Idaho State Department of Agriculture
2015 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 available to landowners pesticides 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. ISDA then will evaluate their land to determine if the site has reached economic thresholds.

Background

Sixty-four percent (64%) of Idaho lands are administered by the Federal Government. Forty-three percent (43%), 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, however, significant outbreaks have also occurred in northern, north central, and southcentral Idaho.

In 2015, the program transitioned from being managed from Boise and Twin Falls ISDA offices to being solely managed from the Boise ISDA office. The state was divided into four (4) regions: North (N), Southwest (SW), South Central (SC), and Eastern (E) regions, with offices in Moscow (N), Boise (SW), Twin Falls (SC), and Idaho Falls (E). Formerly, the area now designated as SC and E Idaho was known as Eastern Idaho. ISDA awarded the bait contracted for Fiscal 2016 to Simplot Partners and Drexel 5% Carbaryl was provided.

In 2015, the program transitioned from recording scouting, complaints, and evaluations on paper to recording this data on electronic devices (tablets and computers). The electronic "Request for Evaluation of Need for Suppression of Grasshoppers or Mormon Crickets in Idaho" form, (also known as the "Complaint Form)" was made into a fillable PDF form and posted on the ISDA Grasshopper/Mormon cricket page. Many landowners used this form. Previously, landowners were required to fax or mail to ISDA. The use of the tablets proved to be a labor saving device. Data that was once manually entered into databases could now be inputted electronically. Tracking of complaints was enhanced. The program manager was able to supply latitude and longitude of coordinates of complaint sites to the GIS Specialist, who in-turn, researched if any threatened or endangered species were close enough to warrant set-backs or not providing

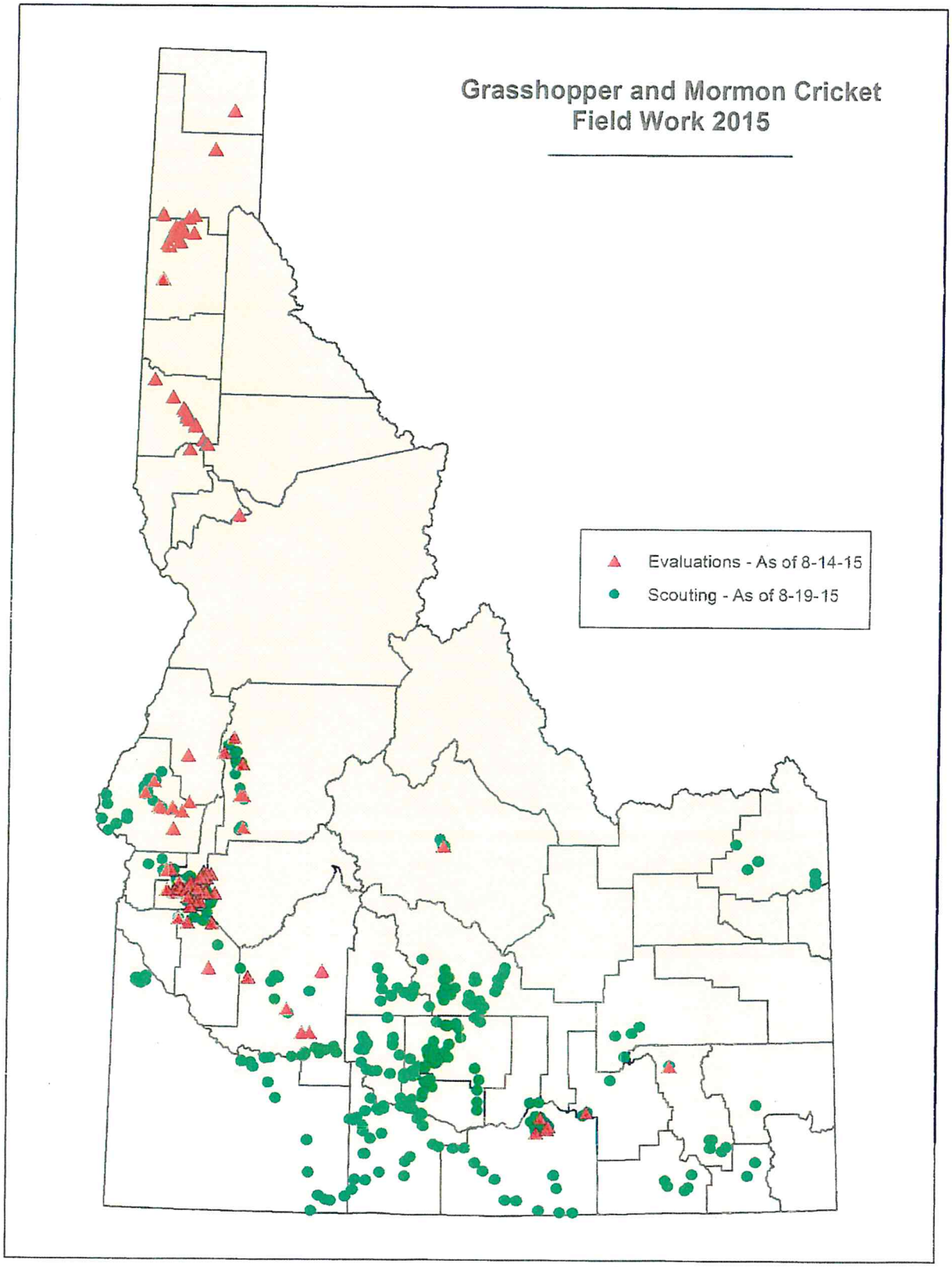
insecticide to the landowner. Carbaryl 5% bait (referred to as bait in the rest of the report) was the only insecticide distributed to landowners and was the only insecticide applied by ISDA ground treatment staff during this season. The bait was stored at eleven (11) different storage sites around the state. When bait was not the most effective insecticide for grasshopper control, ISDA reimbursed landowners for liquid insecticide and adjuvant costs that they incurred.

The University of Idaho Extension Service continued to be a strong partner in the program (especially the Latah County office), fielding complaints using the new electronic forms and forwarding to ISDA. County weed control offices in Cassia, Gem, Elmore, Franklin, Kootenai, and Oneida Counties agreed to store and distribute bait to approved landowners. In addition, a sister agency, the Idaho Department of Transportation in Moscow, allowed ISDA to park an enclosed trailer on their fenced property and distribute bait from their facility.

APHIS and ISDA offices in Boise and Twin Falls continued to work together sharing scouting information. ISDA hired two (2) new grasshopper scouts in Twin Falls. The Twin Falls APHIS office was of great assistance to them.

Summary of Grasshopper Actions Statewide

In 2015 statewide, grasshopper emergence occurred about two to three weeks sooner than normal. Throughout the State, there were one hundred and forty eight (148) landowner complaints, with 100,980 pounds of bait distributed to one hundred and twenty two (122) landowners in eighteen (18) counties. This was the most bait distributed since 2009. In addition, ISDA reimbursed seven (7) landowners for insecticides. ISDA scouted 335 sites statewide, looking for grasshoppers and Mormon crickets. 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. The below map shows scouting and evaluation statewide during this past season.


Grasshopper and Mormon Cricket
Field Work 2015
Evaluations - As of 8-14-15
Scouting - As of 8-19-15

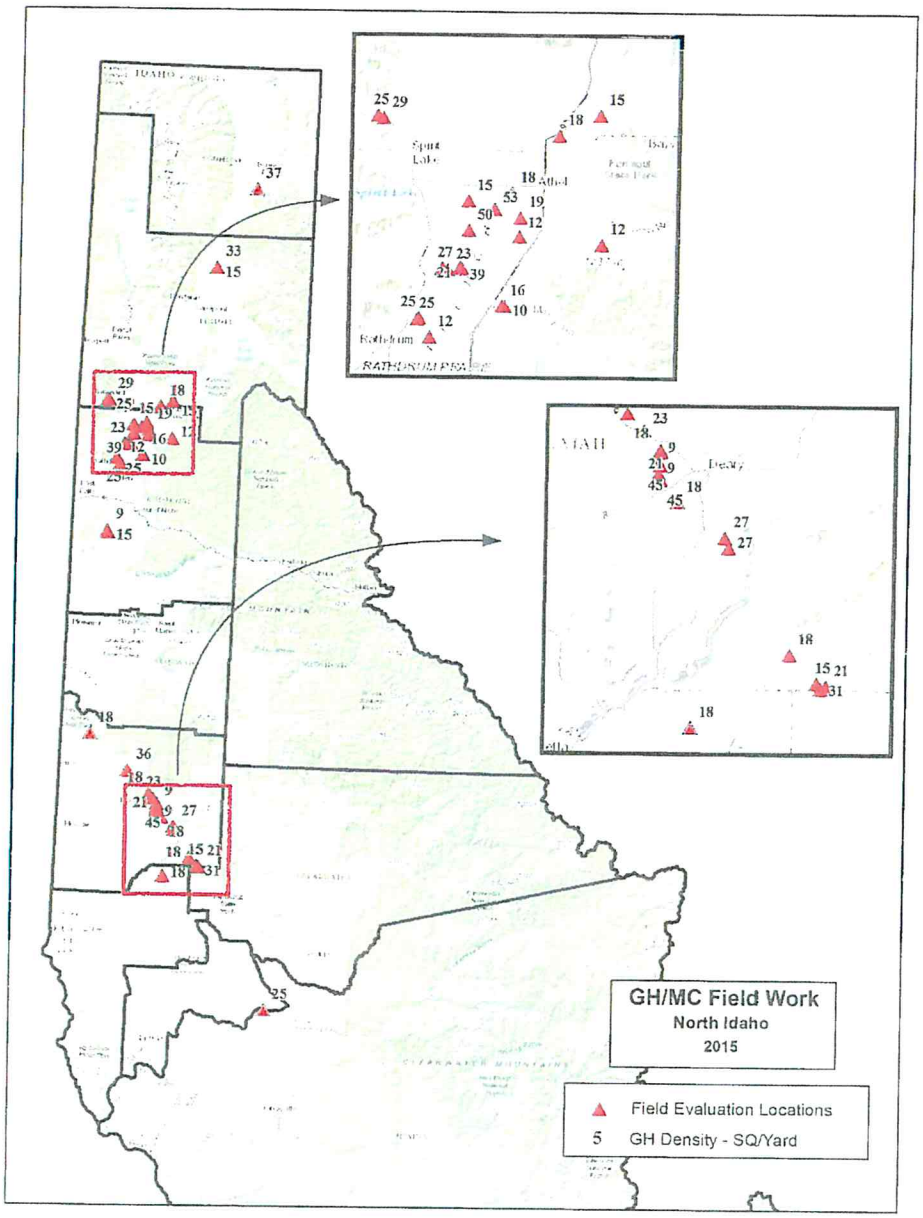
Summary of Grasshopper Actions by Region

North Idaho: North Idaho experienced a drier and warmer winter/spring weather conditions than normal, which resulted in earlier grasshopper emergence. The first day above 50 °F (theoretical temperature at which grasshopper development begins to respond to temperature) was on February 5th (the average high temperature for February was eight (8) degrees higher than normal). Bait was stored in Moscow and Coeur d'Alene, and scouting was limited due to other work demands. The first complaint was received June 1, 30 days earlier than the previous two (2) years in Kootenai County (Athol). There were fifty six (56) complaints in six (6) different counties in this region, with damage to dryland and irrigated grazing lands. This was nearly triple the amount of complaints per year compared to the previous two (2) years and triple the amount of bait distributed. Over half of the complaints were 20 acres or less. The larger acre parcels were in Latah County. Several landowners declined assistance when they learned the assistance was a pesticide.

North Idaho Private Landowner Bait Distribution

County	Number of Landowners	Number of Distributions	Carbaryl Bait Distributed (lbs)
Bonner	6	6	2,140
Boundary	1	1	800
Clearwater	1	1	1,350
Kootenai	19	21	4,180
Latah	17	17	8,850
Lewis	1	1	800
	45	**47**	**18,120**

The below map details the geographic locations of the sites in North Idaho evaluated and the density of grasshoppers located per square yard.



Southwest Idaho: Southwest Idaho had warmer than normal winter and spring conditions and it was also drier than normal. The first day above 50 °F was on February 4th (the average high temperature for February was six (6) degrees higher than normal). Scouting began in Owyhee County, historically the warmest area in Southwest Idaho in March; no significant populations were found. The first complaint received for this region was on May 26 in the Boise foothills. This was two to three weeks earlier than normal. There were eighty-two (82) landowner complaints. Seventy one (71) landowners had damage to dryland, irrigated grazing, and crop lands. The amount of bait distributed in 2015 (73,560 lbs) was double what was distributed the previous year, and the most since 2010. The grasshopper populations reached economic thresholds in the first week of June in Gem County. This county experienced the most damage statewide, with fifty-four (54) complaints. Gem County is composed primarily of small 5-10

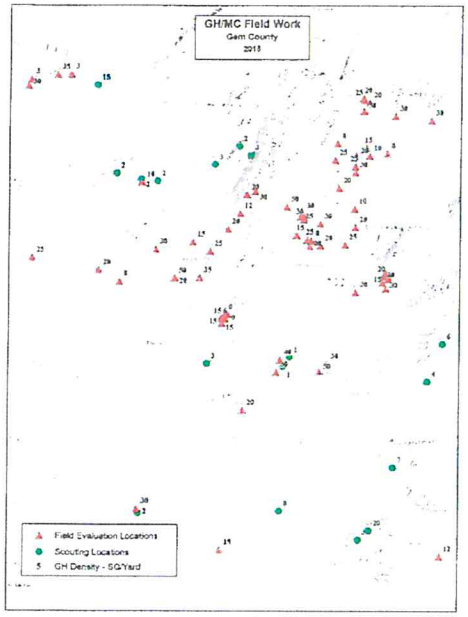
acre ranchettes. Neighboring counties of Ada, Boise, Elmore, Payette, and Washington reached economic thresholds in June. Washington County only had five (5) complaints; however, they were large acreage ranches and a large amount of bait was distributed. Elmore County was similar in that there was one large ranch that needed a significant amount of bait. In addition, there were five (5) landowner reimbursements in Southwest & Central Idaho (Custer County, same area as 2014), totally 479 acres. This was irrigated cropland.

After two consecutive years of high grasshopper populations in Valley County, ISDA did not distribute any bait or reimburse any landowners in this county. ISDA staff conducted early season monitoring and detected populations well below the economic threshold.

Southwest Private Landowner Bait Distribution

County	Number of Landowners	Number of Distributions	Carbaryl Bait Distributed (lbs)
Ada	4	5	7,860
Adams	1	1	100
Boise	2	2	1,750
Custer	1	1	1,000
Elmore	3	4	8,950
Gem	54	62	28,240
Payette	1	1	2,500
Washington	5	9	23,160
	71	**85**	**73,560**

The below map details the geographic locations of the sites scouted and evaluated as well as the density of grasshoppers per square yard found in Gem County.

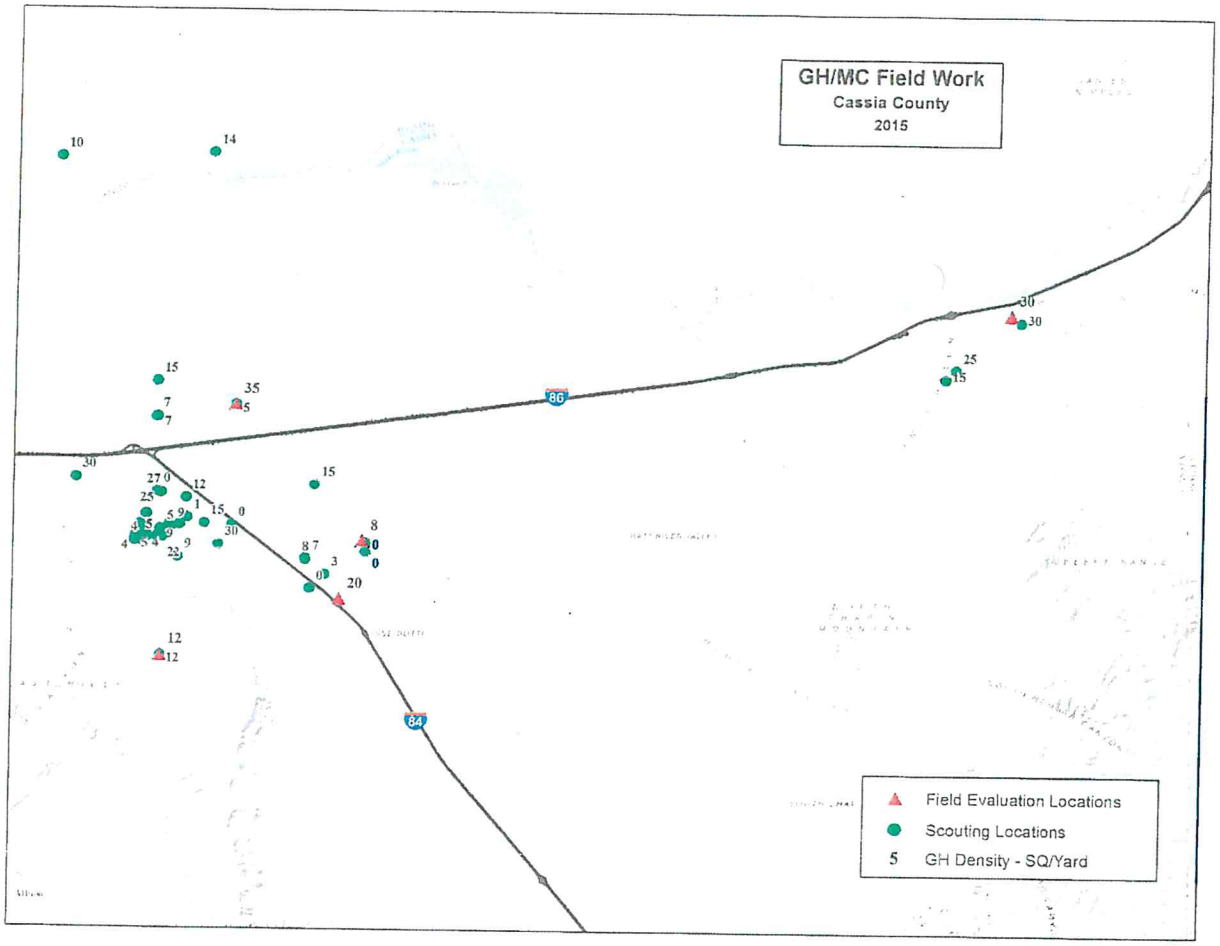


South Central Idaho: In 2015, the area previously designated as Eastern Idaho in the grasshopper/Mormon cricket program was divided into two regions: South Central and Eastern Idaho. With the exception of May, South Central Idaho experienced drier and warmer than normal weather conditions, which resulted in earlier grasshopper emergence than in 2014. The first day above 50 °F was on January 18 (the average high temperature for January was three (3) degrees higher than normal). Scouting began in May and populations reached economic thresholds in mid-June in the Cotterel area, which is located adjacent to the junction of Interstate 84 and Interstate 86 in Cassia County. The Twin Falls scouts were assigned three (3) complaints in two (2) different counties, with damage to dryland, irrigated grazing, and croplands. In addition, ISDA responded to two other complaints on state lands and two (2) ground applications of bait (3,400 lbs) were applied in the Cotterel area. The amount of bait distributed in 2015 (6,750 lbs on private land) was significantly more than what was distributed in the previous three (3) years in what was previously known as the Eastern Idaho area, and the most since 2010. In addition, there were two (2) landowner reimbursements in this same area, totally 605 acres.

South Central Private Landowner Bait Distribution

County	Number of Landowners	Number of Distributions	Carbaryl Bait Distributed (lbs)
Cassia	2	3	6,250
Gooding	1	1	500
	3	**4**	**6,750**

The below map details the geographic locations of the sites scouted and evaluated as well as the density of grasshoppers per square yard found in Cassia County. In addition, this map includes two of the complaints in Eastern Idaho (Power County located in the upper-right corner of map).



Eastern Idaho: In the Pocatello area of Eastern Idaho, landowners experienced the same dry and warm weather that South Central experienced, which resulted in earlier grasshopper emergence than normal. The Twin Falls scouts were assigned three (3) complaints in two (2) different counties, with damage occurring to dryland grazing lands. Additionally, there were two large ranches adjacent to each other located south of the Snake River in the Cold Water Creek area in Power County that filed complaints, see above map. ISDA's Idaho Falls office hired a qualified candidate, to scout primarily for grasshopper and Mormon crickets during their tenure. The amount of bait distributed in 2015 (5,050 lbs) was significantly more than what was distributed in the previous three (3) years in Eastern Idaho and the most since 2010.

Eastern Idaho Private Landowner Bait Distribution

County	Number of Landowners	Number of Distributions	Carbaryl Bait Distributed (lbs)
Bannock	1	1	50
Power	2	3	5,000
	3	**4**	**5,050**

In summary, the cost of insecticides to assist increased from $89,950 in 2014 to $96,982 in 2015. This increase is a result of more complaints and distributions received (triple the amount of bait in 2015 compared to 2014) statewide.

Pesticides Distributed/Reimbursed Statewide for Grasshopper Control

	Lbs	Value
Carbaryl 5% Bait, Ground	104,380	$90,184.32
Landowner Reimbursement Program (this program reimbursed only the insecticide & adjuvant costs) Ground & Aerial Application	NA	$6,797.72
Total	**104,380**	**$96,982.04**

Summary of Mormon Cricket Actions Statewide

During 2015 statewide, the Mormon cricket emergence occurred about two to three weeks sooner than normal. In Southwest Idaho, the first day over 41°F (theoretical temperature at which Mormon cricket development begins to respond to temperature) was January 7. The average high temperature for January was normal. Statewide, there was only one (1) landowner complaint and 2,500 lbs of bait was distributed to that landowner. This complaint was received on May 4 in Washington County (Cambridge). Scouting of state lands near the complaint by ISDA personnel found Mormon crickets infestations that met the criteria to consider treatment in the Keithly Creek drainage. ISDA applied 150 lbs of bait via a ground application. Statewide, no county or state road right-of–ways were treated by the ISDA for Mormon cricket infestations. There were no other Mormon cricket outbreaks detected in the rest of the state during 2015. There were ten complaints (1,100 lbs distributed) in Eastern Idaho in 2014.

Pesticides Distributed/Reimbursed Statewide for Mormon Cricket Control

	Lbs	Value
Carbaryl 5% Bait, Ground	2,650	$2,289.60
Total	**2,650**	**$2,289.60**

Summary of ISDA Grasshopper and Mormon Cricket Program

In 2015, ISDA continued to suppress outbreaks of grasshoppers and Mormon crickets. There were one hundred and forty nine (149) complaints and one hundred and twenty three (123) private landowners in eighteen (18) counties who received assistance in the form of bait. In addition, three state land leases were treated by ISDA staff. A breakdown of the pesticides distributed and/or reimbursed are in the below table. A landowner reimbursement program was again implemented for qualified landowners and seven (7) landowners participated in five (5) counties. ISDA did not receive any complaints or observe any populations that exceeded economic thresholds along county or state right-of-ways.

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	Value
Carbaryl 5% Bait, Ground, Private Landowners, to control grasshoppers	100,980	$87,246.72
Carbaryl 5% Bait, Ground, Private Landowners, to control Mormon crickets	2,500	$2,160.00
Total Private	**103,480**	
Carbaryl 5% Bait, Applied to State Lands to control grasshoppers	3,400	$2,937.60
Carbaryl 5% Bait, Applied to State Lands to control Mormon crickets	150	$129.60
Total Lbs Carbaryl 5% Bait Distributed	**107,030**	**$92,473.92**
Landowner Reimbursement Program (this program reimbursed only the insecticide & adjuvant costs) Ground & Aerial Application	NA	$6,797.72
Total Cost of Bait & Liquid Insecticides		**$99,271.64**

MULTI-YEAR SUMMARY OF CARBARYL TREATMENTS ON 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

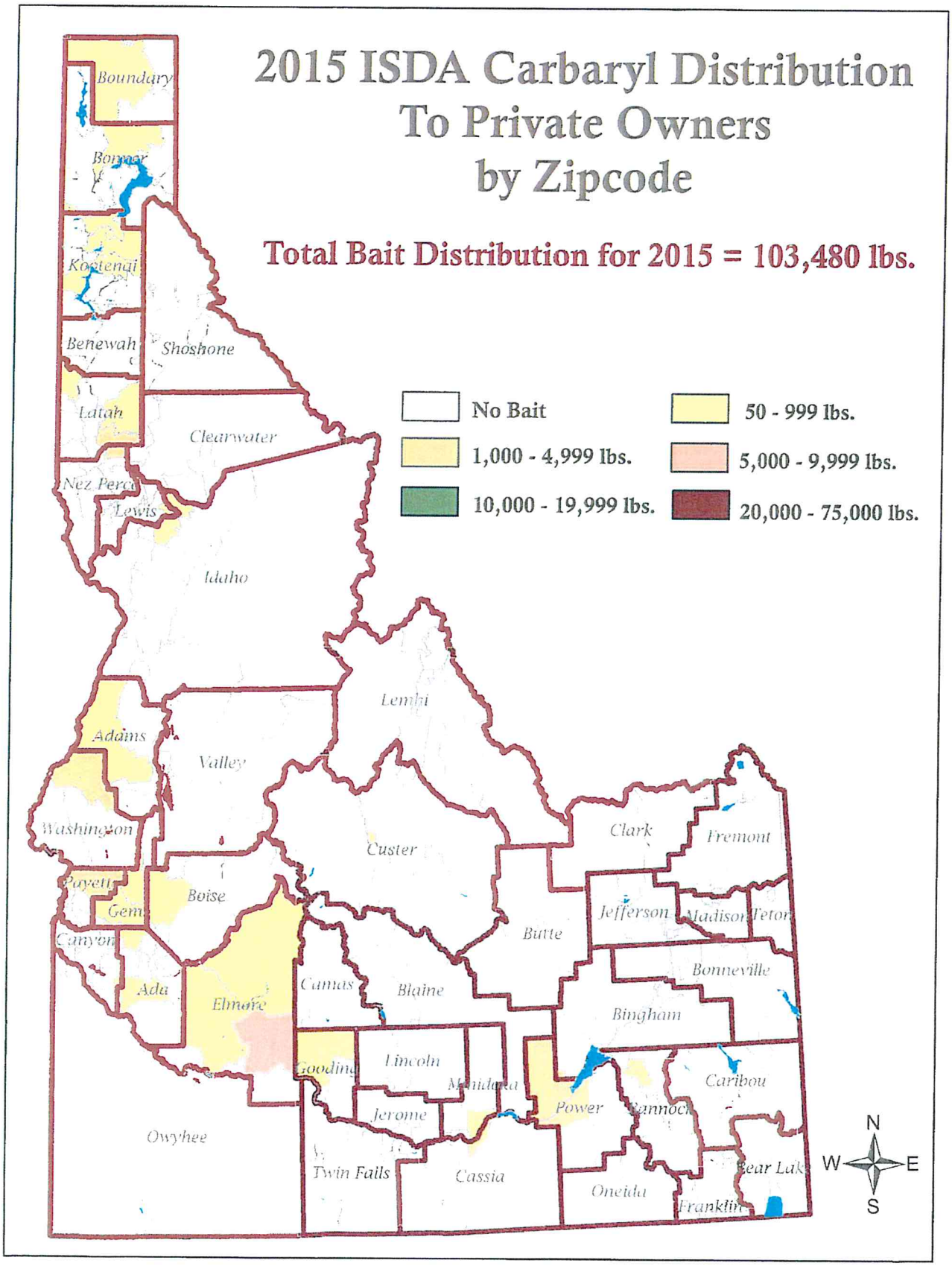
ISDA did not apply any bait along county or state right-of-ways in 2015; however, the 3,550 lbs in the above table was applied on state lands in two (2) counties. For additional information, go to the ISDA website www.agri.idaho.gov and search under the Plants and Insects tab for the Grasshopper/Mormon Cricket Program.

2015 LANDOWNER REIMBURSEMENT WITH PRIVATE LANDOWNERS FOR GRASSHOPPER SUPPRESSION – SEVEN (7) CONDUCTED IN 2015

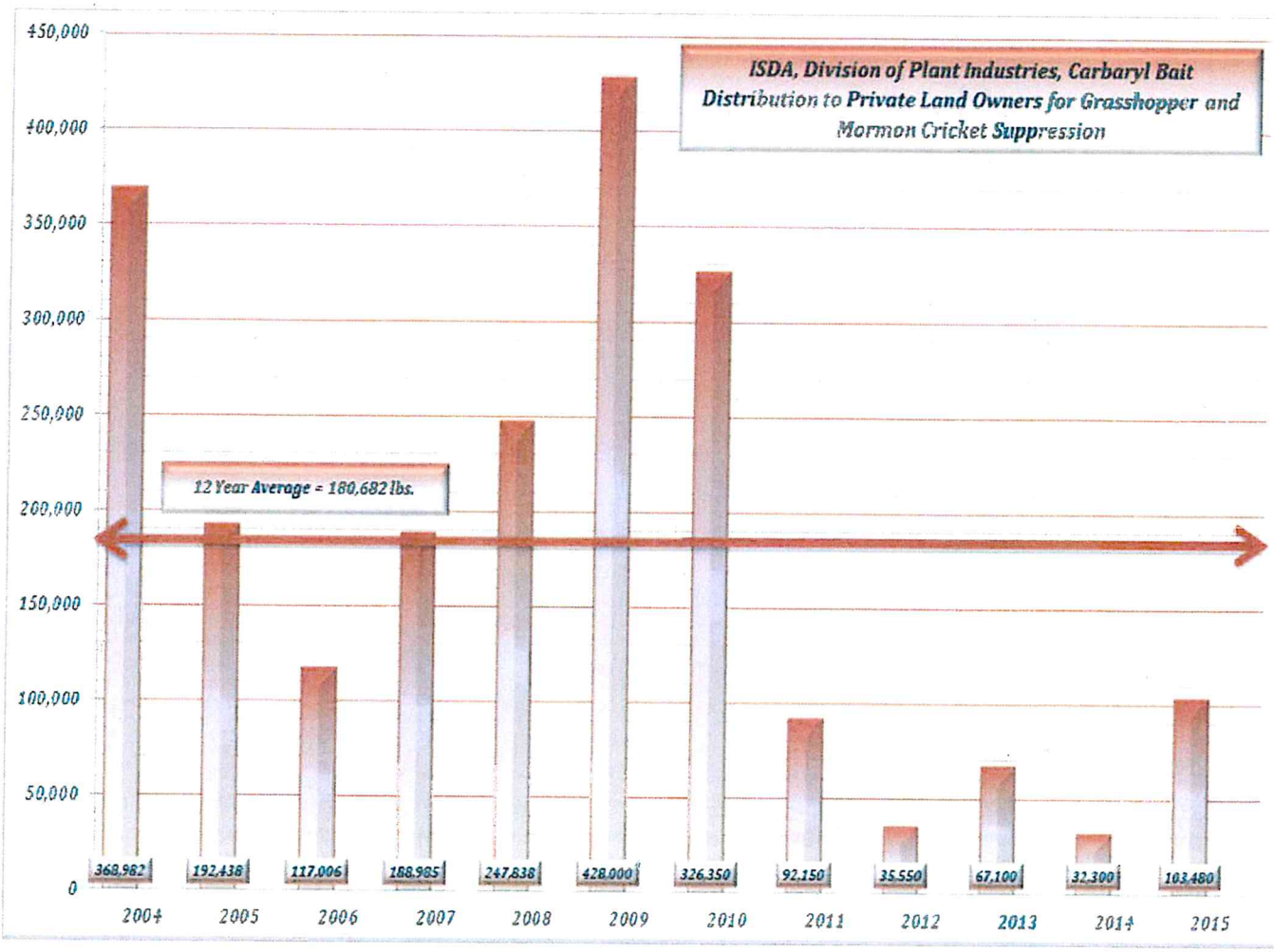
Acres Treated	Insecticides	Project Cost	Cost Per Acres Protected
1,084	Carbaryl Chlorpyriphos Cobalt Dimilin, Malathion	$6,797.72	$6.27

2015 BAIT DISTRIBUTIONS TO PRIVATE LANDOWNERS FOR GRASSHOPPER AND MORMON CRICKET SUPPRESSION

Rank	County	Number of Complaints	Number of Distributions	Carbaryl Bait Distributed (lbs)
1	Gem	54	62	28,240
2	Washington	5	9	23,160
3	Elmore	3	4	8,950
4	Latah	17	17	8,850
5	Ada	4	5	7,860
6	Cassia	2	3	6,250
7	Power	2	3	5,000
8	Kootenai	19	21	4,180
9	Payette	1	1	2,500
10	Bonner	6	6	2,140
11	Boise	2	2	1,750
12	Clearwater	1	1	1,350
13	Custer	1	1	1,000
14-Tied	Boundary	1	1	800
15-Tied	Lewis	1	1	800
16	Gooding	1	1	500
17	Adams	1	1	100
18	Bannock	1	1	50
Totals	**Counties**	**122**	**140**	**103,480**


2015 ISDA Carbaryl Distribution
To Private Owners
by Zipcode
Total Bait Distribution for 2015 = 103,480 lbs.
No Bait
50 - 999 lbs.
1,000 - 4,999 lbs.
5,000 - 9,999 lbs.
10,000 - 19,999 lbs.
20,000 - 75,000 lbs.
Boundary
Bonner
Kootenai
Benewah
Shoshone
Latah
Clearwater
Nez Perce
Lewis
Idaho
Lemhi
Adams
Valley
Washington
Custer
Clark
Fremont
Payette
Gem
Boise
Canyon
Ada
Elmore
Camas
Blaine
Butte
Jefferson
Madison
Teton
Bonneville
Bingham
Gooding
Lincoln
Minidoka
Power
Caribou
Jerome
Owyhee
Twin Falls
Cassia
Oneida
Franklin
Bear Lake
N
W
E
S

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



2016 Grasshopper and Mormon Cricket Forecast

North Idaho: The below table is a twelve (12) 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 for five (5) consecutive until this year, when it increased significantly. Historical data indicates that a larger economic outbreak may occur at some point.

North Idaho

Year	Number of Counties	Lbs Distributed	Number of Distributions
2004	0	0	0
2005	2	103,750	292
2006	2	16,400	36
2007	2	7,900	19
2008	4	104,300	179
2009	8	180,750	222
2010	6	52,500	81
2011	5	23,500	46
2012	5	11,600	19
2013	5	5,350	15
2014	6	4,250	18
2015	6	18,120	47
Avg.	**4**	**44,035**	**81**

Southwest Idaho: The below table is a twelve (12) 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 four (4) consecutive until this year, when it increased significantly. This is somewhat misleading, since the bait decrease in 2014 was primarily due to acres in Valley County that were treated with liquid insecticides instead of bait. Historical data indicates that a larger economic outbreak may occur at some point.

Southwest Idaho

Year	Number of Counties	Lbs Distributed	Number of Distributions
2004	5	264,650	388
2005	6	48,950	218
2006	6	69,850	270
2007	7	150,440	346
2008	7	93,850	167
2009	7	205,350	237
2010	8	212,650	184
2011	9	68,100	46
2012	7	20,950	16
2013	2	58,400	62
2014	5	24,750	35
2015	8	73,560	85
Avg.	**6**	**107,625**	**171**

South Central Idaho: This region was created in 2015. Prior to this year, all the area we have now designated as South Central and Eastern Idaho was designated as Eastern Idaho.

South Central Idaho * new region created in 2015

Year	Number of Counties	Lbs Distributed	Number of Distributions
2015	2	6,750	4

Eastern Idaho: The below table is a twelve (12) 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 for four (4) consecutive until this year, when it increased slightly. This increase is actually larger if you compare the historical usage of Eastern Idaho and what was distribute this year in South Central Idaho and Eastern Idaho. Historical data indicates that a larger economic outbreak may occur at some point.

Eastern Idaho

Year	Number of Counties	Lbs Distributed	Number of Distributions
2004	6	89,250	141
2005	2	34,700	49
2006	3	29,000	115
2007	3	26,500	56
2008	7	45,450	89
2009	5	39,200	66
2010	10	60,500	36
2011	2	550	4
2012	3	3,000	7
2013	4	3,650	4
2014	6	3,300	12
2015	2	5,050	4
Avg.	**4**	**28,346**	**49**

MAJOR COOPERATORS FOR THE GRASSHOPPER/MORMON CRICKET PROGRAM

During the 2015 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
- Eagle Transfer and Storage, Lewiston, Idaho
- Elmore County Weed Control
- Gem County Weed Control
- Idaho State Department of Transportation, Moscow, Idaho
- Kootenai County Weed Control
- Simplot Partners, Caldwell, Idaho
- 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
- Wilbur Ellis, Caldwell, Idaho

Program Contacts: ISDA, Plant Industries Division
Lloyd Knight, Plants Administrator, lloyd.knight@agri.idaho.gov, 208.332.8664
Matt Voile, Section Manager, matt.voile@agri.idaho.gov, 208.332.8667
Dan Safford, Program Specialist, dan.safford@agri.idaho.gov, 208.332.8592
Tina Eiman, Program Specialist, tina.eiman@agri.idaho.gov, 208.736.2195

Celia P Gould 3/31/16 Brian Marshall 4/4/16

ROAR Date: ADODR Date:
(Recipient Organization Authorized Representative) (Authorized Department Officer's Designated Representative)