

Bait Aversion in Cockroaches – Past, Present, and Future



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Varmint Guard Pest Library **Get Bait Aversion** ~ © 2007 ~ rev. March 2007

Bayer Environmental Science



Cockroach Gel Baits



- ◆ Preferred formulation
- ◆ For many PMPs, gels have totally replaced residual sprays, dusts, aerosols, and fogging

What is gel bait aversion?



- ◆ Roaches develop feeding aversion to the food in baits, not the active ingredient
- ◆ Pass-along bait-averse behavior gene to offspring
- ◆ The mechanism(s) for aversion are not fully understood
- ◆ Accompanying detrimental biological attributes:
 - ◆ Slightly smaller
 - ◆ Eat less than normal roaches
 - ◆ Have a slower rate of reproduction
 - ◆ Produce smaller egg capsules

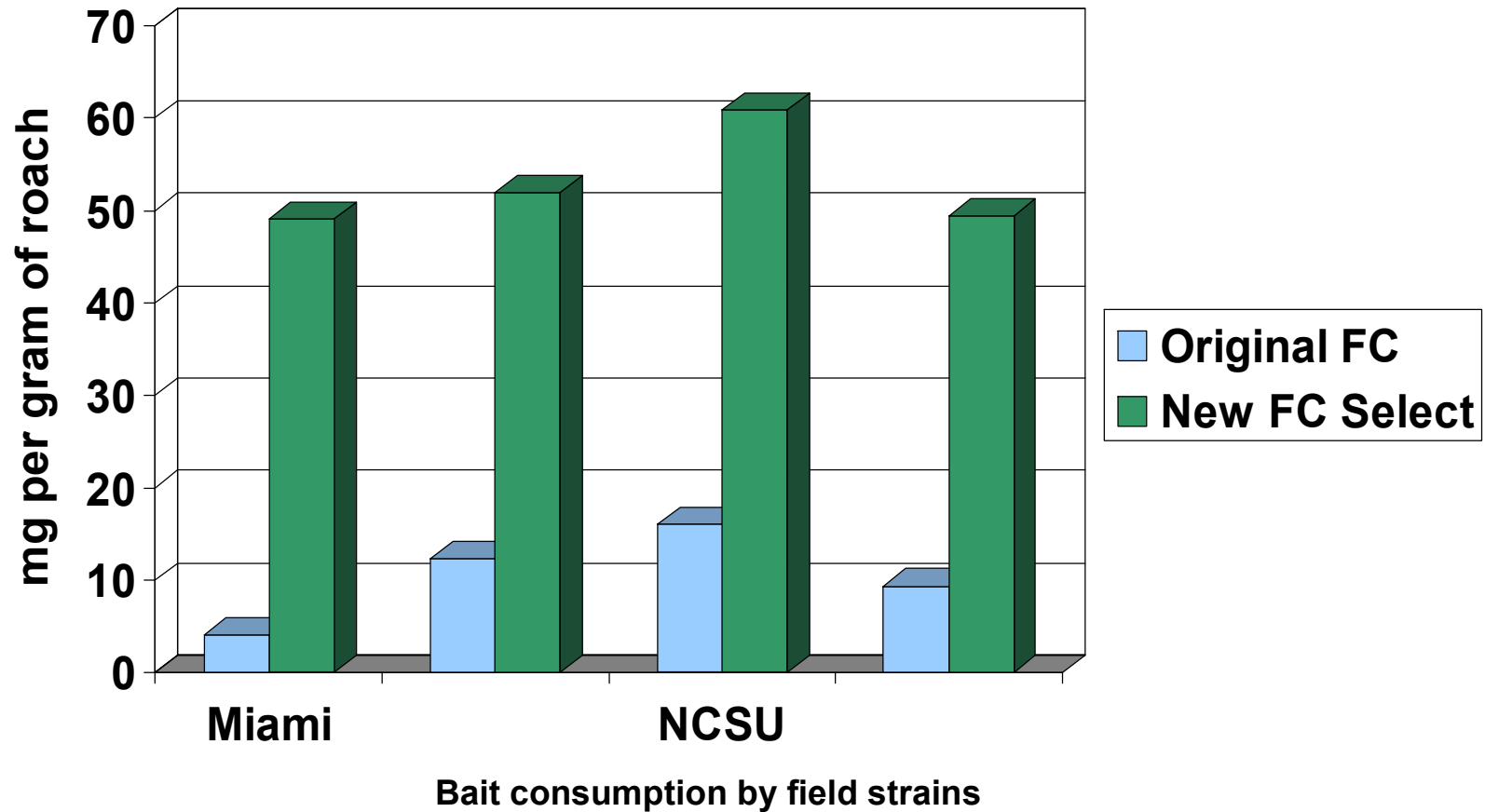
History of Gel Bait Aversion

- ◆ Summer 1999, bait averse roaches discovered again by PMPs in the field (e.g., Scherzinger Corp., Cincinnati, OH)
- ◆ Bayer ES started working with PMPs and researchers to better understand the problem and improve the bait formula
- ◆ Several promising formulas were developed, and tested in the lab (e.g., Gary Bennett, et al., Purdue Univ.*) and field
- ◆ Launch new Maxforce® FC Select Roach Killer Bait Gel
- ◆ Feb. 2003 **PCT** magazine cover story: *Stayin' Alive*
- ◆ Dec. 2004 **JEE** article*: Behavioral and physiological resistance of the German cockroach to gel baits . . .

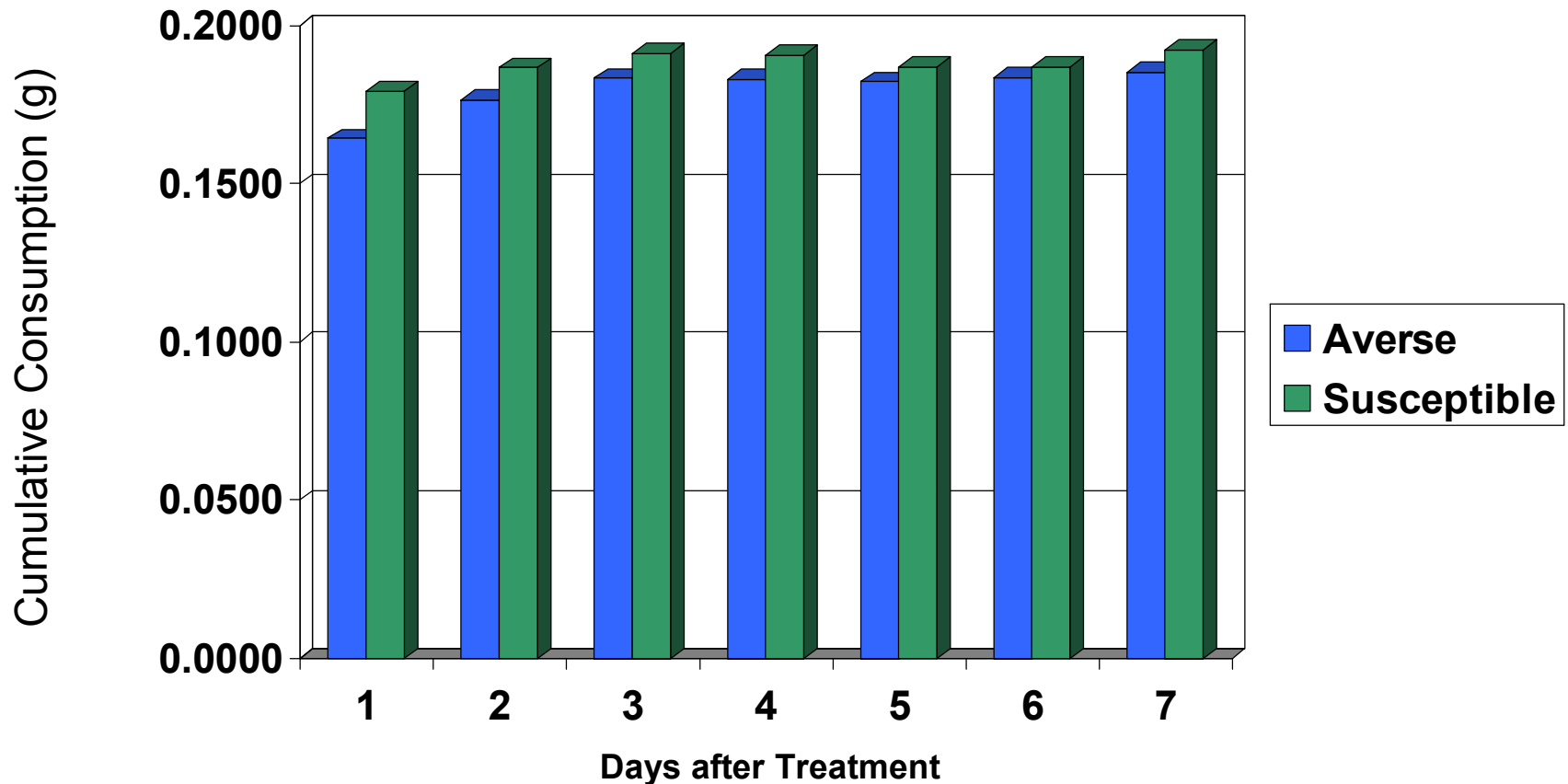
How do I know if my account has bait-averse cockroaches?

- ◆ **Aversion is difficult to diagnose**
- ◆ **Look at the account carefully:**
 - ◆ Do I have continuous problems with roaches?
 - ◆ Are more roaches being introduced into the account?
 - ◆ Is sanitation (food source competition) a problem?
 - ◆ Are the baits being applied properly?
 - ◆ Are the baits being contaminated or washed away?
 - ◆ Have I observed bait avoidance behavior?
- ◆ Contact appropriate manufacturer representatives and industry consultants if you suspect an aversion problem

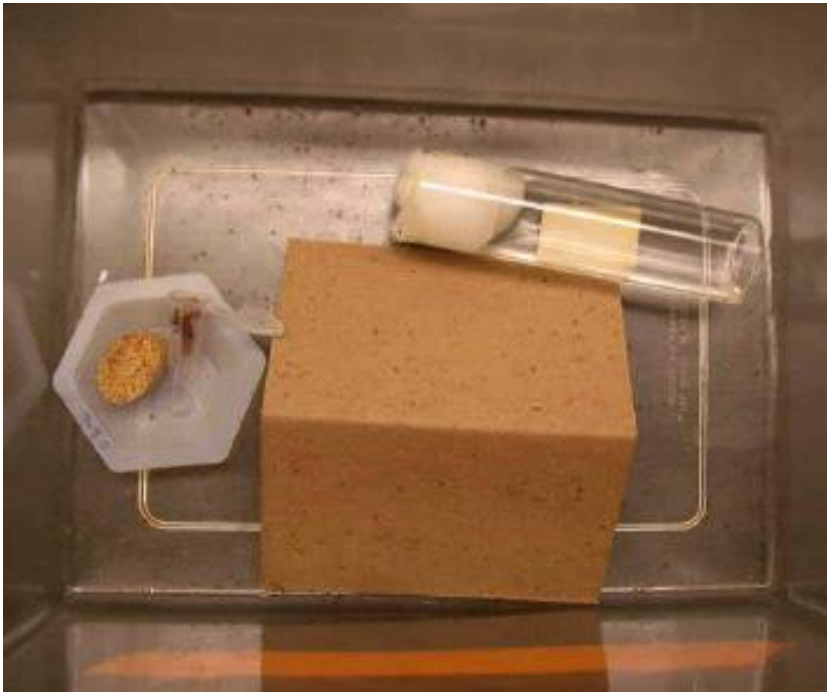
Cockroaches Consume More Bait with the New **Maxforce FC** Formulation



Averse and Susceptible Cockroaches Consume New Maxforce FC Formula



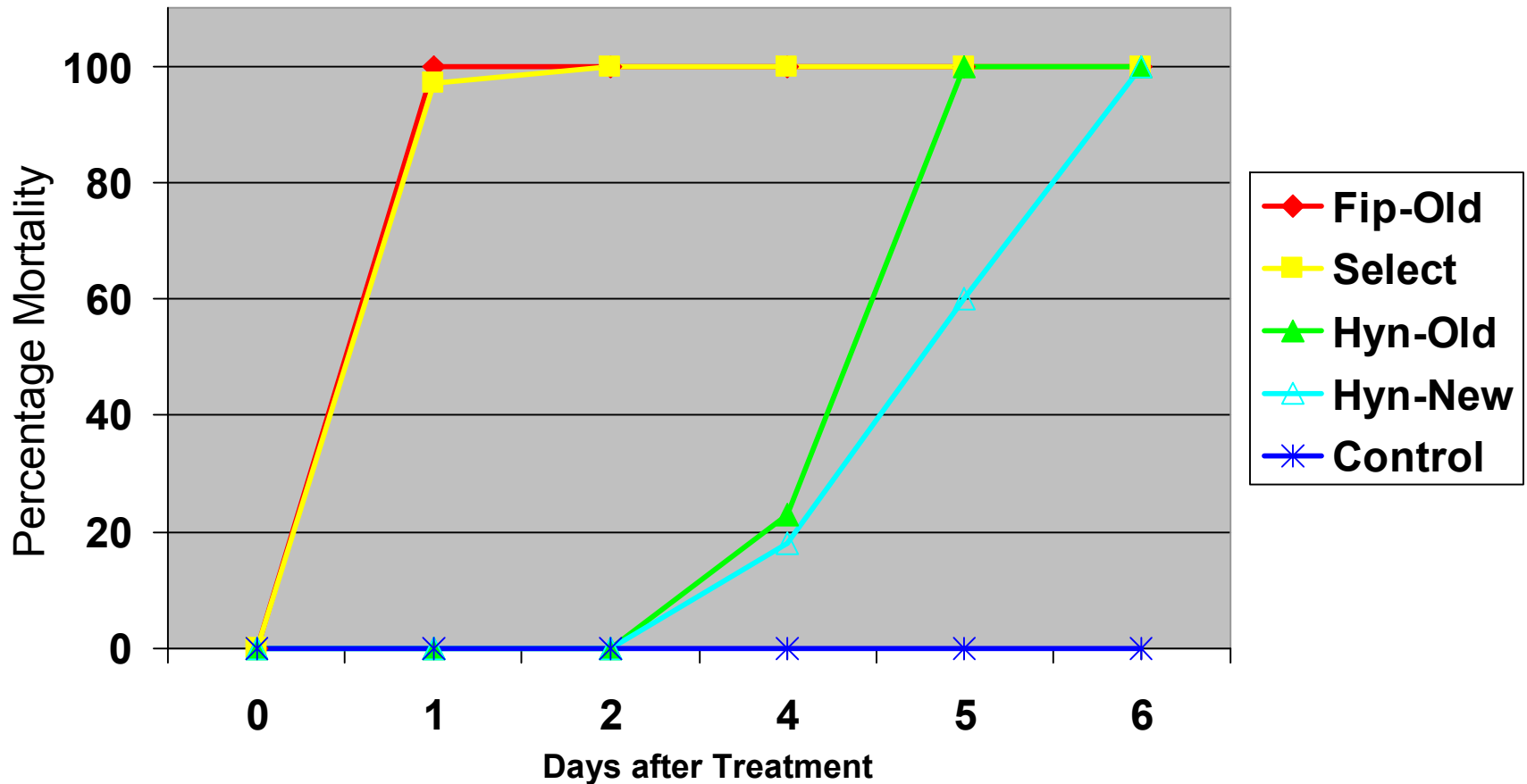
Efficacy and Palatability Studies



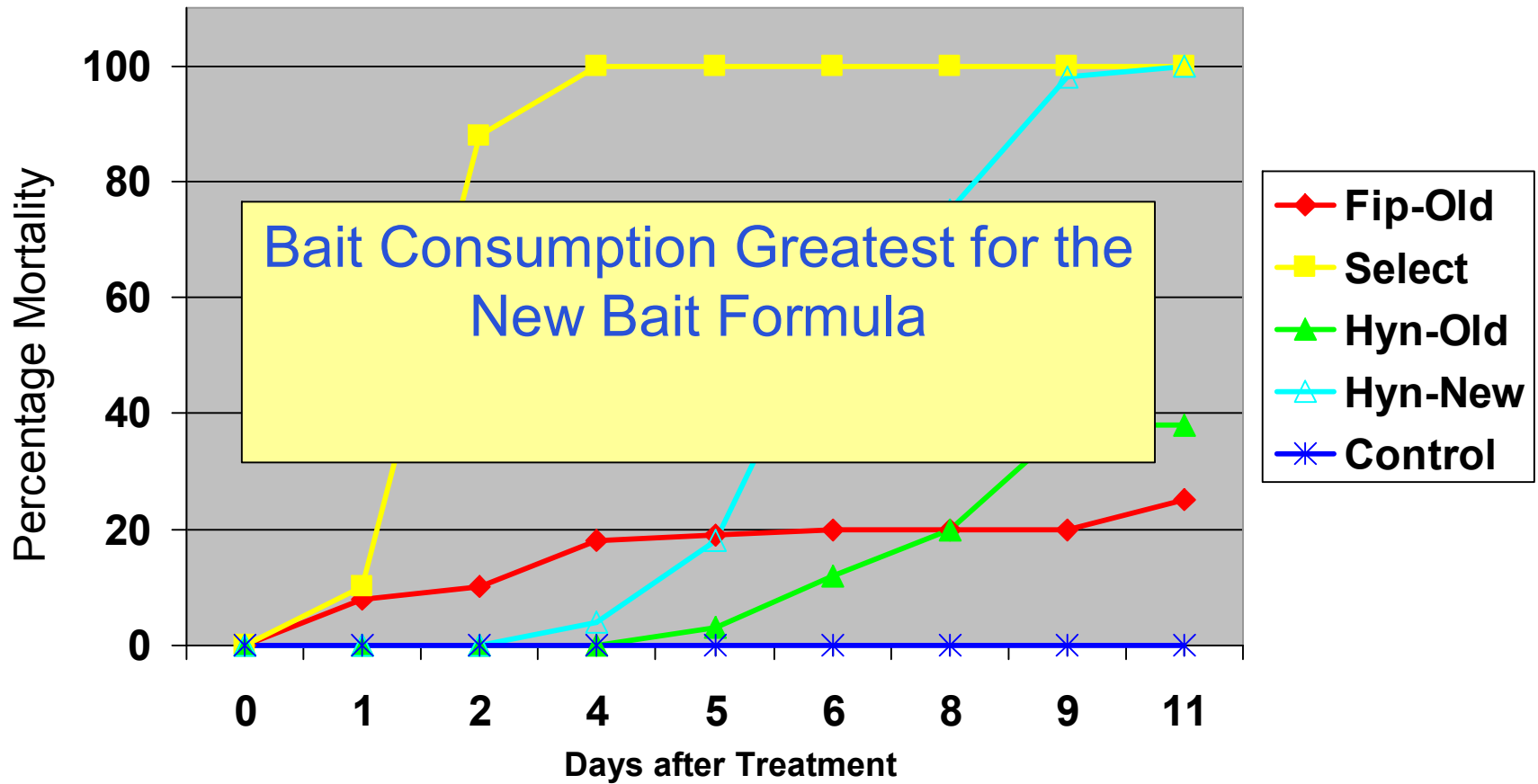
Test arena

- ◆ Researchers at Purdue compared old and new Maxforce gel bait formulas against a lab strain (Jwax) and field resistant (Cincy) strain
- ◆ 10 adult male cockroaches placed in plastic boxes, provided food and water and gel bait
- ◆ Mortality and bait consumption recorded daily

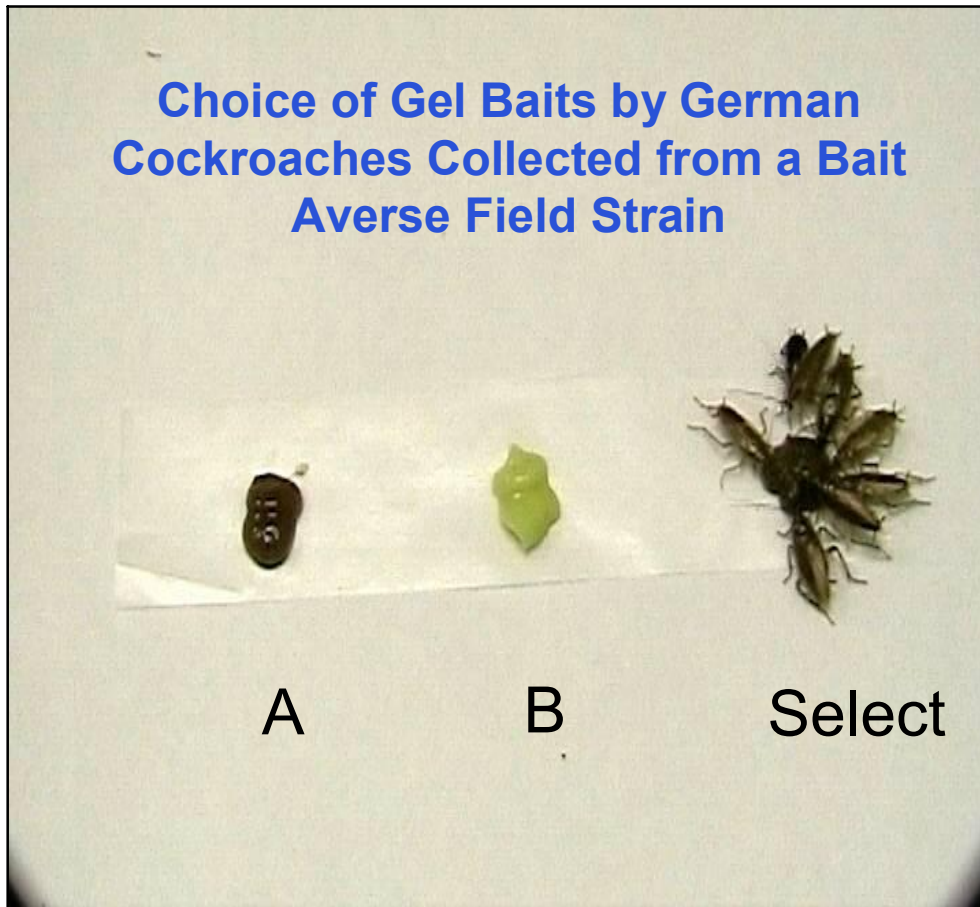
Efficacy of Maxforce Gel Baits Against the Jwax Strain of German Cockroaches



Efficacy of Maxforce Gel Baits Against the Cincy Strain of German Cockroaches



Chemical Treatment Options



- ◆ New Maxforce FC Select Roach Killer Bait Gel entered marketplace in early 2004
- ◆ Bayer ES will continue to offer existing bait formulas
- ◆ For best results remove old baits