



Idaho State Department of Agriculture 2014 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 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 complaint with ISDA, and ISDA 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 north central and northern Idaho.

Summary of Grasshopper Actions by Region

Mike Cooper, Bureau Chief, retired in April. Matt Voile, Section Manager for Noxious Weeds and Invasive Species was appointed manager of the program. Garry West, Program Manager in the Twin Falls office (and supervisor of southeastern Idaho operations) retired in July. Tina Eiman, Program Specialist, replaced Garry as the manager of the Twin Falls office.

North Idaho experienced drier than normal weather conditions, which resulted in earlier grasshopper emergence. There were eighteen (18) landowner complaints and eighteen (18) distributions (one per complainant) of Carbaryl bait in six (6) counties.

Southwest Idaho experienced normal weather conditions, which resulted in normal insect emergence. In Southwest Idaho, Valley County (elevation 5,000) reported the most damage statewide with ninety-one (91) landowner complaints, with damage to dryland and irrigated grazing lands. A combination of Carbaryl Bait, Dimilin 2L, and Malathion was distributed and/or reimbursed to seventy two (72) landowners. (See the next section for more details.) The only other areas where there were complaints in Southern Idaho was Boise, Gem, and Elmore Counties, which had four (4) landowner complaints and four (4) distributions (one per complainant) of Carbaryl bait.

In Southeast Idaho, there were ten (10) landowner complaints and six (6) distributions of Carbaryl bait in five (5) counties. A rare outbreak occurred in Custer County in the lower end of the East Fork of the Salmon River. Historical records dating to 2004 showed that landowners in this county had never received Carbaryl bait. Two landowners requested and received assistance. The source of the grasshoppers was not from their land, but from an adjacent landowner that did not want to control their infestation. Several other nearby landowners wanted assistance; however, they did not meet the acreage minimum and land classification requirements.

Statewide, Carbaryl bait was distributed in North and Southeast Idaho at similar rates as 2013. However, this year in Southwest Idaho (Valley County), there was a dramatic increase in Dimilin 2L and Malathion use and a 40% percent reduction in Carbaryl bait from the previous year. The reasons for this change are explained in the Summary of Valley County. *Camnula* was the main genus to reach economic thresholds statewide.

Statewide, no state lands or county or state road right-of-ways were treated by the ISDA for grasshopper infestations. This is the second consecutive year of no treatments of these lands.

Summary of Actions in Valley County

At the end of the large outbreak in 2013, ISDA scouted and identified “hatching beds”, non-irrigated sites where grasshoppers prefer to lay their eggs. In the early summer of 2014, ISDA began scouting these hatching beds and other likely areas in the third week of May. ISDA’s plan was to identify hatching areas, monitor for economic thresholds (over 8 per square yard), and have the appropriate control products available for use by landowners. Dimilin 2L is effective from second to fourth instar for 21 days of control; liquid Malathion is effective at any instar and adults for three (3) days of control. The goal was to control grasshoppers in the early instar stage before they caused significant damage. Dimilin 2L is a Restricted Use Pesticide (RUP) and can only be distributed by a Pesticide Dealer to individuals that are licensed to apply RUPs.

The Boise APHIS office is registered as a Pesticide Dealer and distributed 63 gallons of Dimilin 2L (Diflubenzuron) and 250 gallons of crop oil to ISDA Boise (Pesticide Dealer) and then ISDA distributed to Valley County Weed Control (Pesticide Dealer) in the first week of June. ISDA also distributed Malathion and Carbaryl bait to Valley County Weed Control for distribution. Malathion and Carbaryl bait (both General Use Pesticides) were distributed from the Valley County Road and Bridge Department and the Dimilin 2L (a RUP) and crop oil from the Valley County Weed Control. The cooperation between USDA APHIS, ISDA, and Valley County were key components of the success of this program in Valley County in the last two years.

By June 10th, economic thresholds of grasshoppers were reached in Valley County from the southern end (Round Valley) to the northern end (McCall). They were still in the nymphal stage, second to third instar. Estimated densities of ten (10) to thirty (30) grasshoppers per square yard were found during these evaluations. Two-striped Grasshopper, (*Melanoplus bivittatus*) and Clearwinged Grasshopper, (*Camnula pellucida*) were the most common species. Irrigated pasture and non-irrigated rangeland were primarily affected; however, there were some instances where other crops were affected (i.e. oats). Only private lands were treated and participation in this program was voluntary. Landowners began spraying hatching bed areas with Malathion and Dimilin on June 10th. A group of landowners organized an aerial applicator (same company as 2013) to spray Dimilin.

As agency inventories of Malathion and Dimilin were exhausted, ISDA created a landowner reimbursement program. This program allowed landowners to arrange an applicator for pesticide and adjuvant, and landowners could then apply for reimbursement by ISDA for insecticide and adjuvant. Sixteen (16) landowners participated in the reimbursement program. ISDA made ATV mounted broadcast spreaders available for use at no cost to landowners for the spreading of Carbaryl bait.

Valley County was a primary area of focus in 2014, accounting for 67% of the Carbaryl bait distributed statewide and 100% of the liquid Malathion and Dimilin distributed statewide. Valley County was the only area in which ISDA operated a landowner reimbursement program. Post treatment inspections indicated excellent control and landowners were pleased with the results of the project.

ISDA continues to work with the United States Fish and Wildlife (USFW) Service to avoid treatment near endangered species. ISDA received a landowner complaint located near endangered Northern Idaho Ground Squirrels (NIGS) in Valley County. ISDA evaluated the site, and it exceeded economic thresholds; however, ISDA determined that the site was too close to existing NIGS populations and informed the landowner that treatment assistance would not be available.

In summary, the cost to assist decreased from 2013 (\$128,948) to 2014 (\$81,396). This decrease is a result in the change from ISDA applications to cost reimbursement to the landowners. In 2014, treatments began about 30 days earlier than in 2013, which resulted in less damage to rangeland and irrigated pasture. The chart below details all the pesticides used (gallons and pounds), and costs in Valley County.

Pesticides used and method of application in Valley County	Gals/Lbs	Value
Carbaryl bait, Dry, Ground:	21,750 lbs.	\$19,683.00
Dimilin 2L, Liquid , Value includes Crop Oil, Air and Ground:	148.83 gals.	\$40,893.00
Malathion, Liquid, Ground:	381.50 gals.	\$12,570.00
Fyfanon (Malathion ULV), Liquid, Aerial:	165.00 gals.	\$8,250.00
Total		\$81,396.00

Summary of Mormon Cricket Survey Results

Oneida County was the only county in Idaho to report landowner complaints of Mormon crickets, (*Anabrus simplex*). There were ten (10) landowner complaints and six (6) distributions of Carbaryl bait. Statewide, no state lands, county or state road right-of-ways were treated by the (ISDA) for Mormon cricket infestations.

Summary of ISDA Program

In 2014, ISDA continued to suppress outbreaks of grasshoppers and Mormon crickets. There were one hundred and thirty-three (133) complaints and one hundred six (106) private landowners in sixteen (16) counties received assistance. A breakdown of the pesticides distributed and/or reimbursed are in the below table. No cost-share spray projects were

conducted in 2014; however, a landowner reimbursement program was implemented in Valley County. ISDA did not receive any complaints or observe any populations that exceeded economic thresholds on state lands or 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.

Pesticides Distributed/Reimbursed Statewide (method of application)	Gals/Lbs	Value
Carbaryl bait, Dry, Ground:	32,300 lbs.	\$29,231.50
Dimilin 2L, Liquid, Value includes Crop Oil, Air and Ground:	148.83 gals.	\$40,893.00
Malathion, Liquid, Ground:	381.50 gals.	\$12,570.00
Fyfanon (Malathion ULV), Liquid, Aerial:	165.00 gals.	\$8,250.00
Total		\$90,944.50

2015 Grasshopper and Mormon Cricket Forecast

North Idaho: The last two years have produced about the same amount of complaints and usage; however, historical data indicates that a larger economic outbreak may occur at some point. The following table is an eleven (11) year history of Carbaryl usage on private lands (Grasshopper and Mormon cricket combined).

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
Avg.	4	46,391	84

Southern Idaho: Valley County has experienced two consecutive years of grasshoppers at economic levels over a large area. A review of Valley County's previous years' pesticide usage shows no usage in 2010, then an increase each year with a peak in 2013 and 2014. Hopefully,

winter and spring conditions in Valley County will bring population numbers back to less than outbreak levels. The rest of southern Idaho has experienced lower than normal usage in the last two years; however, historical data indicates that a larger economic outbreak may occur at some point. The following table is an eleven (11) year history of Carbaryl usage on private lands (Grasshopper and Mormon cricket combined).

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
Avg.	6	110,722	179

Southeast Idaho: Carbaryl bait usage has stayed steady for the last three (3) years, averaging about 3,300 lbs per year; however, historical data indicates that a larger economic outbreak may occur at some point. The following table is an eleven (11) year history of Carbaryl usage on private lands (Grasshopper and Mormon cricket combined).

Southeast 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
Avg.	5	30,464	53

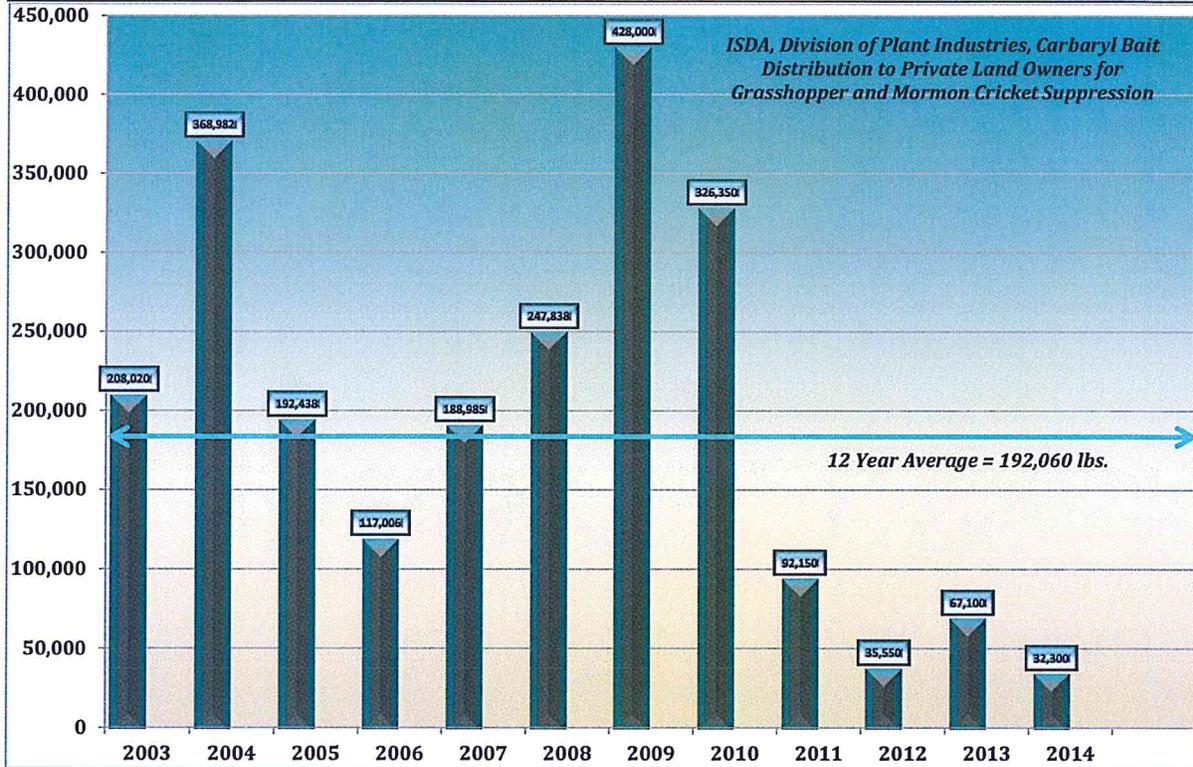
**MULTI-YEAR SUMMARY OF CARBARYL TREATMENTS ON COUNTY ROAD
RIGHT-OF-WAYS AND STATE LANDS**

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

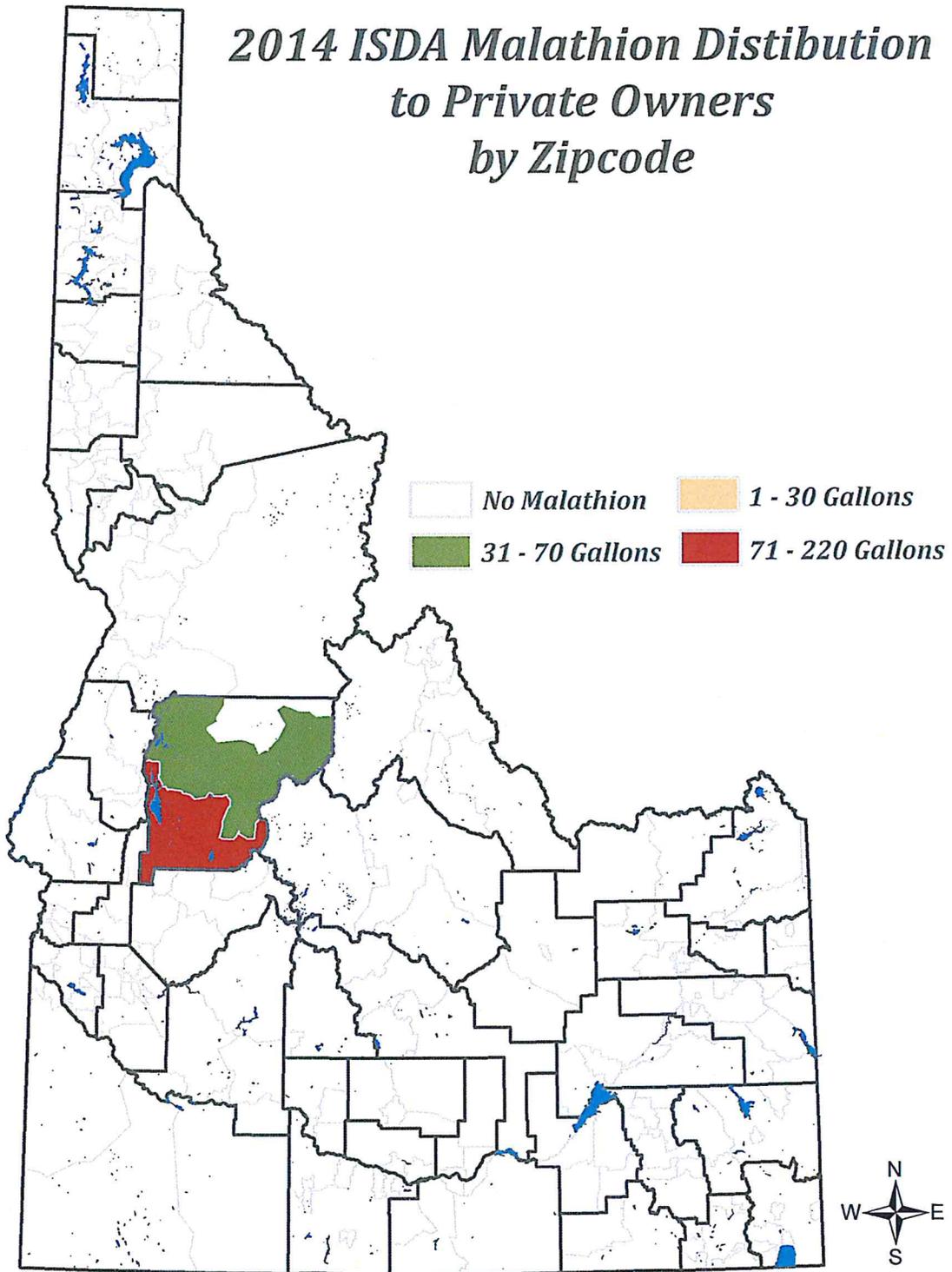
**2014 BAIT DISTRIBUTIONS TO PRIVATE LANDOWNERS FOR GRASSHOPPER
AND MORMON CRICKET SUPPRESSION**

Rank	County	Number of Distributions	Carbaryl Bait Distributed (lbs)
1	Valley	31	21,750
2	Bonner	9	2,950
3	Boise	1	2,000
4	Oneida	6	1,100
5	Custer	2	1,000
6	Kootenai	3	750
7	Gem	2	650
8	Bear Lake	1	500
9	Elmore	1	350
10	Franklin	1	300
11(Tie)	Clearwater	3	250
11(Tie)	Twin Falls	1	250
13	Latah	1	200
14	Blaine	1	150
15(Tie)	Idaho	1	50
15(Tie)	Nez Perce	1	50
Totals	16 Counties	65	32,300

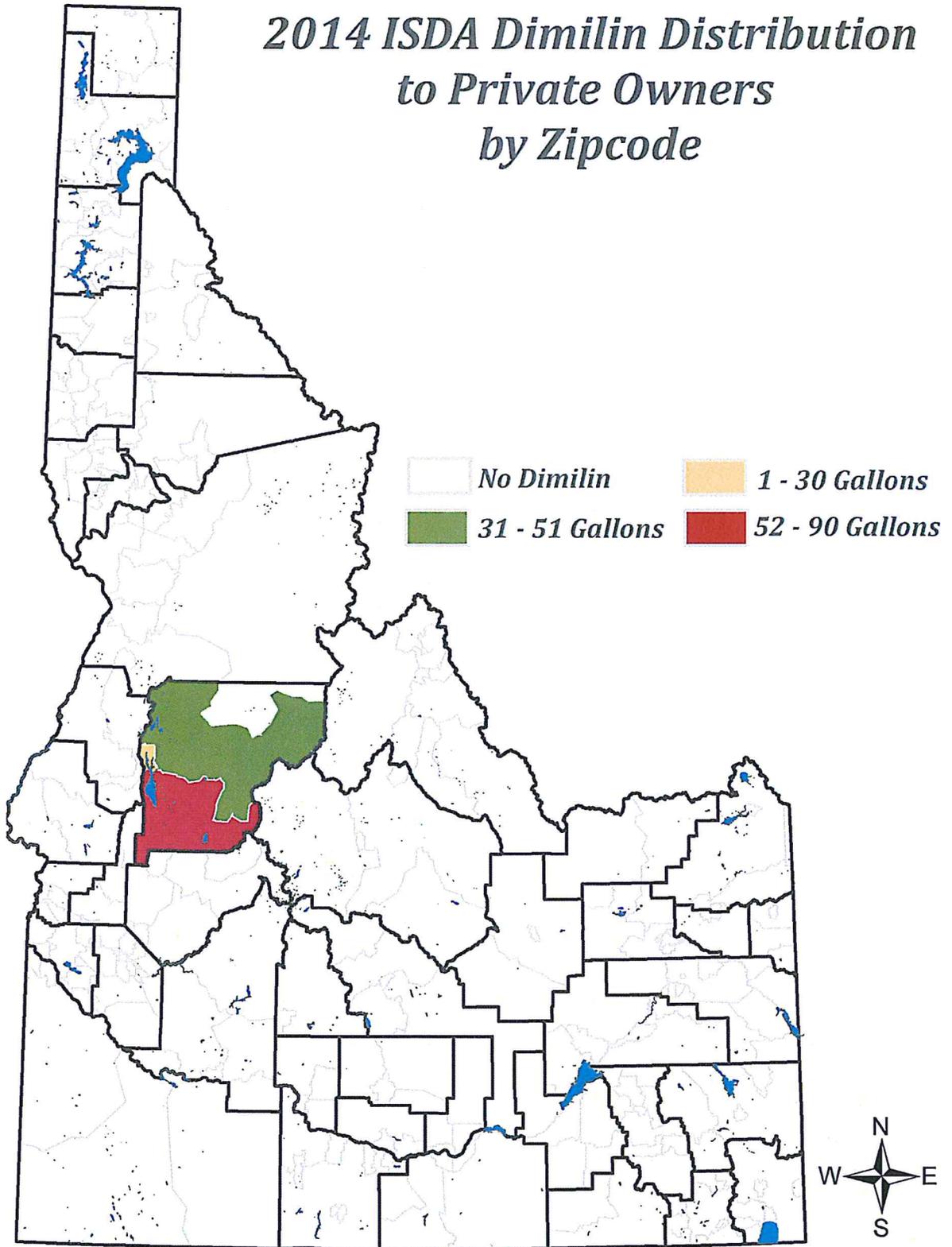
ISDA, Division of Plant Industries, Carbaryl Bait Distribution to Private Land Owners for Grasshopper and Mormon Cricket Suppression



2014 ISDA Malathion Distribution to Private Owners by Zipcode



2014 ISDA Dimilin Distribution to Private Owners by Zipcode



MAJOR COOPERATORS FOR THE GRASSHOPPER/MORMON CRICKET PROGRAM

During the 2014 season, the following cooperators provided significant help in bait storage, distribution, and overall program delivery:

- Primeland Cooperative, Ferdinand, Idaho.
- University of Idaho, Extension Service, Elmore County, Idaho
- University of Idaho, Extension Service, Franklin County, Idaho
- University of Idaho, Extension Service, Oneida County, Idaho
- Valley County Road and Bridge Department, Cascade, Idaho
- Valley County Weed Control, Cascade, Idaho
- Valley County Idaho Commissioners
- Wilbur Ellis, Caldwell, Idaho

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