

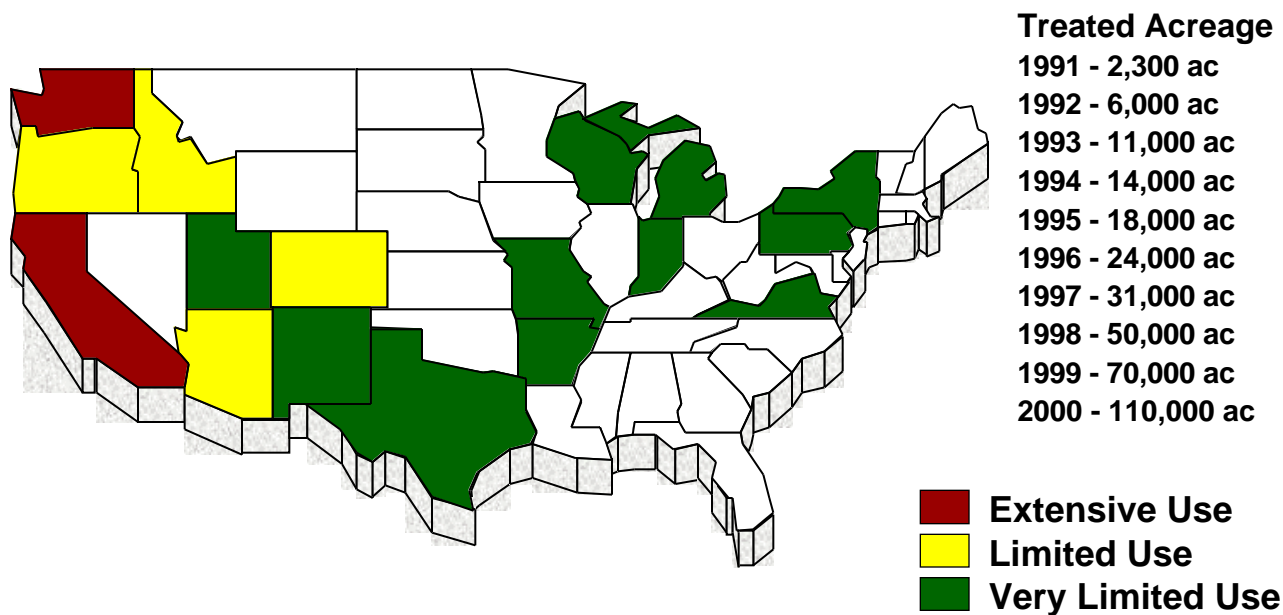
Update on Codling Moth Mating Disruption

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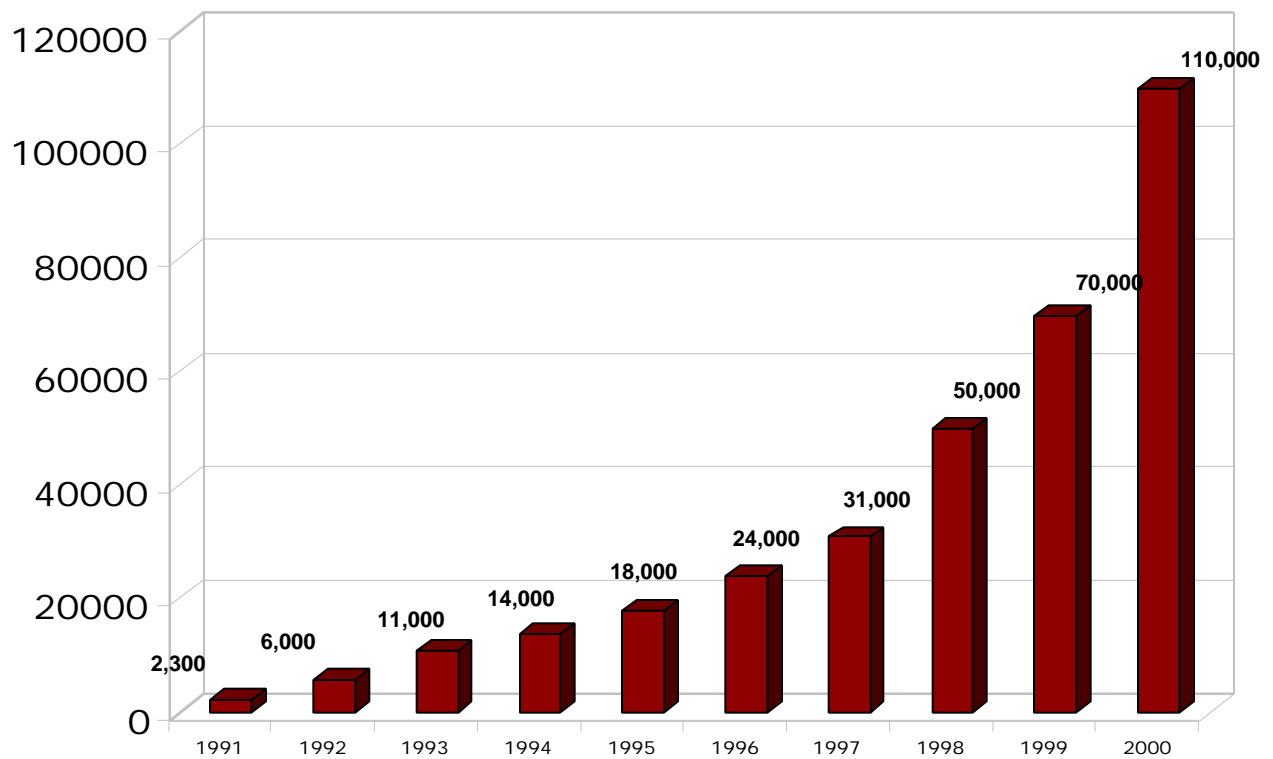
Commercial Use of Isomate C+

United States 1991-2000



Commercial Use of Isomate C+

Estimated # Treated Acres 1991-2000

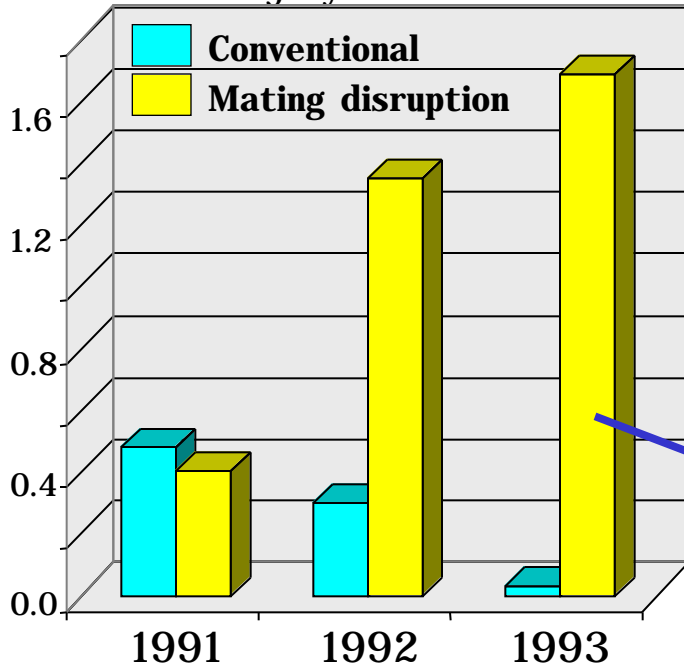


Longevity of dispensers

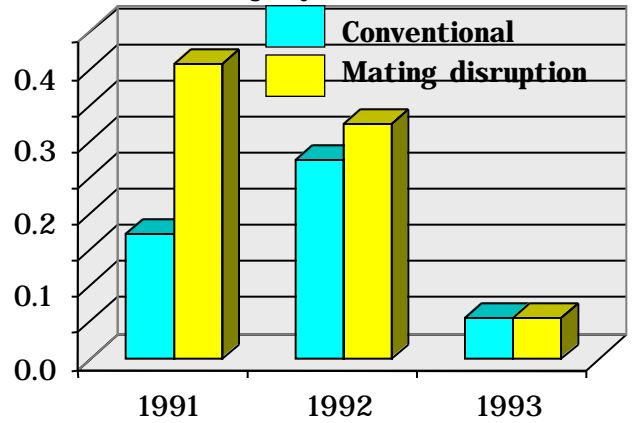
- Release is dependent on temperature, the pheromone diffuses through the walls of the dispenser and then evaporates from the surface
- The amount of pheromone released is a function of temperature and to a minor extent the amount of wind.
- Will last longer in areas with cool climates than in areas with hot climates

Preliminary research codling moth mating disruption

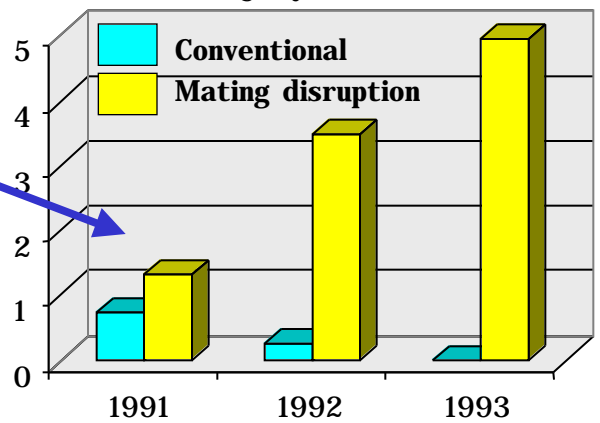
Percent fruit injury - ALL Sites



Percent fruit injury - **Sites 1, 2, 4, and 6**



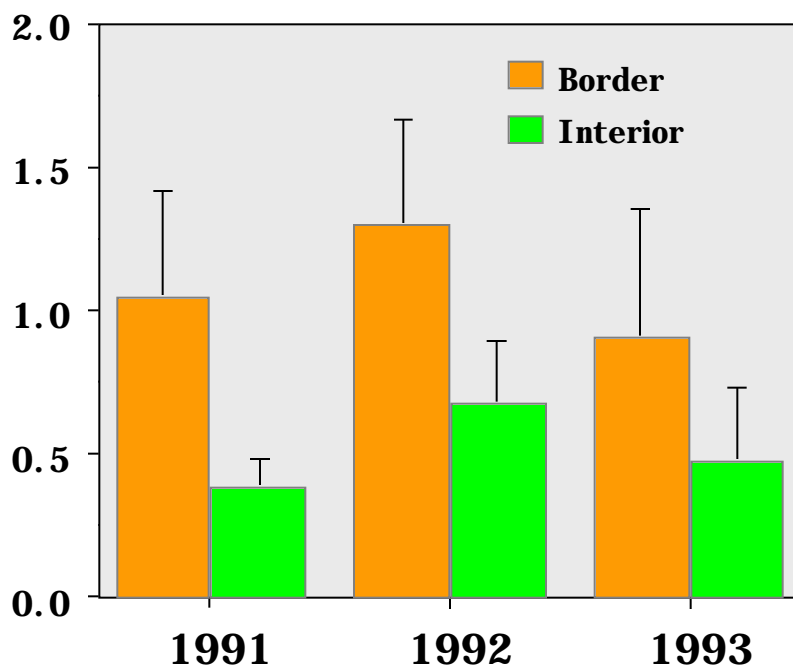
Percent fruit injury - **Sites 3 and 5**



Codling moth control: Mating Disruption

🍏 Early mating disruption research in Washington state

Mean fruit injury (%)



**Consistently higher
fruit injury detected
on orchard borders**

Codling moth control: Mating Disruption

Breakthrough - development of reliable controlled release devices and stability of pheromone formulation

- 🍏 Early mating disruption research in Washington
- 🍏 AREAWIDE project in the western US
- 🍏 New developments in CM mating disruption
- 🍏 Integration of tactics to ensure success

Howard Flat CAMP Site Chelan, Washington

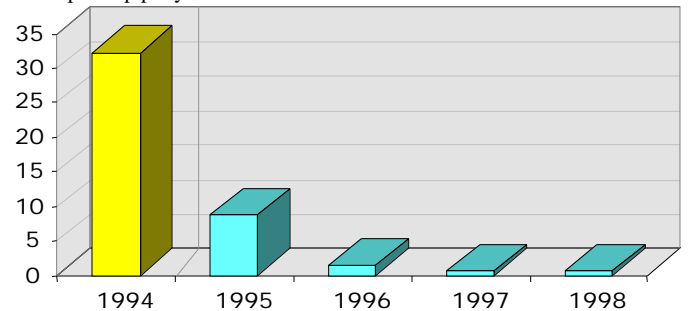
1994 Pre-program data;
1995-1998 Codling Moth
Areawide Management
Project results.

Average number of
moths per trap

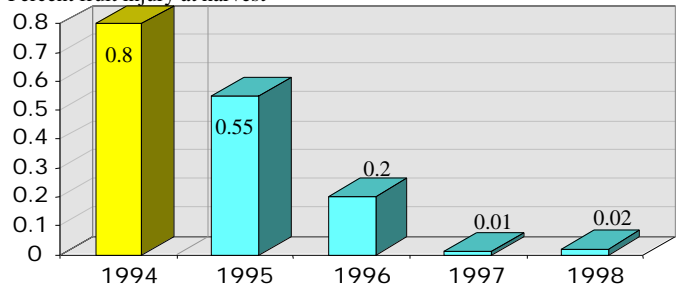
Average percent
fruit injury

Average number of
sprays per acre

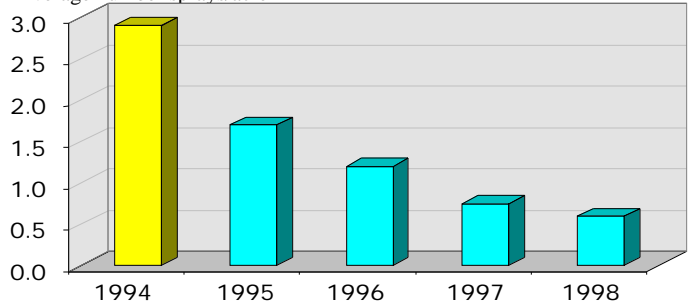
Moths per trap per year



Percent fruit injury at harvest



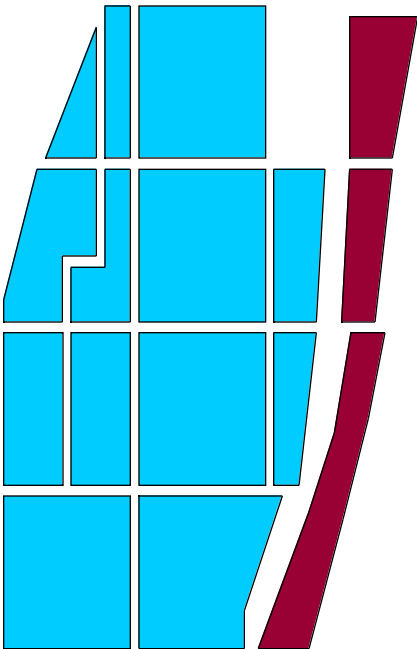
Average number sprays/acre



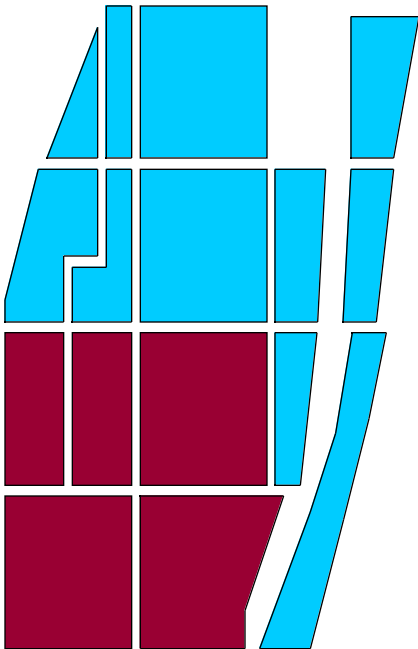
Strategies to eliminate failures

- **Location, location, location!**
 - Size, shape and past pressure
- **Product selection**
 - Release rate, point sources
- **Monitoring**
 - Trap design, placement, management
 - Lure selection (Longevity, release rate)
- **Supplemental treatments**
 - Follow trapping thresholds
 - Focus on border controls

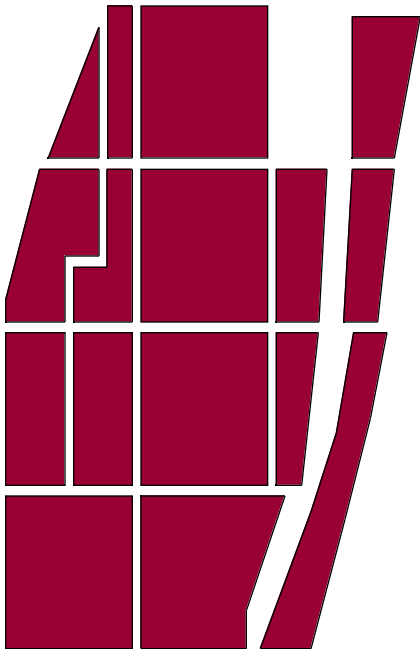
Location, Location, Location



Worst



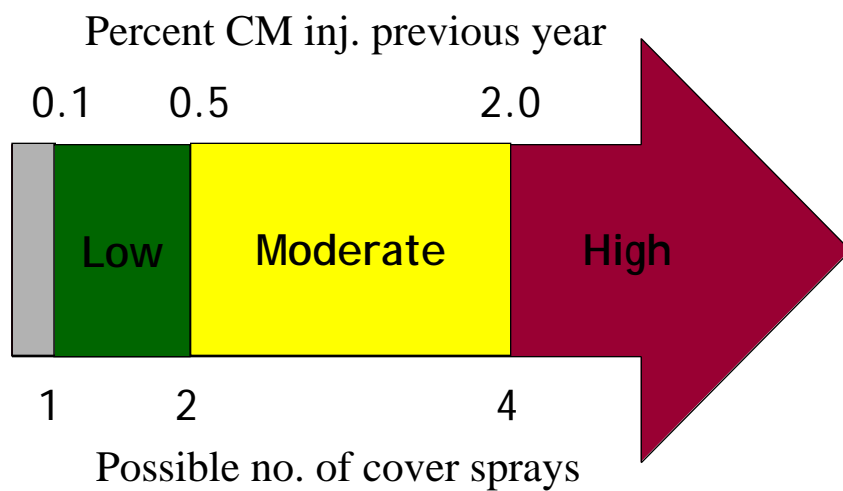
Better



Best

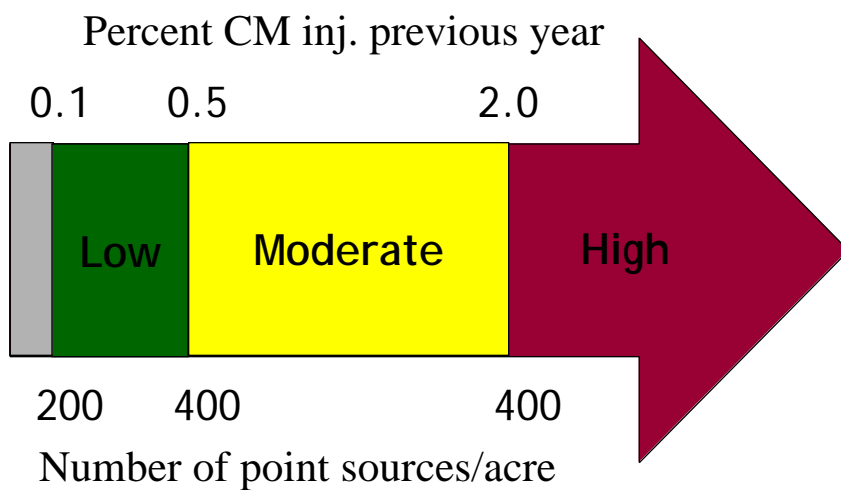
Location, Location, Location

Supplemental controls may be required in moderate pressure orchards



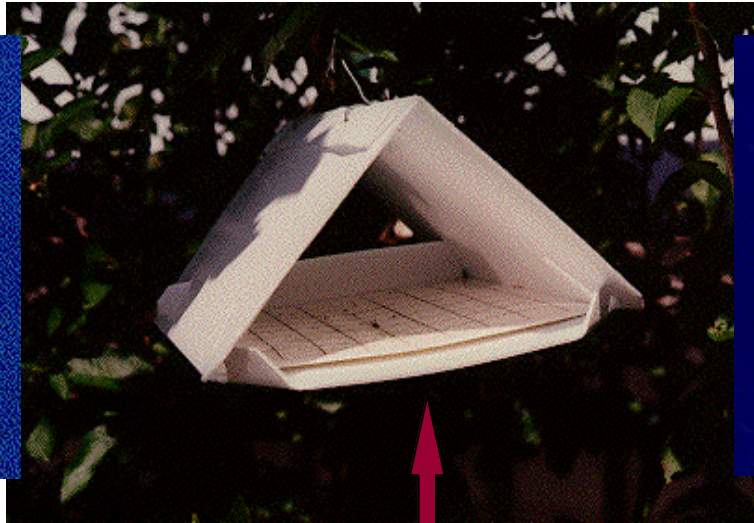
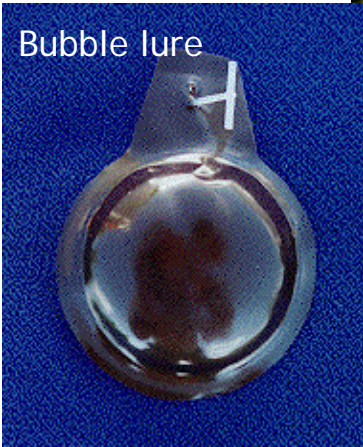
Product selection, Application Rate, Point sources

Start with high rate of dispensers while developing expertise



Monitoring

Bubble lure



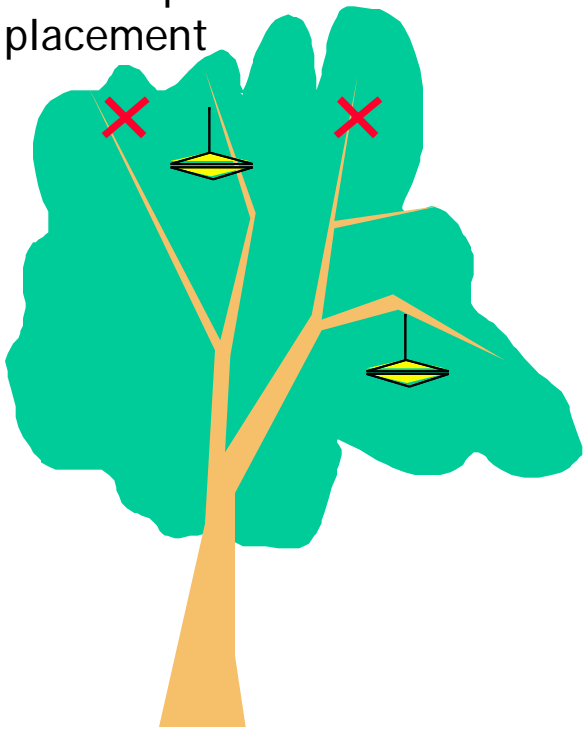
Gray and red septa



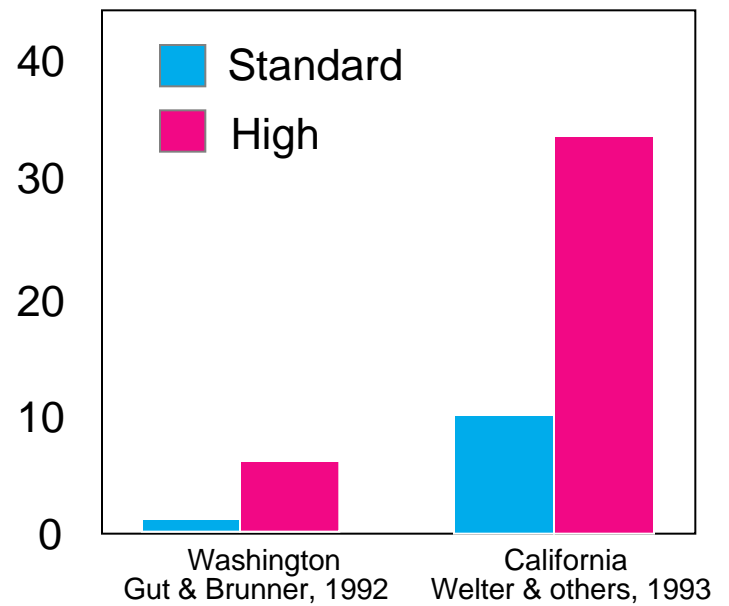
Note: Delta traps maintain integrity and are easier to service. Keep clean bottoms in trap.

Effect of trap position

Note dispenser placement



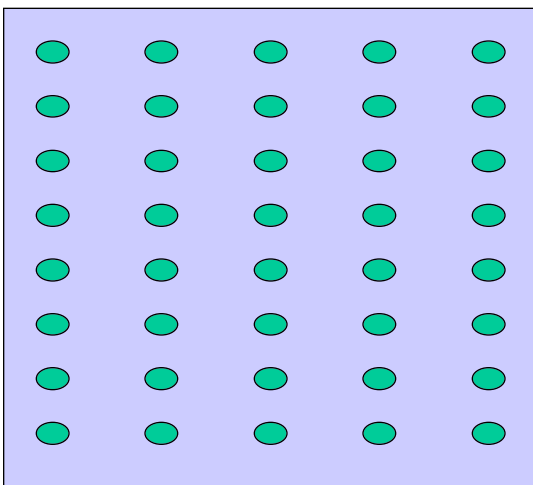
Mean moths per trap



Trap numbers and placement

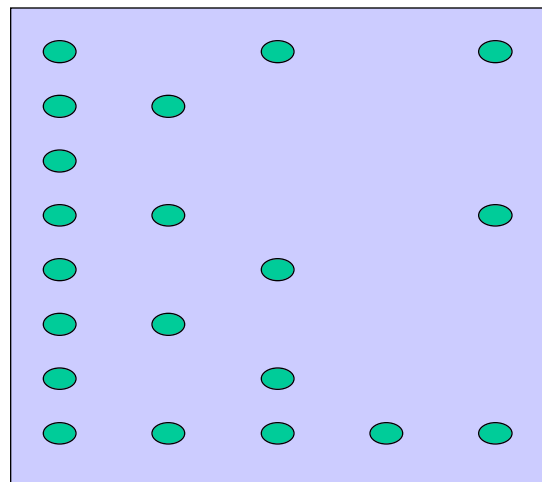
General recommendation is 1 trap/2.5 acres

100 acre block



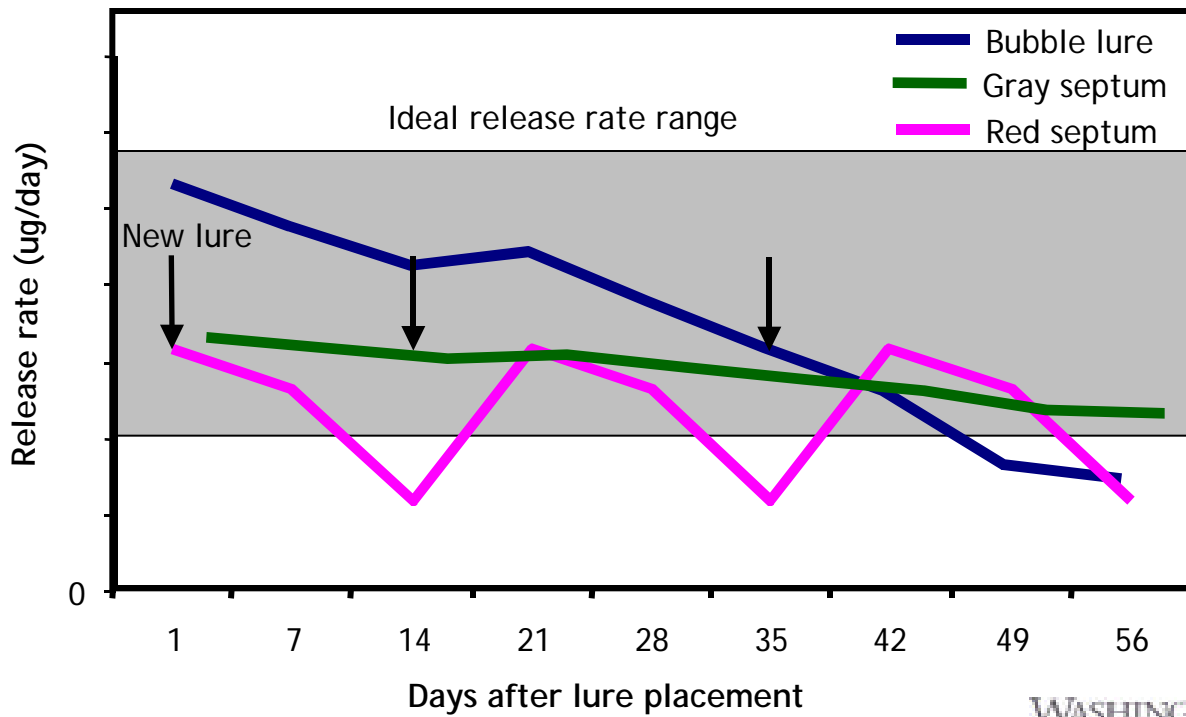
Ideal design (40 traps)

100 acre block



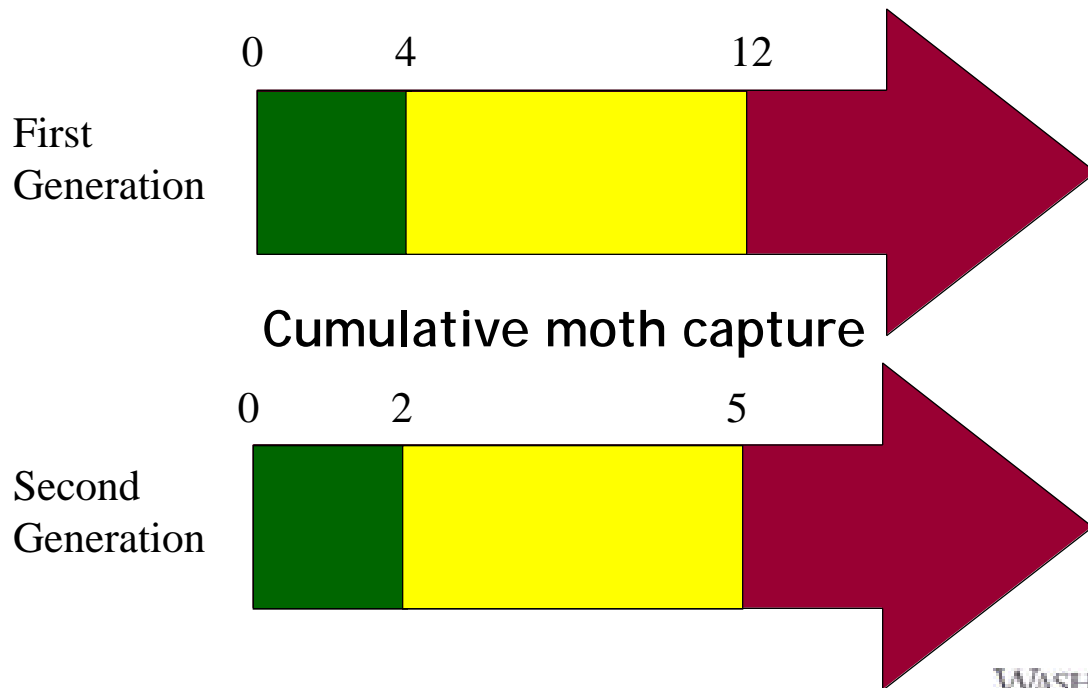
Practical application (20 traps)

Choosing a lure



When to spray-thresholds

Visual inspections exceed 1% injury at any location. Sample borders and hot-spots separately.



Predicting problem areas, hot spots

