

**Identifying the Economic Impact Caused by Mormon Crickets
on Agronomic Crops and Rangeland in Western Utah**

**USU Extension Integrated Pest Management
Mini-Grant Proposal 2004**

Project Leader:

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Situation Statement:

Table 1. Mormon Cricket Survey, USDA -APHIS

Year	Acres Infested
1997	1,180
1998	509,800
1999	758,000
2000	658,500
2001	1,894,500
2002	2,450,650

For the past five years in Utah, Mormon crickets have infested thousands of acres of range and crop lands (Table 1). The majority of the infestation has occurred in four counties (Tooele, Juab, Millard and Beaver). These counties account for 84% of the infested acres in Utah for the year 2003. To save valuable agronomic crops and rangeland forage land managers apply many tons of pesticides each year to reduce the impact from Mormon crickets. In the last Utah Department of Agriculture and Food (UDAF) decision and action committee meeting it was reported that UDAF distributed more than 85,200 lbs. of bait and assisted in cost share spraying more than 21,836 acres throughout the state. Most of this pesticide application went for treating private property. Of the 85,200

lbs. of bait, 22,500 lbs. or approximately 11.25 tons (26 percent) of bait was distributed in Millard County to farmers, ranches and homeowners and was valued at \$27,000. This does not include the bait put out on BLM or Forest Service land. Similar amounts of pesticide were applied in the other three heavily infested counties as well.

Many farmers panic when they see wave after wave of thousands of crickets approaching their irrigated fields of alfalfa and grain. Most of them assume that if high levels of pesticides are not applied the crop will be a complete loss. Besides using the carbaryl (Sevin) bait around the perimeter of the field to try to keep the crickets out of the crop ground many farmers are spraying their entire fields to kill the crickets. In at least one case this past year, a farmer sprayed his 300-acre alfalfa field with (Furadan) twice in less than 30 days to control the crickets. This is not according to label recommendations and over applying excess chemical that may not have been needed. Without accurate assessment of cricket damage to crops, it is difficult for producers to determine proper and economical control measures to be used.

This project will study the economic impact (crop loss) caused by Mormon crickets on agronomic crops and rangeland in Western Utah and will provide critical factual information on how much damage the Mormon crickets actually do on three commonly infested crops (alfalfa, small grains, and rangeland). This information will then be used to help farmers decide what cricket control measures to take in the future.

In 2003 the trial had limited success because few crickets were present on some fields and some of the plots were sprayed prematurely by the farmers. To deal with this problem this year the project will be to set up four different plots in each county in either alfalfa, grain or range. This will give us a much better chance of having crickets in our plots so we can collect the necessary data.

Objectives:

1. Determine the economic impact (crop loss) that Mormon crickets have on alfalfa, small grains and rangeland vegetation in Beaver, Millard, Juab, and Tooele Counties.
2. Develop a fact sheet outlining the economic damage caused by Mormon crickets on the study crops.
3. Educate farmers, Extension agents and other Ag-serving agencies on the importance of looking at anticipated damage and costs when deciding what control measures to take or recommend. A CD with pertinent research information (fact sheet, slide presentation ect.) will be distributed.
4. Provide research information on the USU Extension/Mormon Cricket website and the Extension IPM website. <http://extension.usu.edu/hoppers/>

5. Develop a presentation and poster that shows research results of the project. Results will be shared at educational meetings throughout the state including interagency, national committee / association meetings.

Procedures:

Replicated exclusionary plots will be set up in each of the four counties and will be sufficient to collect the needed data for statistical analysis. The crops evaluated in each county will be determined by the USU Extension agent in that county.

The cages will be purchased or made according to research protocol. In addition to using the cages constructed during 2003, new cages will be used that meet requirements for small grain plots. They will be constructed or purchased. This will be completed upon notification of the grant approval.

Cages will be placed in fields prior to pest pressure and remain there until adequate data can be collected. Before the crops are harvested, the material inside the cage will be clipped, weighed and data recorded. Crop yields will be calculated on a dry matter basis inside and outside of the treatment area.

Infested fields will be monitored regularly to determine population threshold and size of the cricket.

The data will be analyzed using standard statistical methods with the assistance of a statistician if needed.

The information gathered will be used to make the PowerPoint presentation, fact sheets or brochure that will be given to farmers at workshops/field day, and one-on-one visits with stake holders. This information will also be shared with all the Extension Agents in Utah and other government agencies.

Budget:

Item \$ Amount

Educational materia: poster, fact sheet etc. 700

Enclosure material (cages) 800

Equipment: Scales, shears, a digital camera, bags, ect 1,000

Travel / Presentation of results 1,000

Supplemental labor: harvesting & plot setup 700

Specialist support & travel 500

TOTAL 4,700.00

Digital Hanging Scale 33 lb. capacity with 1 ounce resolution = \$76.5. This scale would work better than a flat scale as you could hang a brown paper bag (grocery bag) from the hook. The little flat scales probably don't have enough weight capacity to clip the whole plot.

\$76.5 @ 4 = \$306

Corona Hedge Shears Precision ground, high-carbon steel cutting head gives you clean, concise cuts. Balanced weight and neoprene bumper unit absorbs shock and reduces fatigue. Total length: 22 inches = \$47.50 @ 4 = \$190