

MPRB INTEGRATED PEST MANAGEMENT PROCEDURES

Policy IX-B-9

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Integrated Pest Management (IPM) is a pest management strategy that focuses on long-term prevention or suppression of pest problems with minimum impact on human health, the environment and non-target organisms. In most cases, IPM is directed at controlling pests that have an economic impact on commercial crops; however, in the instance of mosquito control, IPM is used to control nuisance and potentially dangerous mosquito populations. The guiding principles, management techniques and desired outcomes are similar in all cases.

A number of concepts are vital to the development of a specific IPM policy goal:

- 1) Integrated pest management is not a predetermined set of practices, but a gradual stepwise process for improving pest management.
- 2) Integrated pest management programs use a combination of approaches, incorporating the judicious application of ecological principles, management techniques, cultural and biological controls, and chemical methods to keep pests below levels where they cause economic damage. (Laws of MN, 1989)
- 3) Implementing an integrated pest management program requires a thorough understanding of pests, their life histories, their environmental requirements and natural enemies, as well as establishment of a regular, systematic program for surveying pests, their damage and/or other evidence of their presence. When treatments are necessary, the least toxic and most target-specific plant protectants are chosen.

The four basic principles of IPM used in designing a specific program are:

- 1) Know your key pests.
- 2) Plan ahead.
- 3) Scout regularly.
- 4) Implement management practices.

Selection of Management Strategies

Selection of Management Strategies pest management techniques include:

- Encouraging naturally occurring biological control.
- Adoption of cultural practices that include cultivating, pruning, fertilizing, maintenance and irrigation practices that reduce pest problems.
- Changing the habitat to make it incompatible with pest development.
- Using alternate plant species or varieties that resist pests.
- Limiting monoculture plantings where possible.
- Selecting plant protectants with a lower toxicity to humans or non-target organisms

The criteria used for selecting management options include:

- Minimization of health risk to employees and users.
- Minimization of environmental impacts (e.g. water quality, non-target organisms).
- Risk reduction (losses to pests, or nuisance/threshold level).
- Ease with which the technique can be incorporated into existing management approaches.
- Cost-effectiveness of the management technique.

Posting of Plant Protectant Applications:

The Minneapolis Park and Recreation Board complies with the city of Minneapolis ordinance regarding pesticide application posting.

At MPRB Golf Courses, posting of applications occurs at the clubhouse check-in so that golfers can make the decision to proceed with their round of golf. Additional posting will be done on the course at the first area treated.

Recordkeeping

MPRB staff will produce and maintain the necessary records of all pest management activities as required by the Minnesota Department of Agriculture. Yearly paper records will be kept by the District or Golf Course office. Electronic records of all applications began in 2008.

Golf Course Integrated Pest Management

Goal: To develop and implement environmentally sound, integrated pest management for the Minneapolis Park and Recreation Board (MPRB) golf courses.

The Minneapolis Park and Recreation Board and staff members recognize the need to develop and use strategies that effectively manage turf pests on park golf courses and manage those pests in an environmentally sound manner.

Each area will have a turf quality threshold level set for diseases, weeds, insects and other pests. The threshold level will be a percentage figure of turf loss for each defined area on an individual basis. The percentage figure for each defined area is a minimum amount of turf loss that the Minneapolis Park and Recreation Board has agreed to tolerate before plant protectants (i.e. fungicides, herbicides, insecticides, and algaecides) are applied to these defined areas.

Under no circumstances will plant protectants be applied to the golf courses 12 hours prior to or during Junior Golf Programs. These programs include Junior Golf Leagues, Junior Golf Camps, First Tee Programs and other Board approved golf programs geared towards participants 17 years of age and younger. Fast-spreading turf diseases such as *Pythium* that develop prior to or during scheduled Junior Golf Programs and require immediate attention may necessitate the cancellation of the scheduled Junior Golf Program or moving the program to an alternative play area that will not be treated.

Greens

On all regulation putting greens, practice putting greens, practice target greens, and nursery greens, the Minneapolis Park and Recreation Board has set a threshold range of 0% to 2% percent for turf disease pressure. When it is determined that this threshold percentage has been reached or exceeded, a curative

fungicide treatment will be applied. In the case of *Pythium* (a very rapidly evolving turf disease that is triggered by high temperature, high humidity, and high soil moisture), a preventative fungicide treatment will be applied on a 14-to-21 day schedule or until weather conditions change.

The Minneapolis Park and Recreation Board has set a threshold of 0% for broadleaf and grassy weeds. Since annual blue grass (*Poa annua*) is a high percentage of MPRB putting surfaces, we continue to maintain annual blue grass with the same cultural practices as our bentgrass. Weeds on putting surfaces are spot sprayed as necessary.

The Minneapolis Park and Recreation Board has set a threshold range of 0% to 5% for turf insect pressure. When it is determined that this threshold percentage has been reached or exceeded, a curative insecticide treatment will be applied. In the case of insects such as grubs that develop over a cycle of several years, treatment will be applied when the insect is most receptive to control.

Tees

On all regulation tee and practice tee areas, the Minneapolis Park and Recreation Board has set a threshold level of 25% for turf disease pressure. When it is determined that this percentage has been reached or exceeded, a curative fungicide treatment will be applied on a spot spray by location basis as needed. In the case of *Pythium* (a very rapidly evolving turf disease that is triggered by high temperature, high humidity, and high soil moisture), a preventative fungicide treatment will be applied on a 14-to-21 day schedule or until weather conditions change.

The Minneapolis Park and Recreation Board has set a threshold level of 25% for broadleaf and grassy weeds. When it is determined that this percentage has been reached or exceeded, a post-emergent herbicide will be applied on a spot spray by location basis as needed. A better option for annual weeds will be to apply a pre-emergent herbicide in early spring to prevent the weeds seeds from successfully sprouting.

The Minneapolis Park and Recreation Board has set a threshold level of 35% for turf insect pressure. When it is determined that this threshold percentage has been reached or exceeded, a curative insecticide treatment will be applied on a spot spray by location basis as needed. In the case of insects such as grubs that develop over a cycle of several years, treatment will be applied when the insect is most receptive to control.

Fairways

On all regulation fairways and practice fairway areas, the Minneapolis Park and Recreation Board has set a threshold level of 30% for turf disease pressure. When it is determined that this percentage has been reached or exceeded, a curative fungicide treatment will be applied on a spot spray by location basis as needed. In the case of *Pythium* (a very rapidly evolving turf disease that is triggered by high temperature, high humidity, and high soil moisture), a preventative fungicide treatment will be applied on a 14 to 21 day schedule or until weather conditions change.

The Minneapolis Park and Recreation Board has set a threshold limit of 30% for broadleaf and grassy weeds. When it is determined that this percentage has been reached or exceeded, a post-emergent herbicide will be applied on a spot spray by location basis, as needed. A better option for annual weeds will be to apply a pre-emergent herbicide in early spring to prevent the weed seeds from successfully sprouting.

The Minneapolis Park and Recreation Board has set a threshold level of 40% for turf insect pressure. When it is determined that this threshold percentage has been reached or exceeded, a curative insecticide treatment will be applied on a spot spray by location basis, as needed. In the case of insects such as grubs that develop over a cycle of several years, treatment will be applied when the insect is most receptive to control.

Roughs

The Minneapolis Park and Recreation Board have set a threshold level of 100% for turf disease pressure on all rough areas. No fungicide applications will be made in rough areas.

The Minneapolis Park and Recreation Board has set a threshold level of 50% for broadleaf and grassy weeds. When it is determined that this percentage has been reached or exceeded, a post-emergent or pre-emergent herbicide will be applied on a spot spray by location basis, as needed. Noxious weeds will be controlled with either herbicide applications or biological control if available. Weeds listed on the State of Minnesota's Noxious Weed List must be controlled as per state statute.

The Minneapolis Park and Recreation Board has set a threshold level of 100% for turf insects. No insecticides will be applied to rough areas.

Clubhouses and Surrounding Areas

On all turf areas around clubhouses, the Minneapolis Park and Recreation Board has set a threshold level of 30% for turf disease pressure. When it is determined that this level has been reached or exceeded, a curative fungicide treatment will be applied on a spot spray by location basis as needed.

The Minneapolis Park and Recreation Board has set a threshold level of 40% for broadleaf and grassy weeds. When it is determined that this level has been reached or exceeded, a post-emergent herbicide will be applied on a spot spray by location basis as needed. A better option for annual weeds will be to apply a pre-emergent herbicide in early spring to prevent the weeds from emerging.

The Minneapolis Park and Recreation Board has set a threshold level of 60% for turf insect pressure. When it is determined that this level has been reached or exceeded, a curative insecticide treatment will be applied on a spot spray by location basis, as needed. In the case of insects such as grubs that develop over a cycle of several years, treatment will be applied when the insect is most receptive to control.

Natural Areas/Wildlife Habitat, Out of Play/Perimeter Play

On all out of play/perimeter areas, the Minneapolis Park and Recreation Board has set a threshold level of 100% for turf disease pressure, 100% for broadleaf and grassy weeds, and 100% for insect pressure. No chemical applications will be made in these areas. However, noxious weeds will be controlled with either herbicide applications or biological control if available. Weeds listed on the State of Minnesota's Noxious Weed List must be controlled as per state statute.

Natural Lakes and Ponds, Artificial Ponds, and Creeks

On all natural/artificial lakes, ponds and creeks, the Minneapolis Park and Recreation Board has set a threshold of 100% for aquatic weeds. No chemical applications will be made to these aquatic areas. The exception to this rule will be the case of exotic species whose control is required by state law. In these instances, control measures used will be determined and directed by the Environmental Operations Section.

Garden Integrated Pest Management

Goal: To develop and implement environmentally sound, integrated pest management for the Minneapolis Park and Recreation Board display gardens and neighborhood park and parkway gardens.

The Minneapolis Park and Recreation Board and staff members recognize the need to develop and use strategies that effectively manage pests in gardens and to manage those pests in an environmentally sound manner. Therefore, plant selection and design plays a major role in Integrated Pest Management by putting the right plant in the right place. Careful selection of plant species or cultivars that show resistance to pests will eliminate the need for plant protectant applications.

Within the Minneapolis Park system, both large display gardens and smaller landscape gardens can be enjoyed by the public. Climate bears a strong influence on the presence of pests. For example, during drought seasons, foliar diseases are rarely a problem, but insect populations may be severe. Staff gardeners monitor the gardens for pests and response to these pests is based on the time of the season, existing weather conditions and the presence or absence of natural predators.

Two specialty gardens:

Rose Garden

When large gardens feature a monoculture of plants, such as the Rose Garden, there will be larger populations of pests to control. Timing of biocontrols and low toxicity plant protectants are scheduled in order to prevent intense damage to the roses caused by insects and/or diseases. Currently the two major insect pests dealt with yearly are Japanese Beetle and Rose Midge. If these are not controlled, the insects will effectively destroy the rose blooms. On a regular basis, research with University of Minnesota staff and/or Minnesota Department of Agriculture staff has attempted to release natural predators for these insect pests. Black Spot is the major disease that if not controlled can defoliate and severely weaken the plants. The use of biocontrol agents and lower toxicity insecticides and fungicides is based on weekly monitoring of the garden. The choice of plant protectants to be used will be based on the method of alternating products to avoid pest resistance. The Rose Garden is posted and roped off from public access during any plant protectant applications.

Cowles Conservatory

This is one site where predatory insect controls can be applied, although they may not always be successful. Containing plants in a structure with little air flow can result in ideal conditions for the development of disease and insect pests. To minimize that, ceiling fans have been installed in all conservatory houses to keep the air moving. Predators, plant protectants with lower toxicity issues and newer biocontrols are the main choices of control in the conservatory and will be used on a spot spray basis. The arches may require occasional preventative control treatments for root rot. Any treatments required are scheduled on Mondays when the conservatory is closed to the public.

Plant Selection for Environmental Design:

Garden plants are selected and/or replaced in order to provide the most disease and insect resistant plantings, thereby reducing plant protectant applications.

Disease Control in Gardens

During wet, humid seasons, diseases can be problematic. However, the incidence of disease issues will vary at the gardens depending on the air flow. Regular monitoring of the gardens is critical in order to

locate and handle disease issues promptly. Pruning to increase air flow and adjusting mulch levels are the first control methods. Then, if necessary, biocontrols or low toxicity plant protectants will be applied only a spot spray basis. It is critical to keep updated about disease pests and be ready to respond with the current recommendations from the University of Minnesota and the Minnesota Department of Agriculture.

Insect Control in Gardens

Insect problems can vary from season to season. Gardeners will regularly monitor their gardens for insect pests. Release of predatory insects into an outdoor garden is rarely successful as they naturally disperse from the site. All attempts will be made to control insect pests using biocontrols and lower toxicity plant protectants. Global climate change is causing the introduction of more insect problems into our state that were previously found further south. It is critical that our staff keep updated about these insect pests and be ready to respond with the current recommendations from the University of Minnesota and the Minnesota Department of Agriculture.

Weed Control in Gardens, Shrub Beds and Around Trees

In all gardens, trees and shrub beds, the Minneapolis Park and Recreation Board has set a threshold of 100% control of weeds. Weed Control in gardens and shrub beds is primarily handled through mechanical or manual means. However, due to global climate change, increasing populations of tap-rooted and other perennial weeds are being transported into our gardens by birds and other means. Pulling or digging of these weeds is usually not successful. Spot spraying of these tap-rooted weeds with a low toxicity herbicide will help prevent flowering, seeding and further dispersal of these pest weeds. Currently the most critical tap-rooted invasive weeds are Canada Thistle and Mulberry. Appropriate mulching of gardens, trees and shrub beds will help decrease the number of pest weeds. If control of annual weeds in pathway or mulched areas is required, the proper pre or post emergent low toxicity herbicide will be applied on a spot spray basis. Posting of any plant protectant applications occurs at all garden or shrub bed sites prior to the application.

Display Gardens Turf Areas

The Minneapolis Park and Recreation Board has set a threshold of 20% for broadleaf and/or grassy weeds in turf areas adjoining display gardens. When it has been determined that this percentage has been reached or exceeded, the appropriate post emergent or pre-emergent herbicide may be applied, preferably on a spot spray basis. Selection of the appropriate herbicide of choice will be determined by trained staff after evaluating the site, the hazard rating of the product and the specific location. A threshold of 20% for insect and diseases will apply to these turf areas. When that threshold has been reached, spot spray applications with the appropriate plant protectant will be applied.

General Parks and Parkways Integrated Pest Management

Goal: To develop and implement environmentally sound, integrated pest management for the Minneapolis Park and Recreation Board's general park and parkway areas.

The Minneapolis Park and Recreation Board and staff members recognize the need to develop and use strategies that effectively manage pests in our general park areas and to manage those pests in an environmentally sound manner.

The Minneapolis Park and Recreation Board has set a threshold of 50% for broadleaf and/or grassy weeds in turf areas. When it has been determined that this percentage has been reached or exceeded, the appropriate post emergent or pre-emergent herbicide may be applied, preferably on a spot spray basis. Selection of the appropriate herbicide of choice will be determined by trained staff after evaluating the site, the hazard rating of the product and the specific location. Staff is required to use turf cultural practices other than herbicide applications if weeds and/or other vegetation must be controlled or removed from areas within 100 feet of wading pools or playgrounds. Insect and disease infestations are currently managed on a spot spray basis, as they are usually a rare occurrence.

Further, application of any plant protectant within parks must be timed to minimize contact with park users. Posting of the park site (according to City of Minneapolis posting regulations) to be treated must occur just prior to application and if this park includes a recreation center or building, posting of a sign must occur at the entrance doors.

Natural Lakes and Ponds, Artificial Ponds, and Creeks

On all natural/artificial lakes, ponds and creeks, the Minneapolis Park and Recreation Board has set a threshold of 100% for aquatic weeds. No chemical applications will be made to these aquatic areas. The exception to this rule will be the case of exotic species whose control is required by state law. In these instances, control measures used will be determined and directed by the Environmental Operations Section.

Victory Memorial Parkway

This parkway was designed as a memorial drive for the Hennepin County soldiers who lost their lives in service to this country during World War I. Victory Memorial Parkway is maintained at a different threshold for pest control than other parkways. The Minneapolis Park and Recreation Board has set a threshold of 20% for broadleaf and/or grassy weeds. When it has been determined that this percentage has been reached or exceeded, the appropriate post emergent or pre-emergent herbicide may be applied, preferably on a spot spray basis. Selection of the appropriate herbicide of choice will be determined by trained staff after evaluating the site, the hazard rating of the product and the specific location. Posting of the parkway will occur just prior to the application and neighbors will be notified by postcard a week prior to the scheduled treatment.

Neighborhood Parks Athletic Field Integrated Pest Management Policy

Goal: To develop and implement environmentally sound, integrated pest management for the Minneapolis Park and Recreation Board athletic fields.

The Minneapolis Park and Recreation Board and staff members recognize the need to develop and use strategies that effectively manage turf pests on park athletic fields and to manage those pests in an environmentally sound manner. The MPRB wants to maintain its athletic fields so that park users have a safe and stable site for athletic activities. However, multi use of these fields and the intensity of their use and lack of turf recovery time will affect the quality of turf. Currently, due to compaction from over use, many of our general park athletic fields have a high population of knotweed, dandelions and annual grassy weeds.

Each athletic field area will have a turf quality threshold level set for diseases, weeds, insects and other pests. The threshold level will be a percentage figure of turf loss for each defined area on an individual basis. The percentage figure for each defined area is a minimum amount of turf loss that the Minneapolis

Park and Recreation Board has agreed to tolerate before plant protectants (i.e. fungicides, herbicides, insecticides) are applied to these defined areas. Currently the threshold at our athletic fields is about 70%.

Specialty Sports Turf Complexes

[i.e. Fort Snelling, The Parade, Northeast Athletic, Excel (NSP) Energy Fields, Bob Casey Field at Stewart Park, Bryn Mawr, Bossen, and Pearl Park]

At the Specialty Sports Turf Complexes, the Minneapolis Park and Recreation Board has set a threshold range of 20% for turf insects, weeds or diseases. Once this threshold has been reached, appropriate spot or field wide applications of plant protectants will be made as determined by the manager.

Future Pest Control Issues

The Minneapolis Park and Recreation Board recognizes that with changes in climate, the environment will be subject to many changes, including the arrival of additional pests within our park system. Following IPM principles, the MPRB trained staff will determine the best management of new pests. The Minneapolis Park and Recreation Board will provide the necessary update training to staff to keep them informed of ongoing pest issues and best IPM practices. Tolerance levels for each pest will be dealt with on a case by case basis. MPRB will work with the appropriate local, state or national agencies to determine the best control approach for these new pests.