WISCONSIN
Breast Cancer Coalition
A Grassroots Advocacy Member Of The National Breast Cancer Coalition

To: Department of Agriculture, Trade and Consumer Protection
From: Kathleen Harris, President, Wisconsin Breast Cancer Coalition
Re:DATCP 29, Pesticide Rule Changes
Date: June 19,1997

As President of the Wisconsin Breast Cancer Coalition, I am writing to express concerns with proposed changes to DATCP 29, Wisconsin's major pesticide rule.

I appreciate the opportunity to present preliminary comments on behalf of the Wisconsin Breast Cancer Coalition. While we have not yet had the opportunity to review the entire 200 plus page rule we do have concerns with some aspects of the proposal already.

Given our experiences with breast cancer, which include difficulty in obtaining data about risk factors which we may have been exposed to in our lifetimes, we are very concerned about provisions in the rule which may reduce record keeping of pesticide applications. While we do not know for sure that pesticide exposure increases the risks of getting breast cancer, the growing field of endocrine and other hormone disruption research mean that we at least owe it to our citizens to keep track of the use of pesticides and other substances already suspected of causing such diseases.

Furthermore we are alarmed at sections of the rule which will otherwise make it more difficult for people to protect themselves from pesticide exposure. Eliminating current posting obligations (such as along public roads, alleys and back yards) and increasing the difficulty of participating in the state's registry program are two glaring examples. How can the state act to to reduce citizens rights to such information that could help to preserve their health?

Right now, the Silent Spring Institute is investigating the possibility that drinking water contaminated by pesticides may be partially responsible for the high incidence of breast cancer in Cape Cod. Given the importance of drinking water and that its contamination threatens us all, we are mystified as to why the department, whose job is to protect consumers, would allow unintentional contamination of our drinking water, as these rule changes would.

We hope to see changes in the proposed rule to address these concerns. We will be further reviewing the rule and hope to comment on the complete draft after having adequate time to review it

Sincerely,

Kathleen Harris, *President*

Madison Physicians for Social Responsibility

P.O. Box 1712 Madison, WI 53701-1712 608/256-8241

September 8, 1997

Dear DATCP Board members,

We, board members of Madison Physicians for Social Responsibility, are writing in response to the recent proposal, Ag 29, intended to weaken current pesticide regulations.

Physicians for Social Responsibility (PSR) is a national organization of more than 20,000 health care providers committed to eliminating weapons of mass destruction, preserving a safe and sustainable environment, and reducing violence and its causes.
We feel strongly that the proposed changes to Ag 29 would be a major step backward in terms of protecting public health, especially the health of children.

While much is still not known about the long-term health effects of chronic exposures to low doses of many pesticides, it is only prudent to tip the balance in favor of protecting public health when evidence suggests potential risks.

Children differ in their ability to metabolize, detoxify and excrete chemicals. There are windows of time when children are particularly vulnerable to chemical influences, such as infancy and early childhood when organs are still developing. Normal childhood behaviors may add to risks. Crawling infants may come into direct contact with pesticides on lawns or carpets. A variety of pesticides and other toxic chemicals can disrupt normal endocrine and other biological functions, resulting in a variety of health conditions ranging from cancer to asthma to immune deficiency.

PSR supports the following environmental safeguards that put childrens health first:

-Establish policies that prevent or eliminate exposures when health effects are uncertain.
-Require manufacturers to include information about special risks to children.
-Take into consideration effects on the reproductive, immune, and neurological systems, not just cancer in assessing risk.

We urge you to make sure that any changes to Ag 29 result in improved protection from pesticide use, including increased posting of exposed areas and prohibiting pesticide application in areas where children are present.

Sincerely,

Board of Directors
Madison Physicians for Social Responsibility

Michael L. Stouffer
Actuarial Assistant
Corporate Actuarial Department

AAL Home Office
4321 North Ballard Road, Appleton, WI 54919-0001
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Aid Association for
Lutherans

Little Chute.

On December 11, 1997, Mr. Michael L. Stouffer came into the office of Rep. AL Ott to voice his concerns about any possible changes to ATPC 29 on attempts to change the pesticide registration provision currently in place by DATCP.

Mr. Stouffer's wife has a immune deficiency which has been very difficult to diagnose and therefore almost impossible to treat. According to his discussions, any contact that his wife has with ant chemical can cause her to become sick for days and in some cases, weeks.

Because of this, Mr. Stouffer requests that no changes be made in the current registration system. He testified in from of the DATCP board, and they unanimously voted to keep the registration the same as it is now. This is what he wanted.

Concerns on Public Hearing Summaries - Ag 29
by Judy Davinich, B.S., M.S., S.F.O.
December 10, 1997

Fax # 1-920-788-3559

I am writing this paper, as a private citizen of the State of Wisconsin, to outline concerns that were raised when I read the memo sent to the DATCP Board on November 24, 1997 from DATCP staff titled "Pesticide Rule Reorganization: Final Draft." This memo was sent to the DATCP board to summarize public input on the proposed Pesticide Rule Reorganization (Ag 29). After reading the memo, I do not believe the memo appropriately reports the results from the public input and the hearings held on Ag 29, and therefore presented inaccurate information to the DATCP board for decision-making.

Concern # 1: 830 public comments, most apparently opposing the changes weakening Ag 29, aren't included in totals.

The memo reports that 830 individuals/interested parties sent comments before the first public hearing that opposed weakening Ag 29 (summarized as "most were standard postcards expressing environmental concerns"). These are not included in ANY of the summaries although the memo specifically states, on page 6, "The department also accepted written comments for the hearing record, including comments received prior to the hearings."

Why aren't these 830 public comments from persons and interested parties included in the totals??

It was my understanding (and that of every private citizen I've talked to who received any information from newspaper articles or communications from the DATCP) that comments received after the publication of the Pesticide Rule Reorganization Draft and prior to the actual date of the first hearing would be included in any summaries and considerations! There were no bounds set that said "letters/postcards must be received between the date of the first public hearing and November 7th."

It dramatically shifts the reported results from the hearings if you add these 830 comments into the totals. We can make the reasonable assumption, based on the DATCP memo's statement that "most were standard postcards expressing environmental concerns," that 800 of the 830 comments were opposed to the proposed changes to Ag 29 and wanted to see Ag 29 strengthened, while 30 of the 830 comments were in favor of the proposed changes to Ag 29. Accounting for these 830 public comments in this way (and not yet addressing some other reporting problems addressed in concern #2 below), instead of ignoring them in the reported totals, the results are:

1010 persons/interested parties wanted to **strengthen** Ag 29, and opposed the proposed changes to the current Rule in part or in total;

- 800 (of 830) sent in postcards/letters before the day of the first public hearing
- 210 attended hearings or sent in written comments
    - 121 wanted to strengthen the rule (many had specific comments)
    - 66 objected to at least some of the rule changes (many had specific comments)
    - 23 opposed the use of pesticides (many had specifics comments)

205 persons/interested parties wanted to **weaken** Ag 29, and supported the proposed changes to the current Rule, in part or in total.

- 30 (of 830) sent in postcards/letters before the day of the first public hearing
- 175 attended hearings or sent in written comments

Note that this gives an entirely different perspective on the same data that is presented on page 6 of the memo sent to the DATCP Board on November 24, 1997 from DATCP staff.

As an aside, rather than dismissing this input as 'most were standard postcards expressing environmental concerns' it would have been appropriate to not only include these responses but to also provide a breakdown that shows how many were actual letters, how many were pre-printed postcards, and how many were non-form postcards.

Concern #2: Totals don't add up.

At least 197 and as many as 397 of the 782 comments that the memo reports were received during the hearing period are unaccounted for!

According to the DATCP memo (page 6):

782 persons/interested parties provided oral and written comments 'during the hearing period.' Of these:

175 persons/interested parties wanted to **weaken** Ag 29, and opposed the proposed rule changes in part or in total;
210 persons/interested parties wanted to **strengthen** Ag 29, and opposed the proposed rule changes in part or in total; (note that this is a summary of the subtotals reported on page 6 - a total is not given);
"many" of the 200 people who attended the hearings had **no position.**

Even if we try to make this add up by assuming that the "many who had no position" is in fact all 200 of the individuals who attended the hearings (which we know isn't the case) then **it leaves, at a minimum, 197 individuals who had some sort of position that aren't counted in these totals**.

Concern #3: Inappropriate Comparisons of subtotals to totals.

If we ignore the missing comments from those who commented during the hearing period (concern #2) and ignore the 830 who sent in comments before the actual date of the first hearing (concern #1), the comparisons made to show results are statistically inappropriate

The memo makes comparisons between subtotals for those who oppose the weakening of Ag 29 to the total for those who support the weakening of Ag 29. This is misleading, and skews the impression of anyone who reads data presented in this fashion.

Statistically, the reporting should be:

210 persons/interested parties wanted to **strengthen** Ag 29, and opposed the proposed rule changes in part or in total;
175 persons/interested parties wanted to **weaken** Ag 29, and supported the proposed rule changes in part or in total;
35 of 200 attended the hearings but had **no position**; (according to page 1 of the "ATCP 29 Hearing Summary Issues and Options attached to the DATCP Nov. 24th memo)
362 persons/interested parties **commented but their comments are missing** from these totals.

Concern #4: Totals in one section don't match totals for the same information in other sections.

On page 6 of the memo, DATCP staff report that 175 persons/interested parties supported the proposed rule changes in part or in total, yet on page 1 of the attachment ("ATCP 29 Hearing Summary Issues and Options) they report that "196 people stated support for the proposal." Which number is correct?

In the same vein, on page 6 of the memo, DATCP staff report that 210 persons/interested parties supported the proposed rule changes in part or in total (121 wanted it strengthened + 66 objected to at least some of the rule changes +23 opposed use of pesticides = 210), yet on page 1 of the attachment ("ATCP 29 Hearing Summary Issues and Options) they report that "121 generally wanted the rule strengthened and 23 state they were opposed to pesticide use" - entirely leaving out the 66 who objected to at least some of the rule changes.

Note, by the way, that once again subtotals are used, with no total ever given, for those who opposed the changes to use and used in comparisons with totals for those who support the changes, which is a misleading use of statistical reporting.

Concern #5: The justification for at least one option recommended as 'the' solution to answer the major concern raised by citizens is based on citizens having information which *isn't even available* to those citizens.

On page 5 of the attachment ("ATCP 29 Hearing Summary Issues and Options) the DATCP staff recommends that the concerns specifically raised by over 192 individuals (who wanted the current 'block and adjacent block' notification system to continue and opposed the new Rule's restriction of pesticide application notification to adjacent properties) be addressed by "allowing notification for the nine block area surround[ing] the individual," while "limit[ing] the number of addresses to meet the requests of most registry participants."

The staff basically recommends 'cherry-picking' - justifying this as a solution by stating that "Registry participants could likely cover most commercial applications in their nine block area by selecting properties based on past users of commercial services and child play areas." But:

There is no source of information for registry participants that identifies properties based on past users of commercial services, and applicators do not make this information available, even on request.

The data to do what the department is recommending simply **doesn't exist**.

Additionally, there is an assumption that the commercial applications made to private properties are 'stable' and don't change from year to year. This assumption is simply wrong. Properties change hands, individual homeowners hire services some years and not others.

Instead of listening to the citizens request to keep the nine block prenotification area, the DATCP has recommended an option that is based on a nice theory which is untenable when held up against the actual facts.

Concern #6: Missing Demographics.

Nowhere in this memo does the DATCP staff point out or provide breakouts of **who opposes the proposed changes in Ag 29 (they want to keep or strengthen the current Rule) and who supports the proposed changes in Ag 29 (they want to weaken the current Rule).**

This is critical information when you consider the Consumer Protection role that the DATCP is charged with carrying out for the citizens of the State of Wisconsin. Why? In order to make an informed decision it is imperative to determine if there are vested interests of those requesting change.

I challenge the DATCP to make this breakout. I suspect it will show that the comments received by the DATCP supporting the changes in Ag 29 come primarily from pesticide and related industry concerns (owners and applicators) who have a vested commercial interest and will benefit from the implementation of a weakened Rule at the expense of public safety. This, in essence, shifts costs of doing business from the applicators and pesticide users who are charged with operating in a safe and effective manner to the private citizens of Wisconsin who receive no benefit from these services.

When this breakout is made, I am certain it will also show that the comments received by the DATCP opposing the changes in Ag 29 and calling for a stronger Rule come from the private citizens of Wisconsin and their representatives, who are asking for consumer protection from the activities of those who wish to see the Rule weakened.

Summary

The six concerns raised in this paper must be addressed and resolved **before** Ag 29 goes to the Legislature. The citizens of the State of Wisconsin were asked for their input and concerns on the revised Rule, and the concerns outlined here clearly show serious substantive problems with the report that purportedly summarizes these findings.

Judy Davinich, B.S., M.S., S.F.O.
P.O. Box 304
Little Chute, WI 54140

Mike

State of Wisconsin
Tommy G. Thompson, Governor

Department of Agriculture, Trade and Consumer Protection
Ben Brancel, Secretary

2811 Agriculture Drive
Madison, Wisconsin 53718-6777

PO Box 8911
Madison, WI 53708-8911

FAX COVER SHEET

DATE: December 3, 1997
TO: Judy Davnich
FROM: Karen Fenster
SUBJECT: Board Agenda + letter

Wisconsin Department of Agriculture, Trade and Consumer Protection
Agricultural Resource Management Division
Telephone: 608/224-4500
Fax: 608/224-4656

16 PAGES TO FOLLOW

If any pages need to be resent, please call the sender at the above number. Otherwise, we will assume this transmittal has been completely received.

Thank you

MESSAGE: I urge the board to reject the 30-address limit in the proposal & re-instate the ~~½~~ adjacent ½-block limit.

State of Wisconsin
Tommy G. Thompson, Governor

Department of Agriculture, Trade and Consumer Protection
Ben Brancel, Secretary

2811 Agriculture Drive
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BOARD OF AGRICULTURE, TRADE AND CONSUMER PROTECTION

AGENDA

For Meeting in Madison, Wisconsin
DATCP Board room
2811 Agriculture Drive

December 11, 1997

The Board of Agriculture, Trade and Consumer Protection will meet on Thursday, December 11, 1997, at 9:30 a.m. at the above location.

The Board's Committee on Agricultural Resource Management and Conservation will also meet on Thursday, December 11, 1997. The Committee will meet at 8:30 a.m. at the above location, prior to the full Board meeting. The Committee will consider final draft pesticide rules and make recommendations to the full Board (see Board agenda item #7).

The proposed agenda for the full Board meeting is shown below. Additional items not contemplated at the time the agenda was prepared may be discussed and acted upon if the Board determines that immediate action is necessary. Such matters may arise under any of the following agenda items: Board Member Matters, Secretary's Report, or Miscellaneous Business.

The Board will adjourn at or about 12:00 noon for lunch and may reconvene at or about 12:45 p.m. to continue its business.

ORDER OF BUSINESS:

9:30 1. Call the Meeting to Order

2. Approve Minutes of November 11, 1997 Meeting

3. Agenda Additions Authorized by Law

(over)

4. Board Member Matters

5. Secretary's Report

10:00 6. Public Appearances

10:30 7. ATCP 29 - Pesticide Rule Reorganization - Final Draft Rule

11:00 8. Scope Statements

ATCP 30 - Atrazine Rules for 1999 Growing Season
ATCP 10-12 - Fish Farming
ATCP 2, 45, 50, 118 - Technical Rule Changes

11:30 9. Agricultural "Clean Sweep" Program - Report

12:00 Lunch

12:45 10. Ag Chem Clean Up Program - Report

1:15 11. Interstate Pasteurized Milk Ordinance - Report

1:45 12. Commodity Grading and Inspection Programs Update

2:00 13. Trade Mission to Mexico

2:15 14. 1998 Board Agenda

2:45 15. Miscellaneous Business

16. Board Schedule

3:15 17. Adjourn

State of Wisconsin
Tommy G. Thompson, Governor

Department of Agriculture, Trade and Consumer Protection
Ben Brancel, Secretary

2811 Agriculture Drive
Madison, Wisconsin 53718-6777

PO Box 8911
Madison, WI 53708-8911

DATE: November 24, 1997

TO: Board of Agriculture, Trade and Consumer Protection

FROM: Ben Brancel, Secretary
Nick Neher, Administrator,
Agricultural Resource Management Division

SUBJECT: **Pesticide Rule Reorganization; Final Draft**

At the December 11, 1997 Board meeting, the department will ask the Board to approve a final draft rule to reorganize and clarify the department's current pesticide rules under chs. ATCP 29 and 30, Wis. Adm. Code.

This rule reorganizes and clarifies the department's current pesticide rules so they will be easier to read and understand. This will improve compliance with the current rules, and make the rules more effective. For the most part, this rule does not change the substance of the current rules. However, this rule does make some substantive changes.

There is broad industry and environmental support for most of this rule. However, some provisions are controversial. Hearing comments focused on the following substantive issues:

- Lawncare posting by commercial applicators.
- Advance notification registry for commercial lawncare applications.
- Roadside posting of agricultural pesticide applications.
- Requests to prohibit pesticides in schools and other "sensitive" environments.

The Board's Committee on Agricultural Resource Management and Conservation will meet prior to the regular Board meeting on December 11, 1997 to discuss this final draft rule, including possible alternatives to address key issues. We anticipate that the committee will present its recommendations to the full Board on December 11, 1997.

Background; Current Rules

The department administers Wisconsin's pesticide laws under ss. 94.67 to 94.71, Stats. The department licenses pesticide manufacturers, distributors and commercial applicators, and certifies farmers and commercial applicators for competence in using pesticides. The department regulates the distribution, storage, handling and use of pesticides to protect persons, property and the environment.

The department has adopted extensive pesticide rules under chs. ATCP 29 and 30, Wis. Adm. Code. The current rules have been modified many times, and the current organization is becoming unworkable. The department proposes to recodify the current rules in a new, more workable, format.

In recent years, the Legislature has reorganized the licensing of pesticide manufacturers, distributors and applicators. The Legislature has also reduced tax dollar funding for the pesticide program, and has substituted license fee funding. This has created a license and fee structure which is not adequately reflected in the current rules. This rule incorporates current license and fee requirements, including changes made by 1997 Wis. Act 27 (biennial budget act). This rule does not change the fees prescribed by the Legislature.

Proposed Reorganization

The department proposes to reorganize ch. ATCP 29 as follows:

Chapter ATCP 29
Pesticide Use and Control

Subch. I	Definitions and General Provisions
Subch. II	Pesticide Registration and Labeling
Subch. III	Pesticide Manufacturers and Labelers
Subch. IV	Pesticide Dealers and Distributors
Subch. V	Commercial Application Businesses
Subch. VI	Individuals Handling or Applying Pesticides
Subch. VII	Storing, Transporting and Selling Pesticides
Subch. VIII	Pesticide Handling, Disposal and Spills
Subch. IX	Pesticide Use
Subch. X	Agricultural Worker Protection
Subch. XI	Special Registrations and Use Authorizations

The department also proposes to consolidate current substance-specific pesticide rules in ch. ATCP 30 as follows:

Chapter ATCP 30
Pesticide Product Restrictions

Subch. I	Definitions
Subch. II	Prohibited Pesticides (from current ATCP 29.03)
Subch. III	Pesticides Requiring Special Use Permit (from current ATCP 29.04)
Subch. IV	Pesticides Allowed Only for Certain Purposes (from current ATCP 29.05)
Subch. V	Pesticides Used to Control Bats (from current s. 94.708, Stats.)
Subch. VI	Metam Sodium Pesticides (from current ATCP 29.171)
Subch. VII	Aldicarb Pesticides (from current ATCP 29.17)
Subch. VIII	Atrazine Pesticides (from current ch. ATCP 30)

The department believes that this new organization will make it easier for affected businesses and individuals to identify the rules that apply to them. The new organization also reflects, more clearly, the current structure of the pesticide program.

The department has also redrafted the current rules to meet current state drafting standards. This changes the appearance, but not the substance, of the rules. The redrafting:

- Simplifies and clarifies rule language.
- Eliminates ambiguities and inconsistencies.
- Incorporates current drafting conventions specified by the Legislative Council Rules Clearinghouse.
- Consolidates related rule provisions under common headings, for ease of reference.
- Spells out current requirements and exemptions in a more direct way.

Substantive Changes to Current Rules

For the most part, this rule does not change the substance of the department's current pesticide rules. However, this rule does make a few substantive changes, including the following:

Pesticide Application Records

Under current rules, commercial pesticide applicators must keep records of pesticide applications. This rule expands current recordkeeping requirements for commercial applicators (and private applicators applying restricted-use pesticides) to make them more consistent with federal requirements. It eliminates some unnecessary requirements, and clarifies the types of applications ("restricted-use" and "for hire" applications) for which records must be kept.

Applicator Certification

Under current law, individual commercial applicators must be licensed and certified for competence. This rule modifies and updates current certification categories to reflect current practice.

Under current rules, an agricultural producer must be certified to use restricted-use pesticides, either as a commercial applicator or as a "private applicator." This rule clarifies the distinction between a commercial and private applicator, and clarifies the standards and procedures for certifying private applicators.

Waters of the State

Current rules prohibit persons from contaminating waters of the state with pesticides. This rule clarifies that the prohibition does not apply to:

- Incidental application of pesticides to temporary rain puddles on target application sites.
- Unforeseeable leaching or runoff of pesticides applied according to label directions.

Agricultural Pesticide Applications; Warning Signs

Current rules require farmers to post warning signs along public roads for certain pesticide applications made within 100 feet of those roads. This rule repeals the current roadside posting requirement, partly in response to recent legislation strengthening "no trespassing" laws. However, the following agricultural posting requirements would still apply:

- Roadside posting would still be required when pesticides are applied by means of chemigation.

- Warning signs would still be required whenever the federally-approved pesticide label requires warning signs.

- Warning signs would still be required if the pesticide application is made within 300 feet of any residence, school, workplace or other nonagricultural area where people are likely to be present.

Landscape Applications: Warning Signs

Under current rules, a business must post warning signs whenever it makes a landscape application in or around a residential, public or commercial site. The current rule specifies the form, content and method of posting warning signs. This rule:

- Makes changes in sign contents. Under this rule, every warning sign must specify the date when the warning sign may be removed.

- Makes changes related to posting locations. Under this rule, at least one warning sign must be visible from each likely point of entry to the treated area.

- Creates an exception for cemeteries posted with permanent warning signs. This new exception is similar to the current exception for golf courses.

Landscape Applications; Registry of Persons Requesting Prior Notification

Under current rules, the department publishes an annual registry of persons requesting advance notice of landscape applications in their immediate area:

- Persons must register annually to be included in the annual registry.

- The department distributes the registry to commercial application businesses that make landscape applications.

- Before a commercial application business makes a landscape application to any site, it must notify registered individuals who are entitled to notice of that application.

- Registered individuals are entitled to advance notice of applications to property on which they reside, to immediately adjacent property, or to property located on the same or immediately adjacent blocks. (In at least one case, an individual demanded advance notice whenever a landscape application was made to any of 410 properties on surrounding blocks.)

This rule makes the following changes:

- It changes the annual registration deadline from March 1 to January 15. (This will make it possible for the department to distribute the registry by March 1, in time for spring landscape applications.)

- It entitles registered individuals to advance notice of applications to property on which they reside, and to immediately adjacent property, but not to other property located on the same or adjacent blocks. (The applicator must still post warning signs at every landscape application site.)

Board Action to Date

The department presented a preliminary draft rule to the Board on June 20, 1997. On July 17 and August 18, 1997, the Board's Committee on Agricultural Resource Management and Conservation held meetings to hear public comments and recommend changes to the draft rule. On September 9, 1997, the full Board approved a revised draft rule for public hearing.

Public Hearings

In late October, 1997, the department held 5 public hearings around the state. The department made special efforts to publicize the hearings, and sent special mailings to known interested parties, including current participants in the department's lawncare registry and persons who had commented on prior drafts. The department encouraged interested parties to attend the hearings. The department also accepted written comments for the hearing record, including comments received prior to the hearings. Hearing comments may be summarized as follows (see detailed summary attached):

- 830 comments received before the start of public hearings. Most of these were standard postcards expressing environmental concerns. Some of the concerns expressed in these comments were already addressed in the hearing draft rule.

- 782 oral and written comments received during the hearing period. This included 200 people who attended one or more hearings. Of these 782 persons:

  * 175 supported the rule (many had specific comments).
  * 121 wanted to strengthen the rule (many had specific comments).
  * 66 objected to at least some of the rule changes (many had specific comments).
  * 23 opposed the use of pesticides (many had specific comments).
  * Many attended for information only (no position).

Changes from the Hearing Draft

The department has made a number of technical changes to the hearing draft. These changes, which are shown by cross-outs and underlines on the proposed final draft dated 11/12/97. These include:

- Changes in response to comments by the Legislative Council Rules Clearinghouse.
- Law changes enacted under 1997 Wis. 27 (biennial budget act).
- Other technical and editorial changes

Substantive Issues and Options

Hearing comments focused on the following substantive issues:

- Lawncare posting by commercial applicators.
- Advance notification registry for commercial lawncare applications.
- Roadside posting of agricultural pesticide applications.
- Requests to prohibit pesticides in schools and other "sensitive" environments.

The following pages explain these issues, and spell out options for addressing them. Some of the options involve possible changes to the final draft rule. On December 11, 1997, prior to the full Board meeting, the Board's Committee on Agricultural Resource Management and Conservation will meet to address these issues and options. We anticipate that the committee will present its recommendations to the full Board on December 11, 1997.

Fiscal Estimate

This rule will not have a significant fiscal impact on the department or local units of government. A fiscal estimate is attached.

Small Business Analysis

This rule will not have an adverse impact on small business, but will make it easier for affected businesses to understand and comply with pesticide rules. Better compliance will protect public health and the environment. A small business analysis ("initial regulatory flexibility analysis") is attached.

Environmental Assessment

This rule, which reorganizes and clarifies current pesticide rules, will not have a major impact on the environment. In general, the rule will enhance environmental protection by making it easier for affected persons to understand and comply with applicable pesticide rules. An environmental assessment is attached.

Next Steps

If the Board approves a final draft rule on December 11, 1997, the department will transmit the final draft rule to the Legislature for legislative committee review. If the Legislature takes no action to stop the rule, the Secretary will sign the final rulemaking order and transmit it for publication. The rule will take effect upon publication in the Wisconsin Administrative Register.

ATCP 29 Hearing Summary Issues and Options

Five public hearings were held during October, 1997. Locations were in Appleton, Stevens Point, Eau Claire, Madison and West Allis, with both afternoon and evening sessions at each site. The hearing record closed to written comments on November 7, 1997.

This was the most broadly publicized rulemaking by the Agricultural Resource Management Division since the ATCP 29 hearings in 1982. The Division did mailings to all registry participants, all persons that previously commented on drafts of the proposal and to many others. Environmental organizations also sent mailings on this rulemaking to thousands of members, urging their input. Members of the press were present at every hearing site and in some locations there were press conferences and media coverage in advance of the hearings.

The Division received input from 782 individuals during the hearing period, including 200 people that attended one or more hearing locations, 98 of whom offered oral testimony. Overall, 196 people stated support for the proposal, while 121 generally wanted the rule strengthened. Thirty five attended hearings for informational purposes and 23 persons stated they were opposed to pesticide use. Many of these people as well as most others stated concerns with specific rule provisions, as detailed below. Many individuals commented both orally and in writing. Counts on areas of greatest concern are included in the attachments. There were very limited comments on numerous other items, some of which are editorial and others that go beyond the scope of these rules.

Overall, the hearing record supports the re-formatting and general content of the hearing draft. The specific areas of concern with the proposed rule during the hearings and in the written comments to the hearing record were:

- Roadside posting for dual notice pesticides
- Lawncare posting by commercial application businesses
- Advance notification registry for commercial landscape applications
- Pesticide use in schools and other "sensitive" environments, although this topic was not specifically addressed by the proposed rule

Following is a sheet describing each of these issues from the public hearings and possible options to address these issues.

ATCP 29 Hearing Summary Issues and Options
Roadside Posting for Dual Notice Pesticides

Current law requires roadside posting if any pesticide classified as "dual notice" under the Worker Protection Act is used within 100 feet of the road. Dual notice pesticides include most corn rootworm insecticides and several insecticides and soil fumigants used in vegetable production. These pesticides are generally those that present the greatest acute toxicity and therefore present a health risk to farm workers entering treated fields.

The hearing draft rule would eliminate the requirement for general roadside posting of dual notice pesticides. Posting of fields within 300 feet of a "sensitive environment" (residence, school, parks, recreational trails and other places frequented by people) would still be required, as would posting of field entrances for agricultural workers. Workers would also still need to be verbally notified in addition to the field entrance signs. During the hearings, ARM Division staff explained that under the new trespass law, entrance to an agricultural field without grower consent is illegal. Applicators are also prohibited from applying in a manner that causes drift beyond the field boundaries.

There were 134 individuals that felt roadside posting for dual notice pesticides should be maintained, while 83 agreed with the proposed removal of this posting requirement. Many people commented that roads and ditches are used for recreational purposes and they are not adequately protected from these pesticides by the trespass law, particularly children that do not understand the trespass law. A few felt that posting would be another reminder to keep out of the field, while most were just concerned about exposure while still in the right-of-way. Notably, most people that opposed this change did not comment on sign size, content, spacing or understandability by children, whereas many of these same individuals felt the lawncare sign was inadequate.

OPTIONS:

Maintain Current Rule
Although difficult to enforce, this would respond to public concerns. Most Wisconsin corn fields would require roadside posting each spring.

Hearing Draft Language
This version maintains posting in those areas most frequented by people and eliminates general roadside posting. Pesticide exposure to a person using the road or ditch would only occur as a result of violating the trespass law or a violation by drift or overspray to the right of way.

ATCP 29 Hearing Summary Issues and Options
Lawncare Posting

Current law requires commercial application businesses to place 4" x 5" warning signs at specific locations with a specified symbol and language. The rule adds a requirement for the date of sign removal and changes the location standard to be visible from each point with significant potential for human access.

There were 118 individuals that said the sign size should be larger to improve visibility. Many of these same persons noted that the signs are often not visible because they are easily blown or knocked over or taken down too soon. A couple of industry representatives noted that larger signs would require larger posts that could also present a hazard if the sign blew off or post broke. Ninety six individuals opposed placing dates on signs.

Sixty one people said the symbol should be replaced with something more understandable by children (Mr. Yuk or skull and crossbones were suggested). Thirty one said the sign should be more recognizable (sometimes meaning the symbol, but also the location or size.) Twelve said the symbol was good. Sixteen persons suggested mandatory homeowner use posting. Even fewer people suggested other changes such as two sided, color changes and removal of company logos.

OPTIONS:

Current Signs
This would be the same as the hearing draft, except the date of sign removal would not be required. This would respond to the hearing comments, but may counter the concerns about signs not being visible because they are not left up.

Hearing Draft Language
This would maintain the current sign size and content, with the addition of a date for sign removal. The sign location changes is an improvement that should assure visibility and was generally supported.

Increase Size
The sign size seems to be largely a visibility issue that also relates to sign location. The current white signs when placed on a green lawn are visible from large distances, but only if properly located (as proposed in the hearing draft). Several people wanted the signs larger to improve text readability, while others were unhappy with existing larger signs that contain company logos or other "advertising".

Change Symbol
The current symbol is used by most states that require posting and is not particularly confusing. Wisconsin has used this symbol for five years. Use of Mr. Yuk may inappropriately dilute the "danger" message for concentrated poisons in the household. Mr. Yuk was created because the skull and crossbones was overused and is now viewed by children as a pirate symbol, not a danger symbol.

ATCP 29 Hearing Summary Issues and Options
Lawncare Registry Deadline Dates

Currently the deadline for getting on the registry is March 1, with an effective date of April 1 for each year. The proposed rule moved the deadline to January 15 to assure early season applications were covered by the registry and to provide more time for distribution and implementation of the registry. The Department also volunteered to distribute an un-enforced registry supplement in early summer.

Forty two people requested that the March 1 registry deadline be maintained. Twenty eight wanted multiple registries and fifteen suggested February 1. Forty five said the January 15 date was acceptable. In general those concerned with the earlier dates thought people would not be thinking about pesticide applications in early January. No guidance was provided on how a multiple registry approach could be effectively implemented by the industry and those supporting the current March 1 deadline were uncertain on how to address early season applications. The Department currently sends renewal notices to current participants and would continue this practice, regardless of the deadline date.

OPTIONS:

Hearing Draft Language
The deadline for getting on the registry would be left at January 15 and the effective date of the registry would be March 1. A supplement to the registry would be sent to accomodate late registrants, but enforcement could not be assured on the supplement.

February 1/March 15
This change would provide a compromise position to answer the holiday time period issues while still having an effective date that should preceed most if not all applications. This change would reduce the need for a supplemental registry and the confusion it may create.

ATCP 29 Hearing Summary Issues and Options
Lawncare Registry Eligible Properties

Currently a person can request notification for any properties on their block or any adjoining block (a nine block area with the applicant's property on the center block) The intent of the existing language was to assure notice rights for any nearby or adjoining property, even if across a street. Under current rules, people have listed hundreds of addresses, while half the current registry participants list ten or fewer addresses, 90% list 33 or fewer and 95% list 57 or fewer. All registry participants were informed about the hearings and about 150 of the 843 registry participants commented on the rule.

The proposed rule limits registry addresses to immediately adjoining properties, including those that would touch the property at any point if streets and alleys were removed. The Department believed this would address most registry participants, while clearly not addressing those listing hundreds of addresses.

There were 192 people that felt the proposal was too restrictive and that the rule should not provide less right to know than the current rule. Fifty six favored limitations. Many commentors explained their registry concerns with illustrations of drift/overspray incidents that had occurred in the past, which are violations of both the current and proposed rule. Most of these incidents were not reported to DATCP and were immediately adjoining property issues. Several persons also expressed chemical sensitivities to lawncare pesticides and concerns over health effects of airborne chemical beyond the width of one property. Numerous people commented that they wished to maintain the right to know about non-adjacent neighbors where their children play. Some also suggested expansion beyond the existing rule to address routes to school or work. Many of the people that made comments on this topic are not on the registry, but most registry participants that commented also felt the proposal was too restrictive.

OPTIONS:

Retain Current Rule
This would allow the current registry to continue as is. Industry concerns about abuse would not be addressed, but most public comments would be answered.

Hearing Draft Language
This would limit persons to adjacent properties only, which is comparable to the original intent, but more restrictive than currently provided.

Current Area, Limited Properties
This option would continue allowing notification for the nine block area surround the individual, but would limit the number of addresses to meet the requests of most registry participants. 30 addresses, for example covers nearly 90% of current registry users. This approach would answer industry concerns and allow more than immediately adjacent addresses to answer concerns for neighborhood child playmate lawns. Registry participants could likely cover most commercial applications in their nine block area by selecting properties based on past users of commercial services and child play areas.

ATCP 29 Hearing Summary Issues and Options
Pesticide Use By Schools

Both current and proposed rules are silent on this topic. 172 people said pesticide use should be prohibited in schools, daycares and other places that children frequent. When the scope of the term "pesticide" was explained, during hearings, most people stated their greatest concern was actually lawncare herbicides, rather than those used in the structure. A few persons used the term " no aesthetic pesticide use" but these individuals did not define this term nor did they specify who would make the determination on need vs. aesthetic. Seventy nine people suggested adopting prevention and reduction initiatives.

This topic was introduced well after the rulemaking process was underway. The types of measures suggested in this area would require a separate rulemaking action. These actions would also require background study to justify the need for action. DATCP has requested funding from EPA to study the current use practices and develop pesticide use recommendations for schools.

In addition, this is an area where local options currently exist. Schools and school boards currently have the discretion to use or not use any pest control option, including pesticides. Several school districts appeared at the hearings and agreed that this was an increasing issue of local concern, but all these school systems agreed that certain pesticides were essential to maintaining a healthy and safe school. School representatives expressed a willingness to discuss pesticide use with state officials, but did not want their options limited or dictated by state rules.

OPTIONS:

No Change
This would maintain current rules, allowing local action as deemed necessary to that school district. It would also allow legislative action if deemed necessary. Finally, it would allow the Division to study the current status of pesticide use in schools to determine what needs and exposure concerns are present.

Limit or Prohibit Uses
This option would require a return to public hearing to frame the issue and gather information. Such action, if part of this rulemaking, would delay implementation of other provisions upon which there is agreement. If handled as a separate rulemaking it will still require prior study.

State of Wisconsin
Tommy G. Thompson, Governor

Department of Agriculture, Trade and Consumer Protection
2811 Agriculture Drive
Madison, Wisconsin 53704-6777

PO Box 8911
Madison, WI 53708-8911

Date: December 11, 1997

To: Board of Agriculture, Trade & Consumer Protection

From: Nicholas Neher, Administrator
Agricultural Resource Management Division

RE: Public Hearing Summary Information

We understand that the package mailed to the Board has been interpreted to misrepresent the comments received from the public before and during the ATCP 29 public comment period. This memo and its attachments should clarify any confusion that may exist and condenses the counts on the most common comments into a one page sheet.

The counts presented in the Board package are accurate, but are not all found in one place. Page 6 of the November 24, 1997 memo to the Board, lists general comments that cannot be linked to a specific rule change. Page 6 then refers you to the Hearing Summary Issues and Options document that follows the cover memo in the Board package for counts on specific items of greatest public concern.

The 854 comments received prior to the public comment period (as far back as February, 1996) were not included in the counts found in the summary of the hearing record. These comments included 818 copies of the attached postcard and 36 letters. While this information is not formally part of the hearing record, it does represent many additional people with comments on issues contained in the rule.

Following is a sheet that covers all documents received prior to or during the public comment period. The counts represent the number of people that made a comment consistent with that item, although specific wording varied. If the same person commented more than once, it is only counted once. Additional topics that are not listed on the attached sheet received ten or fewer comments. Most of this document parallels information found either on page 6 of the cover memo or in the hearing summary document, but some numbers are slightly larger to reflect the pre-hearing comments. The 818 post cards have not been included in these counts, but a copy of the postcard is attached so that there is no confusion on what it says and how it would modify the count for each issue.

In addition to the postcards received prior to the hearing, we also received several "form letters" and postcards during the hearings. Attached are the most prominent examples, with the number of identical or very similarly worded copies we received.

GENERAL COMMENTS

(This item is not additive. Some persons made more than one of the following comments, others made none of these general comments.)

Supports rule changes	198 (error in Board memo)
Object to rule changes	67
Object to pesticide use	23
Wants rule strengthened	124
Need more education	17
Health concerns	91

(concern for sensitive individuals or for general population)

ROADSIDE POSTING

Keep signs posted	139
Support posting proposal	83

LAWNCARE POSTING

Keep sign locations	16
Use different symbol	66
Symbol ok	26
Support date on sign	8
Against date on sign	96
Larger sign	125
Improve sign recognizability	33
Require homeowner posting	19
Post fenced yards	10
Print on both sides	10

REGISTRY DEADLINES

Keep March 1 date	46
January 15 ok	45
February 1	15
Multiple registries or year round	29

REGISTRY PROPERTIES

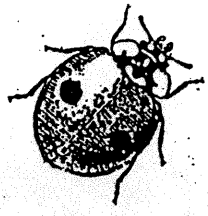
Don't limit or keep as is	207
Ok to limit	56
Submit block numbers	17

PESTICIDE USE IN SENSITIVE ENVIRONMENTS

Should be prohibited	159
Prohibit lawncare	22
Limit in schools, daycares, etc.	19
Adopt prevention and reduction	84

818 COPIES
BEFORE HEARINGS

J. Trinitapoli
1623 W. Wisconsin Ave #16
Milwaukee, WI 53233



Alan T. Tracy, Secretary
Department of Agriculture
PO Box 8911
Madison, WI 53708-8911

I Support Changes to Ag 29 that will Protect Human Health and the Environment

Dear Secretary Tracy,
I encourage you to make the following changes to Ag 29 to protect our drinking water, children and families, and our right to know about pesticide use in our community.

Protect our Drinking Water -- by prohibiting the use of certain pesticides that are known carcinogens, are acutely toxic, and/or have been found to be a hormone disrupter that are used for purely aesthetic uses.

Protect our Children and Families -- by prohibiting pesticide applications in sensitive areas like playgrounds, day care centers, parks, hospitals and nursing homes.

Protect our Right to Know -- by changing the deadline for the pre-notification registry to May 1 to provide easier access to information about spraying in my neighborhood.

Sincerely,
Patricia C. Trinitapoli

64 COPIES
DURING HEARINGS

Dear Secretary Brancel:

As a potato and vegetable grower in the state of Wisconsin, I am writing to express my support for the proposed revisions to WDATCP 29. It is my opinion that this pesticide rule affords the maximum protection for the environment and farm workers while at the same time allowing me to grow profitable crops.

I am particularly supportive of the provisions in WDATCP 29 that allows farmers to utilize the state trespass law as adequate notification of agri-chemical use. I also understand that I must still post my land in the appropriate places to be in compliance with the federal Worker Protection Standards (WPS).

The Wisconsin Potato and Vegetable Growers Association has been actively involved in the development of this rule and I am confident that the current hearing draft is a matter of good public policy.

Thank you for your consideration,

Robert Fecteau Sr.

Date 11-9-97

58 COPIES
DURING HEARINGS

Dear Ms Fenster.

I support the proposed changes in Ag 29 with the exception of DATING.

Respectfully,

Steve Bailey CGCS

Wisconsin Department of Agriculture Trade and Consumer Protection
C/O Karen Fenster
P.O. Box 8911
Madison, WI. 53708-8911

27 COPIES
DURING HEARINGS

Dear Ms. Fenster;

I am in SUPPORT of the proposed changes to Ch. ATCP 29. I believe the lawn and landscape revisions will be beneficial for all the people in WI.

Specifically, I support:

1. The lawn marker size and content should remain the same with no additional information required.

2. The Landscape Registry should be changed to require notification of adjacent properties only.

3. The registration and publishing date should also be changed as proposed by the Department.

Thank You,

Bruce T. Ellery
2312 PARAMENTER ST
APT # 10
MIDDLETON, WI 53562
(608) 831-3429

23 COPIES
DURING HEARINGS

Mark M Giese
1520 Bryn Mawr Ave.
Madison, WI 53703

OCT 13 1997

OCT 15

DATCP Secretary
PO Box 8911
Madison, WI 53708-8911

Dear DATCP,

I'm writing because of the concern I have regarding pending changes to Wisconsin's primary pesticide rule (Ag 29). I believe that if any changes are made, they should be more stringent in protecting health (both human and animal) and the environment.

I believe that the use of pesticides within areas affecting the vulnerable (the elderly, children, etc.) or in areas where people are in direct contact with nature should be prohibited. DATCP should pass legislation to prohibit pesticide use in areas such as schools, day care centers, campgrounds, picnic areas, etc.

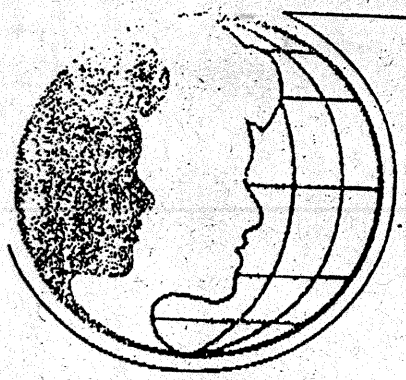
I have seen an increase in many types of children's illnesses in the past ten years, and I strongly believe it is because we are creating an unhealthy environment for our children.

Secondly, large warning signs should be posted in any area where pesticides have been used: on treated lawns, along roadsides. The current signs are far too small, my kids can't see them.

As an institution for consumer protection, DATCP should increase public health and environmental protections and should increase public right-to-know.

Sincerely,

POPULATION ENVIRONMENT



THE INTERNATIONAL BREAST CANCER RESEARCH FOUNDATION, INC.

July 2, 1997

Re: Revisions to Ag 29
(rule regarding pesticide use)

Dear Sirs,

In the last five years the improvements in cancer treatments and mortality from cancers have been very limited [see, for example, John Bailar, "Cancer Undefeated." The New England Journal of Medicine, 336: 1569-94, 1997 (May 29)]. In this context, two broad areas of oncologic science offer information to be carefully considered when formulating prudent public policy regarding pesticide use.

First, there is a spectrum of data which supports the conclusions that exposure to pesticides are associated with increased risk of malignant lymphomas (cancers of the lymphatic tissue) and sarcomas (cancers of muscle and corrective tissues) [see references listed below]. While there can be legitimate scientific debate about study methodologies, these broad conclusions are supported by the most comprehensive studies and experienced investigators [for a most recent example see the American Journal of Epidemiology 145: 1061-75, 1997; in this study the research team is from the International Agency for Research on Cancer (IACR)].

Second, it is increasingly clear that exposures early in life are the most critical in determining cancer risk. Rapidly growing tissues in younger humans allow more likely propagation of mutated cells and more critically, generally children are more sensitive to carcinogens. This timing of exposure is key to carcinogenic effect of any exposure [as an example of a discussion of this perspective for breast cancer see Graham Colditz, Cancer, Epidemiology, Biomarkers and Prevention 4; 567-71, 1995 (July/August)].

The case then is that exposures to pesticides in young humans are very likely to confer significant cancer risks and limiting total exposures from all sources is important. In your revisions to Ag 29, I urge you to take steps that will limit exposures of children to pesticides. Specifically prohibition of pesticide use in schools, playgrounds and parks, more widespread posting wherever pesticide use occurs and prenotification of pesticide spraying should be strongly considered.

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PAM + SUSAN	From ZEV	
/Dept. HOW BOUT THIS	Co. SHOULD I SEND THIS	
one # OUT TO THE BOARD	Phone # RESPONSE REQUESTED	
#	Fax #	

Sincerely,

Richard R. Love

Richard R. Love, M.D., President
International Breast Cancer Research
Foundation, Inc,

and

American Society of Preventative Oncology

Wisconsin
HONEY PRODUCERS
Association, inc.
Established in 1878

To: Department of Agriculture, Trade and Consumer Protection
From: Lee Heine, President, Wisconsin Honey Producers Association, Inc.
Re: Pesticide Rules as they relate to bees
Date: June 19, 1997

As president of Wisconsin Honey Producers Association I have some major concerns with the pesticide rules and how they relate to bees.

I want to first thank you for the opportunity to present comments. I have some preliminary comments, but I have not had enough time to thoroughly review the pesticide rules as they relate bees. I plan to submit more specific comments in the near future with specific suggestions for regulating pesticides to protect bees.

Number one, I have some major concerns with the short advance notice (24 hours) in the current rule. Twenty-four hours may be adequate to close windows or bring in pets but it is inadequate to protect bees. With just 24 hours beekeepers do not have time to move the bees, we can't cover the bees so there's nothing we can do to protect our bees with just 24 hours. Bee kills, even with advance notice, are not uncommon. The advance notification, as it stands, does nothing to help beekeepers protect their bees. I recommend INCREASING THE ADVANCE NOTICE. Specific recommendations to follow.

Number two, bees are active during the day so spraying during the day creates more problems for bees than spraying in the evening. Spraying can be done just as effectively during the evening. I recommend some restrictions on day time spraying in areas where bees are present. Specific recommendations to follow.

Thank you.

Lee Heine

Wisconsin PTA

4797 Hayes Road, Suite 2. Madison, WI 53704-3256 (608) 244-1455

July 1, 1997

RE: AG 29 - The exposure of children in schools and day care facilities to pesticides.

Dear

On behalf of the nearly 50,000 members of the Wisconsin PTA we are writing to express our concern that the current revisions to AG 29 will do nothing to protect children from exposure to dangerous chemicals in schools, day care centers and playgrounds. We urge you to take steps "to eliminate the environmental health hazards caused by pesticide use in and around schools and day care centers. These efforts will result in cost-savings when use of chemical controls is reduced, decreased health risks, and safer school and day care center environments". (National PTA Position Statement The Use of Pesticides in Schools and Day Care Centers - 1992)

Pesticides are, by nature, poisons, and exposure-even at low levels- may cause serious adverse health effects. Our nation's children, because of a variety of age-related factors, are at increased risk of cancer, neuro-behavioral impairment, and other health problems as a result of their exposure to pesticides. The Wisconsin PTA is particularly concerned about the use of pesticides in and around schools and day care centers because children spend much of their young lives in these settings.

Therefore, we ask that the Department of Agriculture, Trade and Consumer Protection make appropriate changes to AG 29 to protect our children from the detrimental effects of exposure to pesticides.

Sincerely

Jane Shibilski
President, Wisconsin PTA

Sue Post
State Legislative Chair, Wisconsin PTA

enc.

Post-it® Fax Note 7671	Date	# of pages ▶
To SUSAN + PAM	From	
Co./Dept. MVPP PARTIP	Co.	
Phone #	Phone #	
Fax #	Fax #	

1000 North Oak Avenue
Marshfield, WI 54449-5790
715-387-9298
FAX: 715-389-4950

National
FarmMedicine
Center

Ned Zuelsdorff
Director AgChem Program; DATCP
POB 8911
Madison, WI 53708-8911

July 11, 1997

Dear Mr. Zuelsdorff and Members of the Board:

As a scientist investigating the effects of environmental chemicals on infertility and pregnancy, I am well aware of the adverse health consequences of acute and chronic exposure to pesticides. I appreciate your difficult task reaching consensus on Pesticide Use and Control Rule (Ag 29); however, your efforts are invaluable for safeguarding the health of current and future Wisconsin citizens. Please consider the following recommendations during your deliberations on July 17, 1997.

1. Ag 29 should advocate least toxic/non-toxic pest control policies for schools, day care centers, parks and playgrounds with the goal of eliminating pesticide use. Children are particularly vulnerable to adverse pesticide effects due to their rapid growth, hand-to-mouth habits and proximity to treated areas. Duration of exposure must be considered.

2. Ag 29 should require posting of pesticide application along public roads, alleys and side yards. Citizens have the right to know where it is deemed safe to walk, work and play. Aerial spraying (drifting) should be reduced and eliminated for fields near residential neighborhoods.

3. Ag29 should require that pesticide vendors provide consumers with LARGE PRINT precaution information sheets that include safety testing and health information concerning use of their products. Retail stores should be required to provide warning signs with the waiting period clearly stated. The signs should be large, bright in color, easy to post and clearly written.

4. Ag 29 should maximize a person's right to know by ***not*** reducing the prenotification registry.

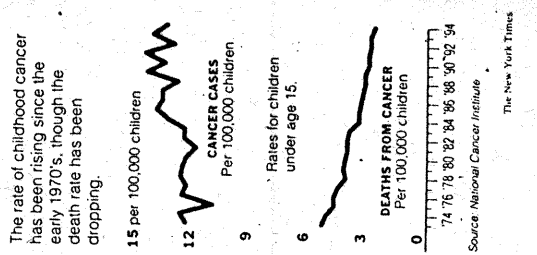
I urge you to take the lead in cautious management of pesticide use. Wisconsin will have a proactive stance to be proud of because of your efforts.

Sincerely,

Anne R. Greenlee, PhD
Associate Scientist
National Farm Medicine Center
(715) 389-4012

Increase May Be Tied to New Chemicals in Environment

U.S. Reshaping Cancer Strategy As Incidence in Children Rises



By JOHN H. CUSHMAN Jr.

WASHINGTON, Sept. 26 — The rate of cancer among American children has been rising for decades. Although the reasons remain unclear, many experts suspect the increase may be partly the result of growing exposure to new chemicals in the environment.

That suspicion, while still unproved, is beginning to shape Federal research priorities and environmental strategies.

Depending on which types of cancer are counted, and in what age groups among the nation's youth, the rate of increase has amounted to nearly 1 percent a year, according to the National Cancer Institute.

Over a few decades, that has meant striking double-digit increases.

Childhood cancer is still far less common than cancer in adults, and its very rarity makes it especially hard to discern what might be causing the increase. Its creeping spread has also been masked by better news, as recent medical gains have made it much more likely that a child with cancer will survive.

But childhood cancer, even when its young victims are cured, can inflict wrenching costs on children and their families, whether its toll is measured in financial, emotional or physical terms. Patients can suffer permanently from brain damage, stunted growth or secondary cancers later in life, partly as a result of radiation and chemical therapies.

And today, according to experts in the field, a newborn child faces a risk of about 1 in 600 of contracting cancer by age 10.

In the United States, cancer is diagnosed each year in an estimated 8,000 children below the age of 15. Cancer, although it kills fewer children than accidents do, is the most common form of fatal childhood disease, accounting for about 10 percent of all deaths in childhood.

The increases surprise even people who are predisposed to think the worst about the ill effects of chemical pollution.

"I had not realized that the numbers were going up that way," said Karen Florini, a lawyer specializing in health issues at the Environmental Defense Fund. "I think it indicates a very disturbing trend that we had better get to the bottom of."

Acute lymphoblastic leukemia in boys and girls increased 27 percent between 1973 and 1990; since then, the rate in boys has declined, but it is still rising in girls. Brain cancer, or glioma, increased nearly 40 percent from 1973 to 1994. These two forms of cancer account for most of the disease in children.

Revision of Cancer Strategy as Incidence in Children Rises

Continued From Page A1

Other forms of cancer, such as the form of bone cancer called osteogenic sarcoma and the kidney cancer known as Wilms's tumor, have also been rising, although the numbers of cases remain so small that the trends may not be statistically significant. The increases are big enough that better diagnosis and reporting of the diseases are unlikely to be the principal explanation, experts say; childhood cancer is such a serious ailment that it is usually detected.

Although the causes are not known and are probably many, some experts say, toxins in the air, food, dust, soil and drinking water are prime suspects.

So with the Clinton Administration putting a high priority on issues of children's health and the environment, and with Congress last year overwhelmingly approving new laws taking children's exposures into account when setting standards for pesticide residues in food and contaminants in drinking water, Federal authorities are moving to review the epidemiological data much more closely and to review environmental regulations that may help fight the trend.

At a meeting in Washington last week, a team assembled by the Environmental Protection Agency drafted a research plan that could steer millions of dollars toward better understanding the problem, beginning next year.

"The increases are too rapid to reflect genetic changes, and better diagnostic detection is not a likely explanation," said Dr. Philip J. Landrigan, a pediatrician who directs the division of environmental medicine at the Mount Sinai School of Medicine and who is the senior adviser to a new office of children's health at the E.P.A. "The strong probability exists that environmental factors are playing a role."

Not all environmental factors involve pollution. Dr. Landrigan said that changes in life style, especially diet, must also be considered and may play some role. Viruses may be implicated in some cancers, but there is scant evidence.

Instead, he and many other experts are inclined to examine the estimated 75,000 new synthetic chemicals introduced in the last half century, the emissions from cars, the pesticides in foods and in neighborhoods, the runoffs in drinking water — the whole collection of chemicals out there, mostly untested for toxicity to humans, let alone for possible cancerous effects in children.

If their suspicions prove to be well founded — and that could take many years to determine — it could usher

A disturbing trend is likely to bring more Federal money for research.

in a new generation of tighter controls on pesticides, toxic wastes, and other chemicals based on the theory that it may take less of a carcinogen to afflict a child or a fetus, that their health may be affected by combinations of chemicals and that their needs ought to come first in dictating pollution controls.

But first, an expansion of federally supported research is likely.

"I'm talking about new research on air pollutants, water pollutants and pesticides and their effects on children," said Carol M. Browner, the administrator of the E.P.A., "and new testing guidelines that routinely incorporate children's issues into E.P.A.'s risk assessments. I'm talking about moving beyond the chemical-by-chemical approaches of the past, and instead looking at a child's total cumulative risk from all exposures to toxic chemicals."

She promised to pursue better interdisciplinary and collaborative studies of suspected environmental causes and mechanisms of childhood cancer, an initiative that was endorsed at the agency's conference.

Industry representatives who attended the meeting, though, cautioned against the Government's moving too fast to react to such sketchy scientific information.

"It doesn't appear that anyone really knows yet what the causes are," said Nancy Doerrer, vice president for scientific and policy programs at the American Industrial Health Council, which represents a diverse group of manufacturing companies. "Yes, there may be some role for environmental causation for childhood cancer. But there is also a role for life style, and the prenatal vitamin supplementation during pregnancy also seems to be very important in preventing some cancers."

Ms. Doerrer said that the E.P.A. was acting properly by announcing that it would select a few major regulations for scientific review to determine whether they adequately protected children.

"But to take too much action without really studying the problem would be wrong," she said. "You are seeing lots of language being written into proposed regulations and legislation that is intended to protect susceptible populations. That seems to be the new buzzword."

The group also recommended developing a National Childhood Cancer Registry, which would contain information such as exposure histories and family health data, and for better techniques for screening chemicals suspected of making children sick.

A cancer registry, which would be a comprehensive database seeking to include information on practically every child with cancer in the country, would be "a difficult thing to accomplish," said Dr. Robert Amler, chief medical officer at the Agency for Toxic Substances and Disease Registry, a Federal agency based in Atlanta. A first step might be to pool the data that already exist elsewhere, such as extensive information the agency has collected to track people exposed to cancer-causing chemicals at Superfund sites.

The childhood cancer registry would improve scientists' chances of finding significant associations between exposures to harmful chemicals and the incidence of cancer, he said.

"Most studies of cancer in children have led to hypotheses, and in some cases have confirmed or furthered these hypotheses, but almost every study carries with it very important limitations," he said. "These intrinsic limitations make it difficult for scientists and policy makers to tell the public what these studies really mean in terms of real risks to children."

Already, using new legal authority, the E.P.A. is taking the risks to children into account in setting standards for food and water safety.

The Food Quality Protection Act, which became law last year, gave the E.P.A. 10 years to review its limits on pesticide residues on food. The agency is starting with what it thinks are the riskiest chemicals: the organophosphate, carbameate and organochlorine classes, as well as with other chemicals that may cause cancer in humans.

But Dr. Lynn R. Goldman, the assistant administrator for pesticides and toxic substances, said that although scientists have adequate information to screen most drugs, food additives and pesticides, they lack even basic toxicity data for most of the agency's list of about 3,000 industrial chemicals produced in the highest volumes each year, many of them found in consumer products and in the workplace.

"The problem with childhood cancer, of course, is that we really do not know what causes most of it," she said. "As we are working through screening the pesticides and tightening up the standards, we would hope that we are reducing the risks for children, but we really can't be sure."

Many studies have explored the possible role of environmental toxins in childhood cancer. Studies have cited possible links between cancer in children and their exposures to pesticides, their parent's exposures to chemicals at work and other factors.

In a study published in The American Journal of Public Health in February 1995, researchers suggested that "use of home pesticides may be associated with some types of childhood cancer."

Tracking the most common form of fatal childhood disease.

The study examined 252 children in whom cancer was diagnosed in the Denver area between 1976 and 1983 and 222 control subjects, and it interviewed their parents about household pesticide use. It found some evidence that yard treatments might be associated with soft tissue sarcomas, and that pest strips containing insecticide might be associated with leukemia.

But the researchers conceded that the measures of actual exposure in studies like this are crude, and called for further research to show "what exposures, if any, are associated with which particular childhood cancers."

Another study, published in The Archives of Environmental Contamination and Toxicology in 1993, found associations between brain cancer in Missouri children and the use of pesticides in homes and yards. But here, too, the researchers conceded weaknesses, including small sample sizes, potentially inaccurate memories of pesticide use, and a lack of detailed verification of children's actual exposures to the pesticides.

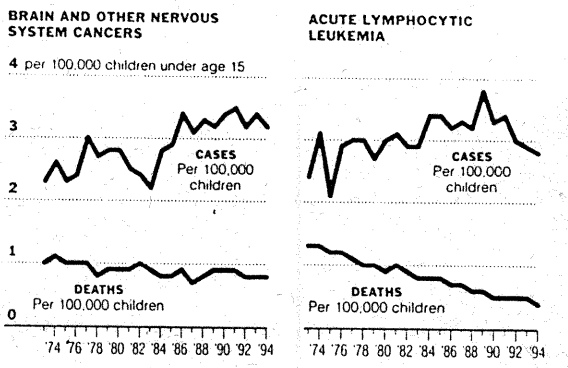
Clinicians said that there were many measures already known that may prevent cancers in children, just as in adults.

"Don't smoke, don't expose your kids to cigarette smoke, use sunscreen, don't expose kids to radon and asbestos," said Dr. Sophie Balk, a pediatrician at the Jacobi Medical Center, a public hospital in the Bronx. She attended the childhood cancer meeting as a member of the American Academy of Pediatrics' committee on environmental health.

SNAPSHOT

The Most Common Cancers

Each year cancer is diagnosed in roughly 8,000 children under the age of 15. Three-quarters of the cases are either brain and other nervous system cancers or acute lymphocytic leukemia.



Percent changes are based on two-year averages from 1973-74 to 1993-94

Source: National Cancer Institute

The New York Times

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Great Lakes Protection Fund,
the Great Lakes Pollution
Prevention Centre
& Environment Canada

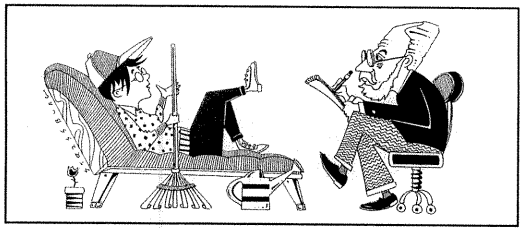
to our health
and to that of our
Great Lakes

GREAT LAKES GREAT LAWNS

contents

A HOMEOWNERS GUIDE TO GROWING LAWNS WITHOUT PESTICIDES

SO, how do you feel about your lawn today?



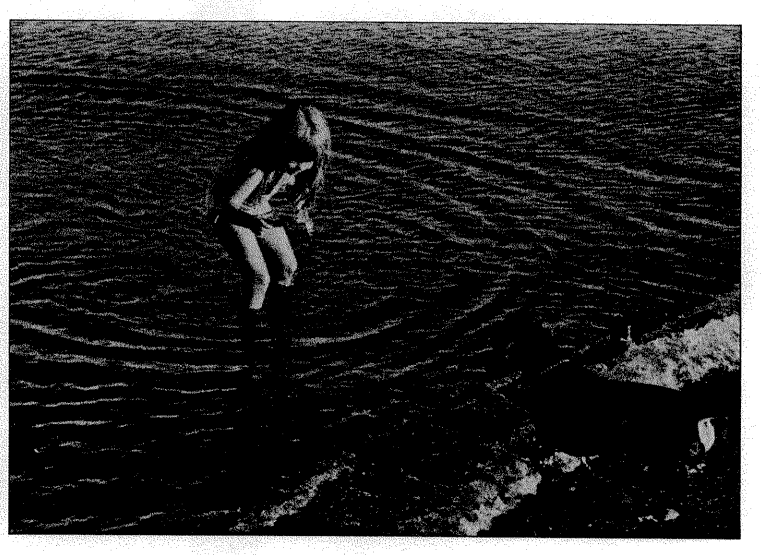
Let's face it. We love lawns. They're our favorite playing fields, for golf and softball, volleyball and badminton, for playing tag with our children and playing catch with our pets. We delight in the sweet, green smell of lawns and the soft tickle of grass under our bare feet. We even think of lawns as outdoor rooms where we can entertain our friends. After all, what would summer be without a barbecue on the lawn? And lawns help us out. They stabilize the soil and cut down on noise. In summer, lawns absorb solar radiation and scatter light, and thus help keep our urban landscape cool.

But our passion for lawns consumes an awful lot of energy. We spend our weekends mowing, watering and feeding lawns, and countless more hours worrying about them. If we see bugs, we panic. If we see weeds, we fret that our neighbors will hate us. If we see bare spots, we think that we've failed in our duties as homeowners. Somehow we've gotten the idea that our lawns should not only be attractive and useful, but that they should look "perfect." And we spend a great deal of money in pursuit of this goal—on gadgets, on lawn care services and on lawn chemicals.

Unfortunately, money isn't the only price we pay for a weed-free lawn. We are jeopardizing our health and that of our neighbors and our environment as well. Acre per acre, our lawns are doused with six to ten times as much pesticide (the umbrella term for herbicides, insecticides and fungicides—chemicals designed to kill insects, weeds and molds)—as our farmfields. Ninety-five percent of the pesticides used on residential lawns are considered possible or probable carcinogens by the U.S. Environmental Protection Agency. Consider the consequences: A National Cancer Institute study of childhood leukemia found higher rates of cancer in households when pesticides were used.

The damage to our environment is also well-documented. Water quality monitoring has discovered pesticides in the Great Lakes, the drinking water of more than 10 million residents. Even lawn fertilizers can have harmful effects when mismanaged. When they wash into our lakes, they promote algae growth that not only looks and smells bad, but robs water of oxygen, creating a hostile environment for fish.

Some of what we apply could end up causing environmental damage. The majority is bound up in organic matter, degraded by soil organisms, or blown or washed away by wind or water. Although weedkillers may eliminate dandelions or crabgrass for a short time, they do not change the growing conditions that allow these plants to thrive, and so weeds come back year after year. And since insects prey upon one another in a natural system of checks and balances, an insecticide that wipes out one species of insect in a lawn may create an opportunity for another to do well—and make a pest of something that never was a problem before.



In other words, it is a myth that pesticides are a necessary part of lawn care. Your lawn can, in fact, be hardier and healthier, and take less time and less money to maintain, if you stop using pesticides altogether. In this manual we will show you how you can get your lawn off to a good start and how to care for an established lawn in ways that are good for your lawn, and good for you and your community.

healthy lawns, healthy lives, healthy planet

Lawns are living things, made up of hundreds of thousands of individual plants. And like all living things they perform best when they are strong and healthy. Think of the human species. When we eat the right foods (in the right amounts), get sufficient sleep, and exercise to keep ourselves physically fit, we can fight off most colds and flu. Similarly, a healthy lawn is able to resist harmful insects and disease and crowd out most weeds.

Applying chemicals to a lawn is a short-sighted response. Think of what happens when athletes ingest steroids. In an effort to artificially stimulate muscle growth, they put their body's health at risk. Dousing a lawn with chemicals causes problems in a similar fashion by interfering with natural growth processes. Apply too much fertilizer, for example, and your lawn puts its energy into growing leaf blades rather than roots. You must mow it more frequently because of the accelerated leaf growth, and you must water it often because the roots are shallow and can't draw their own water from deep in the soil. To supply nutrients to this shallow-rooted lawn, you continue to apply fertilizer. And what you end up with is a care-dependent lawn—a weak lawn, no matter how green it may appear.

Often we apply chemicals to lawns because that is what the lawn-care industry tells us we should do. In reality, most of our lawns are overfertilized, mowed too often, cut too short, and are growing the wrong types of grasses. By changing these practices, we can eliminate most disease and weed problems.

The key to growing a healthy lawn without pesticides is knowledge. Once you know how your lawn grows, taking care of it without pesticides will make sense. In this manual, we will explain how grass grows, then we will describe five cultural practices that will assure that your lawn remains healthy. We will answer some of the most commonly asked questions about pesticide free lawn care. Finally, for those who wish to reduce the amount of lawn they grow, we will suggest some alternative, low-maintenance garden plans.

first, a word about weeds

Every lawn has weed seeds—thousands of them lurk in every square foot of your soil. Some drifted in, but most are longtime residents that are waiting for the right conditions to germinate. Weed seeds can germinate after 30 years! Therefore, it is simply not possible to have a weed-free lawn once you stop using pesticides, unless you intend to spend a good portion of your life on your knees pulling weeds by hand. It is possible to control weeds without pesticides, however. Extensive weed growth is not the cause of an unhealthy lawn—it is the result. Solve the big problems, so that your lawn is as healthy as it can be, and most weeds will not be able to compete with the turf grasses.

Keep in mind, too, that we are the ones who determine what a "weed" is and how many of them we can live with. Queen Anne's lace is a weed, as are many of our roadside flowers, which were imported from Europe, thrive in poor soil, and grow like, well, weeds. Yet we enjoy their beauty. When we decide to grow a lawn without pesticides, we are saying that we are willing to tolerate some weeds in exchange for a healthy planet. Knowing that our lawn poses absolutely no risk to anyone can make even a dandelion look beautiful.

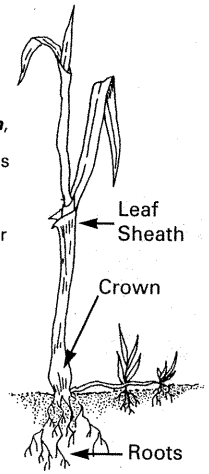
Ninety-five percent of the pesticides used on residential lawns are considered possible or probable carcinogens.

95%

A National Cancer Institute study of childhood leukemia found higher rates of cancer in households where lawn pesticides were used.

the rise & fall of grass

To understand what your lawn needs, and when, it helps to understand how it grows. In a typical 25-by-40-foot lawn there are about 1 million grass plants. Each has a ***leaf sheath***, which wraps around the stem. As the stem grows, leaf blades unwrap from the sheath and grow away from it, forming the foliage that we think of as "grass." The ***crown*** is located at or near the ground surface. Unlike many plants that grow from their tips, grass plants grow from the crown. This is why you can mow off the tips without harming the plants. A grass plant's ***roots*** spread below ground in a typical fashion.



A grass plant is capable of making its own food through a process known as photosynthesis–energy from the sun is captured by the leaf blade, allowing the plant to turn carbon dioxide (from the air) into sugar, or food. The sugars are then broken down and combined into fats, proteins and other substances necessary for plant life. The roots gather water and raw materials required for photosynthesis. They also store nutrients.

You can see that to grow well a grass plant needs both strong top growth and good roots. It takes plenty of leaf blade exposed to the sun to grow deep roots. And the deeper the roots, the better able the plant is to gather nutrients to support top growth and to withstand drought.

The other important fact about lawn growth that homeowners should understand is that grass does not grow in a consistent fashion. In early spring, grasses in northern climates put their energy into developing deep roots. As the air temperature warms, the leaf blade shoots up, supported by the strong root system. By midsummer, however, both root and leaf growth slows down. Leaf growth picks up again in the cooler days of late summer and early fall, and then quiets down again in late fall, when most of the growth action is once again concentrated in the grass roots.

To summarize: Grass plants need both good top growth and a deep root system to grow well; different parts of a grass plant grow at different times of the year. On the following pages, you'll see how a knowledge of these two principles can help you work with nature to grow a healthy lawn without pesticides.

five steps to a healthy lawn

1 Step One: Start Off Right

If you are planting a new lawn or undertaking a major rehabilitation of an old one, selecting the right grass is your most important decision. Consider your lawn's purpose. Will it host your children's soccer games? Or will it primarily be looked at from your picture window? How much sun does the site receive? Direct sun all day, half a day, or very little? Different types of grasses suit different conditions. Planting the type of grass that's appropriate for your site and your needs will save you much effort later.

Grasses are broadly categorized as cool-season or warm-season types. Here in the cool, northern regions, our choices are fairly limited. Of the half-dozen grasses that grow well here, three are most appropriate for home lawns.

Kentucky Bluegrass

Kentucky bluegrass is the beauty queen of turfgrass and has long been the most popular grass for home lawns. It spreads easily and uniformly, and thus produces an even-textured turf within a few years. But, planted alone it requires high nutrient levels - meaning regular doses of fertilizer - to remain healthy. Otherwise it thins out. It does best in full sun on well-drained soil.

Fine Fescue

The fine fescues are the low maintenance grass. They include creeping red fescue, chewings fescue, sheep fescue and hard fescue. Compared to Kentucky bluegrass, fine fescue is more tolerant of shade, and is often used in shady areas. But they can't handle a lot of wear and tear. They will grow better than bluegrass in a wide range of soil conditions, acid, droughty or infertile. However,

Globally,
pesticide sales have increased from $850 million in 1960 to more than $26 billion in 1990,
a 3,100 percent increase.

they require a well-drained soil. Fine fescues have something scientists call "endophytes" which confer natural insect resistance. An endophyte is a naturally occurring fungus that grows inside the plant and gives the plant natural insect resistance.

Perennial Ryegrass

So-called "common" perennial ryegrass is a coarse grass that lacks the winter hardiness required for our climate. More finely textured, "turf-type" perennial ryegrass is hardier. Nevertheless, it is still best suited to areas of the north that have moderate climates. Perennial ryegrass is a good grass to include in your grass mix because it germinates quickly providing some quick green in a newly seeded lawn. But it is less heat and drought tolerant. Don't put more than 15% in a mix or the lawn will become predominantly composed of perennial rye.

What's in the Bag?

Before you purchase grass seed, note the label on the bag. It will list the types of grass seed included in the mix. Look for mixes with generous percentages of one or more of the main seed types for cool climates that we have mentioned—Kentucky bluegrass, fine fescues and perennial ryegrass. A mix will look good and grow well in sunny or shady conditions, tolerate being walked on and be easy to care for. Avoid seed mixes that contain annual ryegrass. Also note the percentage of "other ingredients." The better the mix, the lower this figure will be. Keep in mind you will likely pay more for quality seed, but since the grass that grows from it will require far less maintenance, you will easily earn your money back.

A note about shade: A site that receives less than four hours of sun a day or is located under a tree canopy is considered to be in deep shade. We recommend that you do not attempt to grow grass on these areas. Instead, plant a sturdy shade-tolerant groundcover such as periwinkle or English ivy. See page 19.

pets at risk

Humans aren't the only animals threatened by the use of pesticides.
The National Cancer Institute found that owners of dogs with lymphoma (a type of cancer) reported using higher lawn pesticide use than owners of healthy dogs.

Establish Your Grass Properly

Timing is critical when planting a lawn. New grass needs to develop good roots before the onset of very hot or very cold weather, conditions that stress the plant. As discussed earlier, grass plants undertake most of their root growth in early spring and fall, which would seem to make both these times ideal for planting. The problem with spring planting, however, is that vigorous weed growth takes place in the same season. Enterprising weeds can easily smother young grass seedlings. For this reason, the best time to sow seed is early fall—mid-August to mid-September. During this period, the ground is still moist and warm, yet weed growth is slow.

If you are working with bare ground, seize this opportunity to make your soil healthier by adding compost or other organic materials. But do not assume that all soils need enhancement. Before adding anything, have your soil tested (see inside back cover)

Once the soil is prepared, rake the ground to make sure your seedbed is smooth and level. Then for larger areas, cast seed evenly with a push-behind spreader to make sure it is evenly applied. Plant at a rate of 4-6 lbs of seed per 1,000 square feet of lawn. We suggest you calibrate the spreader to apply seed at half the recommended rate, then cover the area twice in the following manner to ensure even coverage: Spread seed first in one direction (say, north-south), then in right angles to it (east-west). You can seed small areas by hand from a bucket; mix some soil with the seed before you spread it.

Next, with a leaf rake, lightly rake the seeds into the top 1/8 inch of soil. It is important never to bury the seed deeper than 1/4 inch. Then lightly roll the area so that the seeds are in firm contact with the soil. The seed takes water from the soil to germinate and grow. Lawn rollers can usually be rented from garden centers and rental businesses. (if you are seeding a small area, you don't need to rent a roller- you can also walk gently across the soil that was seeded or use the back of a rake to tap gently down on the soil). Not having seed in firm contact with the soil is the primary reason lawns fail to grow, experts say.

Cover the site with a light (weed free) straw mulch, and keep the ground moist until the grass is about three inches high. Depending on the weather, you may need to water your site every day.

Adding Seed to an Established Lawn

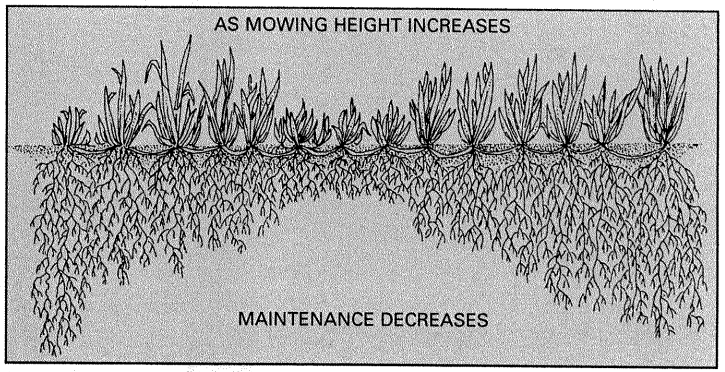
If you have a lawn in place, but realize it is composed of grasses that are wrong for your site, don't despair. And don't dig up the lawn! You can remedy the problem by incorporating more appropriate grasses through a process called overseeding. In early fall, simply walk your lawn sprinkling seed by hand. A good amount is 4 to 6 pounds of seed per 1,000 square feet. You will probably need to do this each year for a few years to significantly change the composition of the lawn. The natural freezing and thawing of soil will work seed in naturally.

Even if you are happy with the grass you have, overseeding is a good practice. It revitalizes tired lawns, and helps assure dense, thick turf that discourages weeds. Professional turf managers routinely overseed golf courses and athletic fields every year.

2 Step Two: Mow High

Homeowners spend a lot of time mowing, but little time thinking about how they do it. Often, that's because it's a routine task. Most of us lead busy lives, so we mow the lawn once a week on the weekend—regardless of whether or not the lawn requires it. However, mowing your lawn properly is one of the most important things you can do to keep it healthy. It's also one of the simplest.

The most common mistake homeowners make is cutting the grass too short. Remember: If you keep the foliage too short, the plant won't be able to grow deep roots. Without healthy roots, a grass plant can't reach water that's stored in



the ground—and you may be tempted to water it often. When a leaf blade is short, it can't shade out weeds—and you may be tempted to kill the weeds with herbicides.
Alternatively, consider the benefits of tall grass:

Tall grass does not need fertilization. When you increase the height of your grass you dramatically increase the amount of leaf blade exposed to the sun. That means the grass is more able to manufacture its own food, and you don't have to feed it a fertilizer diet.

Tall grass tolerates hot and dry conditions. When grass is allowed to grow tall, it also grows deep roots. These roots are able to reach into the soil and can access stored water. Tall grass also shades the soil and reduces evaporation.

Tall grass contains fewer weeds. Weeds are sun-loving plants. When tall grass blades shade the ground, weed seeds are less likely to germinate.

How tall should your lawn be? A general rule of thumb is to keep your grass at least three inches high. Another rule of thumb is to never cut off more than one-third of the blade; lopping off more than that stresses the plant. So, keep an eye on your lawn, and when it reaches a height of four and a half inches, mow it to three. That will mean more frequent mowing in late spring and fall when the foliage really shoots up, and fairly infrequent mowing midsummer. Try to avoid the pattern of mowing once a week whether or not your lawn needs it. By letting lawn height direct you, you will actually mow less in the long run.

It's also important not to mow when your grass is wet. If you mow it wet, the cut is uneven, and clippings tend to clump together and prevent light from reaching the grass. Try not to mow after a rainstorm, obviously, but also avoid mowing in the early morning, when the grass is still covered with dew.

Remember to keep your mower blades sharp. Dull mower blades tear grass blades instead of slicing them, and a wounded grass blade attracts disease and insects. Human surgeons only use the sharpest of scalpels in order to make the cleanest cut. Similarly, cut your grass with a sharp mower blade and the leaf tips will heal more quickly. If the surface of your lawn looks grey or white after a mowing, your blades are probably dull.

Turf pros sharpen their mower blades every week. As a homeowner, consider sharpening your mower blades at least twice a year, perhaps once in fall and again in July. You might want to have an extra set of blades on hand, so that when you remove a dull blade for sharpening you can immediately replace it. To check whether your mower needs sharpening pull a few blades of grass and look. If the surface is ragged rather tahn smooth, it's time to sharpen blades.

You can have your mower blades sharpened professionally, or you can do it yourself. If you decide to undertake the task, disconnect the spark plug in your mower first as a safety precaution. Then remove the blade from the mower and clamp it to a bench or in a vise. Remove the nicks with a medium file, holding the file at about a 30-degree angle to the blade. If the blade is deeply gouged, it should be replaced.

Step 3: Water Optional

3

Grasses don't require as much water as we think to grow well.

By allowing your grass to grow tall, you will have a vigorous, healthy lawn and should not have to water it at all. In the middle of summer when it is hot and dry, compare your lawn to a neighbor's who might be mowing their lawn short – you will see that your lawn is noticeably greener and less dried out.

The situation that many homeowners run into is that when their lawns turn brown, they attempt to keep their lawns growing by watering them. But all northern grasses naturally grow slowly in midsummer when it gets hot and dry. Grass blades stop growing and turn brown, but the plants do not die. Indeed, when autumn rains finally fall, they green up again.

In most cases, your lawn will do better if you allow this process to take place. It's also a fact of modern life that during droughts municipal water supplies are taxed. When a drought hits, why not let your lawn rest for awhile, so that a good water supply will be available for other, more important community needs?

If you're just beginning your transition from heavier doses of fertilizers and pesticides, your lawn may still have a shallow root system and you will need to watch it more carefully for signs of drought. You may need to add water weekly in summer when rainfall is low. Let your lawn be your guide. Check to see if your lawn needs water by walking across it. If footprints linger for several hours, your grass is severely dehydrated and needs water. Water in the morning so that the sun can dry out the grass blades quickly. Dampness can lead to disease problems. Remember, between you and Mother Nature – never water more than one inch per week.

To determine how long your sprinkler needs to run to apply one inch of water, set out a tuna fish can and time how long it takes for the sprinkler to fill it up. If it takes, for example, 45 minutes for your sprinkler to drop one inch of water, set a timer on the system or watch the clock, and run the sprinkler 45 minutes in each area that needs water.

Stormwater monitoring in the Great Lakes basin found significant levels of the herbicide 2, 4-D in 53 percent of the samples tested, and significant levels of the insecticide diazinon in 47 percent of the samples tested.

47%

Step Four: Feed Right 4

The best supplement for your lawn's diet is free and readily available: its own clippings. If you have modest expectations for your lawn, clippings can provide all the nitrogen your grass needs to remain healthy. And the nutrients are added in the best possible way: slowly and steadily. Clippings also lower your lawn's water requirements by shading the surface and reducing evaporation.

Don't be concerned about thatch building up if you leave your clippings on the lawn. Thatch is composed of dead roots caused by overfertilization and soil compaction. Clippings are 90 percent water, and decompose in about two to three weeks.

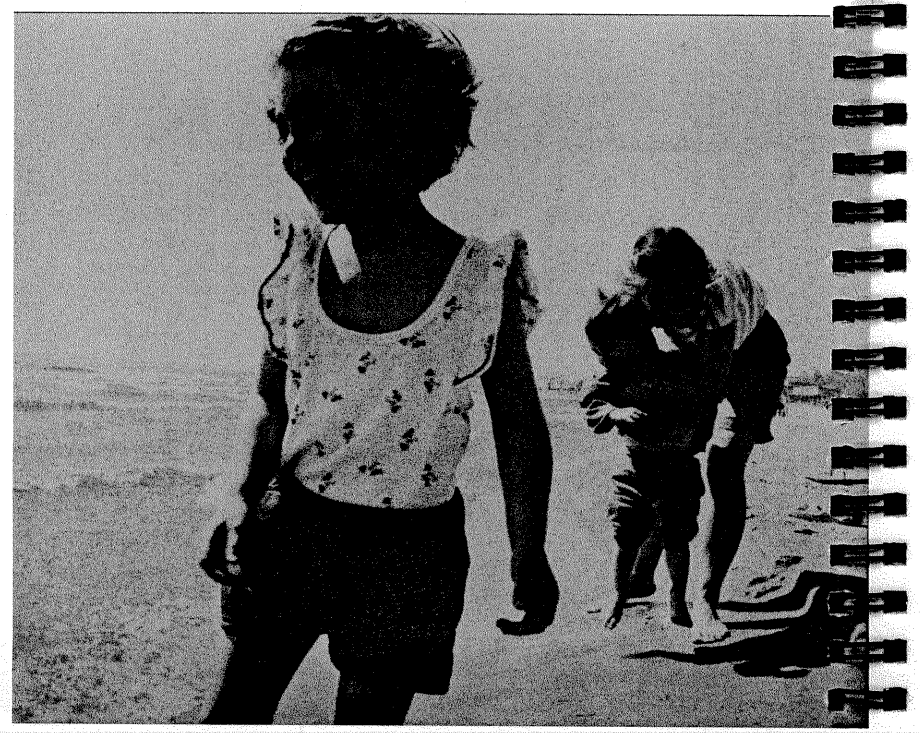
If you have higher expectations for your lawn and wish to add fertilizers, whether chemical or organic, we adhere to a simple principle: Use as little as possible as effectively as possible and fertilize in the fall. Fall is the time of the year when plants can best use fertilizer. If you use fertilizer be careful. Fertilizers can pollute water by promoting algae growth, which robs water of oxygen and creates a hostile environment for fish.

Before adding any nutrients learn about your soil. Grass absorbs nutrients most efficiently when the soil has a pH of 5.5 to 6.5. It also needs sufficient nitrogen, which promotes top growth; phosphorus, which encourages root development; and potassium, which stimulates strong stems and disease resistance. Have your soil tested to determine whether it is lacking in potassium or phosphorus, or whether pH needs to be adjusted. (Since nitrogen changes form quickly and is hard to measure accurately, lawn soil tests do not measure nitrogen.) Add P and K (the accepted symbols for phosphorus and potassium), and lime or sulphur, which will adjust pH, according to the test's recommendations.

As for fertilizer, if you choose to apply it we suggest you apply a slow release fertilizer in the fall. The advantage to applying fertilizer in the fall is that it is more likely to be used by the plant for root growth, because that is the plant's main activity in fall. We suggest one-half to one pound of nitrogen per 1,000 square feet.

The tricky part of all this is calculating which bag of fertilizer will deliver the right amount of the substance you wish to add to your lawn, and how much of it you should apply. Scanning the fertilizer section of your local garden store can be a confusing activity. All those numbers: 6-2-0, 4-2-3, 34-3-4, what do they mean? It's at this point that many homeowners throw up their hands and buy whatever the garden center recommends as "the easy thing to do."

But, in fact, interpreting the numbers is not hard, though it involves a little bit of math. The three numbers on each bag of fertilizer tell you how much nitrogen, phosphorus and potassium (NPK) is in the bag. A 40 pound bag of 10-10-10 fertilizer, for example, contains 10 percent of each nutrient. Multiply 40 pounds times 10 percent. That tells you there are 4 pounds of nitrogen, 4 pounds of phosphorus and 4 pounds of potassium in the bag.



If you want to add only nitrogen to your lawn, look for a fertilizer that contains only nitrogen in a slow release form. Blood meal, although expensive, is a common slow-release pure nitrogen source, usually labeled as 12-0-0 for a 4-pound bag. It contains .48 pounds (.12 x 4) or almost half a pound of nitrogen. To add one pound of nitrogen to your lawn, you'll need to apply two bags, or 8 pounds, of blood meal.

Similar calculations can be done for the other nutrients. To add just phosphorus to your lawn, for example, you might apply triple superphosphate, labeled 0-45-0 for a 4-pound bag. This is the equivalent of 1.8 pounds (.45 x 4) of phosphorus. If a soil test recommends adding 3 pounds per 1,000 square feet, you'll need to apply a little less than two bags.

You will find many fertilizer mixes for sale. A popular "turf-builder" is a 34-3-4 mix. Be aware that this contains a lot of nitrogen, almost 14 pounds (.34 x 40) per 40-pound bag, along with more than a pound each of phosphorus and potassium. Be aware of what's in the bag before you grab ready-made mixes like this off the shelf.

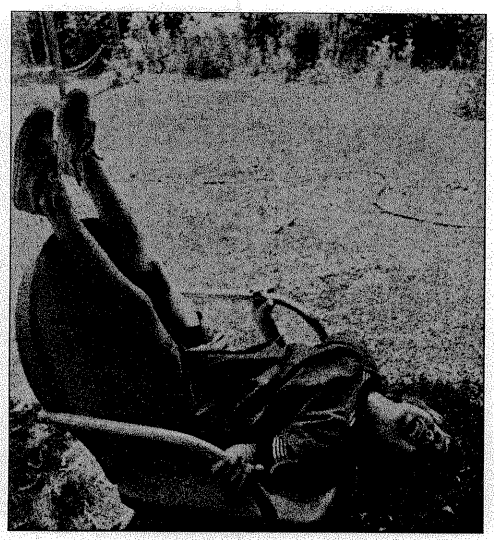
The easiest way to apply fertilizer is with a drop spreader. Fertilizer bags often indicate what setting to use to drop a certain amount of the nutrient. If the fertilizer you buy doesn't, you can calibrate your spreader yourself. Mark off a test area (say, 10 feet by 10 feet or 100 square feet). Adjust your spreader to the middle setting and fill it, but set a collection device underneath. Walk the area, then measure how much fertilizer has been spread. If you have a 1,000-square-foot lawn, but your spreader has dropped half its load over 100 feet, close the opening way down! It may take some experimentation to get the setting right, but this offers the best assurance that you are not overfertilizing your lawn.

Step Five: Don't over-do-it

Most homeowners over-do-it in the spring with fertilizers and chemicals. Spend time this spring evaluating how you use your lawn. Do you have a dog or children that play on it? Do you need it to stand up to a lot of wear and tear or do you only look at it? By learning about your expectations and about how grass grows and what it needs, you can grow a healthy lawn without pesticides.

Now, Sit Back and Let the Grass Grow

Once you have planted the right kind of grass, mow it high and only when it's needed, and water and fertilize wisely, you're ready for the best part of lawn care: forgetting about it. If you follow these cultural practices, you will be working with nature instead of against it, and it will be easy for you to have a healthy lawn with a minimal amount of work. Then you will have more time for doing the fun things in life, like sitting back and enjoying the green and growing world.



Studies have shown that pesticides may cause health problems ranging from cancer, genetic damage and birth defects to nausea and fatigue.

dealing with problems

Too Much Shade

Grass needs sunlight to grow and thrive - some varieties need less and others more. On average, six hours of sun a day is ideal for most grasses. If your site receives four to six hours of sun, you should plant or overseed the site with fine fescue types of grass. Areas that receive less than four hours of sunlight should be planted with something other than grass. The three most commonly used groundcovers for shady spots are English ivy, periwinkle and pachysandra, which are all reliable and useful plants. They are not, however, your only option. Many native species grow well in shade and also have the advantage of being low-maintenance. As you choose a plant for your site, you may want to think about the "look" you want to achieve, as well as a plant's ability to tolerate shade. Here are some options:

Ivy. The classic ivy is Hedera helix, or English ivy. It spreads along the soil by trailing stems that put down roots. English ivy has dark-green, lobed leaves two to four inches long.

Periwinkle. Periwinkle,Vinca minor, prefers a little more sun than ivy. It is also a trailing vine. Periwinkle has small oval leaves that grow in pairs opposite each other, and throws up blue or white flowers in spring.

Pachysandra. This is a more elegant groundcover, with dense mats of shiny green leaves that grow in whorls at the top of six-inch stems. It spreads by underground runners and prefers a fairly rich soil. Japanese pachysandra (P. terminalis) does best in the north.

Lungwort. These perennials combine delicate flowers with lovely foliage. Pulmonaria saccharata, also known as Bethlehem sage, is the most widely known variety, with pink flowers and pointed oval foliage dotted with silver spots. Plants grow 9 to 18 inches tall. Flowers bloom in spring.

Ferns. Ferns are a wonderful foliage plant for shade, eye-catching and graceful. Maidenhair fern (Adiantum pedatum), grows 12 to 20 inches tall and is one of the most elegant. Lady fern (Athyrium filix-femina) has 30- to 36-inch fronds. Cinnamon fern (Osmunda cinnamomea) grows 4 to 6 feet tall.

Hostas. These are one of the best known perennials for shade. Hostas are not native, but they thrive in moist locations and tolerate dry shade. Hundreds of varieties of hosta exist.

Controlling Weeds

If you are committed to a pesticide-free lawn, you have two choices when it comes to weeds: Pull them out by hand or learn to live with them. Dandelions grow in lawns that are too thin or cut too short. Crabgrass invades lawns that are severely clipped or have bare spots. Broadleaf plantain likes thin and compacted lawns. As we've said before, plant the right grasses, mow high, water and fertilize with care, and overseed, and you should not have a lot of weeds.

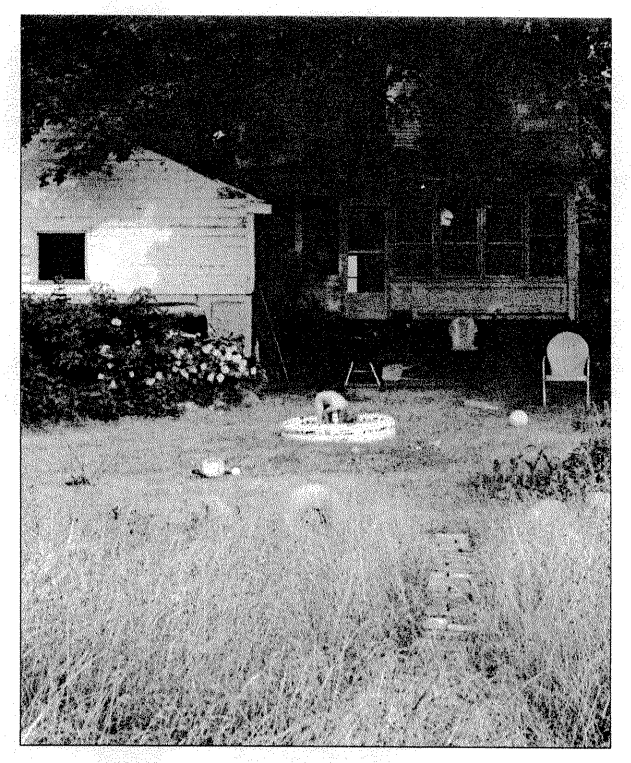
Crabgrass is an annual, and you can keep it in check by yanking it out before it goes to seed. A new natural control for crabgrass developed by Iowa State University is a byproduct of corn gluten meal. Trademarked under the name "A-maizing Lawn" it is an effective preemergence crabgrass control and also provides nitrogen to the lawn. It is available from "Gardens Alive" (812-537-8651).

Small areas of creeping charlie can be pulled up with a rake. Plantain and dandelions can be dug by hand; make sure you remove three or four inches of a dandelion's taproot or the plant will grow back. A better—certainly less frustrating—procedure is to mow the tops of these perennial weeds before they go to seed in the spring and remind yourself that dandelions will disappear in the heat of summer. Your biggest risk with this approach is the disapproval of your neighbors. But you may find them actually relieved to see weeds on your lawn—it means they don't have to feel guilty about their own weed patch.

Whenever you create a bare spot from pulling weeds, reseed with grass. Otherwise weeds will fill in the space again.

How to Handle Thatch

Thatch build-up is far less common than many homeowners believe. It occurs when a highly fertilized turf is growing on poorly drained, compacted soil. Tough, fibrous material develops on the surface of the soil that prevents the penetration of water and nutrients. Thatch also forms a breeding ground for harmful insects. If you do have a thick layer of thatch (i.e., more than one-half inch), physically remove it with a power raker; these machines can be rented. Or aerate the soil. Again, you can rent an aerator for the job or hire a professional.



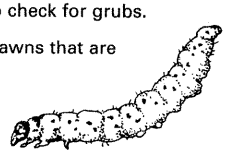
Insects in the Lawn

Dozens of different kinds of insects live in our lawns, but only a handful are capable of doing harm. And, fortunately, those of us in the north have a very special brand of bug killer—winter. A deep freeze kills many insects and helps decrease insect pressure the next year. Before you get too worried about bugs in your lawn, make sure they are actually causing damage. Then consider whether it is worthwhile simply waiting for nature to wipe them out.

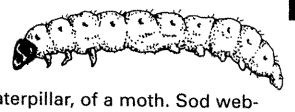
As with weeds, your best defense against harmful insects is a good offense. Keep your lawn healthy. Studies have shown insects will crawl over healthy plants to get to weaker ones! Cultivate an insect-resistant type of grass, such as a fine fescue. Get rid of any disease-ridden plants in your garden. Don't leave organic matter around to decompose—place it in a compost pile. Encourage birds. Build a bat house. Leave a flowerpot upside down to attract toads. Birds, bats and toads all eat insects by the thousands. Most of all, remember that your lawn contains thousands of beneficial insects, many of which prey on the ones you'd rather not have around. Never use any form of broad-spectrum insecticide that kills good and bad insects indiscriminately.

If your lawn is showing signs of damage, inspect it closely and capture whatever seems to be causing the problem. We list below only the four insects that most frequently cause problems. If your problem insect is not mentioned here, consult with your local university or extension service.

Grubs. These are beetles in the larval stage. They appear just under the soil surface as whitish worms with brown heads about three-quarters to one and a half inches long. Grubs feed on grass roots. Grub damage shows up as irregular patches of brown grass, usually in late spring or early fall. Peel up a patch of sod—it should lift easily because of root damage—to check for grubs. A healthy lawn can withstand a lot of grub activity. Lawns that are not in good condition will have problems with more than 10 grubs per square foot.



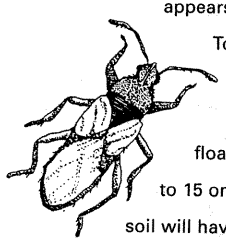
Best controls: Knock adult Japanese beetles off your garden plants into a jar of soapy water so they cannot lay eggs.



Sod webworms. These are the larval stage, or caterpillar, of a moth. Sod webworms have dark brown heads and bodies that may be brown, green or grey. Their distinguishing characteristic is four rows of dark spots running tip to tail. The caterpillars feed on grass blades at night and drag them into their tunnels, leaving small brown patches of grass. Look for them in the thatch of damaged areas. More than 10 webworms per square foot is a problem.

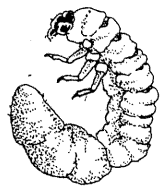
Best controls: Drench affected area with insecticidal soap. Webworms like dry heat, so keep your grass tall to create cooling shade.

Chinch bugs. These are tiny insects, about the size of a ladybug, with black bodies and white folded wings. They suck the juice out of grass stems. Damage appears as large, circular patches that turn yellow, then brown. To check for chinch bugs, cut both ends from a tin can, push it into the ground where damage is just beginning to show, and fill it with water. Chinch bugs will float to the top. Lawns in good condition can withstand up to 15 or so chinch bugs per square foot. Lawns with compacted soil will have problems with fewer.



Best controls: Remove thatch if present. Drench with insecticidal soap. Chinch bugs, like webworms, enjoy hot, dry conditions. Keep your grass blades tall.

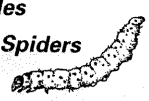
Cutworms. The term refers to many species of moths in the larval stage. These caterpillars may be black, brown, grey or red, one to two inches long and covered with bristles. They come out at night, and when touched curl up into a ball. Cutworms chew on grass blades. Look for patches of stubble, especially in spring; check for cutworms in the affected areas at night. More than five cutworms per square foot will do some damage.



Best controls: Try diatomaceous earth, which is a powder made up of the ground fossilized remains of a kind of sea algae. Crawling across the sharp particles punctures an insect's shell.

good bugs that live in your lawn

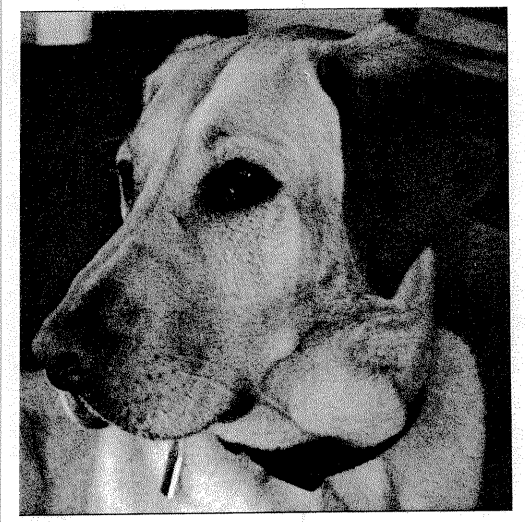
Ants ***Firefly larvae*** ***Vespid wasps*** ***Stinkbugs***
Braconid wasps ***Ground beetles*** ***Mites***
Rove beetles ***Earwigs*** ***Spiders*** ***Wheel bugs***



commonly asked & questions... answers

1. How can I get my established lawn off chemicals?

Begin by evaluating the kind of grass you are growing. Kentucky bluegrass, the most commonly grown grass on home lawns, will thin out if high nutrient levels aren't maintained. Thin lawns encourage weeds and insects, problems for which homeowners often seek chemical solutions. If you have a lawn that is primarily Kentucky bluegrass, consider overseeding fine leaf fescues, which require little if any fertilizer. In early spring or fall, walk your lawn, sprinkling 4 to 6 pounds of seed per 1,000 square feet.



2. I have a small yard and a large dog. What can I do about urine spots?

Train your pet to urinate in one area of the lawn. Once every two weeks, water the area thoroughly for a few days in a row. Then seed the area. To do so, combine one handful of seed with three handfuls of soil in a bucket. Sprinkle the mixture, then tamp it with your foot or the back of a rake.

3. What should I do if part of my lawn is sunny and another part is shady?

Avoid grass types, like Kentucky bluegrass, that require full sun. Plant seed mixtures and include fine fescues which will do well in partly sunny, partly shady conditions.

4. My soil is so heavy nothing seems to grow. What can I do?

Your soil is probably clay. You can improve its soil structure by adding compost. It's best to incorporate compost into the soil before you plant your lawn. If you have an established lawn be careful not to apply it too thickly or it will do more harm than good. If you want to add compost, apply small amounts with a flat shovel and lightly rake.

5. What can I put on my lawn that is safe?

Unfortunately, nothing you put on your lawn is really "safe." Even organic products such as compost or blood meal can be harmful to water quality. These products typically have a low nitrogen to phosphorus ratio. This means that in order to get the nitrogen levels they desire, homeowners must dump far too much phosphorus on their lawns, and phosphorus is the nutrient that causes our lakes to turn green. The best policy is to nurture your lawn with proper mowing and watering, and apply nothing, or as little as possible, to your lawn.

6. Should I start a lawn from seed or sod?

We recommend seeding for most lawns. Its a lot cheaper and enables you to choose the right varieties of low-maintenance grass for your site. Usually, the only grass available for sod is Kentucky bluegrass, which requires some fertilizer to look its best. However, to protect water quality, you should consider sodding areas that could be easily eroded, such as slopes, as sod holds soil well.

7. Should I aerate my lawn?

If you have time and feel you should do something to your lawn, aeration can be helpful. But to be effective, aeration has to be done routinely—twice a year at the minimum. A good aerator, which is four feet wide, costs about $700 to $1,200 U.S. dollars.

pesticides & cancer

In Western society, "cancer" is a feared word. And for good reason—cancer rates are rising dramatically. Excluding smoking-related cancer in men, the rate of new cases of cancer has increased by 35 percent since 1950. In most developed countries, one individual in three will contract some form of cancer; one in four individuals will die of the disease.

What's happening? Part of the increase is due to the simple fact that people are living longer and that we have found better ways to detect the disease. But some scientists believe another factor is involved: hormone-altering chemicals, including pesticides, with which we come in contact every day.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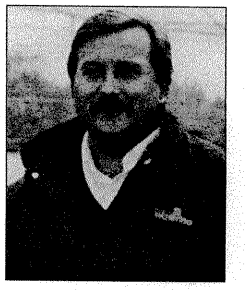
Dr. Devra Lee Davis, senior fellow and program director for the World Resources Institute, a research center in Washington D. C., points to breast cancer as an example. Its rapid increase in incidence from 1 in 20 in 1960 to 1 in 9 today is staggering.

Today, known risk factors for breast cancer include such things as diet, family history and age of menopause all of which have one thing in common: they affect the estrogen levels in a woman's blood stream. Although estrogen has long been known to stimulate the growth of breast tumors, it now appears that many chemicals, called "xenoestrogens," may do so as well.

Davis has formally proposed a hypothesis that when these xenoestrogens are exposed to the body, they act like hormones mimicking estrogen. Xenoestrogens enter our body a number of ways. We consume them in animal fat, since the chemicals tend to accumulate in fatty tissue. We are exposed to them through industrial air and water pollution and in such things as plastic packaging. The lawn pesticide 2,4-D is considered xenoestrogen. A group of scientists are now calling for a hormonal screening of all chemicals in wide use with a phaseout of those shown to mimick estrogen.

can you maintain parks without pesticides? ask Brian Detzler

Shortly after Brian Detzler was hired as parks manager by the city of Waterloo, Ontario, he came upon a contractor dousing insecticide on parkland in November. Why was the contractor spraying at such a peculiar time? Because he had a contract to spray everything, whether or not it was needed, he told Detzler, and this happened to be a convenient time for the job.



Detzler concluded there must be a better way. Blanket spraying—especially at the wrong time of year—was a waste of tax dollars. Moreover, it added chemicals to the environment with absolutely no benefit. So Detzler began a program of preventive health care for park turf. Since 1979 he has reduced the amount of acres treated with pesticides from 79 percent to less than 1 percent.

The secret to his success is growing strong turf. As part of his program, Detzler reduced the use of Kentucky bluegrass. "We chose not to use Kentucky bluegrasses because of its high demand for water and fertilization." As an alternative, he favors fescues and ryegrass.

To promote deep root growth, Detzler raised mowing height from one and a half to three inches. (And did it gradually enough that athletes using the fields never noticed.) To avoid compaction in high-use areas, Detzler aerates sports fields regularly—every two to three weeks. He overseeds, topdresses with compost to improve the soil, and applies fertilizer only if a soil test shows deficiencies. And to cut down on maintenance, Detzler established naturalized areas, along creeks and adjacent to wooded sites, that do not have to be mowed.

While the program depends on constant monitoring, it does not require more money than the old turf-management methods, Detzler points out. Indeed, the park system employs fewer maintenance staff now than in the past, even though parkland has tripled. "People get caught up in the idea that turf management is a really technical thing. Believe it or not, its simple. This program is doable at any level and on any scale, no matter how large or small. It doesn't require big budgets, just an understanding of good turf maintenance practices administered with dedication, commitment and, above all, patience."

lawn of a new day

Growing a sweeping lawn—or at least the desire to—has become entrenched in our culture. Anthropologists say we cultivate lawns because they remind us of the savannahs our ancient forebears roamed. Historians maintain we inherited love of lawns from the British aristocracy. Yet others theorize that we like to grow open, adjacent lawns without fences because they are democratic—in other words, they connect us to our neighbors.

But there is no rule that says every home must have a lawn. Other landscapes are possible and, often, desirable. Here we suggest five: a perennial garden, shade garden, prairie, native woodland and a wildlife habitat.

perennial garden: diversity in bloom

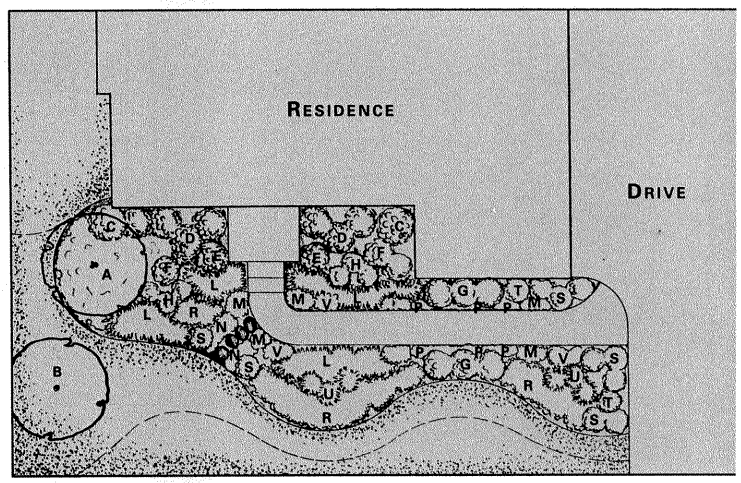
All gardeners love perennials for their long-lasting beauty, their color and their fragrance. This garden puts these showy plants right up front—in sweeping beds that fill most of the front yard of a typical suburban home.

The design first tucks traditional shrubs against the home's foundation: burning bush, rosy-red 'Anthony Waters' spirea and rhododendron, the latter a variety known as P.J.M. that is hardy in northern zones. These form a backdrop for showy, five-feet-high 'Magnifica' shrub roses. Unlike other varieties of roses, which must be pampered, these are hardy and require little maintenance.

Large perennial beds line both sides of the walkway. Packed with reliable, low-maintenance species, they provide three seasons of colorful bloom and a wonderful diversity of textures and forms. In spring, spiky, deep-blue Siberian iris combine with the mounded clusters of chartreuse lady's mantle, plump rounded peonies, bright-yellow daffodils and a selection of other bulbs. Summer brings a parade of daylilies (Stella d'Oro is a long-bloomer, but many varieties are available), yellow and purple coneflower, and purple bellflower. Garden phlox—purple, pink and white—bridges summer and fall. Autumn Joy sedum blooms pink and deepens to rusty bronze as autumn progresses. Three-feet-high 'Bonica' shrub roses highlight the path.

Stretching across the street edge of the yard is a narrow band of lawn. This feature provides a visual link with more traditional lawns to the right and left, and can make a nontraditional planting more acceptable to neighbors. The lawn can be made larger or smaller by adjusting the size of the perennial beds.

A garden like this requires about six hours of sun a day. Before planting enrich the soil by adding composted manure or compost. The beds should also be top-dressed with compost or composted manure every year. A mulch of cocoa beans will keep down weeds. Water deeply, about one inch per week; more in really hot weather. The best time to water is in the morning as night watering can lead to the growth of molds and fungus. Remove spent blossoms to promote continuous bloom. The first winter after planting, it's a good idea to mulch with a layer of evergreens to deter thawing and refreezing. Add the evergreens after the ground is frozen and remove in spring.



Plant List:

A Red Bud-Multistem (1)
B 'Red Jewel' Crab (1)
C Burning Bush (2)
D 'Anthony Waterer' Spirea (7)
E Rhododendron PJM (2)
F Rose 'Bonica' (3)
G Rose 'Magnifica' (6)
H Peony (6)
J Vinca (11)
K Daffodils (11)
L Daylily (13)
M Lady's Mantle (16)
N Baby's Breath (6)
P Creeping Bellflower (6)
R Garden Phlox (14)
S Yellow Coneflower (10)
T Purple Coneflower (2)
U Siberian Iris (6)
V 'Autumn Joy' Sedum (2)

Note: Numbers in parentheses indicate the number of plants to install.

shade garden: elegant charm

If your site receives less than four hours of sun a day, don't despair. A shade garden is the perfect solution. We show here a planting that works well under a tall tree. It's elegant enough for a front yard, and provides a cool, welcoming entrance to an urban home.

Plantings of burning bush and yew against the home's foundation give this garden structure. Hydrangea (the very tough 'Annabelle') and colorful rhododendron frame the front-door steps. Low-maintenance perennials fill the area under the tree. Here, the fernlike foliage of astilbe contrasts beautifully with the mounded hostas and the shiny heart-shaped leaves of bergenia. (Many varieties of hosta are available; we've left it up to gardeners to choose their favorites.) A band of dark-green vinca forms a graceful arch and can be interplanted with bulbs. Ferns run down the side of the house.

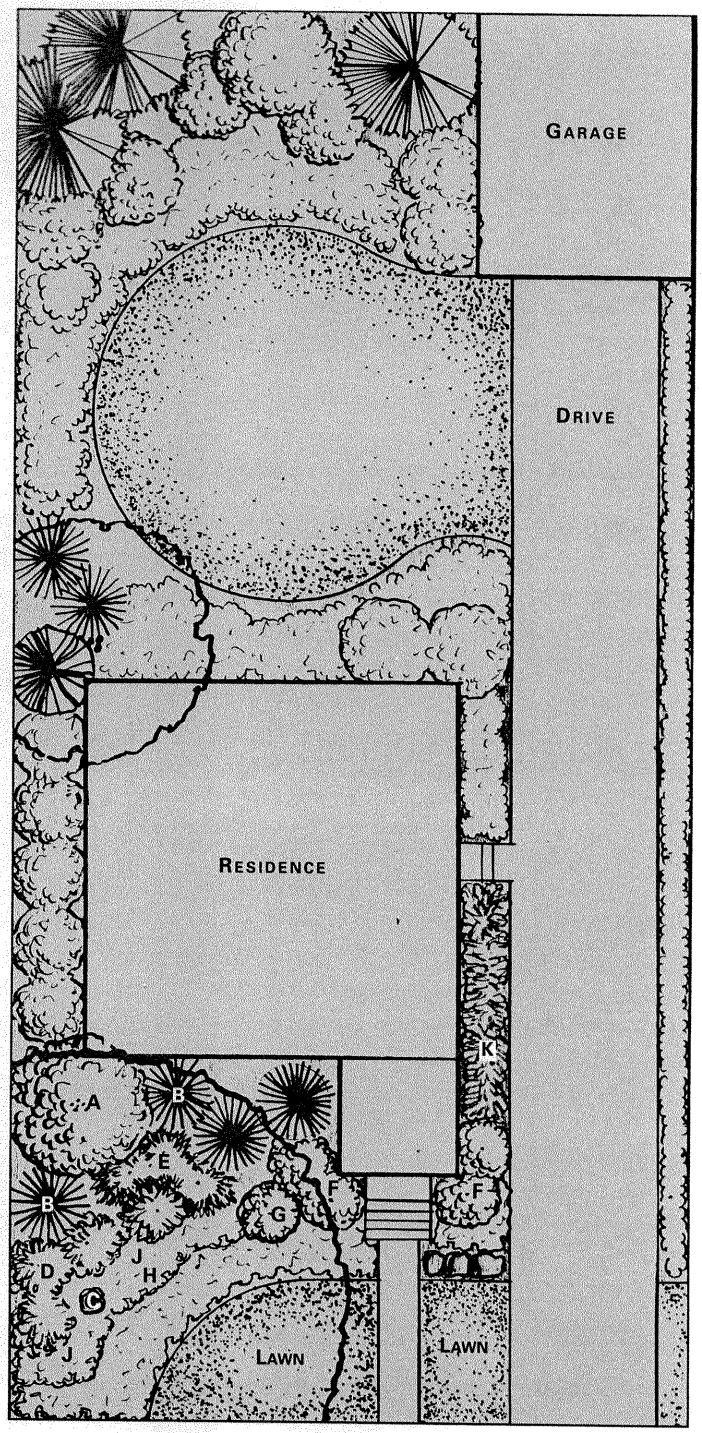
In spring, pink flowering bergenia, spring bulbs, and lavender or pink rhododendron wash the garden with delicate color. The hydrangea and hosta bloom in summer. (Gardeners wishing more summer color can plant annual impatiens along the walkway.) In fall, bergenia leaves turn a lovely bronze.

This garden requires a well-drained soil, fairly rich in organic material. Work in compost before planting, and topdress annually. Mulch with hardwood shredded bark (not cedar, which is too acidic) or cocoa beans to discourage weeds. The garden will need about an inch of water a week for the first few years. It will take about three years to establish.

Plant List:

A Burning Bush (1)
B Taunton Yew (4)
C Existing Tree
D Hosta (4)
E Astilbe (3)
F 'Annabelle' Hydrangea (4)
G Rhododendron PJM
H Vinca/Bulbs
J Bergenia (7)
K Ferns (7)

Note: Numbers in parentheses indicate the number of plants to install.



prairie: a north american alternative

Southwestern Ontario and the American Midwest once contained large areas of open grassland known as prairie. The plants that grew here developed incredible abilities to withstand drought and severe winters, and to resist insects and diseases. Once established, a prairie requires no maintenance, and it will bring an array of birds and butterflies to your yard.

Before planting a prairie, you should consult with local officials since some cities have ordinances that regulate what you can grow in a garden and how tall it can be. You may need to obtain a special permit to grow a prairie. Also keep in mind that the regimen we describe here is very general. Prairie plants can grow in almost any type of soil—dry, medium, moist, sandy, gravelly—and soil type will play a role in what kind of nurturance a new prairie will require.

The plan we show here is designed for a large suburban lot that receives six to eight hours of sun a day. You'll notice that some lawn has been preserved. Many homeowners like to maintain a grassy area for playing games such as volleyball (which requires 30' x 50' of space), badminton (20' x 44') and croquet (40' x 70').

Be forewarned that establishing a prairie takes time—at least five years. We suggest that you start small and get yours off to a quick start in the area closest to the lawn by installing prairie plants. A larger (more than 300 feet) can be seeded but should be done in smaller strips over time. By seeding a small area you can kill existing sody by tilling rather than resort to pesticide use.

Proper site preparation is critical to growing a prairie, since you must be sure that the area is free of weeds, grass and other vegetation that will compete with the slow-growing prairie species. There are a number of ways to prepare a site. If you are planting a small area that is already in grass, you can remove the sod with a sod cutter. You can also smother existing plants and turf by covering the area with black plastic or apply thick layers of newspaper, which will cut off sunlight. Leave the area covered for two to three months during the growing season.

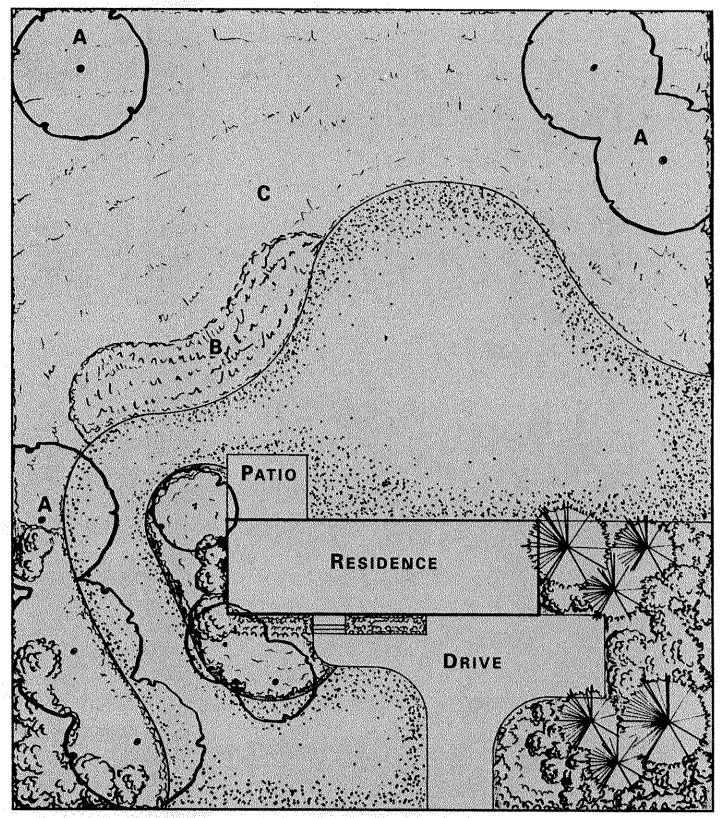
Repeated tilling is another option. Lawns may require only two tillings to eliminate the grass. Weedy fields will require many more. (Be aware, however, that if your site is on a slope, tilling may not be a good option since it will promote erosion.)

After eliminating grass and weeds (which may take an entire growing season), you will be ready for seeding. In spring, broadcast seed by hand, then rake it lightly into the soil, and roll the area to assure firm contact with the soil—a process similar to seeding a lawn. Far less prairie seed than grass seed is needed to cover an area, however, so you may want to add sawdust, vermiculite or peat moss to dilute the mix.

Mulch very lightly with straw. Do not water; under harsh conditions, prairie plants, over time, will do better than weeds. You should, however, mow about three times the first year to cut off weedheads before they drop seed. Mow four times the second and third years. Expect that this will be a difficult task since your prairie plants will be flowering and you won't want to lop them off. Console yourself with the fact that they will look even lovelier in the future if they don't have weeds to contend with.

Plant the showier prairie plants along the lawn edge (area B). Prairie dropseed, Indian grass, New England aster, butterfly weed, marsh milkweed and purple and yellow coneflowers will all look magnificent.

Once established, prairies require no fertilizing, no watering and, beginning in the fourth year, no mowing.



Plant List: *See page 40*

native woodland: the true maintenance-free yard

In small, urban back yards, where only a tiny patch of lawn is desired for entertaining, native woodlands are perfect. Native species attract birds to your feeder, and once established, woodlands require no care. Informal and inviting, they function as a green oasis for city dwellers.

This design incorporates tall native species in the rear of the yard: witchhazel, cranberrybush vibernum, dwarf bushhoneysuckle, arrowwood viburnum and black chokecherry.

A variety of woodland flowers fill the area between the shrubs and the lawn, including trillium, Virginia bluebells and Jack-in-the-pulpit. The broad-leafed wild ginger contrasts nicely with the more delicate columbine. The tall, leafy stems of Solomon's plume drapes over the low-growing wood phlox and lungwort.

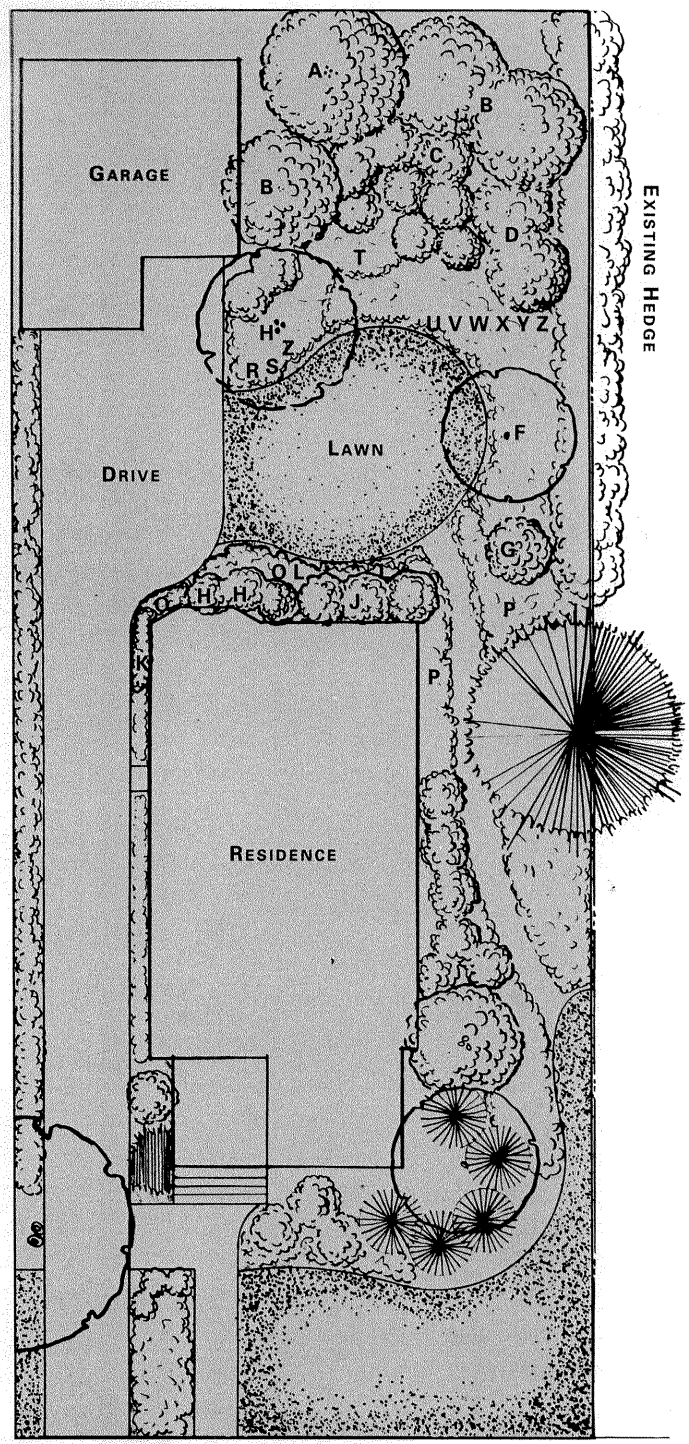
In a sunny area against the back of the house, butterfly weed, purple coneflower, liatris and shrub roses provide a splash of summer color. Trumpetvine attracts hummingbirds. In fall, berries dot the native shrubs.

This garden grows best on well-drained soil that is rich in organic matter. Add compost or composted manure before planting (after the first year, add annually). You will need to water young plants until they are established. Mulch with shredded bark for the first few years; after that, dense foliage will crowd out weeds. Don't rake. Let leaves fall where they may and, as in a natural woods, they will enrich the soil.

Plant List:

- A Common Witchhazel (1)
- B Cranberrybush Viburnum (3)
- C Dwarf Bushhoneysuckle (4)
- D Arrowwood Viburnum (2)
- E Black Chokeberry (6)
- F Hophornbeam (1)
- G Red Chokeberry (1)
- H Shadblow Serviceberry (1)
- J 'Bonica' Hardy Shrub Rose (3)
- K Trumpet Vine (1)
- L Liatris (13)
- M Black-eyed Susan (1)
- N Purple Coneflower (2)
- O Butterfly Weed (6)
- P Mayapple (12)
- R Columbine (10)
- S Wild Ginger (24)
- T Ligularia (3)
- U Jack in the Pulpit (5)
- V Trillium (11)
- W Wood Phlox (18)
- X Solomon's Plume (7)
- Y Lungwort (9)
- Z Virginia bluebells (36)

Note: Numbers in parentheses indicate the number of plants to install.



wildlife habitat: bring in the birds & the bees

Aside from looking beautiful, a wildlife garden's main task is to provide food and shelter for birds, butterflies and small mammals. Therefore it is built on principle as much as on design. The four principles you must remember all wildlife need are: water, food, shelter and cover. Your wildlife habitat should contain all four.

A true natural habitat will make extensive use of native species. Perennials will be chosen based on what they attract. Fallen limbs will remain on the ground to provide cover and nesting places.

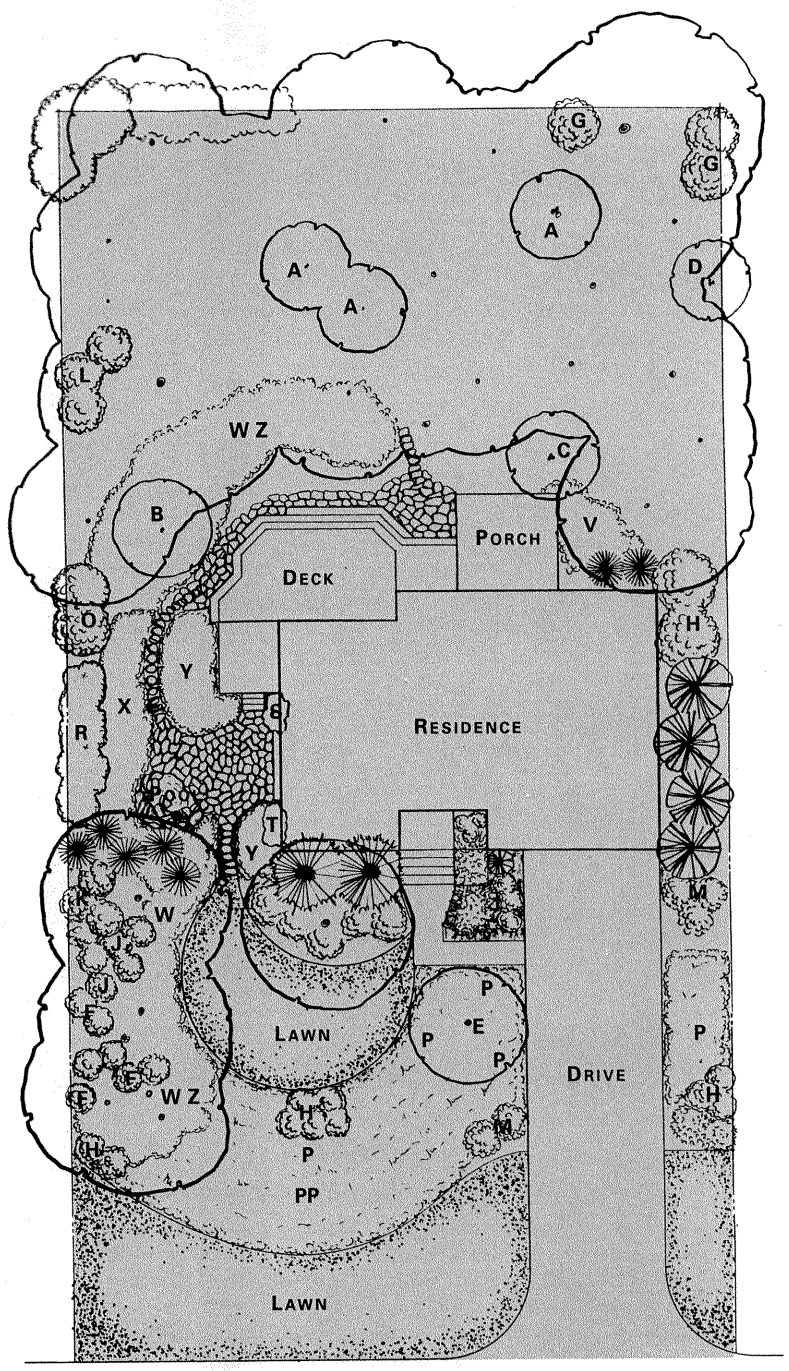
In this design, the rear area of the lot contains mature oak trees. In this woodland, exotic species, primarily buckthorn and honeysuckle, were replaced with native shrubs, including arrowwood viburnum and witchhazel, and understory trees such as hornbeam. Raspberry, a favorite of birds, and sumac were planted near the edge. A dead tree was topped at eight feet to provide habitat. Woodland perennials—trillium, bellwort, mayapple, and others—form a carpet of flowers in the spring.

Along the side of the house, trumpetvine, climbing roses and cardinal flower attract hummingbirds. Butterflies drink the nectar of garden phlox, coneflowers and butterfly weed. Birds appreciate the evergreen cover.

The front yard features more shrubs and a small prairie planting, which attract lots of butterflies. A very small strip of lawn visually connects this diverse garden to adjacent lawns.

Maintenance is minimal. In fact, a wildlife habitat should not be tidy—nature, after all, is unorderly. Birds can use dead foliage for cover and for making nests. They will eat the seeds from standing, dried flower heads over the winter.

Birdhouses, small ponds or birdbaths, and rocks (for hiding frogs and toads) are good, non-vegetative additions. And, of course, don't forget a good pair of binoculars.



Plant List: *See pages 41-42*

lorrie Otto, wild one

Lorrie Otto's interest in native landscaping developed almost by accident. She had just moved to Bayside, a suburb of Milwaukee, Wisconsin, with her husband and two young children, when she noticed some native plants popping up in her lawn. So she decided to stop mowing. "I wanted to bring back the flowers I remembered as a child growing along the railroad tracks and the roadsides," she says. But dandelions sprung up too, a situation that did not please her neighbors. They reported her to the city government, which had a weed ordinance at the time, and, one morning while she was busy doing laundry, city workers came in and mowed her entire front lawn.

Outraged, Otto became an activist—and a naturalist. She took courses on prairie vegetation. She convinced the Bayside government to strike the weed ordinance from the books. She initiated the fight in Wisconsin to ban the pesticide DDT, which was killing birds. And she founded a group called the Wild Ones, which promotes landscaping with native plants.

"When I first started out, I really wanted to just do anything other than have a lawn. It seemed that there was no habitat for either birds or butterflies or the things I really love—that great diversity of life. And so I thought anything that wouldn't require drinking water or chemicals, that would grow in my clay soil would work. Then I decided I wanted to celebrate where I was and that I'd make this look like the Midwest. And so I have kind of a mix."

A "wonder," is a better description. Otto, 76, now tends a one-acre prairie that is 26 years old. Lush with purple coneflower, cup plants and tall sunflowers, it teems with birds, butterflies and bees. Even Otto's driveway is environmentally sound, made of a grid of stone through which absorbs runoff. It's a famous yard, as well, featured in garden books and national magazines. Tour buses visit every August. Otto doesn't go on summer vacations, she points out, "because it's so beautiful here."

"The maintenance is fun. Basically, you just keep the weeds out and control the aggressive plants. You can't call it work because it's just wonderful to do. And I do love the feeling that I'm healing the earth instead of hurting it."

final thoughts

Most of us are concerned about the environment, but we often feel helpless in the face of large-scale problems. Global warming, acid rain, groundwater pollution, hazardous waste—how can an individual possibly have any meaningful impact on such complicated issues? We hope we have shown you here that you can start in your own back yard.

Pesticides are poisonous substances. Scientists know that many of them harm humans, animals and plant life. And there is much left to be discovered about potential harmful effects. Eliminating pesticides in our lawns is a critical first step in reducing world-wide use, and world-wide problems.

If you have been in the habit of using pesticides or if you have inherited a lawn that has not been well cared for, eliminating pesticides may seem like a step backward. In fact, it is a huge step forward. By letting go of a dependency on chemical pesticides, you free your lawn to grow in a natural fashion. You will help to set a new, more environmentally friendly standard and inspire others to join you. In a simple way, you can play a significant role in restoring the health of the planet.

The fundamentals are simple: Plant the right grasses, let your grass grow tall and mow properly. We also urge you to consider reducing the amount of land on which you grow grass. Prairies, perennial gardens, shade gardens and wildlife habitats are beautiful alternatives that require little care.

Life is too short to spend excessive amounts of time mowing and weeding, and it is too precious to risk by exposing it to toxic substances. We hope we have convinced you here that we can have great lawns, great lakes and healthy ecosystems all at the same time.

plant listings

Perennial Garden

A	Red Bud-Multistem (1)	Cercis canadensis
B	'Red Jewel' Crab (1)	Malus 'Red Jewel'
C	Burning Bush (2)	Euonymus alata
D	'Anthony Waterer' Spirea (7)	'Anthony Waterer' Spirea
E	Rhododendron P.J.M. (2)	Rhododendron P.J.M.
F	Rose 'Bonica' (3)	Rosa 'Bonica'
G	Rose 'Magnifica' (6)	Rosa 'Magnifica'
H	Peony (6)	Paeoniaceae
J	Vinca (11)	Vinca
K	Daffodils (11)	Narcissus
L	Daylily (13)	Hemerocallis
M	Lady's Mantle (16)	Alchemilla mollis
N	Baby's Breath (6)	Gypsophila paniculata, 'Pink Fairy'
P	Creeping Bellflower (6)	Campanula carpatica
R	Garden Phlox (14)	Phlox paniculata
S	Yellow Coneflower (10)	Rudbeckia 'Goldsturm'
T	Purple Coneflower (2)	Echinacea purpurea
U	Siberian Iris (6)	Iris sibirica 'Caesar's Brother'
V	'Autumn Joy' Sedum	Sedum 'Autumn Joy'

Shade Garden

A	Burning Bush (1)	Euonymus alata
B	Taunton Yew (4)	Taxus 'Tauntonii'
C	Existing Tree	(Not Black Walnut)
D	Hosta (4)	Hosta
E	Astilbe (3)	Astilbe
F	'Annabelle' Hydrangea (4)	Hydrangea 'Annabelle'
G	Rhododendron P.J.M.	Rhododendron P.J.M.
H	Vinca/Bulbs	Vinca minor/desired bulbs
J	Bergenia (7)	Bergenia
K	Ferns (7)	Athyrium filix-femina

Prairie Garden

A	Burr Oak (4)	
B	Showy Prairie Mix	40% grass (7lbs/acre) 60% forbs (flowers) (4-10lbs/acre)
C	Basic Prairie Seed Mix	65% grass (10lbs/acre) 35% forbs (flowers) (3lbs/acre)

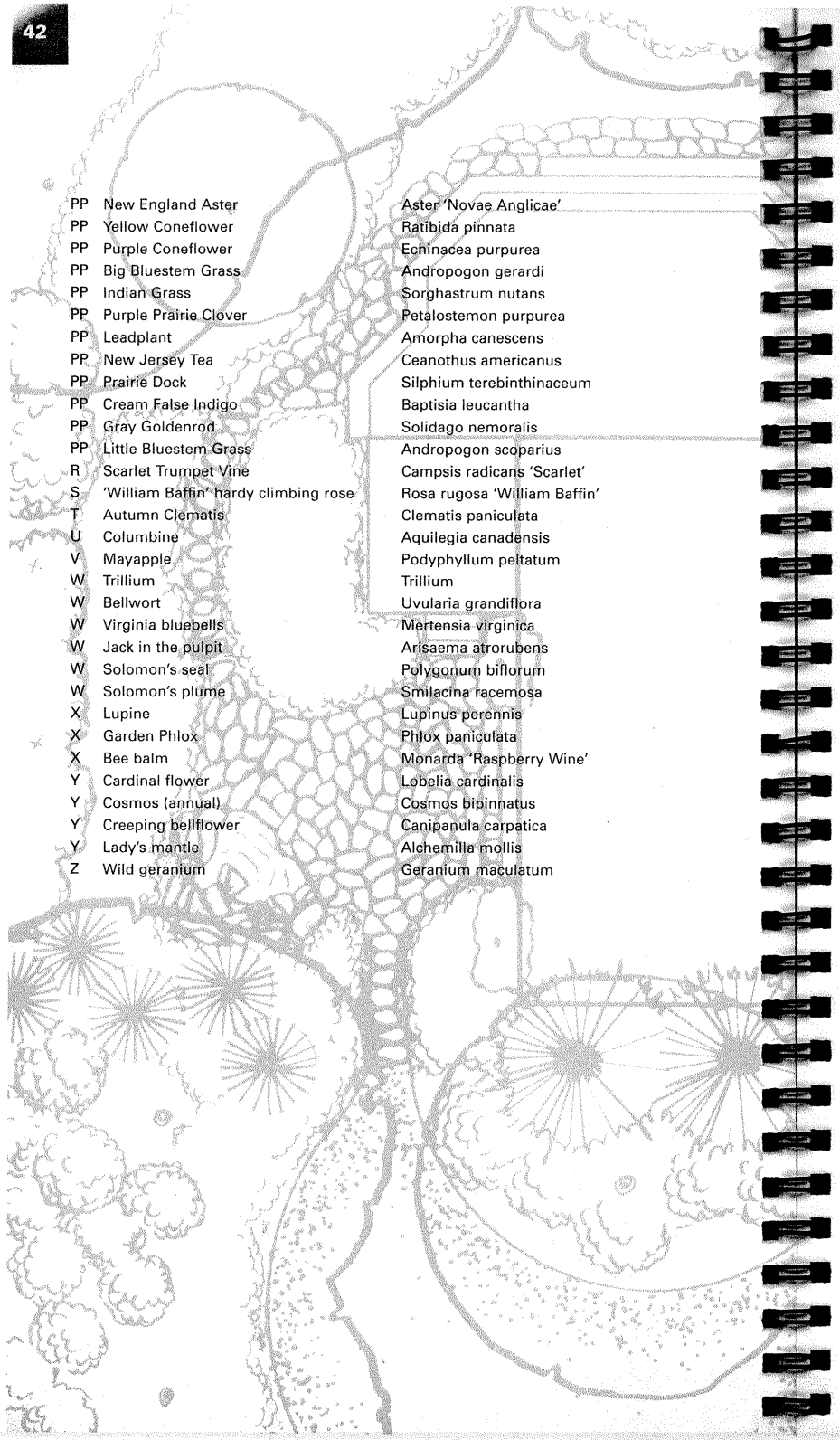
Note: Prairies are native and vary by location. Check with your local prairie nursery for species appropriate for your region.

Native Garden

A	Common Witchhazel (1)	Hammamelis Virginiana
B	Cranberrybush Viburnum (3)	Viburnum trilobum
C	Dwarf Bushhoneysuckle (4)	Diervilla lunicera
D	Arrowwood Viburnum (2)	Viburnum dentatum
E	Black Chokeberry (6)	Aronia melanocarpa
F	Hophornbeam (1)	Ostrya virginiana
G	Red Chokeberry (1)	Aronia arbutifolia 'Brilliantissima'
H	Shadblow Serviceberry (1)	Amelanchier canadensis
J	'Bonica' Hardy Shrub Rose (3)	Rosa 'Bonica'
K	Trumpet Vine (1)	Campsis radicans
L	Liatris (13)	Liatris pychnostachya
M	Black-eyed Susan (1)	Rudbeckia hirta
N	Purple Coneflower (2)	Echinacea purpurea
O	Butterfly Weed (6)	Asclepsias tuberosa
P	Mayapple (12)	Podyphyllum peltatum
R	Columbine (10)	Aquilegia canadensis
S	Wild Ginger (24)	Asarum canadense
T	Ligularia (3)	Ligularia
U	Jack in the Pulpit (5)	Arisaema atrorubens
V	Trillium (11)	Trillium
W	Wood Phlox (18)	Phlox divaricata
X	Solomon's Plume (7)	Smilacina racesmosa
Y	Lungwort (9)	Pulmonaria
Z	Virginia bluebells (36)	Mertensia virginica

Wildlife Garden

A	Hophornbeam (3)	Ostrya virginiana
B	Hornbeam (1)	Carpinus caroliniana
C	Shadblow Serviceberry (1)	Amelanchier canadensis
D	Witchhazel (1)	Hamamelis americana
E	Cockspur Hawthorn (1)	Crataegus crus-galli
F	Black Chokebherry (7)	Aronia melanocarpa
G	Arrowwood Viburnum (3)	Viburnum dentatum
H	Cranberrybush Viburnum (2)	Viburnum triloburn
J	Dwarf Bushhoneysuckle (6)	Diervilla lonicera
K	Red Chokeberry (3)	Aronia arbutifolia 'Brilliantissima'
L	Vernal Witchhazel (3)	Hamamelis vernalis
M	'Magnifica' hardy shrub rose	Rosa 'Magnifica'
N	'Bonica' hardy shrub rose	Rosa 'Bonica'
O	American Hazelnut	Corylus americana
P	Prairie Dropseed	Sporobolus heterolepis
P	Butterfly weed	Asclepsias tuberosa
P	Prairie smoke	Geum triflorum
P	Ironweed	Eupatorium purpureum
P	Liatris/prairie blazing star	Liatris pycnostachya
P	Sideoats grama grass	Bouteloua curtipendula



PP	New England Aster	Aster 'Novae Anglicae'
PP	Yellow Coneflower	Ratibida pinnata
PP	Purple Coneflower	Echinacea purpurea
PP	Big Bluestem Grass	Andropogon gerardi
PP	Indian Grass	Sorghastrum nutans
PP	Purple Prairie Clover	Petalostemon purpurea
PP	Leadplant	Amorpha canescens
PP	New Jersey Tea	Ceanothus americanus
PP	Prairie Dock	Silphium terebinthinaceum
PP	Cream False Indigo	Baptisia leucantha
PP	Gray Goldenrod	Solidago nemoralis
PP	Little Bluestem Grass	Andropogon scoparius
R	Scarlet Trumpet Vine	Campsis radicans 'Scarlet'
S	'William Baffin' hardy climbing rose	Rosa rugosa 'William Baffin'
T	Autumn Clematis	Clematis paniculata
U	Columbine	Aquilegia canadensis
V	Mayapple	Podyphyllum peltatum
W	Trillium	Trillium
W	Bellwort	Uvularia grandiflora
W	Virginia bluebells	Mertensia virginica
W	Jack in the pulpit	Arisaema atrorubens
W	Solomon's seal	Polygonum biflorum
W	Solomon's plume	Smilacina racemosa
X	Lupine	Lupinus perennis
X	Garden Phlox	Phlox paniculata
X	Bee balm	Monarda 'Raspberry Wine'
Y	Cardinal flower	Lobelia cardinalis
Y	Cosmos (annual)	Cosmos bipinnatus
Y	Creeping bellflower	Canipanula carpatica
Y	Lady's mantle	Alchemilla mollis
Z	Wild geranium	Geranium maculatum

resources

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Daniels, Stevie. MacMillan. 1995

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Minnesota Department of Natural Resources. 1987. (To order, call 800-657-3757).

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Noah's Garden: Restoring the Ecology of Our Own Back Yard. Stein, Sara.
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The Butterfly Garden. Tekulsky, Matthew.
Harvard Common Press, Boston, MA. 1985

Requiem for a Lawnmower and Other Essays on Easy Gardening With Native Plants. Wasowski, Sally. Taylor Publishing Co. Dallas, TX. 1992.

Videos

Low Input Lawn Care. University of Wisconsin-Extension.
(To order, call 608-262-3346).

Hormone Copy Cats. World Wildlife Fund.
(Available free on a returnable basis 416-489-8800).

Great Lakes, Great Lawns.
Wisconsin's Environmental Decade Institute. (608-251-7020)

monthly timetable

january

Remember you have a lawn under all that snow!

Consider reducing or eliminating salt which can harm grass and water quality.

february

Read up on lawns and gardens; knowledge is the key to eliminating the need for pesticides.

march

After snow melts, evaluate yard for winter damage. Note dead patches from salt, rodents or mechanical damage.

Consider reducing the size of your lawn by planting a shade, perennial, wildlife or prairie garden.

april

Repair or replace sod damaged by snowblower, foot traffic, salt or cars.

Lightly rake dead spots and patch seed.

may

Mow high (3"), leave clippings on lawn and cut frequently; remove no more than 1/3 of the blade when you cut.

Don't fertilize in spring.

june

As it warms, grass growth will slow - reduce mowing frequency to every 1-2 weeks.

Raise mowing height to 3 1/2".

Monitor lawn for heat stress.

july

Cut only when necessary during the hot and dry months.

Sharpen mower blades.

Aerify lawn with core remover.

Allow lawn to get brown (it will recover when it rains).

august

Don't cut if grass has not received moisture for last 10 days.

Aerify lawn with core remover - late August.

september

Soil test (every 3 years).

Enrich soil for next season by applying a thin layer of compost (no more than 1/4 inch thick) to your lawn, lightly rake.

Lower mowing height back to 3".

If you wish to fertilize, do so now.

Overseed entire lawn with a good seed mix (4-6 lbs/1000 sq.ft)

october

Chop fallen leaves with mower and leave a 1/4" thick mulch; rake remaining leaves and put into your compost pile.

Last cut late October.

november

Service lawn mower; sharpen blades.

december

Rest and play!

thanks

This guide book and accompanying videotape are produced by Wisconsin's Environmental Decade Institute in cooperation with the Western Lake Superior Sanitary District as part of a two year binational project called "The Green Thumb Project".

The goal of the project was to offer a positive contribution to the debate over lawn pesticide use and to encourage homeowners and professional turf managers to adopt more earth friendly products and practices. If we have done so, we have succeeded.

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From left, Seated - Lori Schwingshakl, Jamie Harvie (project co-director), Tom Smith, Roger Bannermann Standing - Moyra Haney, Brian Detzler, Susan Murray

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consult your local county extension service for more assistance

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