

FourStar™ Briquet Efficacy in Highly Organic Catch Basin Microcosms

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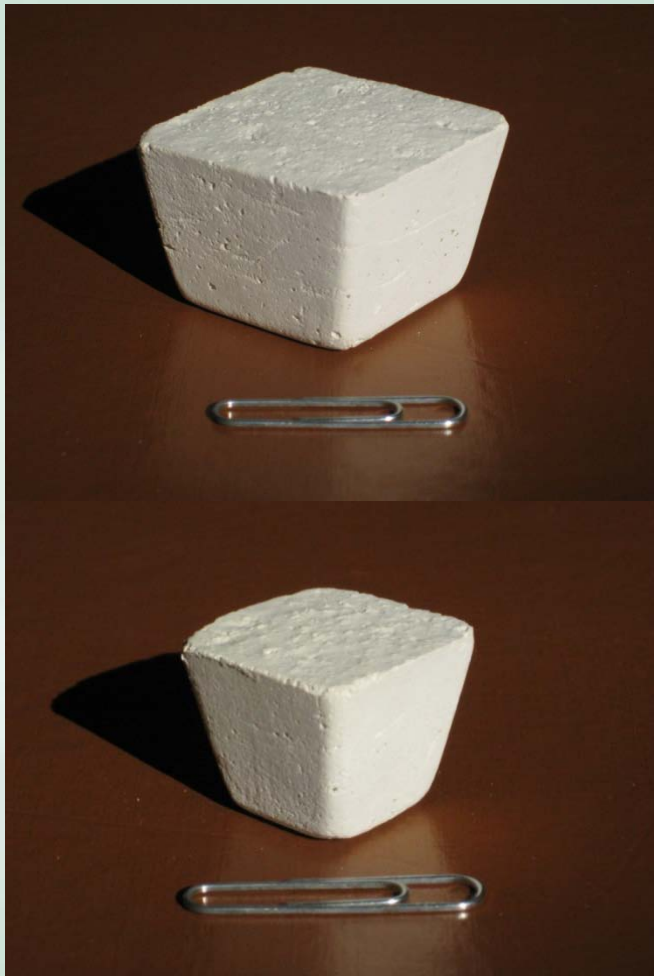
FourStar Microbials LLC



- A new line of FourStar™ controlled release microbial products utilizing *Bacillus sphaericus* & *Bacillus thuringiensis israelensis* is available from ADAPCO
- Three briquet products have been designed for 180, 90 and 45 days control of mosquito larvae
- The briquets were evaluated in replicated, simulated catch basin microcosms
- The control efficacy of the 180 and 90 day FourStar Briquet is presented



Briquet Features



- FourStar Briquets control 1st- 4th instars, before pupal development
- Most larval mortality is in the 1st through 3rd stages
- Inspection confirms larval mortality and efficacy
- No pupal collections or processing required



- 30 gm and 15 gm FourStar™ Briquets were applied to *Culex quinquefasciatus* and *Culex stigmatosoma* larvae in highly organic, 3' deep catch basin microcosms in 2007
- High organic loading was brewed until surface scum formation cleared, then briquets were applied
- Microcosms were flushed monthly, and water restored to initial levels, and organics added
- Control was determined by isolating larvae in floating sentinel cages to verify microbial delivery to water surface



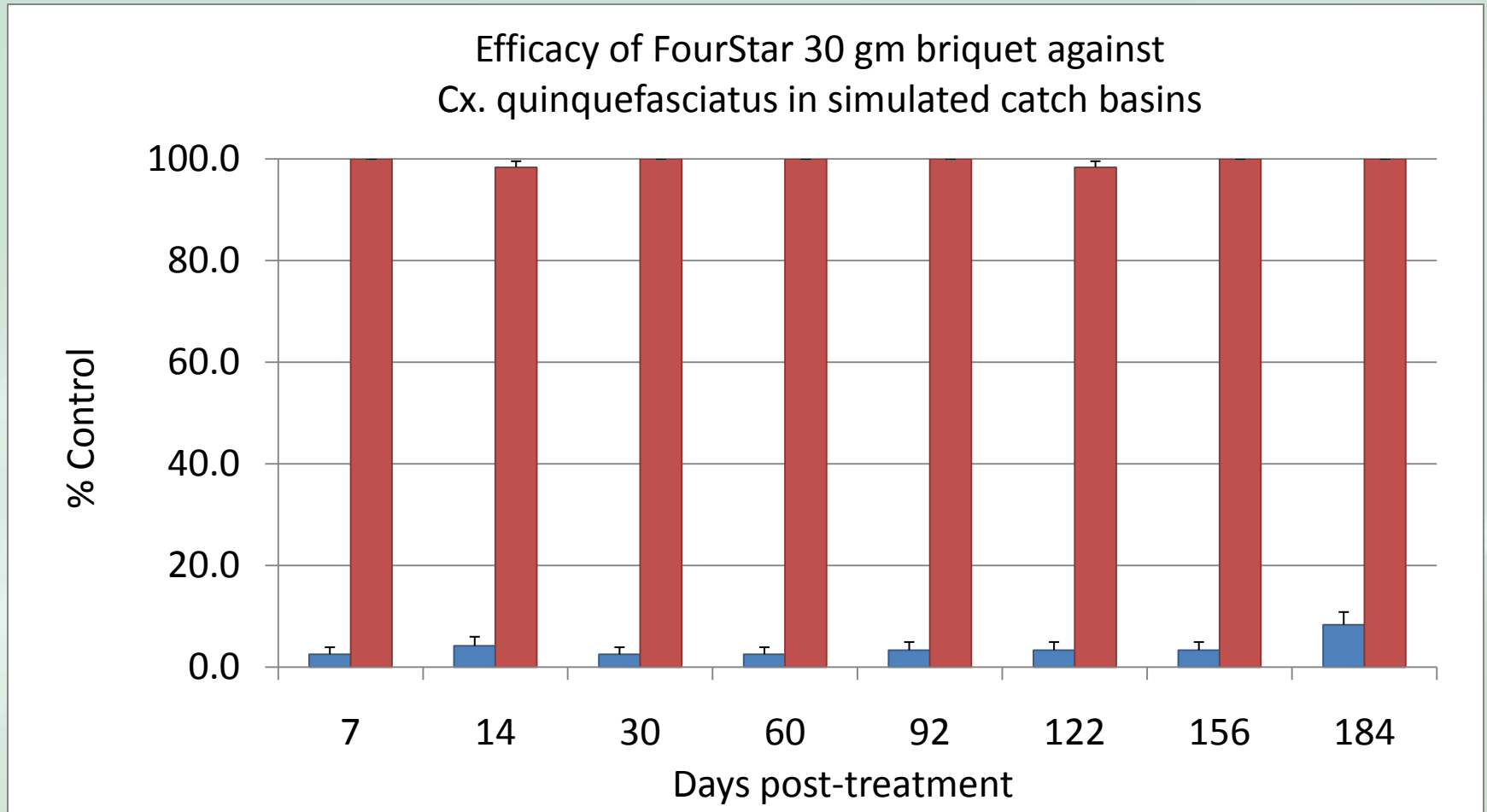
- Percent control was determined by the number of larvae surviving to pupae in each replicate
- Efficacy of 30 gm FourStar™ Briquet was assessed at day 7, 14, 30, and monthly thereafter until control declined to <85%
- 30 gm Briquets were challenged 1 month post with 600 3rd instar larvae per dip, and 3x water dilution
- Efficacy of the 15 gm FourStar™ Briquet was assessed weekly until control declined to <85%



- 30 gm Briquet control over 6 months_are presented in the following slides
- 15 gm Briquet control over 3 months_are also presented
- 30 gm Briquets challenged at 14 days with 600 larvae/dip controlled 100% of larvae before pupation
- 30 gm Briquet microcosm water diluted 3x with fresh water also gave 100% control of larvae

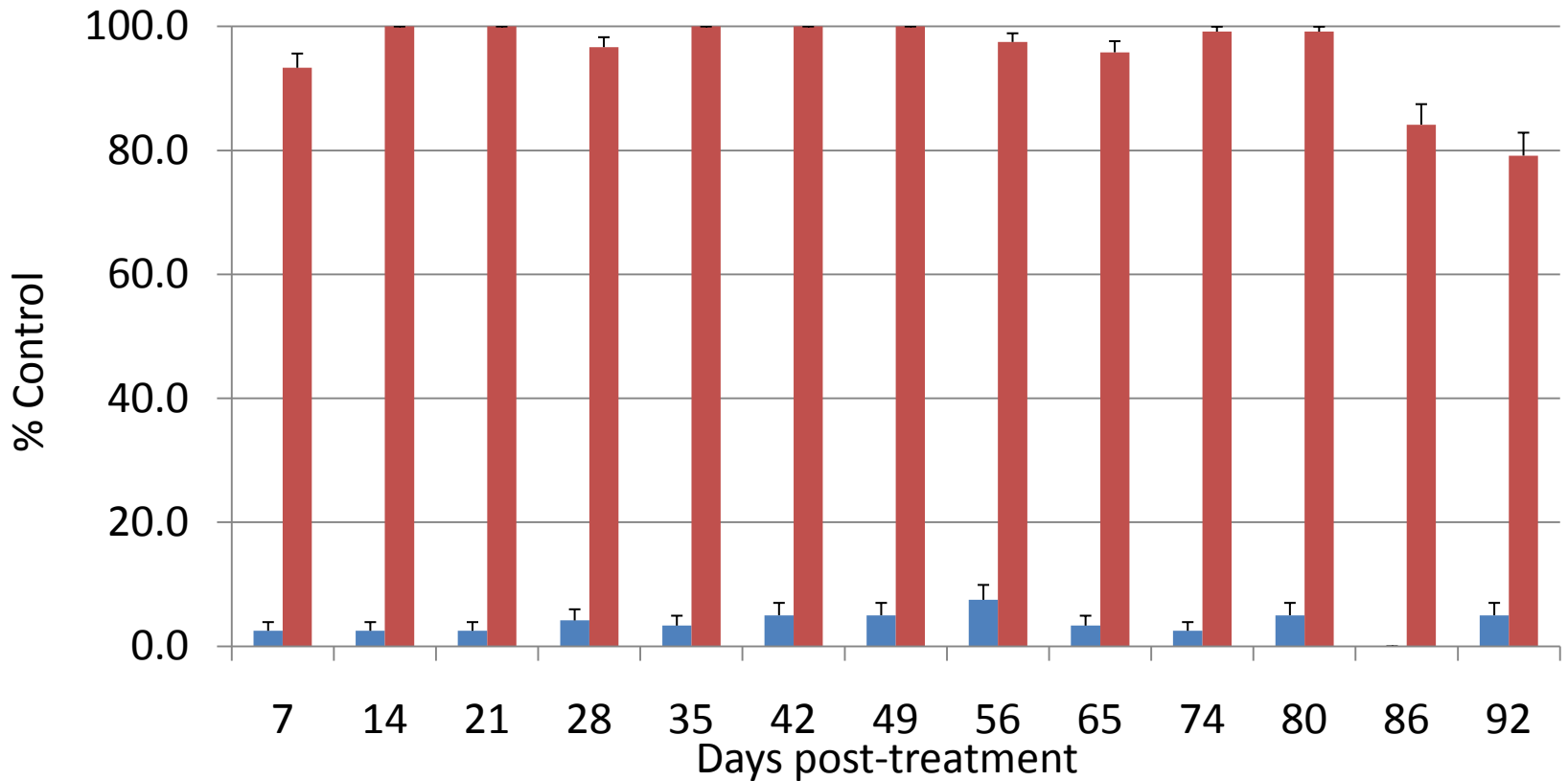


30 gm Briquet Results

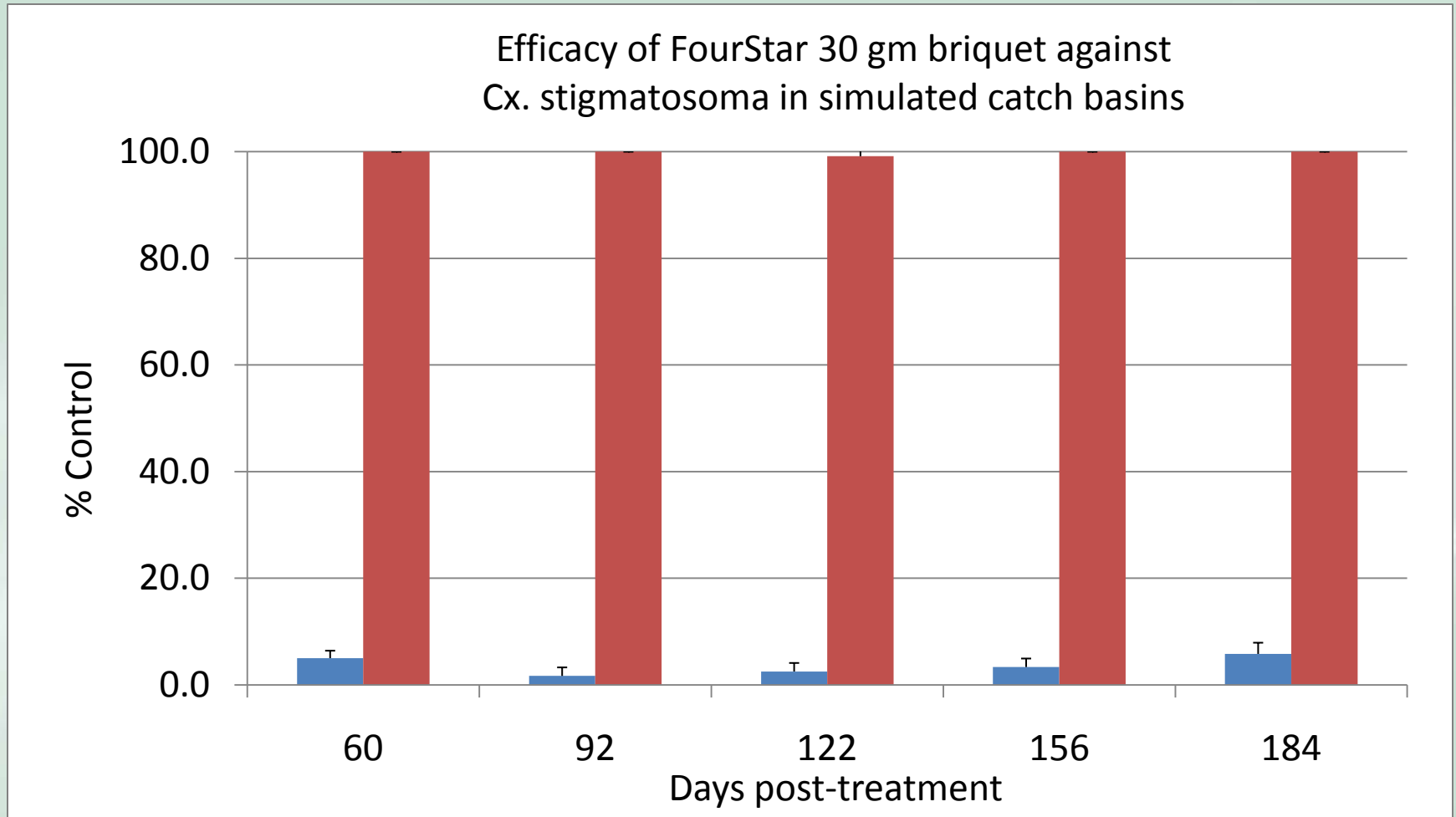


15 gm Briquet Results

Efficacy of FourStar 15 gm briquet against *Cx. quinquefasciatus* in simulated catch basins

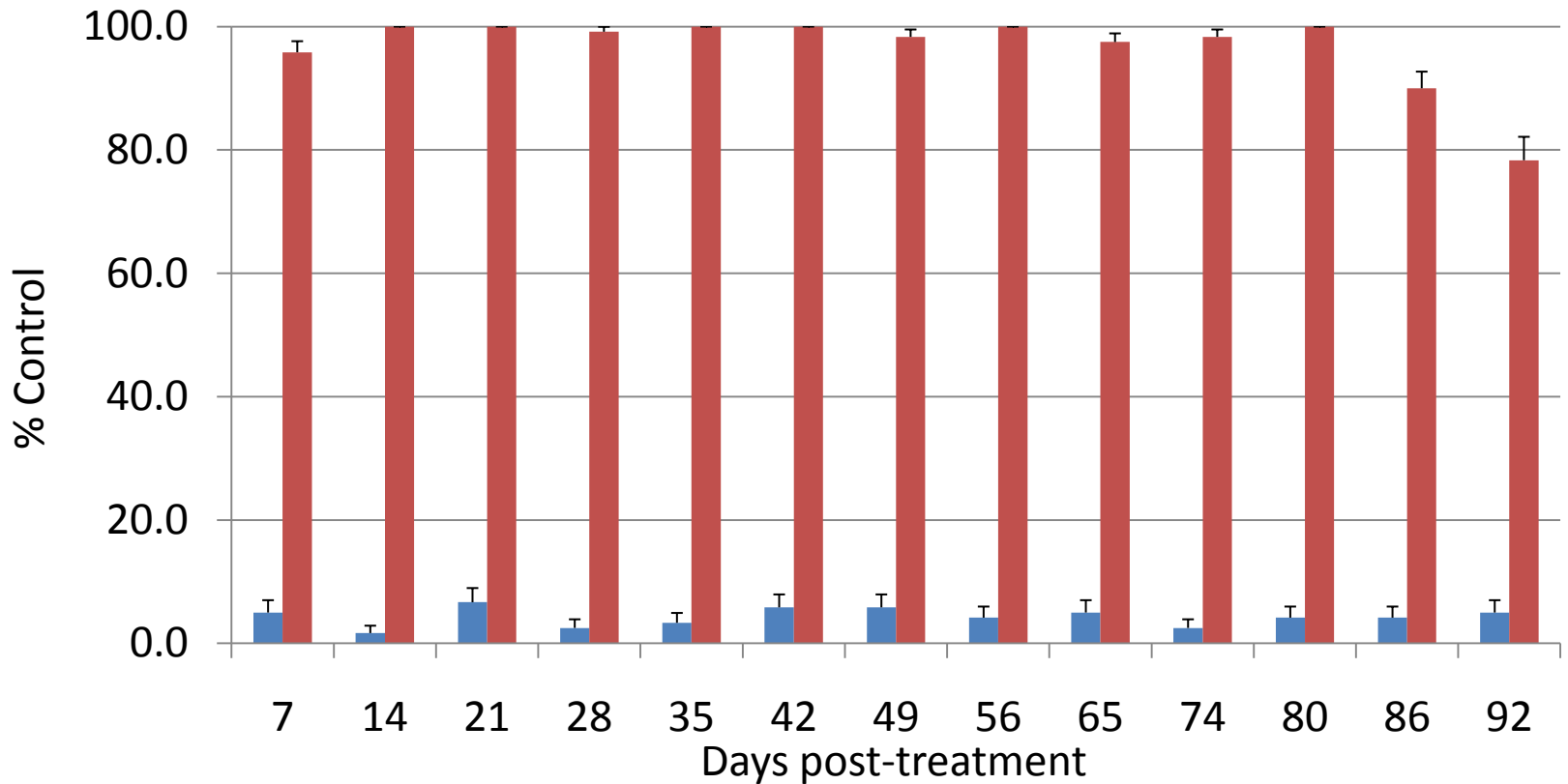


30 gm Briquet Results

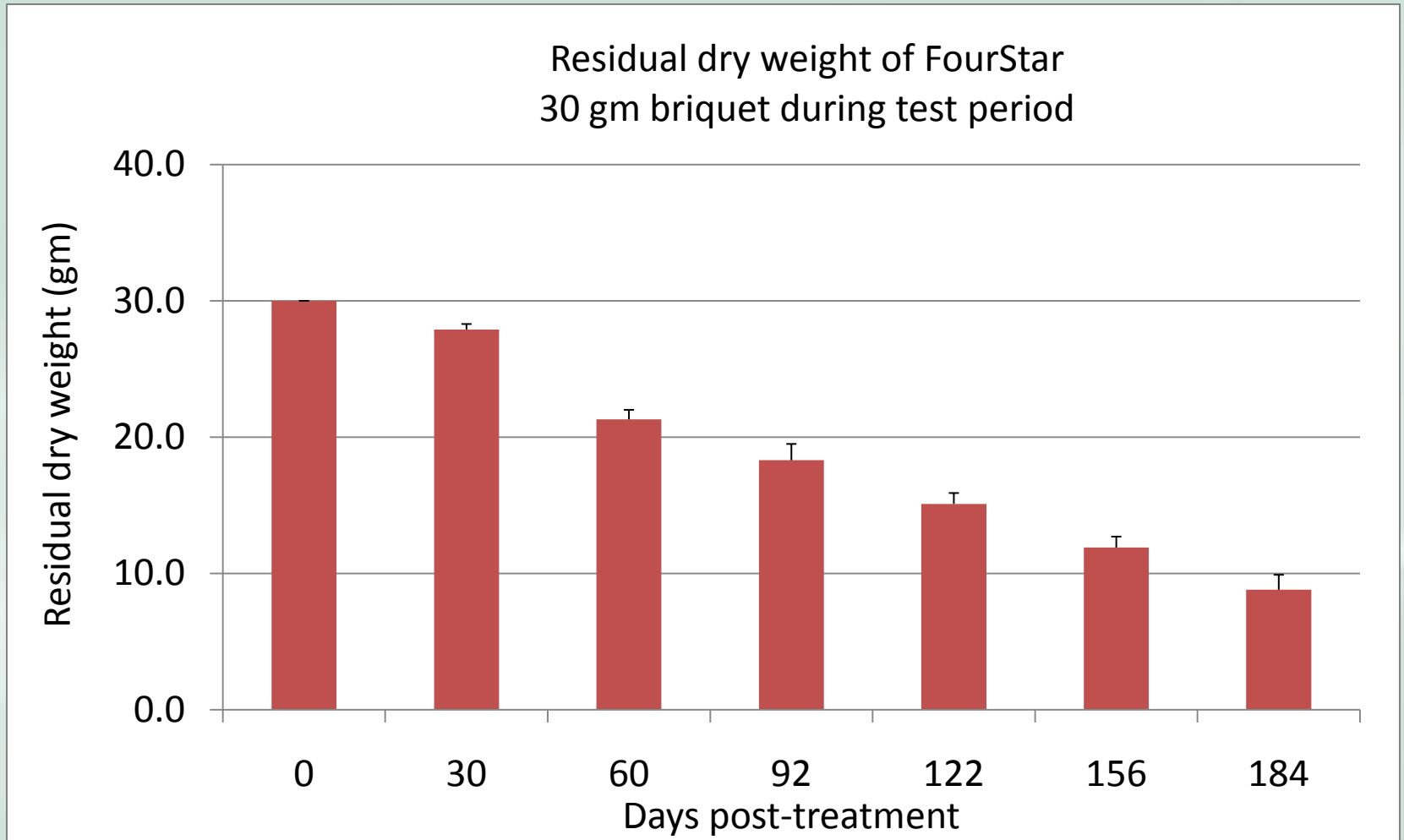


15 gm Briquet Results

Efficacy of FourStar 15 gm briquet against *Cx. stigmatosoma* in simulated catch basins



30 gm Briquet Residual Weight



- FourStar™ 30 gm Briquet provided 99.5% control in in catch basin microcosms for >180 days
- FourStar 15 gm Briquet provided 97.9% control in in catch basin microcosms for >90 days
- FourStar Briquets effectively controlled *Cx. quinquefasciatus* and *Cx. stigmatosoma* in highly organic simulated catch basin microcosms



FourStar™ Briquet Efficacy in Abandoned Swimming Pools

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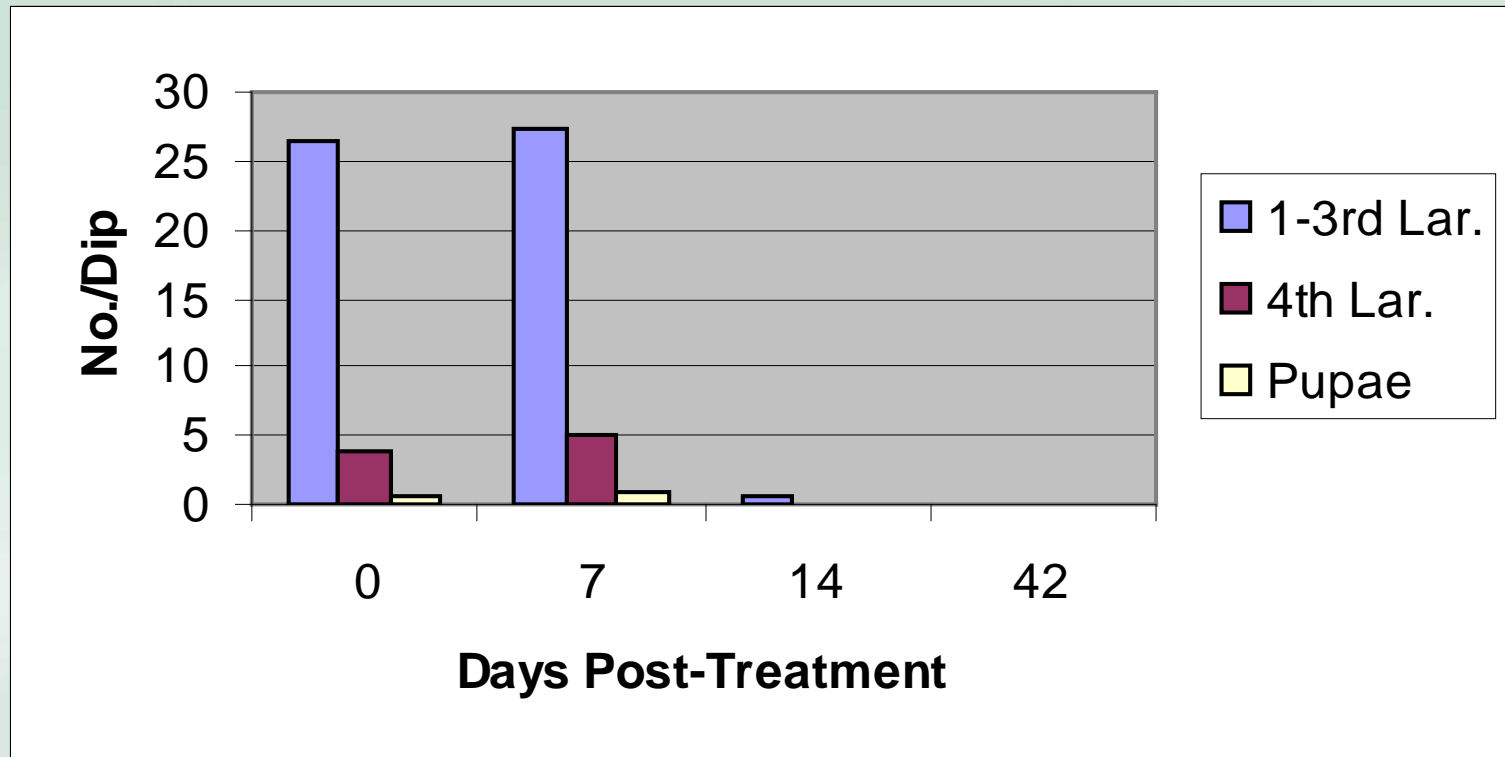
- FourStar™ 30 gm & 15 gm briquets were applied to abandoned swimming pools in San Bernardino County, CA during 2007
- Water depths were 3 to 6 feet
- Control was determined by collecting 10 dips around perimeter of each pool, and recording: 1) the # of live 1st-3rd instar larvae, 2) the # of live 4th instar larvae, and 3) the # of live pupae
- Mosquitoes were assessed pre-treatment, & weekly post-treatment for 15 gm; weekly then monthly for 30 gm briquets



FourStar 30 gm Briquet

- Treated: 7/17/07
- *C. quinquefasciatus*
- Ave. Depth: 36"
- Pool size: 450 sq.ft.
- Rate: 1/112 sq. ft.
- Dose: 4 Briquets
- Test duration: 42 days, pool drained



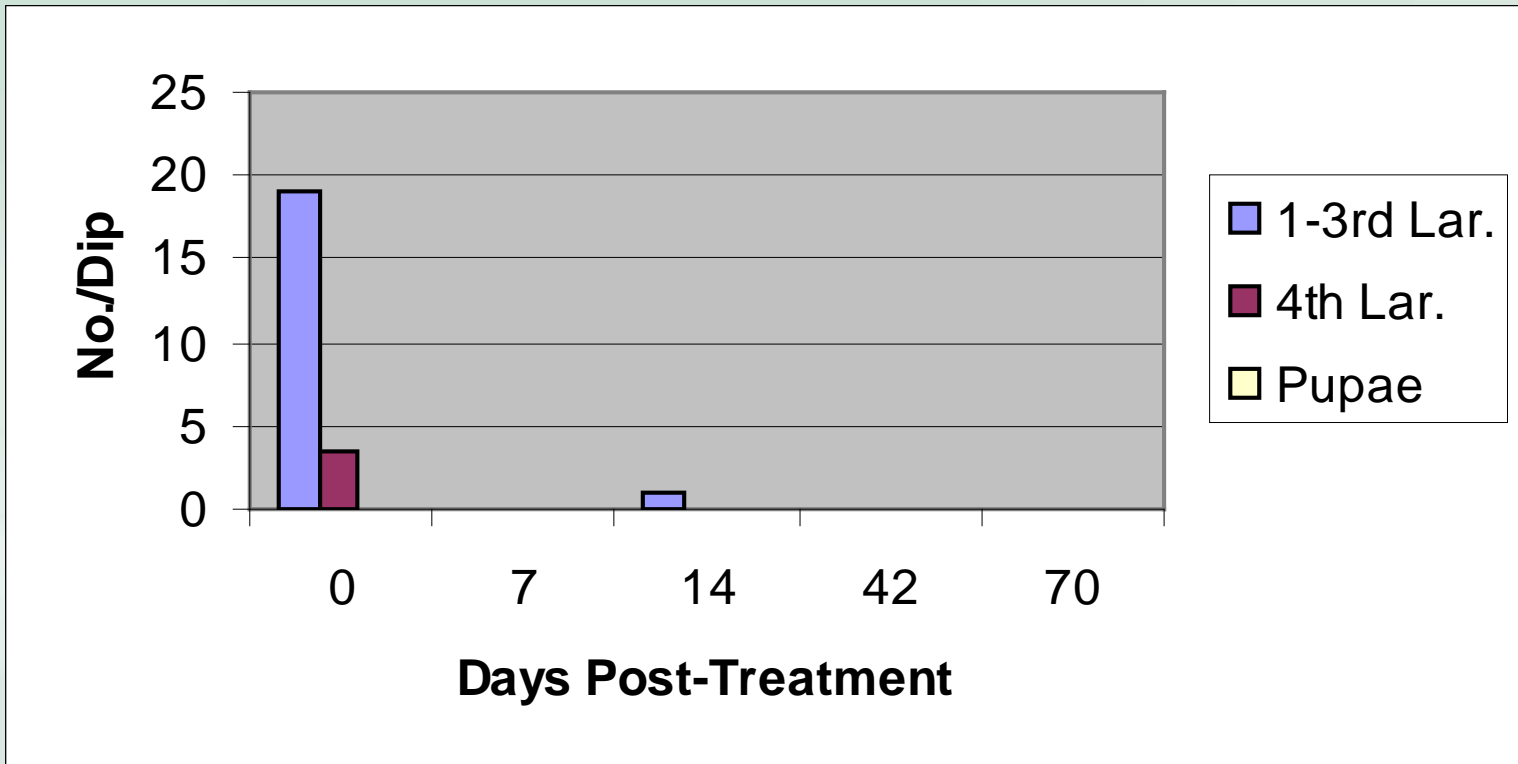




FourStar 30 gm Briquet

- Treated: 7/17/07
- *C. quinquefasciatus*
- Ave. Depth: 36"
- Pool size: 450 sq. ft.
- Rate: 1/112 sq. ft.
- Dose: 4 Briquets
- Test duration: 70 days, pool drained



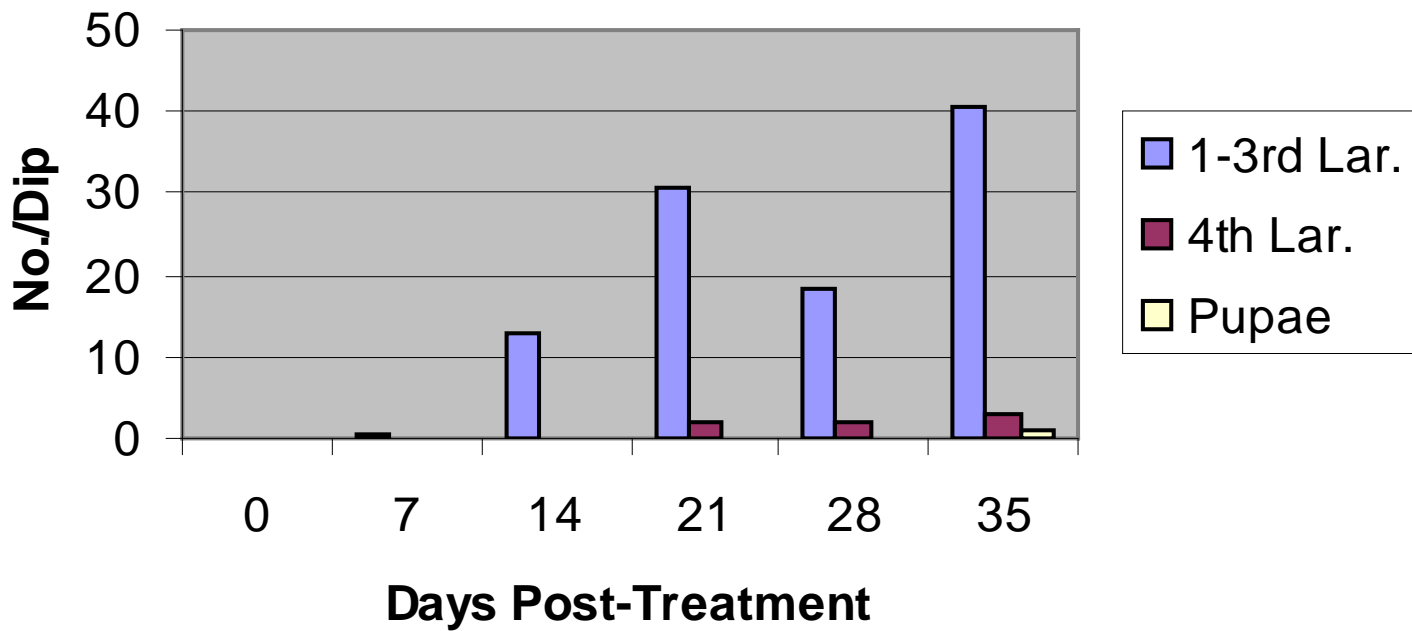




FourStar 30 gm Briquet

- Treated: 8/28/07
- *C. quinquefasciatus*
- Ave. Depth: 48"
- Pool size: 440 sq.ft.
- Dose: 4 Briquets
- Rate: 1/110 sq. ft.
- Test Duration: 35 days, pool drained



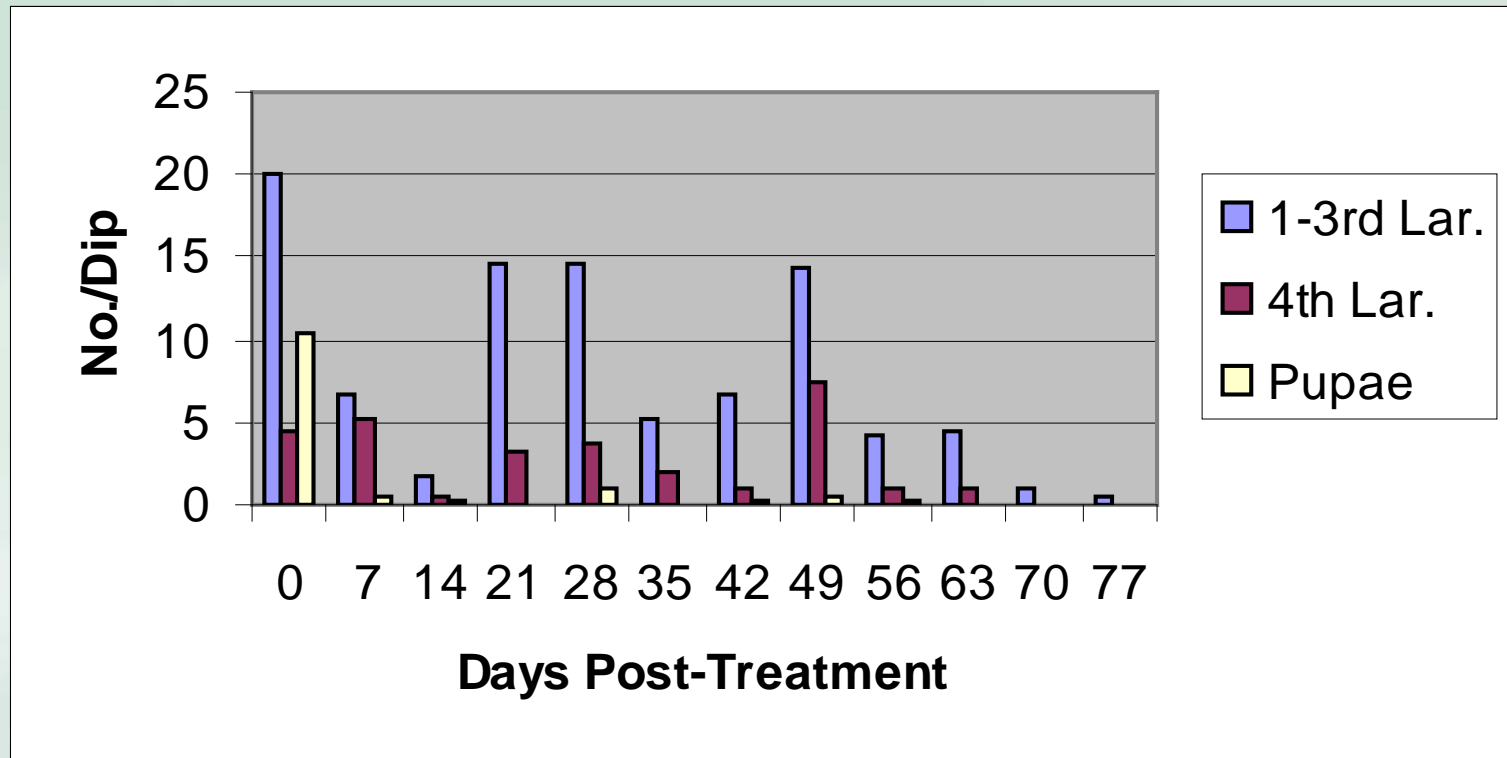




FourStar 15gm Briquet

- Treated: 7/10/07
- *C. quinquefasciatus*
- Ave. Depth: 48"
- Pool size: 700 sq.ft.
- Rate: 1/58 sq. ft.
- Dose: 12 Briquets
- Test duration: 77 days



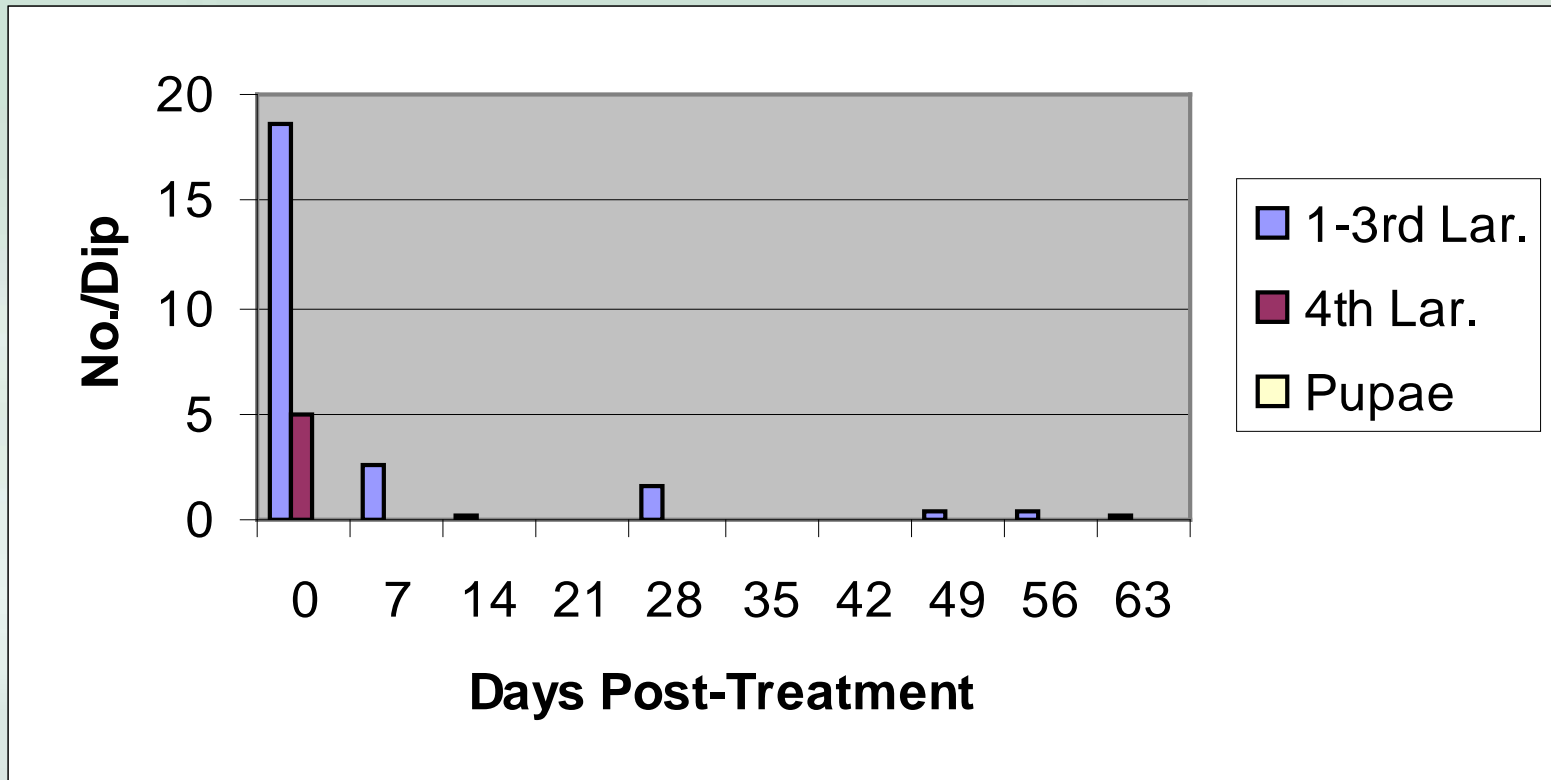




FourStar 15 gm Briquet

- Treated: 7/17/07
- *C. quinquefasciatus*
- Ave. Depth: 60"
- Pool size: 675 sq.ft.
- Rate: 1/52 sq. ft.
- Dose: 13 Briquets
- Test duration: 63 days



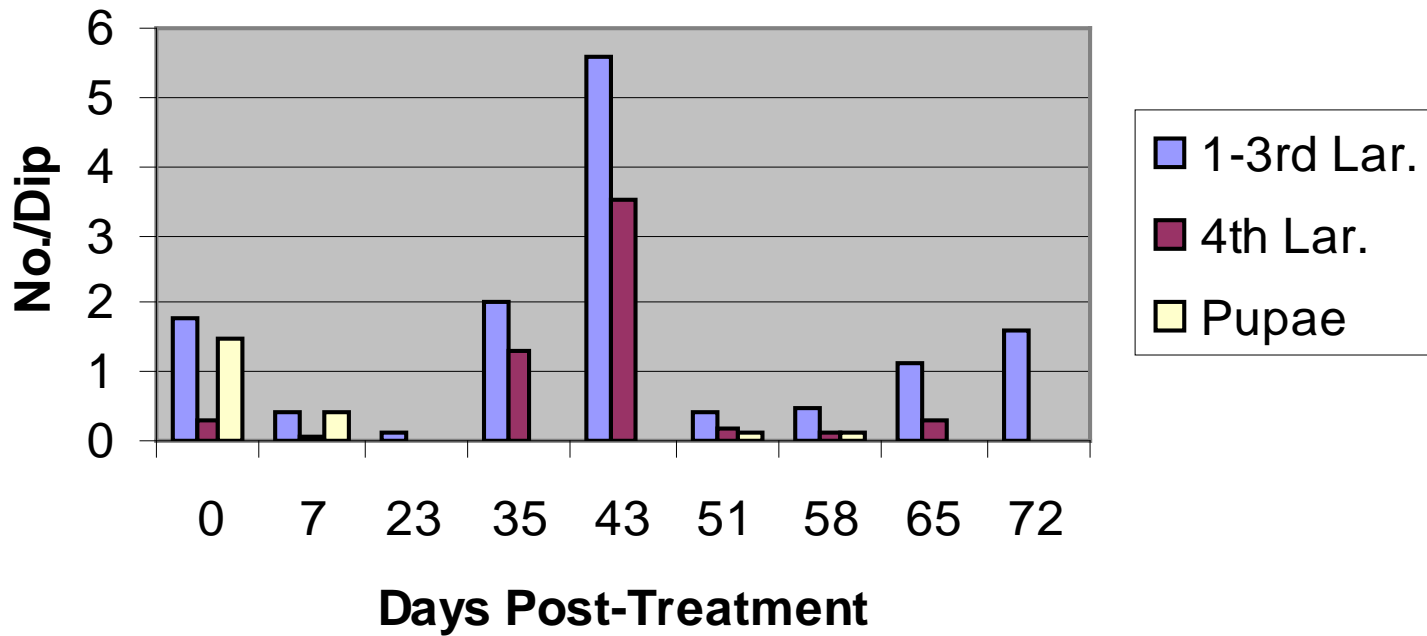




FourStar 15 gm Briquet

- Treated: 7/11/07
- *C. quinquefasciatus*
- Ave. Depth: 48"
- Pool size: 800 sq.ft.
- Rate: 1/50 sq. ft.
- Dose: 16 Briquets
- Test duration: 72 days



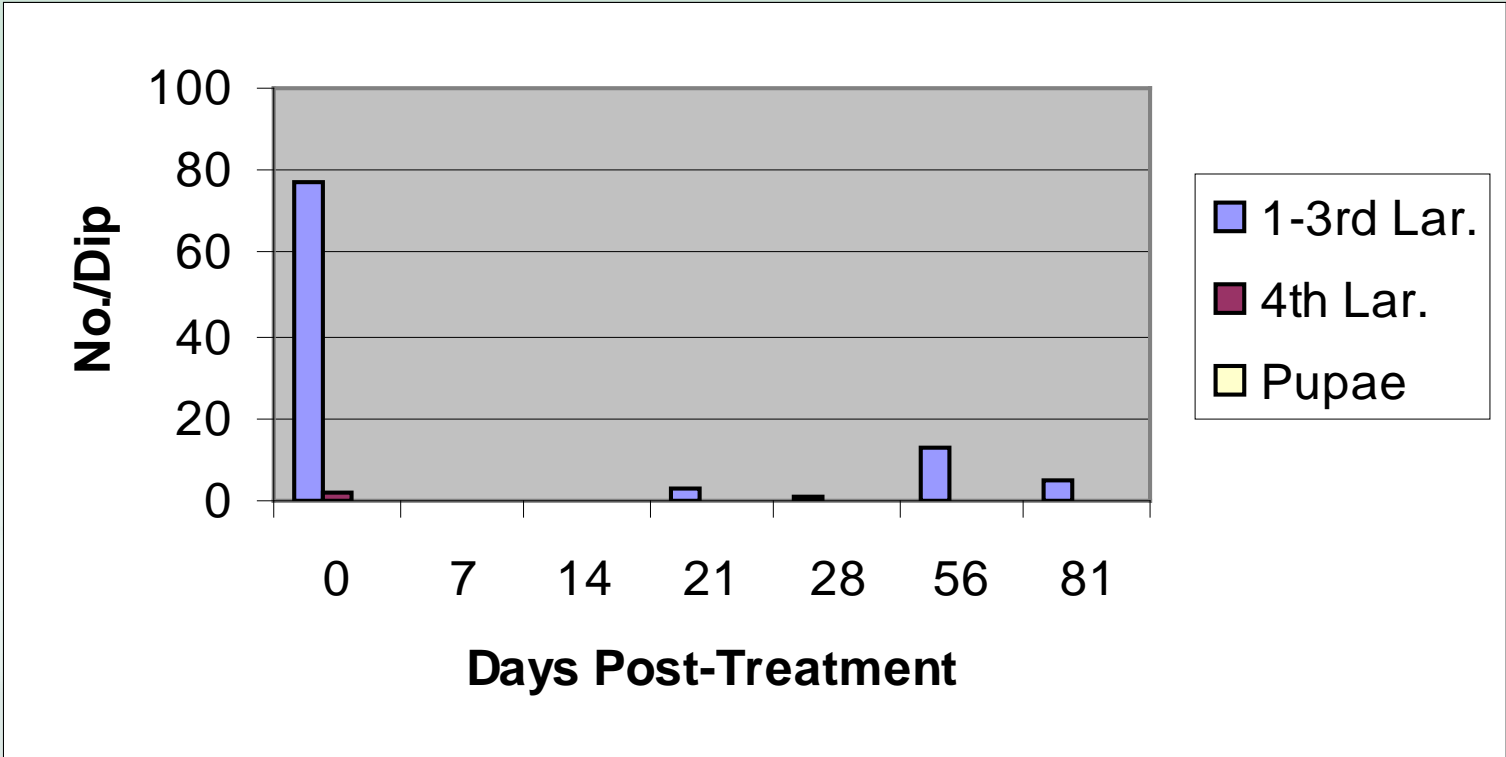




FourStar 15 gm Briquets

- Treated: 7/3/07
- *C. quinquefasciatus*
- Ave. Depth: 48"
- Pool Size: 400 sq.ft.
- Rate: 1/100 sq. ft.
- Dose: 4 Briquets
- Test duration: 81 days, pool drained





- FourStar™ 30 gm Briquet control averaged >98.9%* mortality in abandoned swimming pool tests for up to 70 days (pools were drained)
- FourStar 15 gm Briquet control averaged >97.8% mortality in abandoned swimming pool tests for up to 81 days (pools were drained)
- FourStar Briquets effectively controlled *Culex quinquefasciatus* in abandoned swimming pools



- We thank Joan Mulcare, Environmental Health Program Manager, and Joe Krygier, Supervising Environmental Health Specialist of the San Bernardino County Vector Control Program for their project support
- This study would not have been possible without their help

