



Pesticide Use

Introduction

Pesticides play an important role in the management of pests. In addition to other practices, pesticides may be needed to keep pests below acceptable levels to maintain crop quality and profitability. However, when not selected or applied properly, pesticides can become very costly to the farmer and have the potential to contaminate surface and groundwater resources. Best management practices and integrated pest management strategies should be implemented to minimize/avoid pest problems, reduce or eliminate pesticide use and costs, and maximize potential net profitability of crop production.

Environmental Concerns

Improper selection and use of pesticides can lead to surface or groundwater contamination and pose serious health risks to humans and wildlife. When applied inappropriately, pesticides can leach through soils and into groundwater. Cleanup of groundwater contaminated by pesticides is often impossible and the contamination may be present for many years. Wells contaminated with pesticides must not be used or used only with appropriate treatment if concentrations are higher than drinking water standards. Pesticides applied to the soil surface can be transported to lakes and streams by water runoff and soil erosion, contaminating these surface water bodies. Pesticides can deform, inhibit growth and reproduction, or kill aquatic organisms. The harmful chemicals can also accumulate in the fatty tissue of fish and other aquatic species which may cause health problems in people or animals if they consume these contaminated species.



Potential Economic Benefits

Pesticides are used to manage pests and help maintain crop quality and profitability. However, pesticides can be extremely costly. Using Integrated Pest Management (IPM) practices may save money on pesticide inputs while also maintaining crop productivity. Additionally, implementing crop management practices such as: crop rotation, conservation tillage, and optimizing the timing of planting and harvesting may reduce the need for pesticide applications while increasing or maintaining soil quality.



Summary of Best Management Practices

- Utilize a written Integrated Pest Management Plan to systematically manage pests by incorporating all reasonable measures to prevent pests including: cultural, physical, biological, and chemical methods.
- Apply pesticides with the lowest hazard rating according to site specific needs. Only use pesticides that are registered in New York State.
- Implement as many non-chemical pest prevention practices (i.e. crop rotation, pest resistant crops, plowing, etc.) as possible to reduce the need for pesticide.
- Pesticide applicators should be certified (private or commercial) or be directly supervised by someone who is a Certified Pesticide Applicator. Appropriate training should be given to all employees who handle or apply pesticides.
- Farm owners, operators, and employees should be familiar and comply with the EPA Worker Protection Standard.
- Consider weather conditions before applying pesticides. When conditions are less than favorable, pesticide contamination can occur through runoff or drift. To prevent contamination avoid spraying before/during a rain event or when wind speeds are greater than 5 mph.
- Calibrate sprayer/applicator equipment frequently and on a regular basis to ensure the appropriate quantity of pesticides is being applied accurately.
- Know the location of wells and springs. Avoid applying pesticides within recharge areas and maintain all required setbacks from surface water resources. To prevent pesticides from migrating onto neighboring fields and properties avoid spraying in windy conditions. Maintain vegetated buffer strips along surface waters to prevent erosion and catch pesticide runoff.
- Maintain records of pesticide application and be sure to include all necessary information. If applicable, records must be kept for a minimum of three years.



Summary of Regulations

State Regulations

NYS Department of Environmental Conservation – [Pesticide Statutes, Regulations, and Policies](#)

Federal Regulations

US Environmental Protection Agency – [Pesticide Container and Containment Rule](#)

US Environmental Protection Agency – [Federal Insecticide, Fungicide, and Rodenticide Act \(FIFRA\)](#)



Background Information for Worksheet Questions

Does the farm have a written IPM plan? If so, when was it last updated? How closely is it followed?

Integrated Pest Management (IPM) is a systematic approach to managing pests which focuses on long-term prevention or suppression with minimal impact on human health, the environment and non-target organisms. IPM incorporates all reasonable measures to prevent pest problems by properly identifying pests, monitoring population dynamics and utilizing cultural, physical, biological, or chemical pest control methods to reduce pests to acceptable levels. If a farm has a plan it should be updated periodically to include new strategies, responses to cropping system and pest changes, and avoid the development of pest resistance. If the farm does not have an IPM plan, but utilizes pesticides, they should consider developing one to reduce pest damage on crops, protect water quality, and reduce other forms of environmental degradation.

For More Information:

USDA NRCS Conservation Practice Standard – [Integrated Pest Management \(595\)](#)

What criteria are used in decisions to apply pesticides?

Before applying pesticides on a crop, pests should be identified and the level of infestation should be assessed. This will help determine the type of pesticide to use. Ideally, the lowest hazard rating chemical should be used. This means that a pesticide that is the least toxic to humans and the environment should be used.

For More Information:

[Pesticide Environmental Stewardship, Center for Integrated Pest Management – How to Read the Label](#)

What types of non-chemical practices are used for pest prevention (e.g. crop rotation, insect/disease resistant plant varieties)?

There are several types of non-chemical practices that can be implemented to prevent pest infestation. These include:

- Plowing or harrowing to control weeds
- Crop rotation - rotating susceptible crops with non-susceptible ones
- Removing infected plant material from fields
- Maintaining soil organic matter by leaving crop residues on the soil and adding manure or composts
- Using mixed cropping, strip cropping, inter-cropping. Planting adjacent fields to non-susceptible crops can decrease disease and spread of the pest.
- Avoiding planting seeds in cold, wet soils. These conditions favor growth of fungal and bacterial pathogens and are not favorable for seedling growth.
- Using soil tests to determine fertilizers and manure application levels appropriate to obtain realistic yields. Over or under-fertilization can make crops more susceptible to pest attack or infestation.
- Controlling weeds that can serve as alternative hosts for plant pests or diseases.
- Planting pest-resistant varieties of crops are selectively bred or genetically altered to be less susceptible to pest or disease attack
- Natural biological enemies or pest organisms can be used to control pest populations (i.e. ladybugs, beneficial mites, and bacteria such as *Bacillus thuringiensis*).

These cultural or biological practices effectively control pests by disrupting environmental conditions that pests need to grow and reproduce. They also deter pests through the use of disease resistant varieties, as well as, biological competition. Using non-chemical practices to prevent pests reduces or eliminates the risk of water resource contamination and can save the farm money.

Background Information for Worksheet Questions

Have practices been scored for level of IPM adoption (e.g. Cornell IPM Elements, NRCS or other industry accepted method)?

Resource professionals will use an assessment tool (i.e. Cornell IPM Elements) to determine what and how many IPM practices have been and are being implemented on the farm. This will establish a baseline of information to assess what the farmer is currently doing and how to improve. Effectively implementing IPM practices can greatly reduce the need for additional chemicals, thereby reducing the costs associated with purchased pesticides and protecting natural resource from the effects of harmful chemicals.

Is the owner/operator a Certified Pesticide Applicator? If so, Private or Commercial?

Pesticides must be applied by a Certified Pesticide Applicator or by someone who is directly supervised by a certified applicator. There are two types of certifications that applicators may obtain. The first is a private certification which allows the applicator to apply restricted use pesticides for the purpose of producing an agricultural commodity on property owned or rented by the applicator. However, if the private applicator is using general use pesticides, they do not need to be certified. The second is a commercial applicator which allows for the applicator to apply pesticides for any purpose on land that is not owned by the applicator. Most landowners maintain a private certification, but some may be certified commercially. Applicators that wish to become certified must demonstrate knowledge of pest problems and control practices, proper pesticide storage and handling procedures, and legal responsibility. They must also be able to recognize common pests and damage caused by them, read and understand pesticide labels, apply pesticides according to instructions, recognize environmental situations to be considered during application, and recognize poisoning symptoms.



For More Information:

[US EPA Pesticide Health and Safety – Private and Commercial Classification](#)

[NYS Department of Environmental Conservation – Pesticide Applicator/Technician Information](#)

What is the level of training of the owner/operator and the pesticide applicator?

The person applying pesticides should be appropriately certified as a pesticide applicator if using restricted use pesticides. Going through the certification process ensures that the applicator is well educated about pesticides and any associated risks. If this is not the case, the owner/operator needs to be appropriately certified and must provide supervision and training to any employee doing the application. If no one involved in the application of pesticides is certified, this could pose a serious threat to the applicators and neighboring residents, as well as, the environment. Learning about State and Federal regulations and properly following the pesticide label goes hand in hand with having the right training and certification to apply pesticides. Pesticide labels have to be approved by the EPA and contain important information regarding the contents (Product Name/Brand, classification, type, etc.), how to handle, mix, and store the chemical, as well as, other important safety information. Pesticide labels need to be followed at all times to avoid creating a dangerous situation for humans, animals, and the environment.

For More Information

[Cornell University Cooperative Extension – Pesticide Label](#)

Background Information for Worksheet Questions

Is the EPA Worker Protection Standard followed?

The EPA Worker Protection Standard (WPS) is a regulation issued by the US Environmental Protection Agency under the authority of the 1992 Federal Worker Protection Standard covering pesticides that are used in the production of agricultural plants on farms, forests, nurseries, and greenhouses. The WPS requires producers to take steps to reduce the risk of pesticide related illness and injury if they: use pesticides with WPS requirements on the label, and employ workers or pesticide handlers who are exposed to such pesticides. Owners, operators, and employees should be familiar with the WPS and should be in full compliance.

For More Information:

[US EPA – Worker Protection Standard for Agricultural Pesticides](#)

Are weather conditions considered before applying pesticides?

When weather conditions are not considered pesticide drift can occur during or soon after application. Pesticide drift is when some of the pesticide leaves the intended target through the air or never reaches the intended target site. Pesticide drift may have negative impacts on farm workers, other people (i.e. neighbors or children), other crops or non-target plants, livestock, sensitive environmental areas, water resources, and fish and wildlife. Drift can also result in fines or legal liability. Wind, storms, humidity and temperature should be at favorable levels before spraying to reduce pesticide drift.

For More Information:

[Pesticide Environmental Stewardship, Center for Integrated Pest Management – Introduction to Pesticide Drift](#)

What criteria are used for pesticide selection?

When choosing pesticides, product cost should not be the only factor considered. Product efficiency, environmental risk, restricted re-entry interval, and preservation of natural pest predators should also be taken into consideration. When assessing the environmental risk of a pesticide,

Atrazine 4L Reg No: 34704-69 42.2% Atrazine		Dupont Asana XL Insecticide Reg No: 332-516 8.4% Esfenvalerate		Atrazine (Another)																																					
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resource professionals can use screening tools such as the Windows Pesticide Screening Tool (WIN-PST). WIN-PST assesses the potential for pesticides to move with water and eroded soil/organic matter and affect non-targeted organisms. Taking all of these factors into account will ensure that the most efficient pesticide is used, which will reduce the amount of pesticides needed and saving the farmer money. If a pesticide is chosen by cost alone, it may

not be as efficient as more expensive products resulting in the need for more chemicals. This would force the farmer to spend more money on pesticides and introduce more chemicals to the environment putting water resources and other environmental habitats at risk.

For More Information:

[USDA NRCS – About the Windows Pesticide Screening Tool \(WIN-PST\)](#)

Background Information for Worksheet Questions

Is application equipment properly and regularly calibrated?

Calibration is the process of measuring and adjusting the amount of pesticide your equipment will apply over a target area. Calibrating sprayer equipment will save money, by ensuring the correct amount of pesticides is applied. Over-application causes pesticides to be wasted and under application of pesticides will result in the need to re-apply. When the appropriate amount of pesticides is applied, there should not be any excess residues on or in plants, soil, and surface or groundwater. Ideally, calibration of sprayer equipment should be completed before each application. If regular calibration is not implemented, the landowner could be in violation of state law. Additionally, the landowner could be losing a significant amount of time and money, as well as, creating potentially dangerous environmental conditions by placing more pesticides than necessary on the land.

For More Information:

[Pesticide Environmental Stewardship, Center for Integrated Pest Management – Calibration](#)

Are wells and springs in and near cropped fields identified?

To protect wells and springs from pesticide contamination, all well and spring locations should be located on field maps and visibly marked in the field. All applicators should be made aware of the presence and location of farm wells/springs, as well as, neighboring wells. This can help to prevent pesticides from leaching into the water supplies rendering them unusable and dangerous to human and animal health.

What is the distance of applications from a well, spring or surface watercourse?

Pesticide application should not occur within the recharge area of a well or spring and should meet or exceed labeled setbacks from surface watercourses. If applications are made adjacent to or over wells/springs and setbacks are not met, water resources can become contaminated and toxic to humans and animals.



What pesticide use records are kept?

Federal and state regulations require that application records be kept for all restricted-use pesticides, or for all pesticide applications made by a certified applicator. When keeping pesticide application records, it is always a good idea to record more information than required. Exceptional pesticide records will include: restricted pesticides purchased, crops treated, product name, EPA Reg. number, address of application, place of application, date applied, quantity applied, rates applied, method of application, applicator's name, target pests, pest monitoring records, weather conditions, stage of crop growth, stage of pest growth, and apparent effectiveness. As required by the New York State Department of Environmental Conservation under certain circumstances, all pesticide records should be retained for at least three years.

For More Information:

[Pesticide Environmental Stewardship, Center for IPM – Application Recordkeeping](#)

[NYS DEC – Regulations, Chapter IV – Quality Services, Part 325 Application of Pesticides](#)

Background Information for Worksheet Questions

Are the pesticides used on the farm currently registered for use in New York State?

All pesticides used on the farm have to be registered for use in New York State. Any use of unregistered pesticides should be discontinued and the farm should consult a resource professional for an appropriate replacement. A list of all currently registered pesticides can be found by following the link below.



For More Information

[NYS Department Environmental Conservation – Currently Registered Pesticides](#)

Are pesticide drift and odor considered during application?

A farmer will either give consideration to pesticide drift and odor or they will not. When applying pesticides, drift and odors issues can be a concern, especially to neighbors. To avoid drift and odor problems, application should occur when wind speeds are low. See “Are weather conditions considered before applying pesticides?” for more information.

Are neighboring crop fields considered during application?

Neighboring crop fields may not require the same pesticides as adjacent fields. Applicators should be aware that pesticides can drift to neighboring fields in the wind. Pesticides should be applied when wind conditions are optimal.

Is there a history of pesticides in wells of nearby properties or nearby waterbodies?

The New York State Department of Environmental Conservation Priority Waterbody Lists (PWLs) characterize water quality, the degree to which water uses are supported, progress toward the identification of water quality problems and sources, and activities to restore and protect each individual waterbody. These lists will document if pesticides have been identified as an impairment in waterbodies. If pesticides are being applied in an area with a history of pesticide contamination, care should be taken to avoid wells, springs, and associated recharge areas. Setback requirements for surface water resources should also be met or exceeded.

For More Information:

[NYS DEC – Waterbody Inventory/Priority Waterbody List](#)

Have neighbors ever asked about the farms pesticide use?

Farms should disclose the use of pesticides if asked by neighbors. Accurate application records will help if neighbors or inspectors have questions regarding where and when pesticides were applied.



Contact Information

Emergency Spills

Local Fire Department Telephone: _____

Police Department _____

Telephone: _____

NYS DEC 24-Hour Spills Hotline: _____ 1-800-457-
7362 _____

Financial Assistance

Local County Soil and Water Conservation District - State and Federal conservation programs including cost-share programs funded through the NYS Agricultural Non-Point Source Abatement and Control Program

Telephone: _____

Email: _____

Website: _____

Local Natural Resource Conservation Service - Federal conservation programs including: EQIP, CRP, WRP

Telephone: _____

Email: _____

Website: _____ www.ny.nrcs.usda.gov _____

Recycling and Solid Waste Management

Local County Recycling Coordinator or Solid Waste Manager

Telephone: _____

Email: _____

NYS Department of Environmental Conservation Hotline

Telephone: _____ 1-800-462-6553 _____

EPA Resource Conservation and Recovery Superfund Hotline

Telephone: _____ 1-800-424-9346 _____

Local County Cornell Cooperative Extension

Telephone: _____

Email: _____

Website: _____

SUMMARY

AEM Tier 2 Assessments document environmental stewardship and establish benchmark conditions on the farm. They also identify resource concerns and areas of opportunity. The AEM Tier 2 worksheets also help to further establish baseline data that can be used to prioritize issues for Tier 3 planning.

Tier 2 Assessments should be completed on-site with the farmer. When the initial assessment is completed, appropriate feedback in the form of an AEM Tier 2 Worksheet Summary should be provided to the farmer. The summary should include an overall level of concern for the worksheet, explanation of the overall ranking, a list and description of items of greatest concern, as well as, documentation of what is being done well and what areas need improvement. After the evaluation is complete, the farm should be given a ranking which will determine their priority to advance to the AEM Tier 3 planning phase. Appropriate ranking categories that could be used are: High, Medium, or Low Priority. A ranking procedure that has been approved by your local AEM Team should be used to make the ranking determinations.