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# Imidacloprid Patch Use on Roses for Japanese Beetle Control

## **Abstract**

The past few years have been difficult for rose growers in the Midwest due to an increase in Japanese beetle (*Popillia japonica*) populations. Japanese beetles can cause damage to many different parts of the rose plant. Their first target is normally the rose bud, feeding on pollen. Damage appears as a small, round hole going through the side of the flower bud. Buds that are able to fully open are normally the next target. The damage to the flowers is a small hole in the flower petals. As beetle populations increase and after the first bloom of the rose is finished, they begin to attack the foliage. Typical damage to the foliage ranges from small holes in the leaf to complete destruction, resulting in an unattractive plant in the landscape. In recent years, because of the Japanese beetle problem, homeowners are eliminating roses from the landscape. An efficient way of getting rid of these pests is needed.

## **Keywords**

RFR A1233, Horticulture

## **Disciplines**

Agricultural Science | Agriculture | Horticulture

## Imidacloprid Patch Use on Roses for Japanese Beetle Control

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### Introduction

The past few years have been difficult for rose growers in the Midwest due to an increase in Japanese beetle (*Popillia japonica*) populations. Japanese beetles can cause damage to many different parts of the rose plant. Their first target is normally the rose bud, feeding on pollen. Damage appears as a small, round hole going through the side of the flower bud. Buds that are able to fully open are normally the next target. The damage to the flowers is a small hole in the flower petals. As beetle populations increase and after the first bloom of the rose is finished, they begin to attack the foliage. Typical damage to the foliage ranges from small holes in the leaf to complete destruction, resulting in an unattractive plant in the landscape. In recent years, because of the Japanese beetle problem, homeowners are eliminating roses from the landscape. An efficient way of getting rid of these pests is needed.

Imidacloprid, a neonicotinoid insecticide, in recent years has been added to formulations for rose care as a control for insects on roses and is believed to work on Japanese beetle control. These products consist of drench and spray formulations, making them difficult for the homeowner to apply and creating potential hazards to the environment. A new product, developed in Germany, is using

Imidacloprid in a patch formulation to answer these application and environmental concerns.

This experiment compared the effectiveness of the Imidacloprid drench to the Imidacloprid patch on its effectiveness to control Japanese beetle on roses.

### Materials and Methods

The test site for the experiment was a rose planting used for Earth-Kind® rose research, located at the Iowa State University Horticulture Research Station. The planting consists of 20 cultivars replicated four times, but for this experiment only six of these cultivars known for their susceptibility to Japanese beetle populations were chosen. On May 17, 2012, the treatments were applied to the rose trial. Treatments for this experiment were a one-patch application, a two-patch application, a drench application at a rate of .26 oz per 4 ft<sup>2</sup>, and a control.

<b>Table Treatment Key</b>	
Treatment 1	One-patch application
Treatment 2	Two-patch application
Treatment 3	Drench application
Treatment 4	Control

The study used six replications (cultivars) with the four treatments occurring in a random fashion for each cultivar. Patches were applied at the base of the plant to stems of various maturities with thorns removed from the patch site before application. The patches were applied once during the study. Mulch was removed from a 2 ft × 2 ft area to allow the plants to receive the drench application. A mixture of .26 oz of Imidacloprid was diluted in water and was

applied at the base of each plant with a sprinkler watering can. Data for this experiment were collected on biweekly basis and included the number of beetles per plant, the percent damage to buds per plant, percent damage to flowers per plant, and the percent damage to foliage per plant.

### **Results and Discussion**

The results of the data indicate that there were minor positive effects when using the Imidacloprid drench and no effect when using the Imidacloprid patches (Tables 1-4). On July 2, 6, 9, 18, and August 6 and 13 the Imidacloprid drench showed a greater number of beetles per plant than the patch treatments or the control (Table 1). This was apparently due to beetles dying on the plant following

consumption of the Imadocloprid. The dead beetles stayed on the plant for a period of time and resulted in higher numbers of beetles per plant for the drench treatment. The data for the percent damage to buds and flowers showed no effects by the pesticide (Table 2 and 3). According to the data collected, neither the patch nor the drench is effective in Japanese beetle damage control.

### **Acknowledgements**

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**Table 1. Number of beetles per rose plant.**

Treatment	Jul 2	Jul 6	Jul 9	Jul 13	Jul 16	Jul 18	Jul 23	Jul 27	Jul 30	Aug 3	Aug 6	Aug 10	Aug 13	Aug 17
1	24	36	14	2	44	31	4	18	14	6	11	11	2	3
2	32	40	19	3	31	27	8	28	30	16	8	11	3	3
3	134	79	67	10	73	55	11	22	14	31	21	19	6	5
4	21	19	15	3	40	32	4	20	29	5	8	15	4	5
LSD 0.05	80	42	31	NS	31.3	27.1	NS	NS	NS	NS	12.5	NS	4.41	NS

**Table 2. Percent damage to rose buds.**

Treatment	Jul 2	Jul 9	Jul 9	Jul 13	Jul 16	Jul 18	Jul 23	Jul 27	Jul 30	Aug 3	Aug 6	Aug 10	Aug 13	Aug 17
1	8	12	2	0	19	2	3	0	9	3	2	1	9	1
2	8	5	4	6	8	9	4	2	8	22	8	21	1	5
3	8	5	4	1	4	5	2	0	2	3	2	3	7	2
4	5	4	4	1	37	17	4	0	7	2	2	3	0	5
LSD 0.05	NS	NS	NS	NS	NS	NS	NS	1.58	NS	20	NS	19.32	NS	NS

**Table 3. Percent damage to rose flowers.**

Treatment	Jul 2	Jul 9	Jul 9	Jul 13	Jul 16	Jul 18	Jul 23	Jul 27	Jul 30	Aug 3	Aug 6	Aug 10	Aug 13	Aug 17
1	45	36	57	18	63	63	55	28	57	48	53	33	18	27
2	56	48	28	19	50	37	45	44	57	33	42	42	35	30
3	35	50	25	29	48	53	28	49	35	31	34	40	21	33
4	57	26	49	42	66	63	38	30	50	25	63	28	40	48
LSD 0.05	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

**Table 4. Percent damage to rose foliage.**

Treatment	Jul 2	Jul 6	Jul 9	Jul 13	Jul 16	Jul 18	Jul 23	Jul 27	Jul 30	Aug 3	Aug 6	Aug 10	Aug 13	Aug 17
1	38	38	28	28	23	16	35	30	41	46	44	45	37	37
2	30	31	20	23	16	23	25	21	33	36	23	38	31	26
3	18	14	13	5	11	23	14	13	16	15	18	14	15	17
4	28	28	19	28	17	26	22	24	33	28	26	26	18	32
LSD 0.05	NS	NS	NS	19.7	NS	NS	20.1	16.7	23.01	25.37	26.7	26.69	20	NS