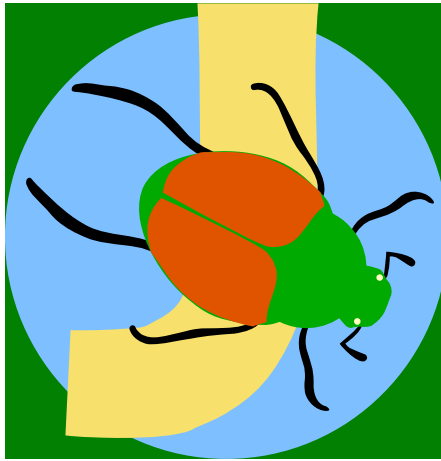


2006

Japanese Beetle Eradication Program

Palisade, CO



Summary and Final Report
by
Debbie Bulmer, Coordinator

Presented

October 11, 2006

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Introduction

The Japanese beetle (*Popillia japonica*) is a scarab beetle native to the main island of Japan. In the Eastern United States it is classified as an *invasive pest* by the USDA. The Plant Protection and Quarantine (PPQ) unit of the USDA Animal and Plant Inspection Services (APHIS) actively manages programs to intervene in the “artificial spread”, such as by aircraft, of the Japanese beetle from the Eastern United States to nine “protected Western States” including Colorado.

It is one of the few beetles in which both the adult and larval stages cause significant economic damage. Adults feed on flowers and foliage of over 300 varieties of plants and damage fruit crops, corn, other field and garden crops as well as the urban landscape. Feeding on grass roots, grubs damage lawns, golf courses, and pastures. Both grubs and adults are targets for substantial insecticide use in heavily infested areas of the U.S.

Despite fifty years of concerted federal and state efforts to eradicate the beetle or at least limit its spread from Eastern States, in the past three decades the beetle has made a damaging sweep westward. Since the beetle is transported on fruit, potted nursery stock and turf, an infected state or county is at risk of being labeled *Infested* by the USDA. This can result in agricultural products from that state becoming ‘restricted from import’ to other states. In the year 2002, Colorado exported \$4.5 billion worth of agricultural products. In that

same year Mesa County contributed \$59.6 million to the state's economy in agricultural products sold. It is intuitive that if a population of Japanese beetles were to be permanently established, the effects could impact our community by lost tax revenues from the sale of agricultural products such as peaches, wines and nursery stock, by lost tourism dollars, and by creating additional costs to residents and growers associated with insect control and landscape remediation.

An infestation of beetles was identified in Palisade in 2002. In the summer of 2003 a mass trapping program was implemented by the Colorado Dept. of Agriculture (CDA), and it became apparent that an eradication program needed to be established. Since 2004 a 3-pronged strategy has been in effect in Mesa County. Efforts have been focused on mass trapping of adult beetles, insecticide application to kill larvae in lawns, and the encouragement of residential lawn dry-down to reduce the chances of egg survival.

Procedure

TRAPS – Procedures as described in the *Trapping Protocol for Japanese Beetle* (Jason Bishop, CSU Department of Bioagricultural Sciences and Pest Management) were utilized. Funnel traps manufactured by Trece Inc. were baited with a 'double disc' of floral compound and a JB specific sex pheromone, *Japonilure*, or with the pheromone lure only as per a plan formulated by the Japanese Beetle Eradication Committee on April 13, 2006. The pheromone has been

proven to increase capture of adult males, while the floral scent is equally attractive to both sexes. The plan was to hang 100 or so dual lures in the *primary core* area (approximately one per property; see description of this area below); 50 pheromone only lures within ¼ mile radius peripheral to the *primary core* (approximately one per block); and 50 dual lures peripheral to these latter pheromone lures. Because as many beetles were initially being captured in the peripheral traps as in the *primary core*, the decision was made to hang more traps in these peripheral neighborhoods and to change single lures (pheromone only) to double lures to determine if females were present in these peripheral neighborhoods. The four Palisade vineyards were the only properties where “sex- pheromone-only” traps were hung as a precaution to prevent luring females onto these properties. Double lures were replaced with fresh bait in late July, and the floral lure was replaced a third time in early September because the floral scent had faded. Traps were hung from deciduous trees or fences 3-5 feet above lawns. The CDA provided both traps and lures.

All traps were monitored on a weekly basis. Captured beetles were sexed, labeled, and are preserved in 70% ethanol. These are archived at the CDA Palisade Insectary. A Garmin iQue M5 handheld GPS unit and ArcGIS™ 9.1 software were utilized to log trap count numbers and locations; information was also logged in EXCEL™. The beetle capture data and trap locations were organized onto a map using the ArcVIEW 9.1 software. Computers, the GPS system, training and personnel support were provided by the CDA Palisade Insectary.

PERMISSION SLIPS – The third eradication season began in early June with an effort to obtain permission from homeowners to trap and treat 102 properties in the *primary core* area with addresses between Iowa and Elberta Avenue and 1st through 5th Streets west of Iowa. An additional 91 homeowners peripheral to the *primary core* were contacted. All 193 property owners were contacted via a mass mailing. Permission slips were also made available for pick-up at the Palisade Town Building and the CDA Palisade Insectary. Because we desired trapping as soon as possible, a door to door campaign in these neighborhoods, with permission slip “in hand”, was conducted. Several properties were eliminated from the campaign on the basis of xeriscaped, dried out or non-existent lawns. These included three apartment complexes with paved or graveled “lawns” and five properties that appeared abandoned with dried out lawns. By mid-June 179 homeowners in the *primary core* and in peripheral neighborhoods were participants, and baited traps were in place. By July 10th when the Merit™ lawn insecticide application was scheduled for these neighborhoods, all but two of the residential owners (545 Crawford Ln. who objected on the basis of chemical sensitivity and 150 Majestic Ct. who is employed by a lawn care service and planned to treat himself) were participating. Additional traps were placed in other Palisade neighborhoods over the next month from homeowner requests as a result of publicity on three local television stations and newspapers (Appendix 3) and by personal canvassing. Four traps were positioned outside of Palisade: 1) in Grand Junction at 2015 Overlook Drive, 2) in Clifton at 3215 D Road, 3) on East Orchard Mesa at 3555 E.5 Road,

and 4) east of Palisade at Canyon Wind Cellars on 3907 North River Road. Ultimately a total of **351** properties participated in the trapping program in 2006.

INSECTICIDE APPLICATIONS – R.E. Landscape Services of Grand Junction was the only respondent to a bid invitation by the Town of Palisade and was awarded the bid for insecticide application to residential properties. Granular imidacloprid (Merit™ 0.5G) previously donated by the Bayer Corporation was utilized for larval lawn treatments, including the Palisade Peach Bowl Park. A foliar application of cyfluthrin (Tempo™), a synthetic pyrethroid contact and ingestion insecticide was applied to Virginia creeper at three properties in the *primary core* where live adults were observed feeding and along the fence at the Palisade Peach Bowl swimming pool.

MERIT™ APPLICATION – Lawn treatment was completed in early July, 2006. The Palisade Peach Bowl Park was treated by Palisade Public Works personnel on July 7. The *primary core* was treated by the contractor on July 10th. An additional 39 properties in neighborhoods north of the *primary core*, including Majestic Court and Cicero Drive, plus 6 residences on West 5th and West 6th Streets where adult females had been captured were treated on July 19th. Merit™ was applied using Lesco rotary push spreaders and a riding spreader. The insecticide was applied at a rate of 1.4 oz /1000 ft². Notification door-hangers were distributed after the application, instructing homeowners to water in the chemical for approximately 1 hour, or about ¾” deep.

TEMPO™ APPLICATION – Three residences in the *primary core* on Crawford Lane historically have had high numbers of Japanese beetles. Dr. Bob Hammon, entomologist with the Colorado State University Tri-River Extension Office and Judith Sirota, Mesa County Pest Inspector, toured these properties on July 18th and discovered several adult beetles feeding on Virginia creeper vines along a common back yard fence. Dr. Hammon in a personal communiqué with Dr. David Smitley at Michigan State University learned that Japanese beetle larvae are capable of feeding on the roots of Virginia creeper and roses. Due to the amount of feeding damage and the concentration of live beetles, it was suggested that a foliar insecticide treatment be done. Tempo™ was applied with ground spray equipment by R.E. Landscape Services on July 24. Six gallons of spray were applied at a rate of 24 ml in 4 gallons of water. Additional baited traps were placed at two of the three residences: three traps were hung at 126 Crawford and two traps at 204 Crawford. At this latter residence, care was taken by the contractor to cover a backyard fish pond during Tempo™ treatment as this insecticide is injurious to fish. The Virginia creeper at the Palisade Peach Bowl Park swimming pool was treated on July 26 with Merit™ (as a soil drench) plus Tempo™ (as a foliar spray) purchased and applied by Palisade Public Works personnel at 3:30AM to avoid public contact.



Results

MASS TRAPPING – Total trap count for the 2006 season was 66 adult Japanese beetles (Fig 1). This number represents a 43% reduction from 2005 and a 95% reduction since 2003. No Japanese beetles were captured outside the Town of Palisade. The peak adult flight occurred in mid-July with the capture of 16 adult beetles (Fig 2). The first beetle, a male, was captured June 16th at a residence (3519 G Road) in south Palisade, and the last, a female, was trapped at 540 W. 1st Street on September 18th at the *primary core*'s north perimeter. A July peak beetle flight appears to be consistent from year to year (Fig 3).

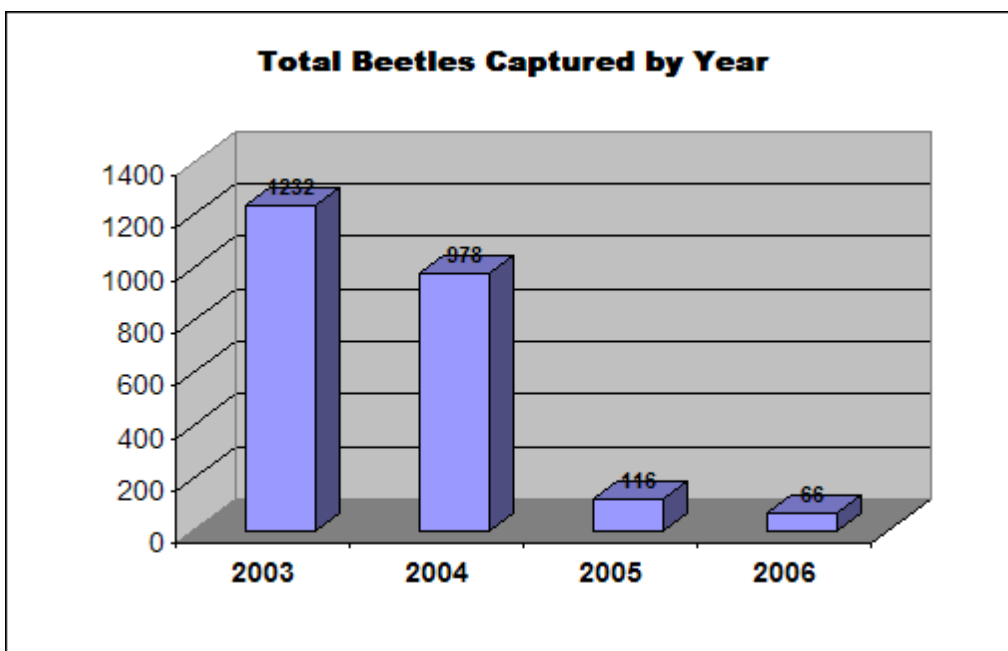


FIGURE 1. The total number of adult Japanese beetles continues to decline annually. The 2006 total is a 43% reduction since last year, and a 95% reduction since 2003.

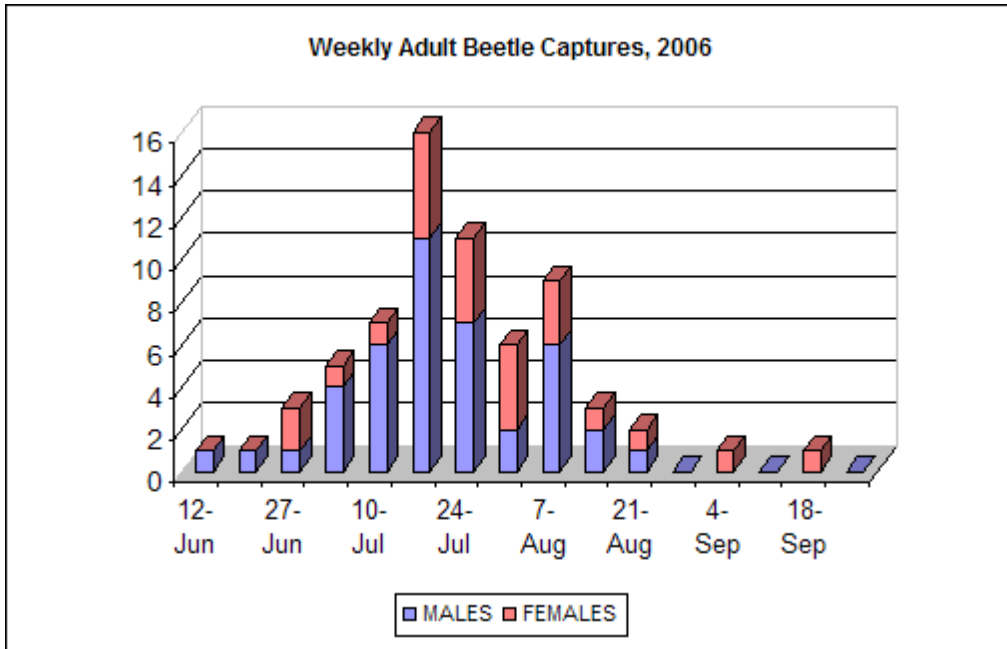


FIGURE 2. The peak adult flight occurred in mid-July.

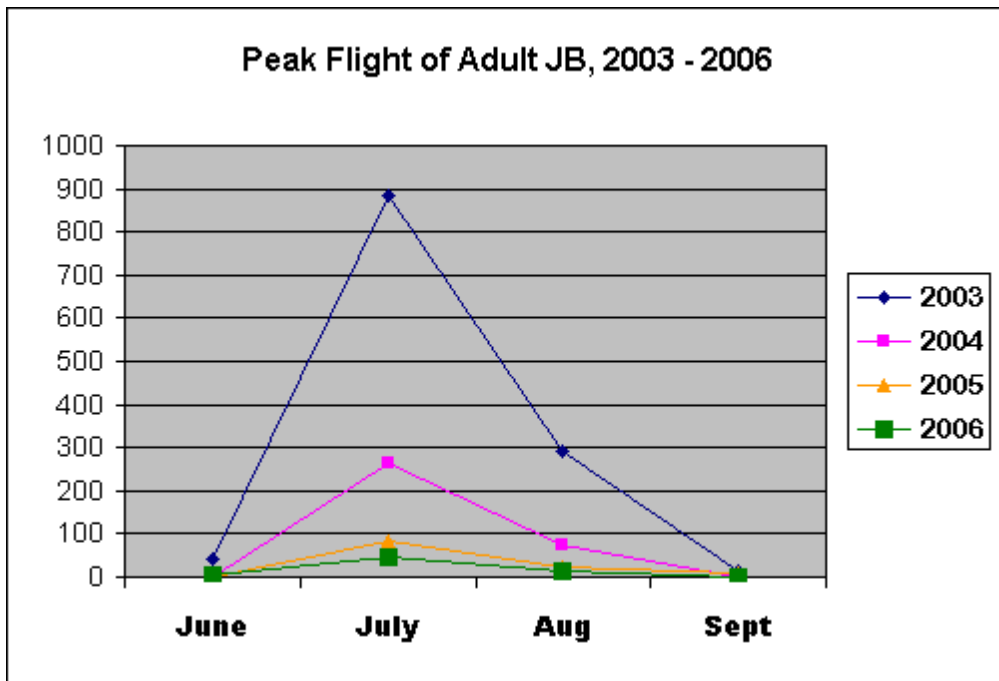


FIGURE 3. Adult Japanese beetle flight pattern is consistent from year to year.

As in previous years, there is a trend that most beetle captures are confined to the Crawford Lane neighborhood. As seen in Figure 4a, more than half (37) of all total beetles (66) were trapped here. In the previous year, 67 (more than half) of the 116 adult beetles (Figure 4b) were captured in this same neighborhood (2005 Summary Report and Final Report, Jessica Green, Coordinator).

FIGURE 4a. Trap Capture Data, 2006

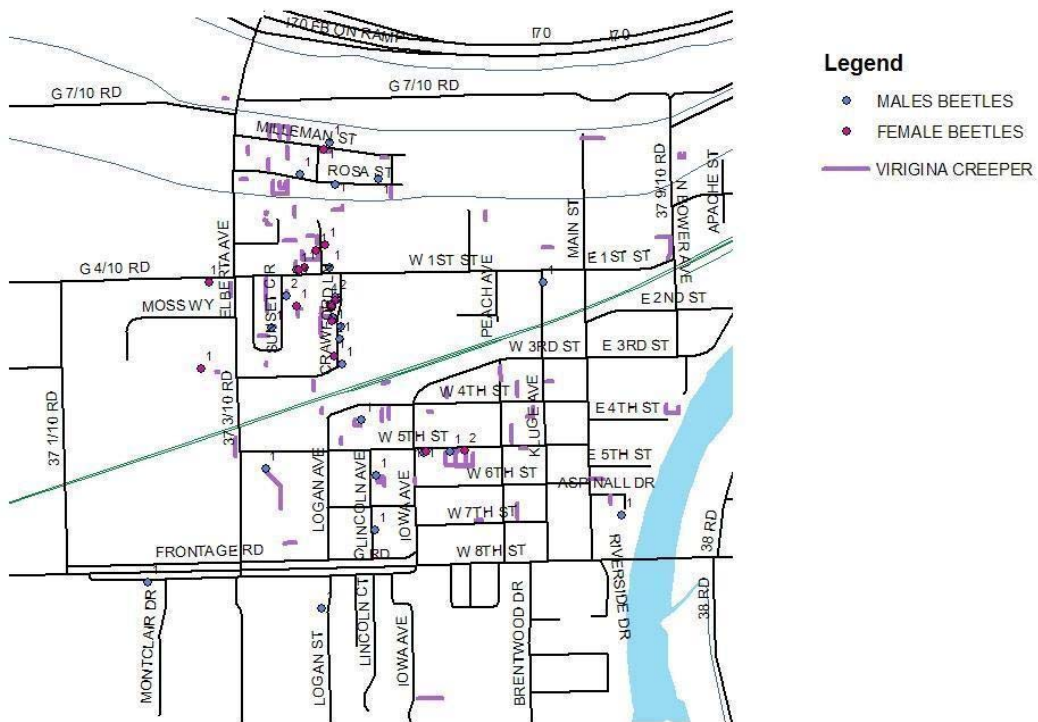
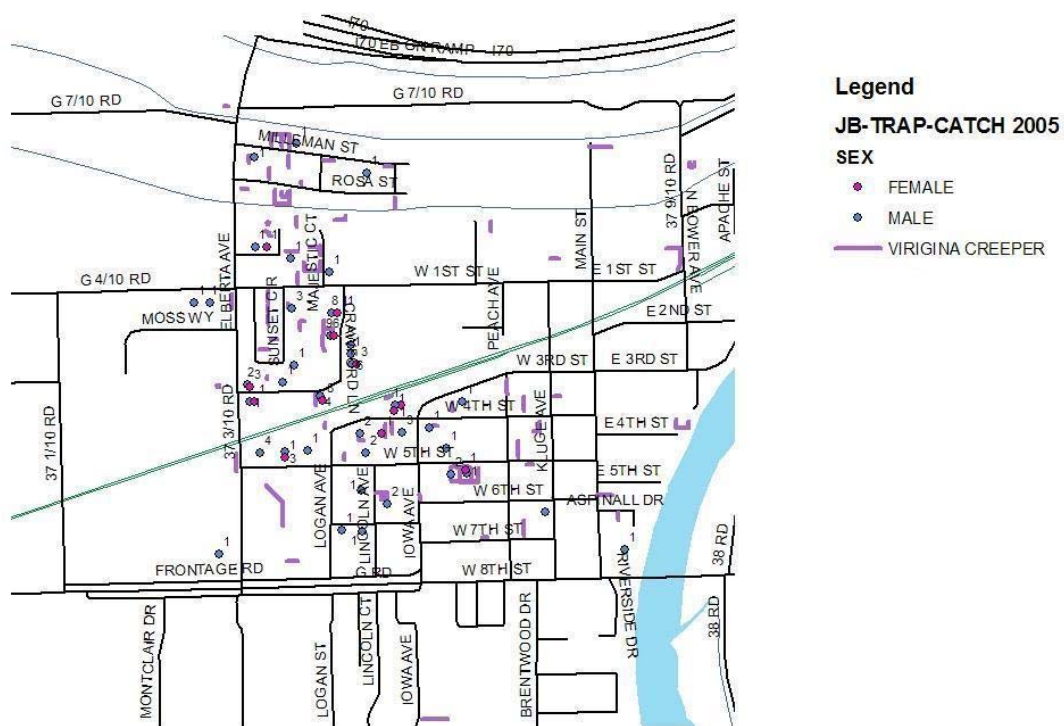


FIGURE 4b. Trap Capture Data, 2005



Two weeks after the foliar Tempo™ treatment at three residences on Crawford Lane the number of captured adults plummeted to zero. However, in neighborhoods north and southeast of this neighborhood beetles continued to be captured.

DRY-DOWN – Encouraging homeowners to dry down lawns was an ongoing process during the 2006. The importance of dry-down was stressed on the door-hangers that were hung after treatment, as well as mentioned in the news media. Most residents were familiar with this ‘extra precaution’ due to previous years’ efforts. The JAPANESE BEETLE INVADES PALISADE! pamphlet was distributed and discussed with many homeowners again in 2006. Despite written directions, there still remains confusion about watering lawns. A disparity in access to irrigation water in various neighborhoods results in some homeowners watering daily and others, with access to expensive city water only (in the older downtown areas), having dried out lawns. Because there was a ¾ inch rain in Palisade the day after lawn treatment, at least we have confidence that the Merit™ was watered in on these latter properties too. Landowners in the northwest portion of Palisade, including the *primary core*, tend to water daily. Like St. Ann’s Church property where an automated sprinkler system is under the control of a lawn care professional, some owners are unable to easily change their automated water cycles.

INSECTICIDE TREATMENT – Merit™ was stored in a wrapped pallet over winter at the town of Palisade Public Works facility. There were 1350 pounds (forty-five 30# bags) of Merit™ remaining from 2005. This year a total of 660 pounds (22 bags) were used: the contractor, R.E. Landscape Services, applied 480 pounds (16 bags) to residential properties, and The Town of Palisade utilized another 180 pounds for the Palisade Peach Bowl Park (four initially as a lawn

treatment and two later as a soil drench on Virginia creeper vines). To date 23 bags (i.e., 690 pounds) of Merit™ remain in storage at the Town of Palisade Public Works facility.

The Tempo™ treatment to Virginia creeper on three Crawford Lane properties appears to have been successful as no beetles were captured subsequent to this foliar treatment.

Discussion

The community of Palisade was very cooperative and supportive of continuing the Japanese beetle eradication effort. However, some are weary of the process and wonder how much longer this will take. In some cases it took over a month to obtain permission slips. There were a half dozen or so new homeowners who did not understand the Japanese beetle eradication program and required *educating*. Several homeowners voiced concern about insecticidal use: one whose child has Downs Syndrome; one who sells certified organic cotton clothing from home; several with chemical sensitivities; one who has grapes in his lawns (and uses them to make his own wine); and one who is employed by another lawn care company and insisted he treat his own lawn. Two homeowners refused lawn treatment. However, no evidence of lawn damage due to JB grubs was observed at these properties. Conversely, several homeowners wanted information about treating roses and other shrubs for the Japanese beetle even though they had not seen any at their properties. Copies of the Ohio State University

Extension Fact Sheet (Appendix 4) which discusses homeowner cultural and chemical controls were distributed to a dozen or so homeowners. It is important that a JB fact sheet specific to Colorado be developed.

There were very few complaints about insecticide application by R.E. Landscape Services. One home owner, whose front yard is xeriscaped but who has a backyard lawn was inadvertently missed on July 10th. The contractor cheerfully returned a few days later to finish there. One homeowner claimed that flowers were trampled during the application, but declined to show me what had happened. Many participants were grateful for the free insecticidal treatments which provided other benefits to their lawns. Several who did not qualify for treatment in 2006 were disappointed they missed the free lawn treatment.

A Thank You letter and a 2007 permission slip have been mailed to all 2006 participants. In 2007 another Public Relations campaign with Palisade residents is recommended. A half dozen or so properties sold this summer, and there are more sales pending this fall.

And as some residents grow weary of the program and the coordinator's weekly visits, a new effort to revitalize interest is needed. An updated brochure describing lawn and soil drench treatments as well as the achievements in the eradication process is needed. Monthly articles beginning in April or May in the local newspaper, including a copy of the permission slip (as was done in 2004) is needed. A description of beetle biology, lawn care, the economic impact to Palisade of an *Infestation*, and phases and progress in the eradication

program through out the summer should be included. An announcement at the start of the season and updates about the eradication program could be included in the quarterly Newsletter which the Town of Palisade publishes and mails to residents. Outreach presentations at the local grade school with handouts including the 2007 permission slip could be conducted. Television news coverage in the spring would again be helpful. Updates about the eradication efforts on CSU Tri-River Extension radio broadcasts and web site would be helpful. A fresh Japanese beetle poster and a display of beetles at the local library or at the Town Hall have been suggested by residents. Richard Mathews, a former mayor, suggested that the Town of Palisade be asked to adopt a Resolution or Proclamation that all town residents are expected to participate in the Palisade Japanese Beetle Eradication Program. In general, we will need an aggressive Public Relations campaign in 2007.

In conclusion, the eradication program in Palisade is successful. The beetle population continues to be isolated to the west side of Palisade, especially to the neighborhoods on and near Crawford Lane. Overall, the beetle population is in decline; however, in order to achieve an *eradicated* status, the program needs to incorporate the use of systemic insecticidal treatments on Virginia creeper vines as well as on lawns. And as the program looks to the future where the Upper Grand Valley Pest Control District and the Colorado Department of Agriculture withdraw from their management responsibilities, the residents of Palisade will need to be given information and support from the Tri-River Extension offices on how to combat any errant

Japanese beetles that return. The need for an exit strategy is soon at hand.

I wish to thank the people of Palisade who by and large have a wonderful attitude about our program. Many thanks to the staff of the Colorado Department of Agriculture for providing the space, equipment, lures, and ideas in the Japanese beetle eradication program. I look forward to being involved in monitoring the situation in future years.

Debbie Bulmer

Appendix 1
Members of the
2005 Palisade, CO. Japanese Beetle Eradication Committee

- Brant Harrison, Kokopelli Produce, chairperson
- Jerry Cochran, Colo. Dept. of Agriculture
- Andrea Judson, Palisade Insectary, Colo. Dept. of Agriculture
- Bob Hammon, CSU Cooperative Extension, Entomologist
- Albert and Terry LaSalle, CSU Master Gardeners
- Fesalene Ashurst, Town of Palisade
- Susan Rose, CSU Cooperative Extension, Horticulture Tech.
- Shirley Skinner, CSU Master Gardener, Resident
- Curtis Swift, CSU Cooperative Extension, Horticulture
- Galen Wallace, Town of Palisade Trustee
- Jude Sirota, Mesa Co. Pest and Weed Inspector
- Mitch Yergert, Colo. Dept. of Agriculture
- Tom McKee, Palisade Greenhouse
- Bruce Talbott, Talbott Farms

Appendix 2

Donations and Supporters – THANK YOU!

- Town of Palisade
- Colorado State University Tri River Area Cooperative Extension
- Colorado Department of Agriculture Palisade Insectary Staff, especially Sonya Ortega, Field Biologist and GIS Mapping Specialist
- Palisade Chamber of Commerce
- Mesa County Library – Palisade
- Bayer Corporation
- RE Landscape Services
- Lisa Peraino – APHIS/USDA
- Bob Hammon, CSU Tri River Area Cooperative Extension, Entomologist, and Carrie Rinderle, Student Assistant
- Mesa County Division of Pest Management, Staff

Appendix 3

Public Relations and Media Appearances

- 06/05/06 – Flyers posted throughout Town of Palisade
- 06/28/06 – KREX News
- 06/28/06 – KJCT News
- 06/29/06 – KKCO News
- 07/07/06 – *Palisade Tribune*
- 07/24/06 – *Grand Junction Free Press*
- 07/27/06 – *Palisade Tribune*
- 08/19/06 – Palisade Peach Festival with CSU Tri River Area Extension
- 09/25/06 – News Release posted at www.townofpalisade.org
- 10/12/06 – *Palisade Tribune*
- (Scheduled) – Present results at Town Meeting

Appendix 4

Publications and Information Handouts

- Ohio State University Extension FACT SHEET, HYG-2001-03
- Collage of three Press Releases