International Association for Food Protection®
WEBINAR

Presents

COMBATING PESTS IN FOOD PROCESSING ENVIRONMENTS: NEW TOOLS AND TACTICS

…but first a few housekeeping items

International Association for Food Protection® WEBINAR

WEBINAR HOUSEKEEPING

For best viewing of the presentation material, please click on 'maximize' in the upper right corner of the 'Slide' window, then 'restore' to return to normal view.

Audio is being transmitted over the computer so please have your speakers 'on' and volume turned up in order to hear. A telephone connection is not available.

Questions should be submitted to the presenters during the presentation via the **Q & A section** at the right of the screen.

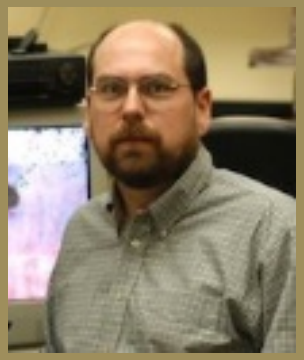
It is important to note that all opinions and statements are those of the individual making the presentation and not necessarily the opinion or view of IAFP.

This webinar is being recorded and will be available for access by IAFP members at www.foodprotection.org within one week.

SPEAKERS

Jerry Heath, BCE

The Industrial Fumigant Co.



Dr. James Campbell

Agricultural Research Service

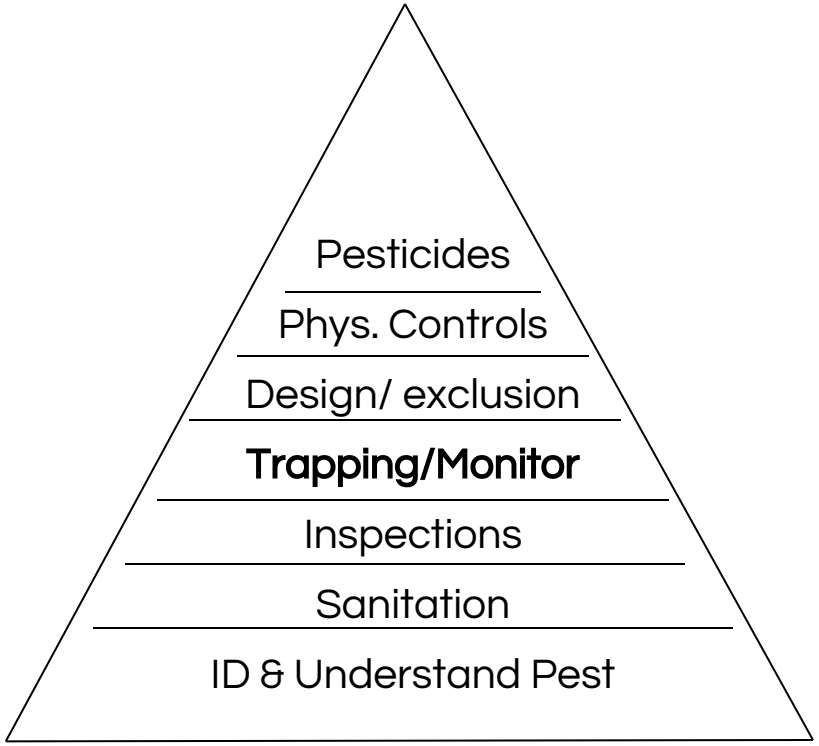
USDA

Center for Grain and Animal Health and Research Stored Product Insect and Engineering Research Unit

- Focus on post harvest and processing industry problems.
- Diverse scientific staff.
- Strong collaboration with Kansas State University and its unique resources in grain science, entomology. AIB is also a neighbor.
- Collaboration with other universities and research centers nationwide.

Monitoring is a Fundamental Building Block of IPM

- Rodent baiting, rodent traps, and insect light traps serve as both control and monitoring devices.
- Pheromone traps are strictly monitoring devices.
- Captures are always identified, counted and documented.
- ***The essence of monitoring is data analysis.***

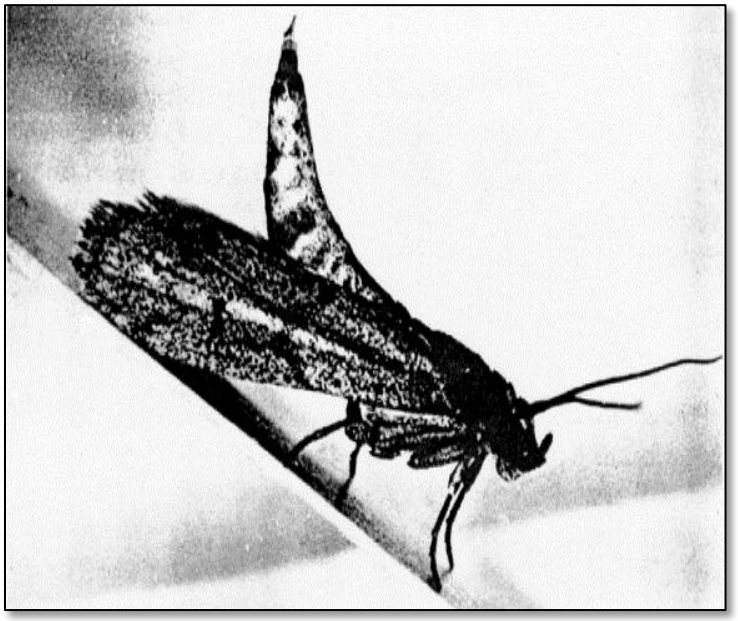


Monitoring provides early detection and warning of risks

- Thus falls under the spirit of PCHF to identify risks and take preventative measures.
- Most audit schemes require pest monitoring.
- Monitoring programs can vary in their quality so strive to monitor to your best advantage!

Pheromones

- Pheromone - chemical emitted by an individual that sends a message to other individuals of the same species
- Many types have been identified
  - Sex
  - Aggregation
  - Alarm
  - Trail following
  - Food attractants



Pheromone Uses

- Monitoring
  - Attractant to increase capture efficiency of traps
- Reduce Pest Populations
  - Mass trapping
  - Lure and kill
  - Mating disruption – using pheromone as an insecticide

Monitoring Insect Activity

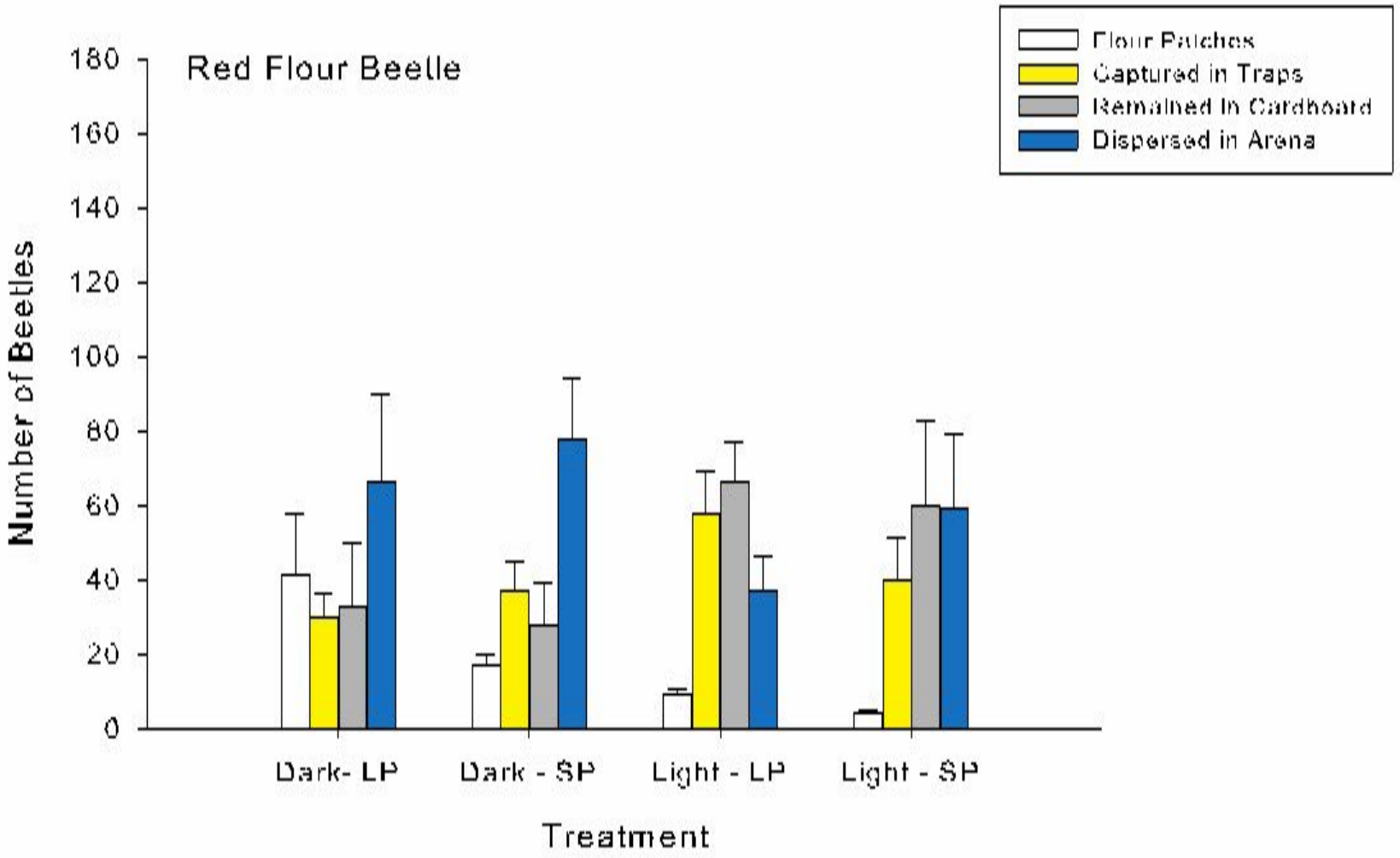
- No single monitoring approach will provide a complete picture of pest activity
- Pheromone traps are part of a comprehensive monitoring program that includes inspection and other tactics
- Many questions remain about how to best implement and interpret pheromone based monitoring programs

Evaluate Factors Impacting Insect Captures in Pheromone Traps Using Small Experimental Chambers

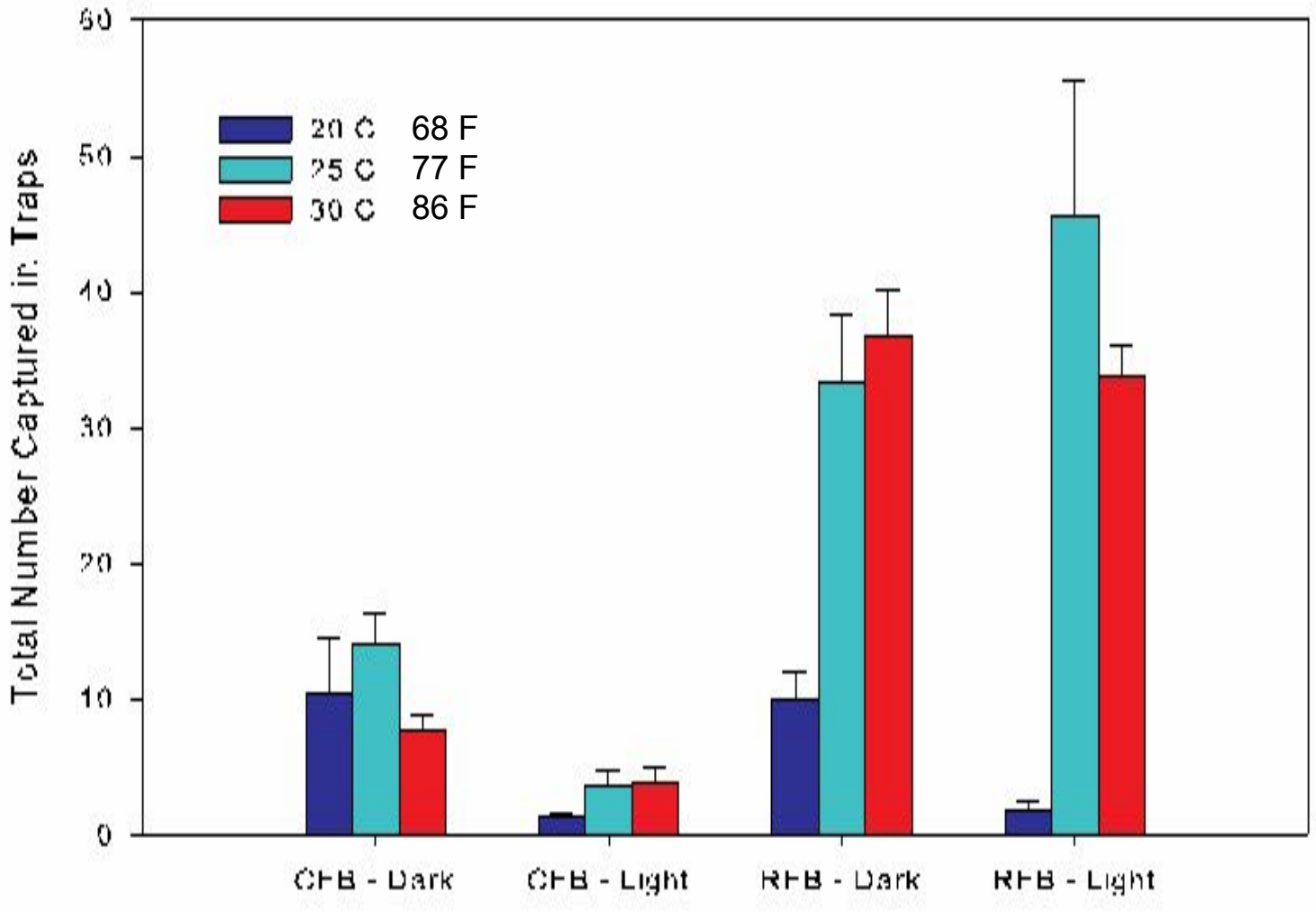
Red Flour Beetle
Tribolium castaneum

Confused Flour Beetle
Tribolium confusum

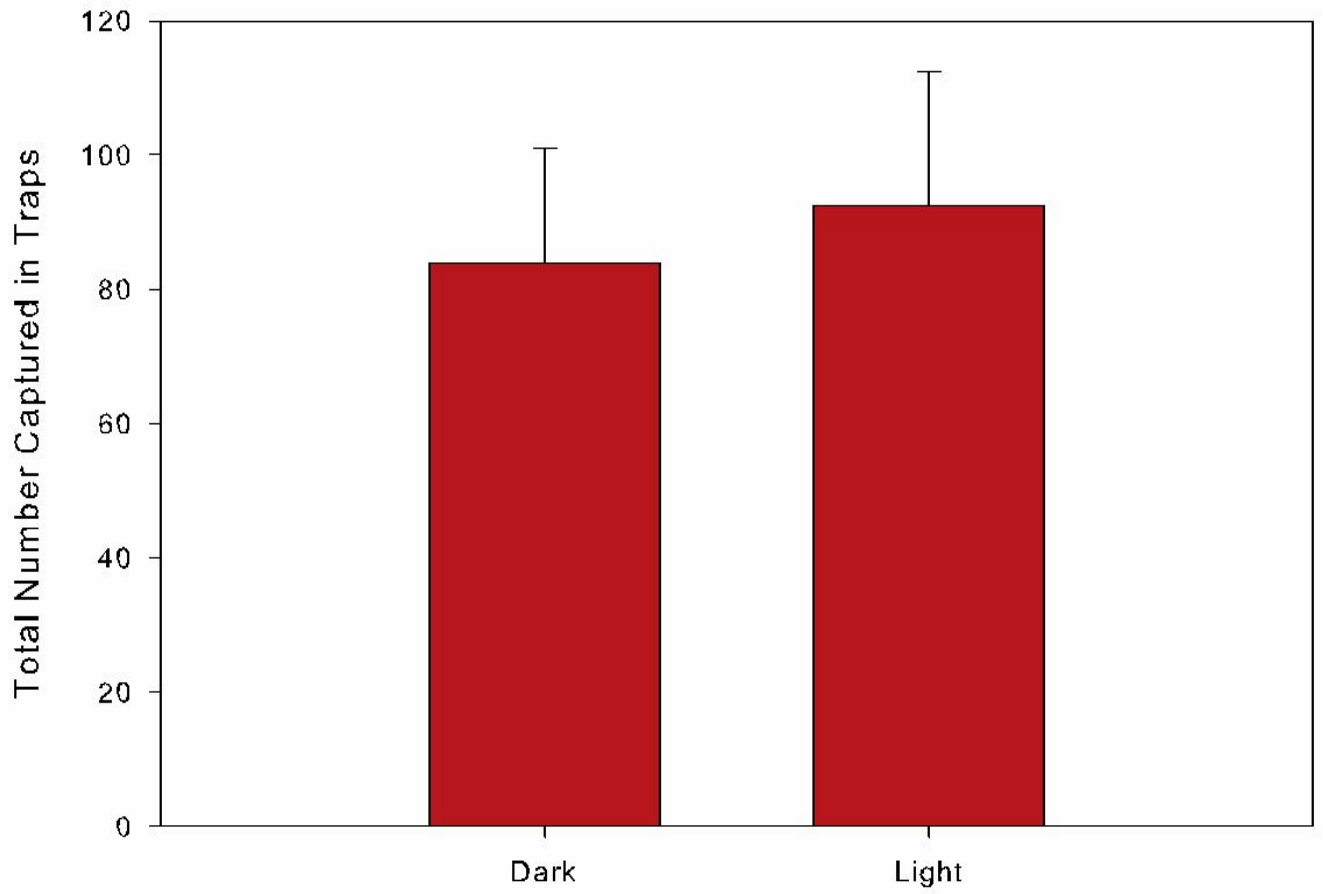
Red Flour Beetle: Influence of Light and Sanitation Level



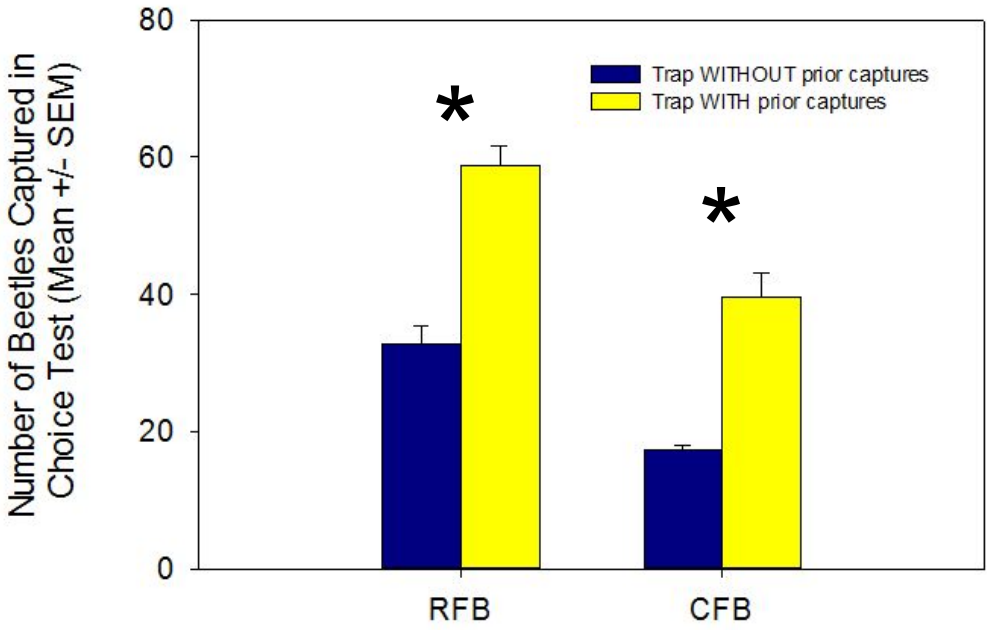
Confused Flour Beetle and Red Flour Beetle: Influence of Light and Temperature



Cigarette Beetle: Influence of Light

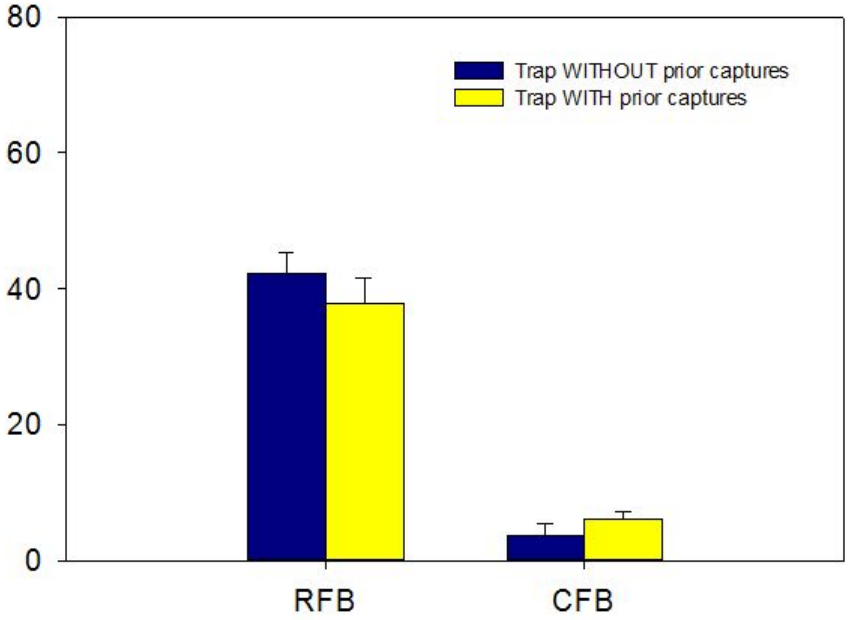


Prior Captures can Influence Traps



Dome trap with prior captures of the same species compared to trap without prior captures

Dome trap with prior captures of the other species compared to trap without prior captures



Advances continue in pheromone technology and commercial developments in addition to monitoring

- Additions to insecticide formulations
- Mating disruption for additional species
- Monitoring enhancements for additional species or improved attraction for certain insects.

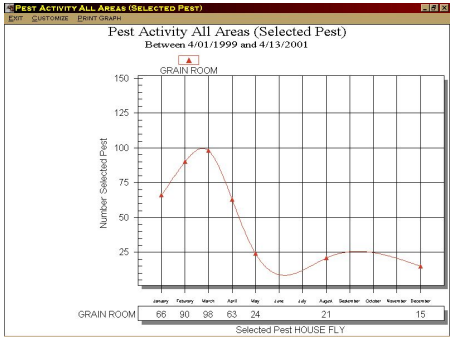
- Regulation of pheromones varies across the world, and depending on their use for monitoring vs. control.
- Remember that pheromones are generally specific to a species or closely related group. Care must be taken to select and service pheromones appropriately!

Rodent monitoringt is a little more straightforward

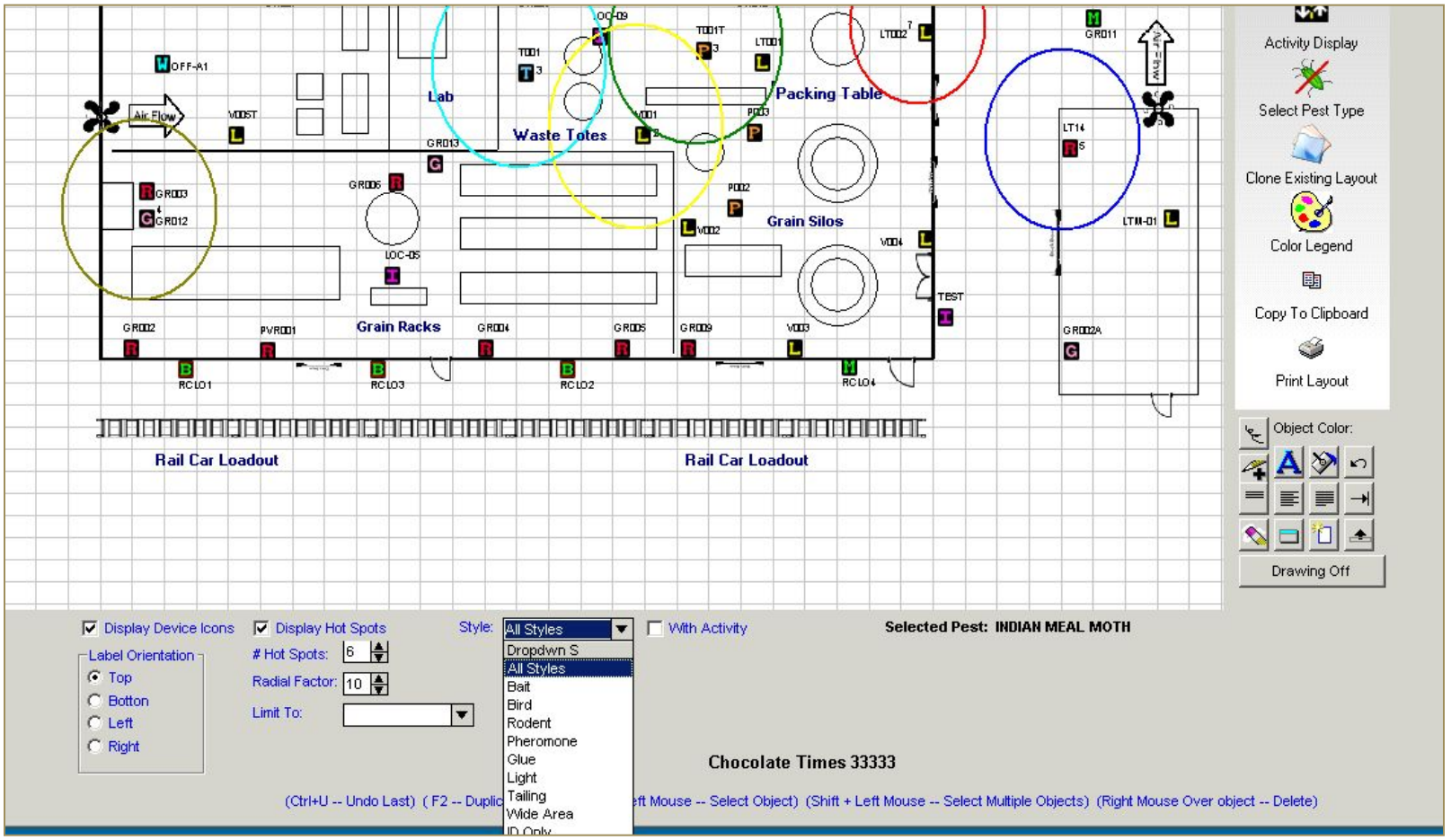
- Generally food processing plants have a fairly standard and complete set up of bait stations and traps.
- Devices serve a dual purpose for monitoring and control
- Rodent activity – feeding or captures needs to be documented.
- Just as with insects trends and hot spots of activity emerge with the analysis of the documentation.

All pest monitoring is simplified by bar-code systems & software

- Every device is bar coded.
- Scanners recognize type of device and ask technician appropriate questions about details of service.
- Computer generates maps, reports, graphs, etc.



Typical Pest Management Device Deployment as seen on Monitoring Software Map



Rodent management is expensive! Monitoring can help focus efforts and possibly reduce expenses.

- Some devices rarely if ever see activity.
- Adjusting placements according to risk and monitoring history can reduce rodent management labor and rodenticide use!
- Target species could also call for adjustments from old-fashioned device placement schemes.

Analysis is the essence of monitoring

- Service reports have reported current activity for years: “snapshots”
- Software programs manipulate the data into tables, graphs and maps: “photo albums”
- We still need better *analysis:* explanation of why the trends occur, identification of structural deficiencies, etc. that can be corrected.

Discussion Questions?

Remarks by Dr. Campbell or other USDA personnel are not intended, nor should they be construed, as recommendations of particular products or services.

Thank you for your attention!