

Alternative Weed Control Methods in Davis California Parks

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In the 1980s the City of Davis pesticide use was similar to other cities and agricultural operations. Much of the maintenance of park, greenbelts, landscaping, bike paths, streetscapes and open space consisted of scheduled applications of fertilizers and pesticides. The pesticides used were a mixture of Category I (Danger), II (Warning) and III (Caution) compounds.

In 1989 the city established an Integrated Pest Management (IPM) program where new methods of managing public landscapes were imposed. The program included:

- First IPM Policy developed by the Parks and Community Services department.
- First IPM specialist hired by the City of Davis.
- Issuing written pesticide recommendations.
- Consolidating and centralizing pesticide storage in upgraded facilities.
- Cooperating with UC Davis in experimenting, utilizing beneficial insects and other practices.
- Minimizing hazardous pesticide use.
- Increasing staff training and education on IPM.

Since then the city has fine-tuned the program, resulting in an IPM and pesticide use policy for all city departments. Parks maintenance personnel as well as contractors are involved in pest control activities—mostly weed control throughout the parks, greenbelts, open space, and landscaped street medians. Public Works has three divisions involved in pest control activities. The Wastewater Treatment Plant (WWTP) personnel maintain the grounds around the plant, lagoons, overland flow (bioremediation process using perennial grasses), associated open space, and treatment wetlands. The Transportation Division maintains streets, roadsides, bike paths, and the old landfill/pistol range site. Some of its weed control is done by a contractor who treats problem roadsides and non-landscaped traffic medians with herbicides in the late fall. The Collections Division is in charge of maintaining stormwater flow within drainage channels, right-of-way access and the sanitary sewer system.

Current pest control response is dictated by the results of pest-population monitoring by field staff. Monitoring results are compared to action thresholds. Action thresholds include functional impairment, fire hazard, and aesthetic degradation. Functional impairments are infestations that impair the operation of a City facility, program, and/ or objective. Dense weed growth on City property, adjacent to private or public structures, creates a fire hazard. Weed infestations that occur in parks, bike or sidewalk paths, and road medians are considered hazardous and or of poor aesthetic value.

Several alternative pest control methods are performed to reduce reliance on conventional pesticides and meet IPM objectives. Weed management techniques include:

- **Mechanical Removal:** Mowing, weed trimming, and tilling.
- **Hand Removal:** Seasonal employees and volunteers were utilized at the WWTP,

Wetlands, and community garden sites to pull weeds from around landscaping and native plant restoration areas.

- **Flooding:** Water level management continued to be effective at controlling weeds and Canada goose nest density at the local stormwater detention basins and the Wetlands.
- **Rx Burning:** Prescribed fire was used at the Wetlands to stimulate native grasses and reduce weed seed production.
- **Grazing:** Livestock grazing is utilized at the Mace Ranch Community Park habitat area and Yolo County Grasslands burrowing owl preserve to meet burrowing owl habitat objectives.
- **Use of Native Vegetation in New Landscaping Projects:** The City continues to utilize native trees, shrubs, and grasses in municipal landscape projects.
- **Use of Wood Chip Mulch and Sheet Mulching Techniques:** Landscape contractors and park field staff continues to maintain mulch around landscaped areas. Some areas are sheet mulched with cardboard and weed cloth. Mulch helps to smother weeds and reduces the need for fertilization and water.
- **Green Herbicide:** Trials with these products continues to be tested and are showing promising results. Acetic acid (vinegar) along with soap based and herbal oil based herbicides have shown promise in burning down annual broadleaves. This is encouraging for areas that are sensitive to conventional pesticide use due to human and pet exposure or wildlife habitat. The use of burn-down herbicides with reduced concentrations of glyphosate has reduced the overall use of glyphosate in parks.
- **Weed Flaming:** Propane flamers are utilized when conditions of high humidity reduce the options for other forms of weed control.
- **Irrigation Management:** Central irrigation system provides water when and where it is needed.

The City of Davis IPM policy incorporates the Pesticide Hazard and Exposure Reduction (PHAER) zones program. This strategy gives structure to the implementation process of the IPM policy in parks and greenbelts by allowing supervisors the needed flexibility in their management options and informing the citizens about the general level of pesticide hazard on a site-by-site basis. These zones are designated as Green, Yellow and Special Circumstance Zones, with Green Zones providing the lowest potential for pesticide hazard and exposure. Each Zone has a corresponding pesticide list determined by existing toxicological data. For more information contact:

<http://www.home.earthlink.net/~phaerzones/PHAER%20Color%20V.%201.2.pdf>

Public outreach and education is one of the major goals of the program. The City of Davis comprises 6,353 acres: 1,616 acres are parks, greenbelts, open space and streetscapes which fall under the IPM policy. The remaining 4,737 acres are managed by the citizens, who can choose how to manage their pest problems. Outreach efforts include:

- Development of City of Davis' IPM website. (<http://archive.cityofdavis.org/pw/ipm/>)
- Development of IPM comic "The Exterminator."
(<http://archive.cityofdavis.org/pw/ipm/exteriorator.cfm>)
- Notification of City herbicide application activities in parks and greenbelts via the Pesticide Hotline.

- Encouraging local pesticide vendors to participate in the Our Water Our World (OWOW) program. This program provides “Less Toxic” fact sheets and shelf tags set adjacent to pesticides sold in stores. In addition to the written materials, store employees are given training regarding what products are environmentally conscious alternatives for pest control. For more information on the OWOW program visit: <http://www.ourwaterourworld.org>
- Tips and alternatives to pesticide use provided in the annual Public Works sponsored “Utility Connections” and citywide “Focus” newsletters.
- Distribution of IPM educational literature at community events partnering with the Master Gardener Program and Tree Davis. Tables feature the OWOW program, bat and owl boxes, as well as pamphlets and handouts on our pest control programs, etc.
- Periodic presentations at local schools regarding stormwater quality including tips and alternatives to pesticide use.
- Presentations on least-toxic pest control at the community gardens, Central Park garden and the Mace Channel Herb Garden.
- City-sponsored annual Horticulture Pest Control Seminar, where continuing education units are available to city staff and other pest control professionals from the school district and surrounding communities.
- Pesticide safety training for City field staff.
- Attendance at IPM conferences by departmental staff involved with IPM coordination.
- Annual presentations to the city council and citizen advisory commissions.
- Use of positive posting at locations where alternatives to chemical pest control are in use.

Overall pesticide use by the City of Davis has declined in the past five years due in part to some of these alternative practices. Pest control strategies are dictated by weather, pest persistence and staff availability to implement management techniques. Persistence of infestations and budgetary constraints may hinder some alternative control methods. The IPM program continues to keep staff and management informed on pesticide regulation updates and safety. It will maintain field trials to demonstrate alternatives, their effectiveness, limitations and costs.