

the urine was 18 ppb and the limit of establishing a quantitative amount was 25 ppb.

The results of their studies are summarized in Table 1 for those using granular applications and in Table 2 for those using liquid applications. Trace amounts, that is a level between 18 and 25 ppb were detected in one applicator of granular material and one bystander among those using protective gear (Table 1). Amounts ranging from a trace to 604 g were excreted in the urine of applicators not using protective gear and a trace in one bystander.

Exposure occurred more frequently among those not using protective clothing. Three applicators and one bystander showed trace or greater amounts of the insecticide in their urine

The use of a liquid formulation significantly increased the number of applicators showing a trace amount or greater of chlorpyrifos in their urine (Table 2). A trace or quantifiable amount was determined in three bystanders where the liquid formulation was applied. Where no protective clothing was used all 10 applicators had trace or greater amounts of the insecticide in their urine in contrast to three of the eleven applicators taking some degree of protection.

The highest level of exposure was with applicator # 1 who used no special clothing. His exposure level on one day was 0.798 mg which for an individual weighing 91 kilograms results in daily intake of .009 mg, close to the allowable average daily intake of .01 mg/kg body weight/day.

The study was primarily focused toward the home owner applicator and the risk of exposure of his immediate family. Nevertheless, the turf manager must recognize his personal exposure but also those who may be in the immediate vicinity, whether he is in parks, playgrounds and sports fields, and schedule his spray operations accordingly.

The low exposure resulting from the granular impregnated fertilizer appeared to be the safest system. The use of this product, however, requires the simultaneous need for a plant nutrient and an insecticide. This is not always the case in a well managed sports field.

# Caught in the Web - Using the Internet

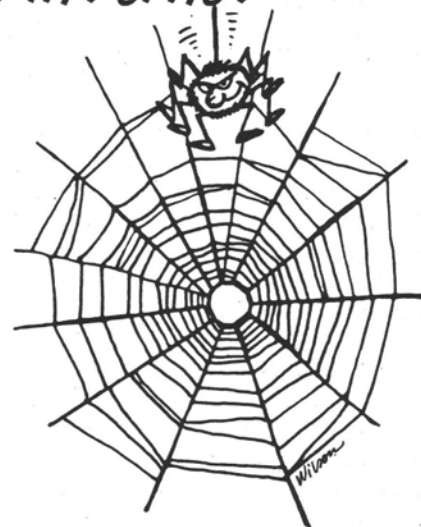
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Seldom a day goes by that the popular media doesn't include an article relating the benefits [and necessities] of being linked to the Internet. Major businesses and institutions have established "Web Sites" and increasingly, information is being transmitted, and business being conducted, over the Internet. A significant number of readers of this article may already be linked to this global network via computers at work and/or at home. For many others, the Internet remains a black box [or a black hole], clouded in mystery and confounded by the jargon related to its use. For those who have ventured onto the Web - the experience may have varied from enlightenment to total frustration. In 1996, the volume of useful information remains a minuscule fraction of the total information available. The purpose of this article is to provide for complete neophytes an introduction to using the Internet, and to suggest some useful or interesting sites to travel to for information related to turfgrass and turfgrass management.

## **What is the Internet and how do I get on it?**

The internet is a network of different intercommunicating computer systems funded by governments and commercial organizations and linking more than 40 countries around the globe. The network may be accessed in a variety of ways - probably the one we hear about most is the World Wide Web (WWW or W3) [also known simply as the Web]. The Web arranges information in documents with links between them. The links facilitate rapid movement between related documents.



## **What can I do on the Internet?**

Of the many uses which may be made of these global computer linkages, the most common activities include:

- Electronic mail (E-mail) - a method of communication between individual or groups (the latter route uses collective "mailing lists" where all members of the group receive all communications).
- File Transfer Protocols (FTP) - used to download files from other sites to your computer.
- Search functions - used to search the Internet for information, contacts and databases.
- Discussion groups/bulletin boards - groups with more or less targeted subject matter which allow general discussion and interchange. These groups may be mediated, allowing for some control of what is acceptable and what is not.

## **How do I connect?**

For most of us, access to the Internet will be via a "dial-up connection" through a modem and telephone line. If you are looking at the purchase of a modem, buy the "fastest" model available for your computer - no matter what the capacity, there will always be some days when it

seems unreasonably slow! A number of improvements in connection technology will occur in the next 5 years, in the meantime, a good, fast modem represents the most cost-effective connection for the majority of users who are not hard-wired to a network through their institution.

Your modem connection will allow you to access and communicate with an Internet service provider. Some names may be familiar - CompuServe, Syntac etc. - but a look at the Yellow Pages will reflect the increasing choice available - almost ten pages of Internet services and service providers. If you are looking to sign up with a service provider, be sure to check on the service and rates provided, how long they have been in business, whether they supply technical support, and whether Internet access is via a local phone connection (historically, some providers' access involved long distance calls whose charges were on top of any direct connection fees). Many services supply a certain number of free connect hours per month - consider carefully whether the rate structure provides adequate access at lowest cost. Ask people you know if they have any experience with a service provider.

### I'm connected: Now what?

The value of the Internet and the Web is most obvious if you are using a multimedia browser -this is a software package which facilitates moving around the Web and displays formatted documents, graphics, video and sound. Currently, major market share in the network browser league is held by Netscape Corporation. Strong competition was recently launched by the introduction of the Microsoft Corporation browser called Internet Explorer.

I can hear the groans - more software! more money! This is one time the industry seems to be responsive to a need. Both the Microsoft and Netscape browsers are available by downloading from the Internet itself at no cost except for the connection time. A browser makes moving around the Web both easier and more attractive as it takes advantage of the technology to display images and sound. More information about these browsers can be obtained from service providers

and from the company Internet sites listed in the addresses at the end of the article.

### Surfing the Web



For those with unlimited time, dedicated telephone lines and a large resource of patience, surfing the Web via your browser can be a fascinating experience. Most Web browsers provide one or more search utilities which can be used to track information in very general subjects, or to look for very specific topics. To avoid too much grief and to use your time efficiently some care should be taken in setting up the terms for the search. For example - the term *turf* will produce numerous "hits". Unfortunately, many of these will not be what either you or your employer may have had in mind - they will include a significant selection of information on horse racing an international physics/math game with this title and numerous personal and business pages that describe someone's personal or corporate "turf". The same search using *turfgrass* as the descriptor will turn up a more useful selection of possibilities (though by no means without some junk).

One other hint learned from painful experience. If you are using a Web browser and find a good site, use the browser's bookmark tool to add this to your list of sites. Web addresses are notoriously complicated (as you will see from the examples) and using the bookmark function saves keeping a separate list as well as reducing the need to type in the entire address each time. Clicking on the bookmark with your mouse will allow

you to go straight through to the desired location.

For those of you who are on the net - or nearly there, the following are some useful addresses to look for, or at:

<http://home.netscape.com>

Netscape Corporation home page with information on downloading the Netscape Web browser, net directories and a variety of search engines.

<http://msn.com>

Microsoft Corporation's home page.

<http://www.uoguelph.ca/GTI/home.htm>

Guelph Turfgrass Institute home page with assorted links to a variety of useful information and other turf resources.

<http://www.gcsaa.org/gcsaa>

Golf Course Superintendents Association of America home page - various resources, some accessible to the public - others for members only.

<http://www.usga.org>

United States Golf Association providing a variety of information resources about the USGA, its activities and development and the Audubon Program.

<http://worldgolf.com/courses/canada/bc/bcga.html>

BC Golf Association home page with a variety of information about the organization.

This is a small sample to start you looking. The Pacific Turfgrass program will have its own home page up and running by the end of the fall season. Part of the access will provide for a discussion group on turf problems and ideas. If you are already linked to the Internet and/or have E-mail access and are interested in the development of such a facility in the BC/Pacific Northwest, please E-mail me at the address below - all you need to do is to indicate "turf group" in the subject area, and your own "address"; you can add a message of interest, but it's not essential. As soon as we are up and running, this is the core group that will be notified.

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[Editors note: The front page of the *Sports Turf Manager* may now be found on the home page of the GTI]