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The Use of Imidacloprid Patches to Control Japanese Beetles on Roses

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Abstract
The past few years have been difficult for rose growers in the Midwest region due to an increase in Japanese beetle (Popillia japonica) populations. Japanese beetles can cause damage to many different areas on 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 unattractive plants 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.

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Introduction

The past few years have been difficult for rose growers in the Midwest region due to an increase in Japanese beetle (*Popillia japonica*) populations. Japanese beetles can cause damage to many different areas on 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 unattractive plants 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 with the Imidacloprid patch on Japanese beetle control on roses.

Materials and Methods

The trial was conducted at the ISU Horticulture Research Station, Ames, Iowa. On July 29, 2013, 20 containerized Iceberg roses were planted and treatments were applied in a randomized complete block layout (Table 1). The five treatments were replicated four times.

Patches were applied at the base of the plant to stems with thorns being removed from the patch site before application. The patches were applied immediately following planting. 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 a weekly basis and included the number of beetles/plant, the number of deceased beetles adjacent to the plant, the percent damage to buds/plant, percent damage to flowers/plant, and the percent damage to foliage/plant.

Results and Discussion

Although there was significant damage from Japanese Beetle feeding on adjacent rose plants, the feeding on the Iceberg roses was very light. We are not sure if this is a timing problem with the late planting or if the beetles do not feed on this variety. We will keep them for next season to see if significant feeding occurs next year. Tables 3 to 6 contain the data from the study. At no time was there enough feeding damage to get reliable results. We are unable to make any conclusions about the effectiveness of the patches.

Table 1. Treatment list.

Trt	Product	Application date
1	Control	--
2	1 patch	July 29, 2013
3	2 patches	July 29, 2013
4	4 patches	July 29, 2013
5	Drench	July 29, 2013

Table 2. Mean number of living beetles on plant tissue.

Trt	Aug. 5	Aug. 12	Aug. 21	Aug. 28	Sept. 4	Sept. 11
1	0.25	0	0	0	0	0
2	0	0.25	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
LSD 0.05	NS	NS	NS	NS	NS	NS

Table 3. Mean number of dead beetles adjacent to plant.

Trt	Aug. 5	Aug. 12	Aug. 21	Aug. 28	Sept. 4	Sept. 11
1	0.25	0	0	0	0	0
2	0.25	0	0	0	0	0
3	0	0.25	0	0	0	0
4	0	0.25	0	0	0	0
5	0	0	0	0	0	0
LSD 0.05	NS	NS	NS	NS	NS	NS

Table 4. Mean percentage of leaf damage.

Trt	Aug. 5	Aug. 12	Aug. 21	Aug. 28	Sept. 4	Sept. 11
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	1.25	0	0	0	0
5	0	0	0	0	0	0
LSD 0.05	NS	NS	NS	NS	NS	NS

Table 5. Mean percentage of flower damage.

Trt	Aug. 5	Aug. 12	Aug. 21	Aug. 28	Sept. 4	Sept. 11
1	0	0	0	0	0	0
2	2.5	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	2.5	0	0	0	0	0
LSD 0.05	NS	NS	NS	NS	NS	NS

Table 6. Mean percentage of bud damage.

Trt	Aug. 5	Aug. 12	Aug. 21	Aug. 28	Sept. 4	Sept. 11
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
LSD 0.05	NS	NS	NS	NS	NS	NS