



Idaho State Department of Agriculture 2016 Grasshopper and Mormon Cricket Suppression Program Summary

Introduction

Grasshoppers and Mormon crickets continue to be one of the most serious pest problems for Idaho rangelands and adjacent croplands. Based on annual surveys conducted by the United States Department of Agriculture (USDA), Animal Plant Health Inspection Service (APHIS), Idaho has experienced very serious pest outbreaks in previous years. The management and the timely control of grasshopper and Mormon cricket populations are high priorities for the Idaho State Department of Agriculture (ISDA) and our cooperators at USDA, APHIS. Congress has addressed this issue with special funding to the impacted states of Idaho, Utah and Nevada. With this funding, ISDA has made pesticides available to landowners to control these pests. To qualify to receive these pesticides, a landowner must file a "Request for Evaluation of Need for Suppression of Grasshoppers or Mormon Crickets in Idaho" commonly known as the "Complaint Form", with ISDA, and ISDA will evaluate their land to determine if the site has reached economic damage.

Background

Sixty-four percent of Idaho lands are administered by the Federal Government. Forty-three percent, or 21.8 million acres, in Idaho is classified for use as rangeland. The Bureau of Land Management (BLM) administers 11.8 million acres in Idaho, much of it prime grasshopper/Mormon cricket habitat. There is a significant area of grasshopper and Mormon cricket habitat on federal lands that borders private rangeland and irrigated cropland in the state. Mormon crickets and grasshoppers (primarily about six species) are cyclical economic pest problems, particularly in southern Idaho. In recent years, significant outbreaks have also occurred in Northern, North Central, and South Central Idaho.

The grasshopper and Mormon cricket program is divided into four (4) regions: Northern (N), Southwestern (SW), South Central (SC), and Eastern (E), with offices in Coeur d' Alene (N), Boise (SW), Twin Falls (SC), and Idaho Falls (E). The area formerly known as Eastern Idaho is now designated as SC and E Idaho. ISDA awarded the bait contracted for fiscal years 2016 and 2017 to Simplot Partners, and Drexel 5% Carbaryl was provided at a cost of \$0.819 per pound.

ISDA continued to use electronic devices (tablets & computers) to record complaints and evaluate properties. The electronic "Complaint form" was again posted on the ISDA Grasshopper/Mormon cricket site and many landowners, especially people who use smart phones, used this form. This form was previously posted at the same site, however; the landowner was required to fax or mail to ISDA. The use of the tablets has improved efficiency by allowing data to be entered into the system once and providing a way to track complaints and response. In addition, GIS points are available to identify known Threatened and Endangered Species locations that could impact treatment options.

Carbaryl 5% bait (referred as "bait" in the rest of the report) was the only insecticide distributed to landowners, and applied by ISDA ground treatment staff. The bait was stored at eight different

storage sites around the state. When bait was not the most effective insecticide for grasshopper control, ISDA reimbursed landowners for insecticide and adjuvant costs on a case-by-case basis.

University of Idaho Extension offices in Latah and Cassia counties continued to be strong partners in the program, fielding complaints using the new electronic forms and forwarding them to ISDA. County Weed Control offices in Cassia, Gem, Elmore, Franklin, and Kootenai County agreed to store and distribute bait to approved landowners. In addition, the Idaho Department of Transportation in Moscow allowed ISDA to park an enclosed trailer on their fenced property and distribute bait from their facility.

ISDA seasonal temporary Pest Detection Specialists (PDS) were located across the state to respond to complaints and survey known infestation locations. ISDA continues to use personal survival beacons (SPOT) for all full-time employees working in this program.

APHIS and ISDA offices in Boise and Twin Falls continued to work together by sharing scouting information.

Summary of Grasshopper Actions Statewide

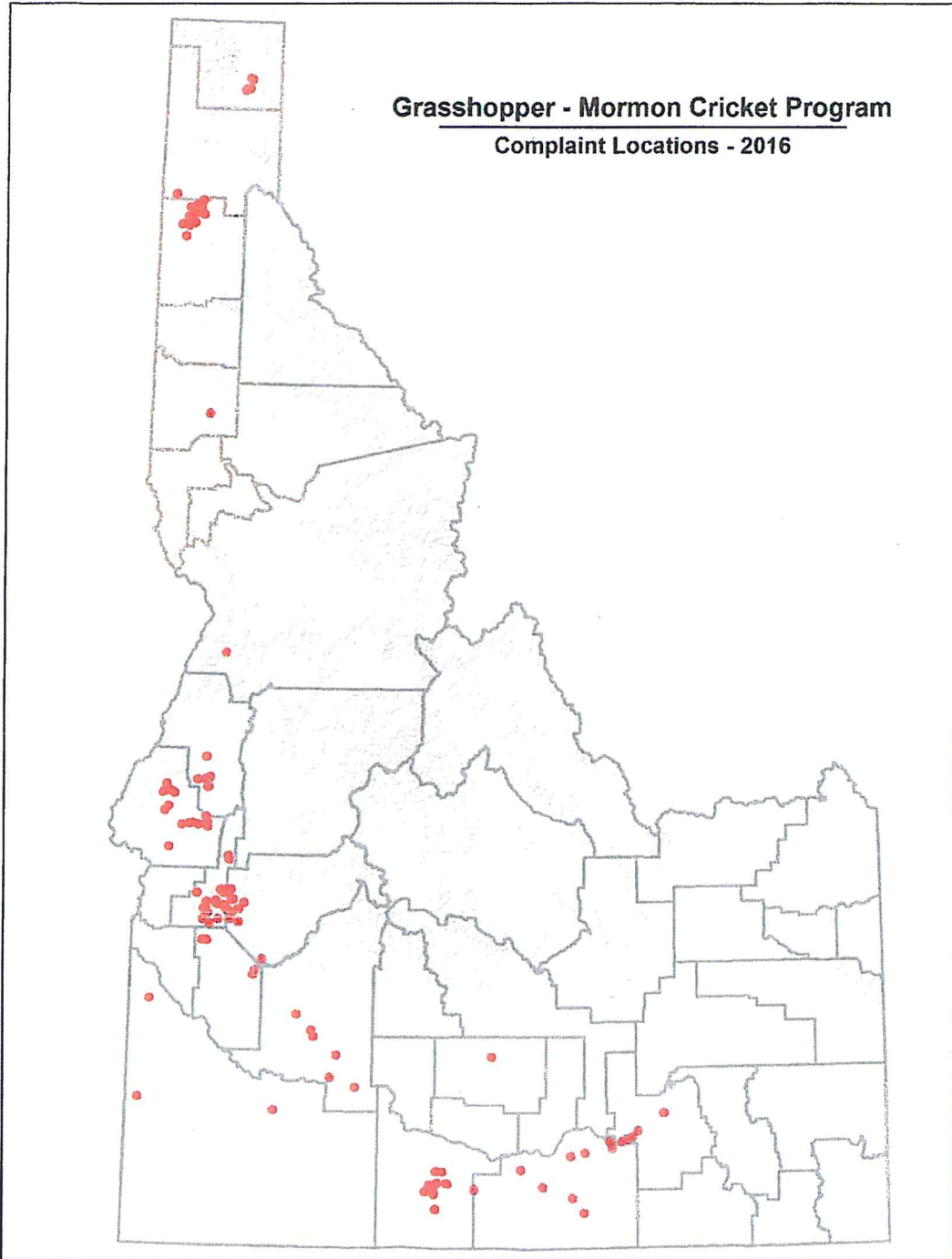
In 2016, grasshopper emergence occurred about two to three weeks sooner than normal. Statewide, there were 133 landowner complaints, and 76,090 lbs. of bait was distributed to 117 landowners in 18 counties. This was about 25% less bait than in 2015 (100,980 lbs).

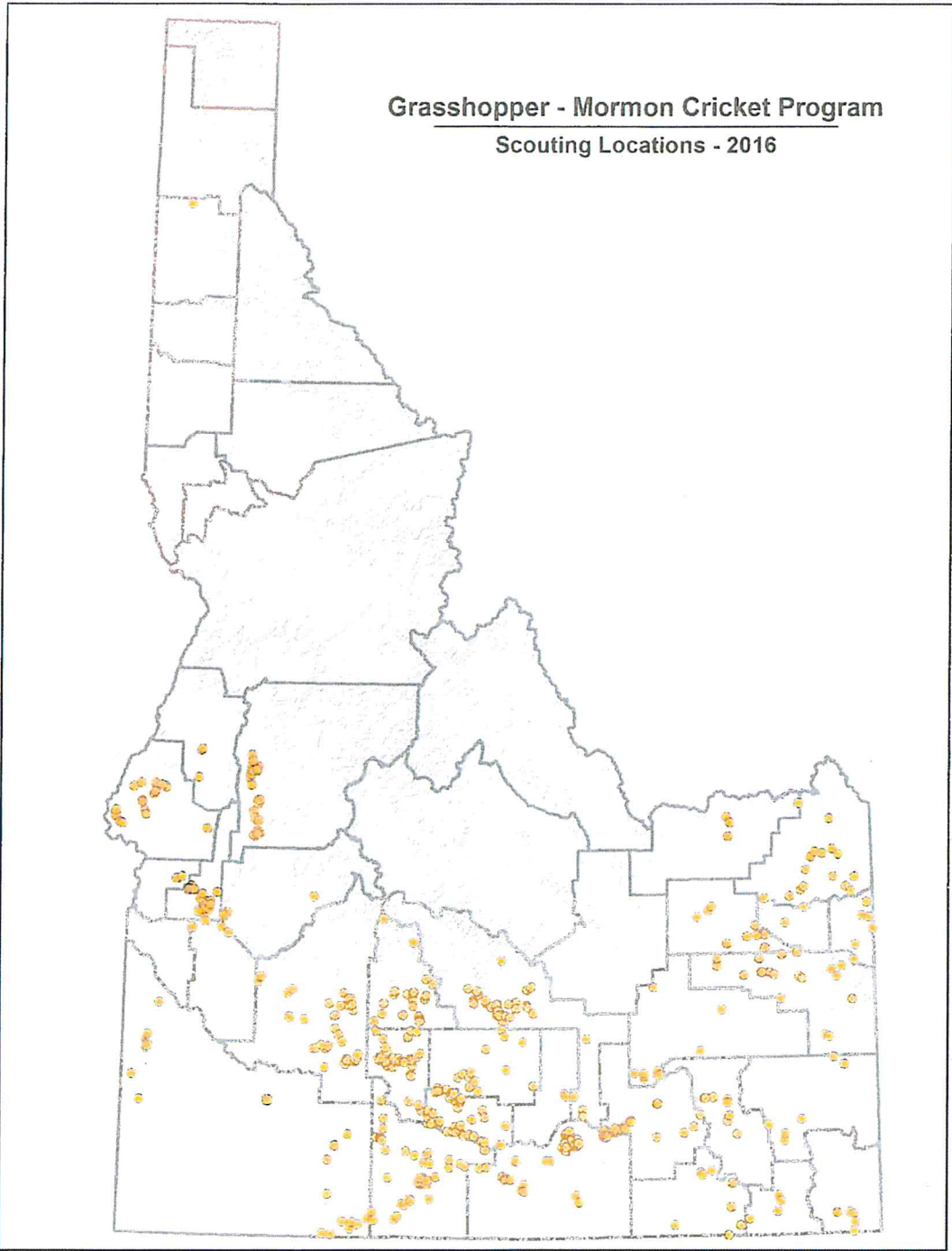
In addition, ISDA reimbursed four landowners for insecticides. ISDA scouted 610 sites (surveying for grasshoppers and Mormon crickets) statewide. No county or state road rights-of-way were treated by the ISDA for grasshopper infestations. ISDA continues to work with the United States Fish and Wildlife (USFW) Service and Idaho Fish and Game (IDFG) to avoid treatment near endangered species.

In Southwestern and South Central Idaho, the three most common grasshoppers are: Clear-winged Grasshopper (*Camnula pellucida*), Two-striped Grasshopper (*Melanoplus bivittatus*) and Migratory Grasshopper (*Melanoplus sanguinipes*).

The two maps below detail the geographic location of the complaints and surveying (grasshopper & Mormon cricket combined).

Grasshopper - Mormon Cricket Program
Complaint Locations - 2016





Summary of Grasshopper Actions by Region

Northern Idaho

Northern Idaho experienced a wetter (especially March, 2.5” precipitation more than normal) and warmer winter/spring, which resulted in earlier grasshopper emergence. The first day above 50 °F (temperature at which grasshopper development begins) was on 2-6-16. There were 32

complaints in four different counties, with 28 qualifying for ISDA assistance in the form of carbaryl bait. Total bait distribution in Northern Idaho was 5,920 lbs.

Northern Idaho Private Landowner Complaints and Bait Distribution

County	Number of Complaints	Number of Landowners that received bait	Carbaryl Bait Distributed (lbs)
Bonner	1	1	160
Boundary	8	7	1480
Kootenai	22	19	4080
Latah	1	1	200
Totals	32	28	5,920

Southwestern Idaho

Southwestern Idaho experienced warmer and drier conditions than normal during winter and spring, with the exception of March, which had normal precipitation. The first day above 50 °F was on 2-13-16. Scouting began in Washington County on 4-11-16, in conjunction with a report of Mormon crickets. The first grasshopper complaint was on 5-5-16 in the Horseshoe Bend area, this was two to three weeks earlier than normal.

There were 66 landowner complaints and 57 met the ISDA requirements and wished to receive bait. The amount of bait distributed in 2016 (40,080 lbs) was about half what was distributed in 2015 (73,560 lbs). Gem County and Washington County were the most active areas in Southwestern Idaho. There were two landowner reimbursements in Southwestern Idaho, with applications totaling 352 acres.

Southwestern Idaho Private Landowner Complaints and Bait Distribution

County	Number of Complaints	Number of Landowners that received bait	Carbaryl Bait Distributed (lbs)
Ada	4	4	600
Adams	8	6	4760
Boise	13	13	6960
Elmore	4	3	3000
Gem	23	19	12200
Idaho	1	1	720
Owyhee	3	3	1160

Washington	10	8	10680
Totals	66	57	40,080

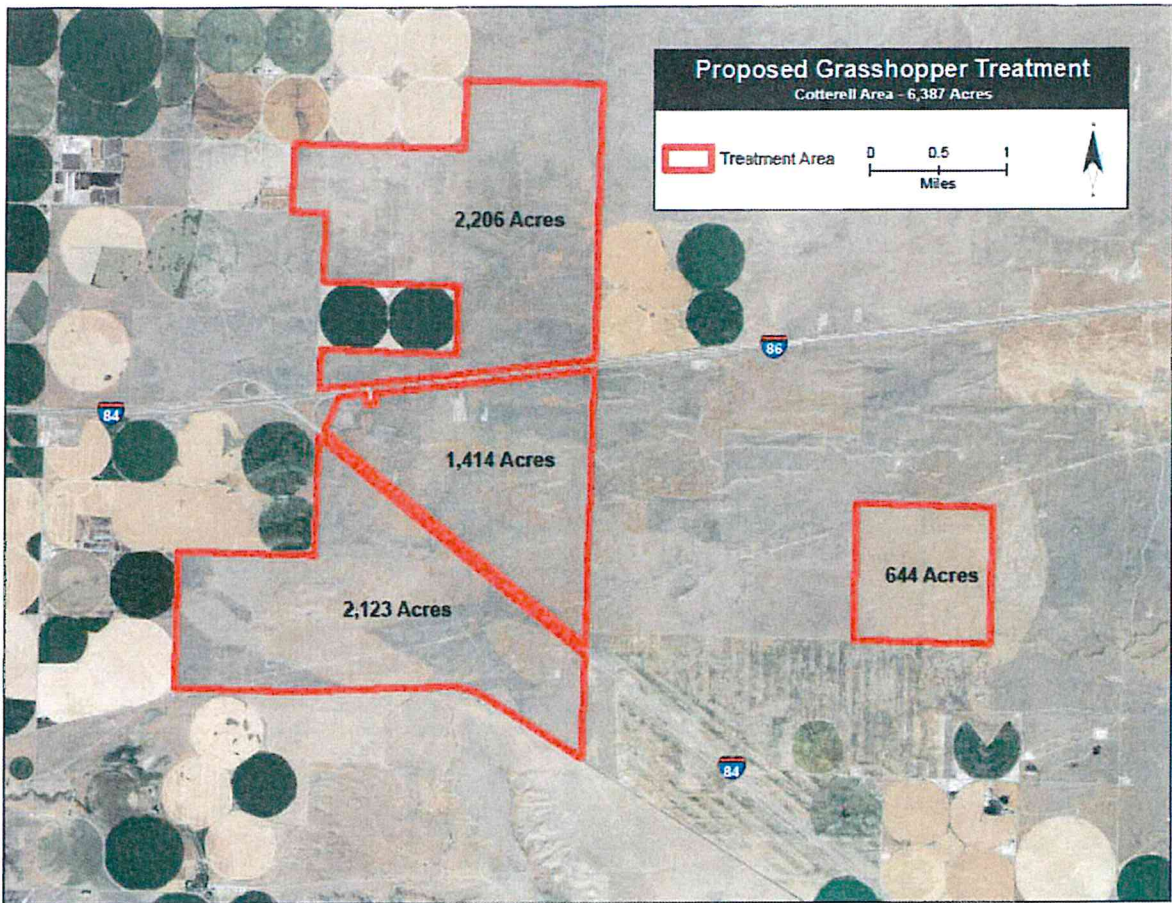
South Central Idaho:

South Central Idaho experienced normal precipitation and warmer than normal winter-spring, which resulted in earlier grasshopper emergence than normal. The first day above 50 °F was on 2-12-16.

Scouting began in May, and the first complaint was received near American Falls on 6-16-16. There were 34 landowner complaints, and 31 met the ISDA requirements to receive bait in 2016 (29,690 lbs). This was a large increase compared to 2015 (3 complaints and 6,750 lbs bait). The farming areas of Burley, Delco, Hollister, Rogerson, and Twin Falls had numerous complaints. Farmers that qualified received and applied bait on the unplanted pivot corners to protect their irrigated crops.

For the second consecutive year, there were large populations of grasshoppers on the state rangeland in the Cotterell area which is located adjacent to the junction of Highway 84 and Highway 86 in Cassia County. In 2016, weekly surveying began in this area in Mid-May, and it reached economic thresholds about four weeks later. An application (see picture below) of Dimilin 2L was applied aerially on 6-16-16 to 6,626 acres, using the RAATS application method. A post-treatment survey revealed excellent control, and ISDA did not receive any complaints from adjacent landowners.

Cotterell Treatment Area Map



Aerial Application in Cotterell Area of Dimilin 2L on State Rangeland on 6-16-16:



In addition, there were two landowner reimbursements in the Delco area, totally 529 acres.

South Central Idaho Private Landowner Complaints and Bait Distribution

County	Number of Complaints	Number of Landowners that received bait	Carbaryl Bait Distributed (lbs)
Cassia	9	7	11,700
Elmore	1	1	1,000
Gooding	2	2	700
Lincoln	1	1	320
Power	7	6	3,670
Twin Falls	14	14	12,300
Totals	34	31	29,690

Eastern Idaho:

Eastern Idaho (Pocatello area) experienced the same dry and warm winter spring that South Central experienced, which resulted in earlier grasshopper emergence than normal. The Twin

Falls Scouts were assigned one complaint in Bannock County, with damage to dryland grazing lands. This complaint was filed very late in the summer, 8-15-16. The landowner received bait.

Eastern Idaho Private Landowner Complaints and Bait Distribution

County	Number of Complaints	Number of Landowners that received bait	Carbaryl Bait Distributed (lbs)
Bannock	1	1	400
Totals	1	1	400

In summary, the cost of insecticides to assist landowners decreased in 2016 (\$83,238.21) from 2015 (\$96,982). This decrease is a result of dramatically less bait being distributed in 2016 (45,680 lbs less) in the Northern and Southwestern regions of Idaho than in 2015.

Pesticides Distributed/Reimbursed Statewide for Grasshopper Control

	Lbs (\$.819 lb)	Value
Carbaryl 5% Bait, Ground	76,090	\$62,317.71
Landowner Reimbursement Program (this program reimbursed only the insecticide & adjuvant costs) Ground & Aerial Application	NA	\$5,680.70
Cotterell State Land Aerial Application		\$15,239.80
Total Cost of Bait & Liquid Insecticides		\$83,238.21

Summary of Mormon Cricket Actions Statewide

In 2016, statewide, Mormon cricket emergence occurred about two to three weeks sooner than normal. In Southwestern Idaho, the first day over 41°F (temperature at which Mormon cricket development begins) was 1-5-16. Historically the Boise area reaches a high of 41° F about mid-January. The January through April temperatures were warmer than normal.

In Southwestern Idaho, there were 26 landowner complaints and 21 landowners qualifying for ISDA assistance in the form of carbaryl bait. These landowners received bait (12,770 lbs.) in three counties: Elmore, Gem, and Washington. The first complaint was received on 4-27-16 in Cambridge.

ISDA ground treated 20 miles of Right- of-way on Highway 71 (600 lbs Drexel 5% Carbaryl), west of the town of Cambridge on 5-4-16. ISDA ground-treated a state rangeland property (380 lbs Drexel 5% Carbaryl) in Gem County on 5-11-16. There were no other Mormon cricket complaints filed in the rest of the state in 2016.

In summary, the cost of insecticides to assist increased in 2016 (\$11,261) from 2015 (\$2,289).

Heavy Infestation of Mormon Crickets on Rangeland (Yellow Flowered Plant is Rush Skeletonweed) in Emmett:



Southwestern Idaho Private Landowner Mormon Cricket Bait Distribution

County	Number of Complaints	Number of Landowners that received bait	Carbaryl Bait Distributed (lbs)
Elmore	4	3	750
Gem	13	9	2,200

Washington	9	9	9,820
Totals	26	21	12,770

Pesticides Distributed/Reimbursed Statewide for Mormon Cricket Control

	Lbs (\$.819 lb)	Value
Private Landowners	12,770	\$10,458.63
State Land and Right- of way Treatment	980	\$802.62
Total	13,750	\$11,261.25

Summary of ISDA Grasshopper and Mormon Cricket Program

In 2016, ISDA continued to suppress outbreaks of grasshoppers and Mormon crickets. There were 159 complaints and 138 private landowners in 18 counties that received assistance in the form of bait. A breakdown of the pesticides distributed and/or reimbursed are in the table below.

A landowner reimbursement program was again implemented for qualified landowners and four landowners participated in three counties. ISDA contracted with an aerial applicator to protect about 6,600 acres of state grazing land and to prevent grasshoppers from migrating to adjacent crop lands.

ISDA applied Carbaryl bait along a state Right-of-way (Hwy 71, Adams County) and on state land in Gem County in 2016. In summary, the total cost of insecticides and application to assist decreased slightly in 2016 (\$94,499.46) from 2015 (\$99,271.64).

For additional information, go to the ISDA website www.agri.idaho.gov and search under the Plants and Insects tab for the Grasshopper/Mormon Cricket Program.

All Pesticides Distributed/Reimbursed Statewide to Control Grasshoppers and Mormon Crickets

	Lbs (\$.819 lb)	Value
Carbaryl 5% Bait, Ground, Private Landowners, to control grasshoppers	76,090	\$62,317.71

Carbaryl 5% Bait, Ground, Private Landowners, to control Mormon crickets	12,770	\$10,458.63
Total Private	88,860	\$72,776.34
Carbaryl 5% Bait, Applied to State Lands & Right- of-ways to control grasshoppers	0	\$0.00
Carbaryl 5% Bait, Applied to State Lands & Right-of-ways to control Mormon crickets	980	\$802.62
Total Lbs Carbaryl 5% Bait Distributed	89,840	\$73,578.96
Landowner Reimbursement Program (this program reimbursed only the insecticide & adjuvant costs) Ground & Aerial Application	NA	\$5,680.70
Cotterell State Land Aerial Application (Insecticide & Application)		\$15,239.80
Total Cost of all Bait, Liquid Insecticide, & Application Costs		\$94,499.46

Multi-Year Summary of Carbaryl Treatments on State and County Road Right-of-Ways and State Lands

Year	Total Pounds Applied	Acres Treated
2005	12,175	1,218
2006	6,612	661
2007	3,906	340
2008	3,750	194
2009	21,200	1,446
2010	4,300	428
2011	900	92
2012	2,650	267
2013	0	0
2014	0	0
2015	3,550	355
2016	980	98

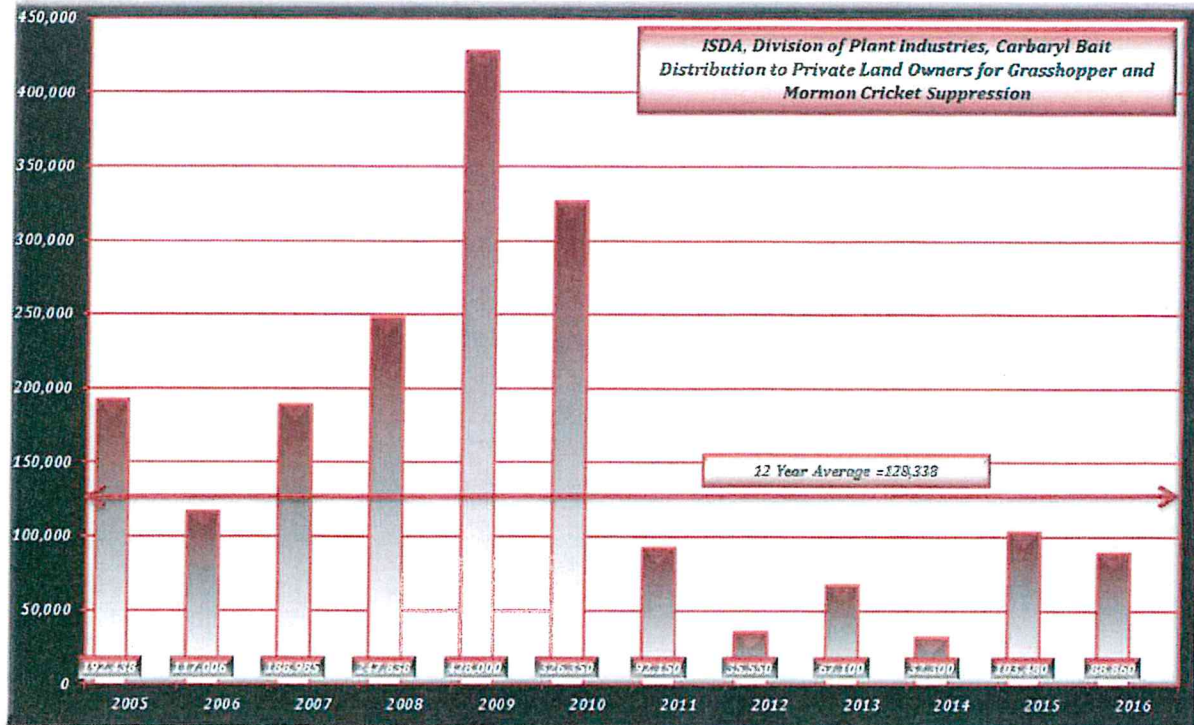
**2016 Landowner Reimbursement with Private Landowners for Grasshopper Suppression-
Four Conducted in 2016**

Acres Treated	Insecticides	Total Project Cost	Cost Per Acres
881	Carbaryl Chlorpyrifos Cobalt Silencer	\$5,680.70	\$6.45

**2016 Bait Distributions to Private Landowners for Grasshopper and Mormon Cricket
Suppression**

Rank	County	Number of Complaints	Number of Landowners that received bait	Carbaryl Bait Distributed (lbs)
1	Washington	19	17	20,500
2	Gem	36	28	14,400
3	Twin Falls	14	14	12,300
4	Cassia	9	7	11,700
5	Boise	13	13	6,960
6	Adams	8	6	4,760
7	Elmore	9	7	4,750
8	Kootenai	22	19	4,080
9	Power	7	6	3,670
10	Boundary	8	7	1,480
11	Owyhee	3	3	1,160
12	Idaho	1	1	720
13	Gooding	2	2	700
14	Ada	4	4	600
15	Bannock	1	1	400
16	Lincoln	1	1	320
17	Latah	1	1	200
18	Bonner	1	1	160
Totals		159	138	88,860

**ISDA, Division of Plant Industries, Carbaryl Bait Distribution to Private
Land Owners for Grasshopper and Mormon Cricket Suppression**



2016 Grasshopper and Mormon Cricket Forecast

Northern Idaho: The below table is a 13-year history of Carbaryl 5% bait usage on private lands (grasshopper and Mormon cricket combined). The table shows a peak distribution in 2009 and decreasing amounts since that year, with a spike in 2015. Historical data indicates that a larger economic outbreak might occur at some point.

Northern Idaho

Year	Number of Counties	Lbs Distributed
2004	0	0
2005	2	103,750
2006	2	16,400
2007	2	7,900
2008	4	104,300
2009	8	180,750
2010	6	52,500
2011	5	23,500
2012	5	11,600
2013	5	5,350
2014	6	4,250
2015	6	18,120
2016	4	5,920

Avg.	4	41,103
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Southwestern Idaho: The below table is a 13-year history of Carbaryl 5% bait usage on private lands (grasshopper and Mormon cricket combined). The table shows a peak distribution in 2010 and decreasing amounts for since that year. The bait decrease in 2014 was primarily due to an application of liquid insecticide in Valley County that supplanted the need for bait application. Historical data indicates that a larger economic outbreak might occur at some point.

Southwestern Idaho

Year	Number of Counties	Lbs Distributed
2004	5	264,650
2005	6	48,950
2006	6	69,850
2007	7	150,440
2008	7	93,850
2009	7	205,350
2010	8	212,650
2011	9	68,100
2012	7	20,950
2013	2	58,400
2014	5	24,750
2015	8	73,560
2016	8	52,850
Avg.	7	103,412

South Central Idaho: This region was created in 2016. Previous to this year, all the area we have now designated as South Central and Eastern Idaho was designated as Eastern Idaho. In 2016, there was a large increase in bait usage.

South Central Idaho

Year	Number of Counties	Lbs Distributed
2015	2	6,750
2016	6	29,690
Avg.	4	18,220

Eastern Idaho: The below table is a 13-year history of Carbaryl 5% bait usage on private lands (grasshopper and Mormon cricket combined). The table shows a peak distribution in 2010 and a dramatic decrease since that year. Historical data indicates that a larger economic outbreak might occur at some point.

Eastern Idaho

Year	Number of Counties	Lbs Distributed
2004	6	89,250
2005	2	34,700
2006	3	29,000
2007	3	26,500
2008	7	45,450
2009	5	39,200
2010	10	60,500
2011	2	550
2012	3	3,000
2013	4	3,650
2014	6	3,300
2015	2	5,050
2016	1	400
Avg.	4	26,196

Major Cooperators for the Grasshopper/Mormon Cricket Program

During the 2016 season, the following cooperators provided significant help in bait storage, distribution, and overall program delivery:

- Cassia County Weed Control
- Clayville Insulation & Storage, Twin Falls, Idaho
- Elmore County Weed Control
- Franklin County Weed Control
- Gem County Weed Control
- Idaho State Department of Transportation, Moscow, Idaho
- Kootenai County Weed Control
- Simplot Partners, Caldwell, Idaho
- S&P Enterprises, Twin Falls Storage Unit
- University of Idaho, Extension Service, Cassia County, Idaho

- University of Idaho, Extension Service, Franklin County, Idaho
- University of Idaho, Extension Service, Latah County, Idaho
- University of Idaho, Extension Service, Oneida County, Idaho

Program Contacts: ISDA, Plant Industries Division


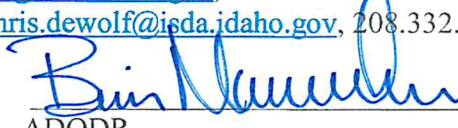
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 <hr style="border: 0; border-top: 1px solid black;"/> ROAR (Recipient Organization Authorized Representative)	3/10/17 Date:	 <hr style="border: 0; border-top: 1px solid black;"/> ADODR (Authorized Department Officer's Designated Representative)
	3/13/17 Date:	