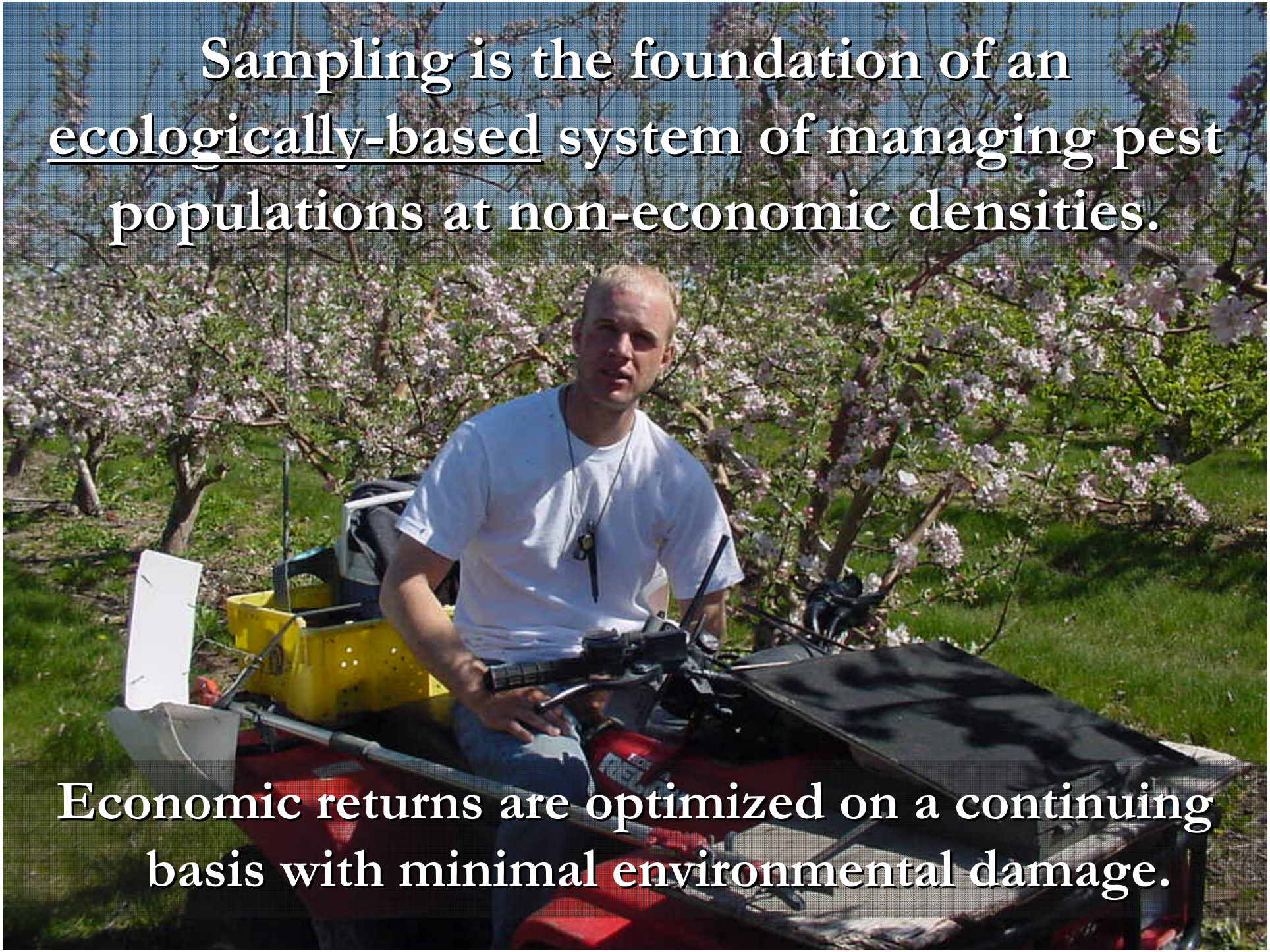
**Ecosystem-based, site specific decision making process that prevents pest damage through a combination of appropriate pest control strategies used in an environmentally and economically sound manner.**

# Essential Components of an IPM Program

- 1. Biology, ecology of the crop
- 2. Biology, ecology and dynamics of the pest(s) and their natural enemies in the orchard habitat
- 3. Intensive monitoring program to assess levels of pests and beneficial insects
- 4. Action threshold for each pest
- 5. Consider all control strategies and determine the most appropriate one(s)
- 6. Keep accurate records: evaluate results, measure change

# Elements of a stable IPM structure




Sampling is the foundation of an ecologically-based system of managing pest populations at non-economic densities.
Economic returns are optimized on a continuing basis with minimal environmental damage.

# Decision Making: Treat or Don't Treat

- compare pest densities to predetermined thresholds
- if pest density exceeds the threshold, consider appropriate control measures

# Degree-Day Models Optimize Spray Timings

http://das.wsu.edu/

# Timing is Everything

Results of good timing

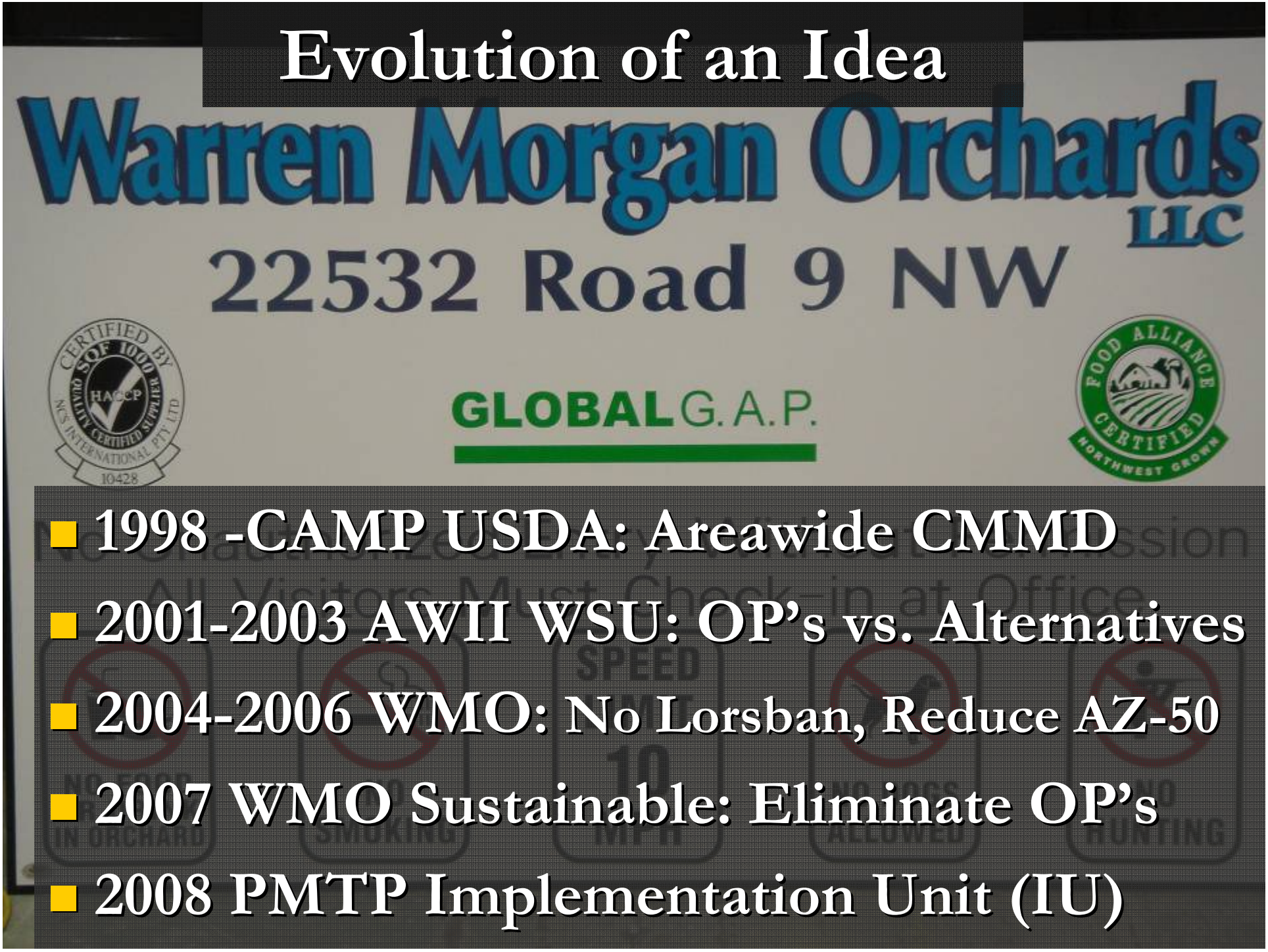
- Obtain the greatest effect by targeting the most susceptible life-stage of pest
- Use the fewest number of sprays necessary
- The least effect on non-target organisms

# Application Equipment

Tower sprayers

- reduce drift, reduces waste
- improves efficacy in top of canopy
- better coverage with less GPA
- reduces trips to spray fill
- reduces energy costs
- Maintain & Calibrate Equipment - reduces waste

# Evolution of an Idea




- 1998 -CAMP USDA: Areawide CMMD
- 2001-2003 AWII WSU: OP's vs. Alternatives
- 2004-2006 WMO: No Lorsban, Reduce AZ-50
- 2007 WMO Sustainable: Eliminate OP's
- 2008 PMTP Implementation Unit (IU)

# Use Full Rate of Mating Disruption

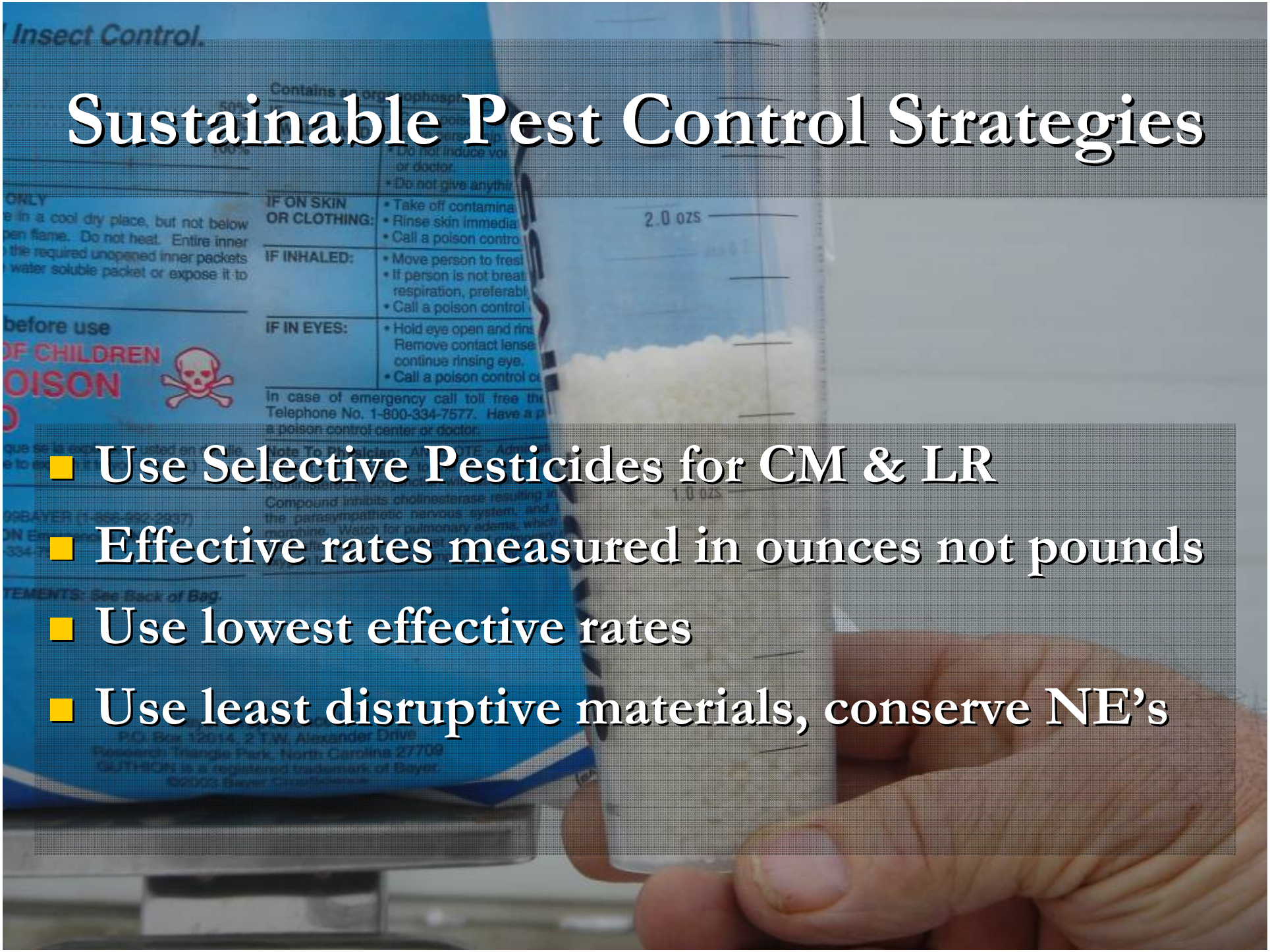
- Reduce Egg-Load
- Increase Efficacy of Pesticides
- Drive Population Down

# Eliminate All Organophosphates

2 lbs.(ai) Lorsban per year REI - 4 days

8 lbs. Guthion per year REI - 14 days

10 pounds of pesticide

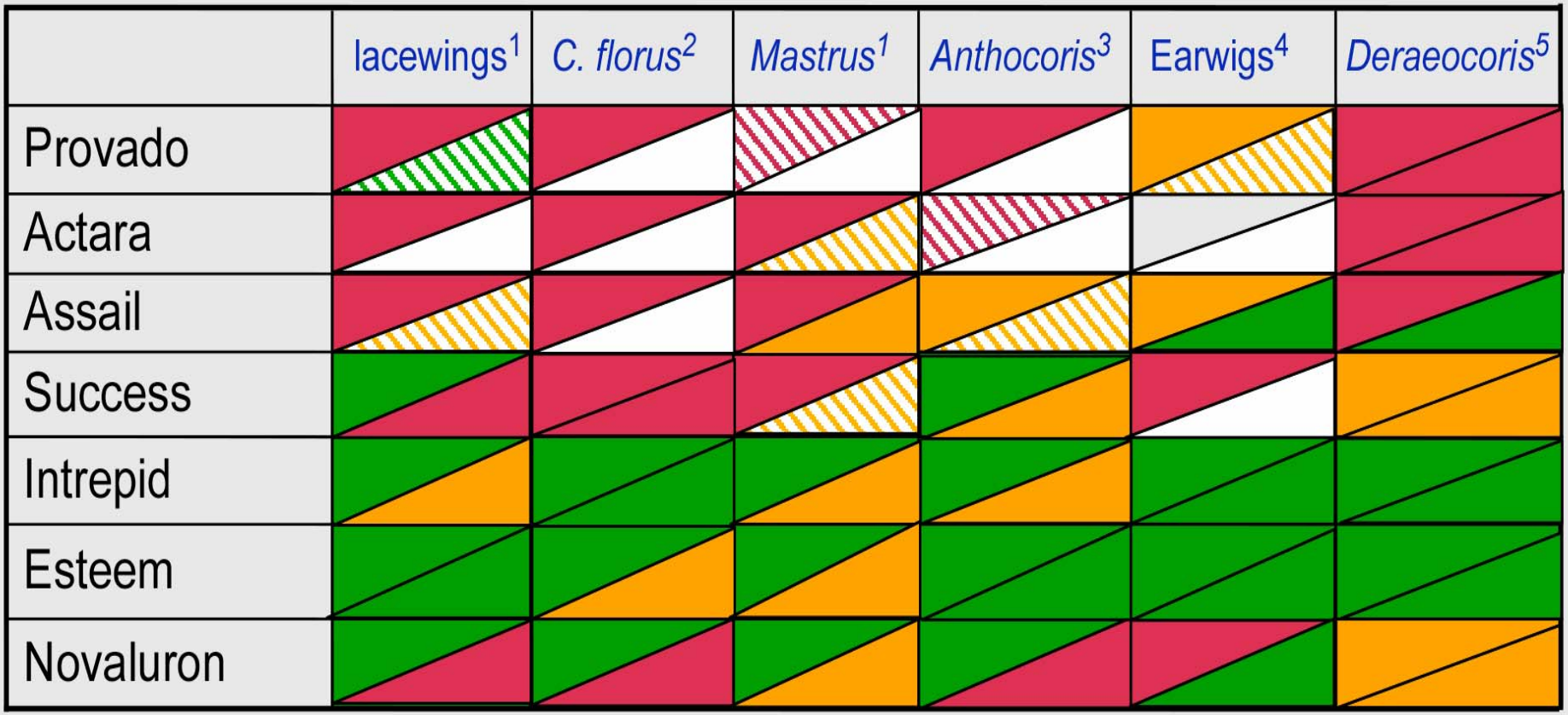


# Sustainable Pest Control Strategies

- Use Selective Pesticides for CM & LR
- Effective rates measured in ounces not pounds
- Use lowest effective rates
- Use least disruptive materials, conserve NE's

## Box 4. New "kinder" pesticides still affect natural enemies

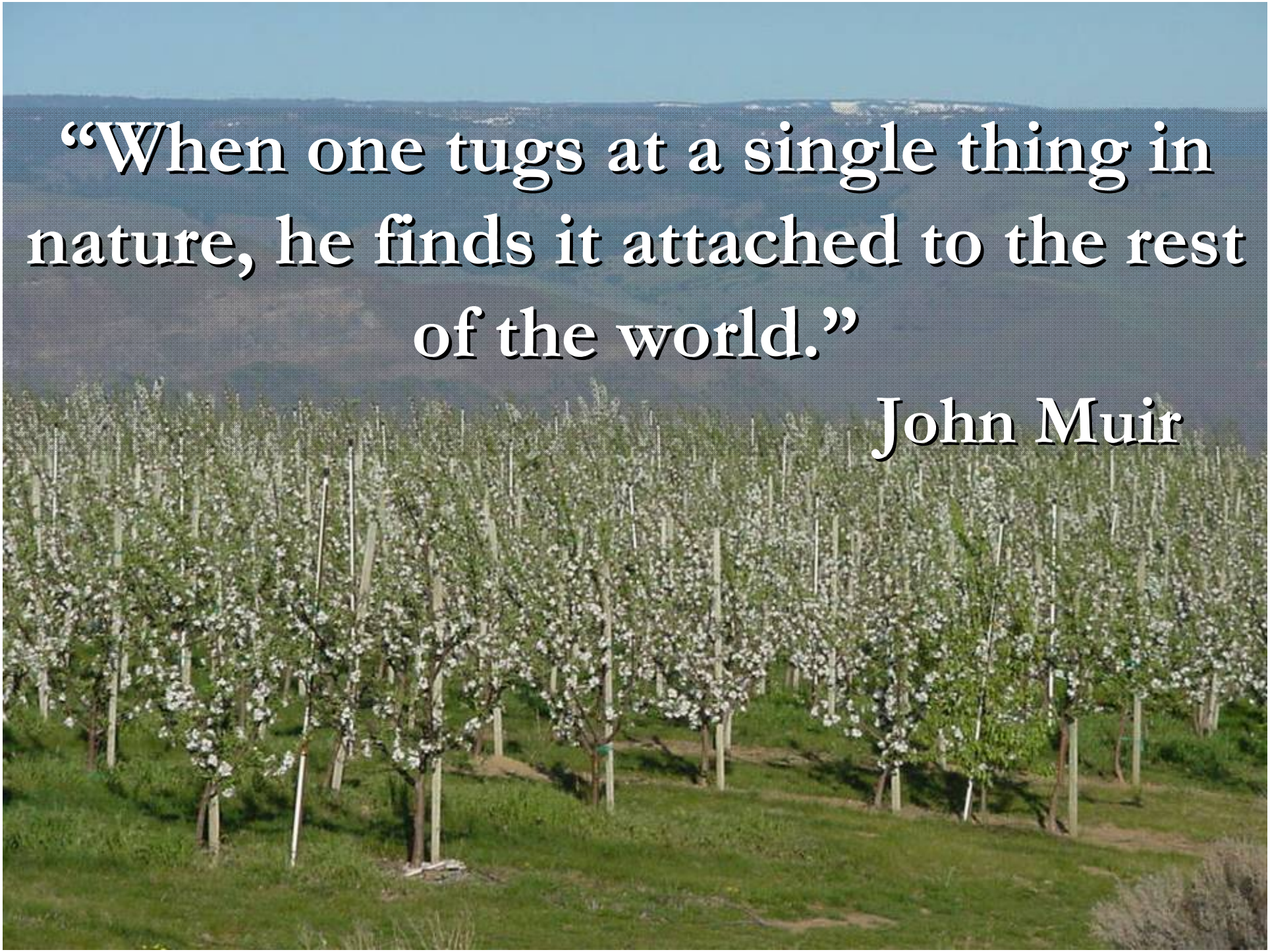
Acute effects above diagonal; Sub–lethal effects below diagonal; green indicates little or no effect, orange modest effects, red reflects strong effects (little or no survival). If acute effects were high, sub-lethal effects were tested at at 10% field rate (hatched colored areas) if sub-diagonal is white it was not tested; solid color = field rate.

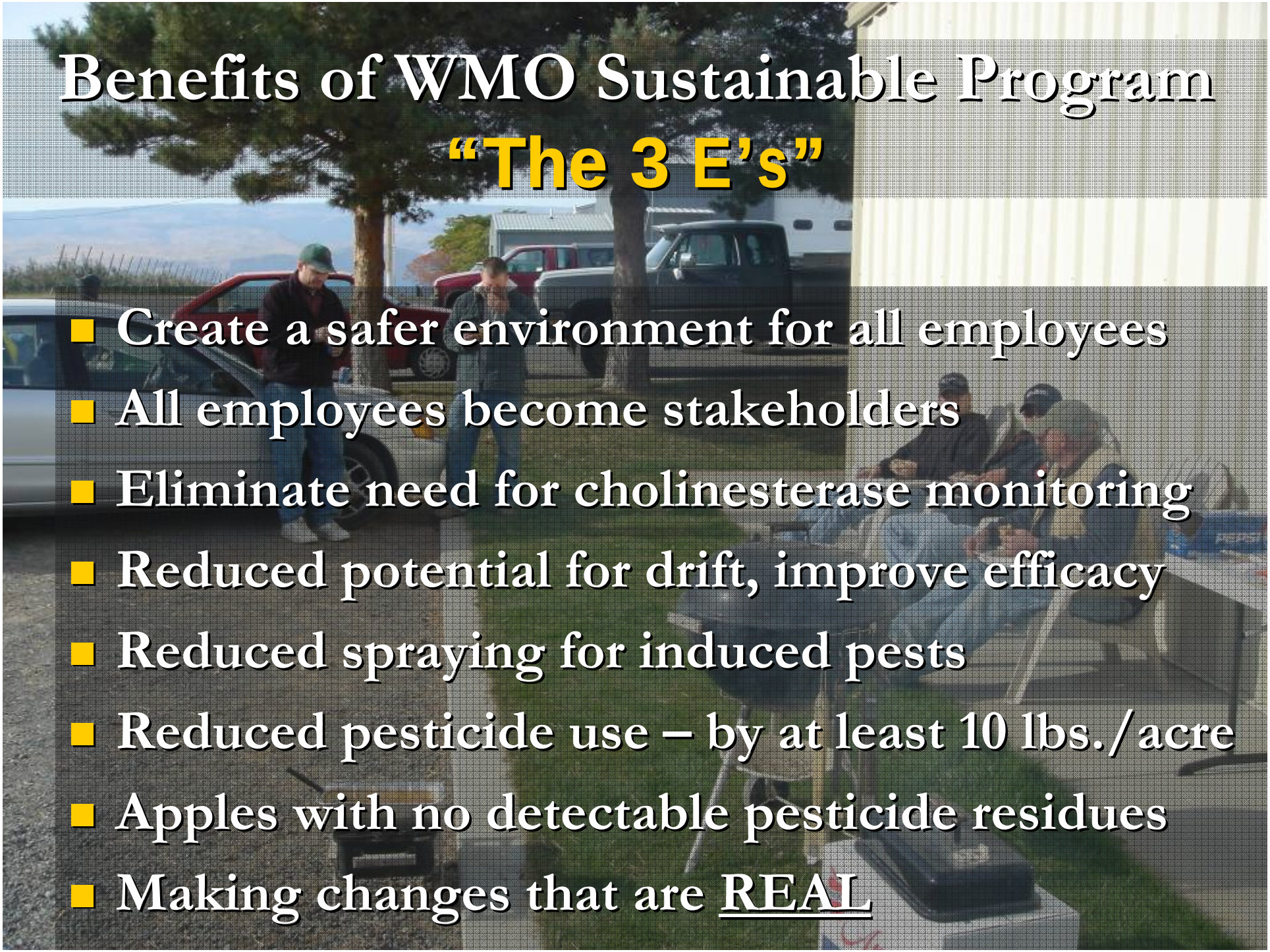



[1]Nick Mills UC Berkeley, [2]Tom Unruh, [3]Dave Horton, [4]Rick Hilton, Oregon State University, [5]Helmut Riedl, Oregon State University

# Conservation Biological Control

# Habitat Manipulation


“When one tugs at a single thing in nature, he finds it attached to the rest of the world.”
John Muir



# Benefits of WMO Sustainable Program

## "The 3 E's"

- Create a safer environment for all employees
- All employees become stakeholders
- Eliminate need for cholinesterase monitoring
- Reduced potential for drift, improve efficacy
- Reduced spraying for induced pests
- Reduced pesticide use – by at least 10 lbs./acre
- Apples with no detectable pesticide residues
- Making changes that are <u>REAL</u>


Thank You!