

# Sports Turf Manager

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## STA Field Day Highlight: Putting IPM Into Action

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The implementation of the Cosmetic Pesticides Ban in Ontario has led to some pest control challenges for athletic field managers province-wide. With the amount of play that so many fields are subjected to throughout the season, the need for pest control is critical to maintain a safe playing surface. With one fewer pest management tool available to combat weeds and insects, a change in management methods is needed. Although many turf managers feel that pesticides are the top weapons in their arsenal, in truth many of you should realize that your ability to adapt and make decisions is even more valuable. This article is intended to provide tips for effective integrated pest management that are sustainable and utilize the most important tools in the box – your knowledge and experience.

**T**he first point, and I can't stress this enough, is taking the opportunity to remain educated as much as possible in pest management. Too often, the use of a quick fix like pesticides can take the place of keeping up on understanding new pests and learning about and trying alternative cultural practices. Then when the routine

practice that is so relied upon is taken away, you find yourself already behind in new product information or making sure that you know your pests. Take advantage of field days, conferences and even spending a little time each week on the internet to really have a thorough understanding of the pests you are likely to encounter. The key to properly managing pests and abiotic



**MORE FIELD DAY  
COVERAGE**

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stresses is understanding the life cycles of the various weeds, insects and even the desirable turf, as well as the conditions under which they all thrive.

Integrated pest management involves the use of all available techniques to suppress pests in an effective and environmentally sound manner in an effort to sustain a healthy landscape. >>> **pg 14**



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## Putting IPM Into Action Using Your Own Valuable Resources

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### FIELD DAY HIGHLIGHT

Continued from the cover.

Although IPM often uses pesticides as one of the tools for pest management, it is not a requirement, and the remainder of the techniques can be very effective at developing an effective management plan for most pests. The main fundamentals that are applicable to athletic field management include proper identification of pests and potential problems, proper monitoring and scouting, stress management for healthier turf, and a combination of the control options at your disposal.

#### Proper Pest & Symptom Identification

The first step in being able to prevent pest problems is to know which pests are a potential threat and being able to recog-

nize both the pests themselves as well as the damage that they can cause. In addition, many symptoms are often caused by abiotic factors, including drought, fertility issues, heat and compaction. It is of equal importance that you are able to distinguish between symptoms caused by pest damage and those caused by an abiotic stressor. This means having a thorough understanding of insect life cycles, feeding habits, and the symptoms that they cause.

For weeds, remember that they are not really pests, as they do not harm the turfgrass plants. They are, however, indicators of poor growing conditions or stress that creates voids. Weeds are extremely competitive and are able to fill voids often more quickly than the turfgrass plants. Proper identification of weeds that are present in your fields will help with management and also with identifying conditions such as compaction, low fertility or excess moisture. Three of the more common weeds seen on athletic

fields include plantain, clover and knotweed (pictured above) and all are indicative of low fertility, drought and compaction.

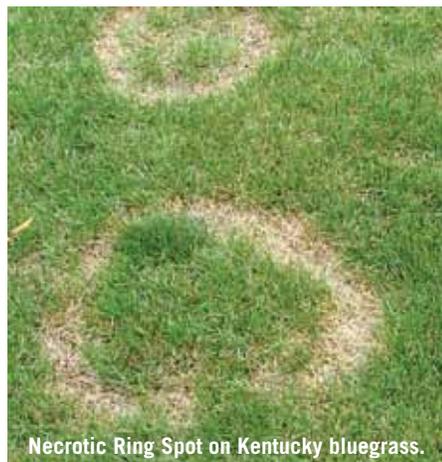
Insect damage becomes more difficult to identify and control as symptoms are somewhat non-descript and damage can occur rather quickly. However, proper identification of the various insects that are potential pests can help reduce symptom development through effective and well-timed cultural practices. The most common insect pests seen on athletic fields are usually white grubs (European chafer,

**Top.** Insect pests seen on turfgrass fields. **Left.** European chafer (*Rhizotrogus majalis*) **Right.** European crane fly larvae (*Tipula paludosa*). Photos courtesy of Pam Charbonneau.

**Above.** Common weeds found on athletic field turf. **Left.** Broadleaf plantain (*Plantago major*). **Middle.** Clover (*Trifolium repens*). **Right.** Prostrate knotweed (*Polygonum aviculare*). Photo courtesy of Eric Lyons.

May/June beetle and Japanese beetle) and leatherjackets. Damage from white grubs is difficult to see before the turf is severely affected, so it is important to be on the lookout for any evidence of adult beetles or skunk feeding. For leatherjackets, symptoms should not be too extreme, but note excess activity of the adult European crane fly, especially toward the end of the summer, to give you an idea of whether or not they are likely to be present in your turf.

Diseases are fortunately not an issue on athletic fields, but the occasional necrotic ring spot (below) or rust can appear on stressed turf. The former is usually an indicator of excess thatch levels and low nitrogen while the presence of rust is usually evidence that fertility (especially nitrogen) is low and that there may be excess shade in the area.



Necrotic Ring Spot on Kentucky bluegrass.

## Monitoring

The second fundamental that is of key importance in managing pests on athletic fields is proper monitoring or scouting. In order to reduce the effects of weeds, insects and diseases on managed turfgrasses, issues need to be assessed early on as this allows for the option of managing them through cultural practices. Monitoring involves carefully looking over your fields to make note of any changes in plant health or presence of weeds, insects, odd symptoms, etc. Some type of monitoring should be done each time that you are on a field and can be done by anyone who is working on a particular site. If you are at the managerial level, your best chance of success in recognizing issues early on is to train all of your employees to recognize different symptoms as well as early signs

**Table 1: Common turfgrass weeds and the underlying conditions that their presence indicates. Adapted from Turf IPM Manual, OMAFRA, 2003.**

Weed	Underlying Condition
Black medick ( <i>Medicago lupulina</i> )	Low fertility, drought
Chickweed ( <i>Stellaria media</i> )	Thin turf, excess moisture, shade
Clover ( <i>Trifolium repens</i> )	Low N, drought, compaction
Crabgrass ( <i>Digitaria</i> spp.)	Thin turf, low fertility, compaction
Moss (Various species)	Heavy shade, low fertility, low pH, compaction
Plantain ( <i>Plantago</i> spp.)	Low fertility, drought, low HOC
Prostrate knotweed ( <i>Polygonum aviculare</i> )	Compaction, low fertility, drought
Rough bluegrass ( <i>Poa trivialis</i> )	High fertility, excess moisture, shade

of pest presence. If you are one of the people who maintains the fields and sees them most often, make sure you keep an eye out for any changes in turf health, presence of new weeds or symptoms of insect damage or disease.

As important as monitoring for symptoms or signs of pests is, it is equally critical to keep accurate records of everything that you see. You should have a map of each field that is under your care and every time that you see something out of the ordinary make sure that you mark it down, by location on the field, so that there is a permanent record of it. This allows you to note any patterns of damage that may be chronic or that might hint at unfavourable environmental conditions or damaging usage patterns that could potentially be amended.

In addition, with enough data taken over time, you may find that you are able to predict when issues are going to occur and this can help you prevent problems in the first place. Another advantage of good record keeping is that it allows you to monitor the progress of symptom development, weed growth or insect populations over time. One of the best suggestions that I have heard on how to do this easily is with a map and various coloured highlighter pens with each colour representing a different issue. In addition to keeping track of turf symptoms or pest presence, you should also be noting weather conditions, if possible, specifically at your locations. Install

a simple rain gauge to get an idea of the amount of water your fields have received and keep track of regional temperatures throughout the season. This will allow you to correlate any problems that you might encounter with weather conditions.

Finally, be sure that you keep good records of your management practices – mowing height and frequency, fertilizer rate and application dates, cultivation types and dates, overseeding (including species, rate and date), irrigation (if available) or any other practices performed for growth of the turf. When combined with the pest monitoring data, you might find that certain pests can act as indicators of unhealthy conditions. This is especially the case with weeds as they take advantage of voids or weakened, thin areas. As such, they are often indicators of issues that may exist with the soil or other growing conditions (see Table 1 above).

## Stress Management

An often overlooked fundamental to remember as part of your pest management plan is stress management. In many cases, pests are present primarily because the desirable turf is under stress and thinned areas have become vulnerable to invasion from weeds or to symptom development from insects or diseases. The first line of defense against weeds and insect damage is not only keeping your turf at the appropriate height, but also mowing your fields



**Above.** Material collected as a result of vertical mowing. **Inset.** Cores from aeration done to improve soil compaction on an athletic field (photo courtesy of Eric Lyons).

frequently enough to ensure that you only remove 1/3 of the leaf blade at any cutting. You are better off mowing twice per week and keeping your turf a little bit higher to compete against weeds rather than mowing infrequently and cutting it down too short each time.

Fertility is also of extreme importance in reducing stress in your turfgrass plants. Adequate fertilizer levels in your plants allow for defense against weed invasion, rapid recovery from injury due to excess use, and growing out of insect damage. Timing and source of your fertilizer applications need to be appropriate as you want to avoid excess growth during times of heat and stress while allowing plants to recover from feeding or injury. Consider having regular soil tests performed as this information can tell you about the amount of phosphorus, potassium or other essential nutrients your turf might be lacking.

Cultivation is also a significant cultural practice that is key on athletic fields. With the amount of traffic that most fields see in a season, compaction is sure to occur in a short period of time. In addition to making the fields less safe for play, compaction also reduces the health of the turf by restricting root growth and subsequently

not allowing the plants to access necessary water and nutrients. Core aeration should be done at least once per year and ideally both in the spring and fall on these high traffic areas. Also consider incorporating deep tine aeration periodically to break apart soil deeper in the rootzone. Keep an eye on thatch levels and use vertical mowing to remove excess thatch when needed. Thatch can lead to issues with water repellency (hydrophobicity), root restriction, soil compaction and reduced water retention. The final practice that is vital in maintaining healthy turf is irrigation. Although most of you likely do not have irrigation systems installed in any of your fields, this is something to consider saving for with any capital funds that you are given. One of the best defenses against weeds is properly timed irrigation and many insects can be managed through proper management of soil moisture.

### Combination of Controls

The last fundamental to keep in mind is that of using a combination of control measures. In order for a pest management system to work over a long period of time, you need to take an integrated approach and utilize all methods at your disposal. This ensures that no one method is relied upon and gives you numerous options for dealing with pests. Cultural management has been discussed under the section of stress management and is the first defense against pest presence and damage. Re-

member to keep in mind that many pests are indicators of unhealthy turf and their presence is often a reminder that certain practices are possibly being overlooked.

Another method for dealing with pests is physical or mechanical removal. For insects, this may involve the use of pheromone traps (e.g. for Japanese beetle), but be sure to situate your traps away from your desirable turf as it is suggested that these traps actually attract insects to your site. Physical control with weeds could involve torching or hand pulling, a labour-intensive method that can be quite successful when weeds are still small.

A few biological control options are available for athletic field managers for both weed and insect control. The one thing that you need to be aware of with the use of biological control agents is that they require specific conditions in which to be effective, so the more you know and understand about how they work, the better chance you have for success with them.

Finally, there are some available chemical controls that are exempt from the provincial ban, primarily for use on weeds. As with any pesticide, be sure to read the label and follow instructions carefully to increase the efficacy and reduce any potential harmful effects on your turf.

### In the End...

One of the most important points that I hope you take from this article is to remember that you truly are the best tool that you have. The more you educate yourself and understand what you are fighting in pest management, the more successful you will be in combating turfgrass pests without the use of conventional pesticides. Remember to get back to your basics – mowing, fertility, cultivation and if available, irrigation. Also, think about substituting the funds that used to be allocated for pesticides to grass seed as increasing the number of turfgrass plants is one of the best defenses you can have against most pests. Finally, remember to keep up with early monitoring and record keeping and do what you can to keep your turf as healthy as possible. With a bit more labour and some good practices, you should be able to maintain beautiful turf throughout the season.