Integrated Pest Management (IPM) Documentation Guidance

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Introduction:

Integrated Pest Management (IPM) is a science-based approach to managing pests in agricultural production by using a combination of biological, cultural, physical, and chemical methods. The goal of IPM is to reduce pest damage while minimizing risks to human health, beneficial organisms, and the environment. By focusing on prevention and applying control measures only when necessary, IPM can improve crop quality, enhance sustainability, and optimize economic outcomes for growers.

The intent of this document is to provide guidance on how individuals responsible for pest management decisions—such as growers, Pest Control Advisors (PCAs), agronomists, and other qualified professionals—can structure and document their IPM programs for certification purposes.

This document offers practical insights in a Q&A format on how knowledge of operations, industry resources, and professional expertise can be leveraged to develop an IPM plan that supports and justifies pest control decisions. It is important to note that the guidance provided here does not guarantee compliance with PrimusGFS Module 9 – IPM Practices, but aims to clarify how IPM principles can be integrated into farm operations and documented to support compliance during audits.

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Who is qualified to make IPM decisions?

IPM decisions should be made by individuals who understand how to identify and monitor relevant pests, interpret field conditions, and make informed choices about when and how to apply pest control strategies. A qualified individual should have a working knowledge of pest biology, crop development stages, and the environmental factors that influence pest pressure.

These decisions can be made by PCAs, certified crop advisers (CCAs), agronomists, food safety leads, or experienced growers, depending on the operation. Qualifications may include formal certifications or licenses, but practical experience and demonstrated knowledge can also meet this expectation—especially when supported by documentation.

A qualified IPM professional should be able to:

- Interpret scouting reports, trap data, and environmental indicators
- Understand crop growth stages and pest development cycles
- Apply pest thresholds, whether economic, action-based, or observation-based
- Select pest control actions that consider efficacy, timing, cost-effectiveness, resistance management, and sustainability
- Document the rationale for all decisions and provide follow-up observations to confirm control outcomes

It is acceptable for a grower or internal team member to take a different approach than an external advisor, such as a PCA, when they can demonstrate that the decision is based on field-specific observations, aligns with their documented IPM plan, and includes a clear explanation of the rationale. IPM programs are not one-size-fits-all and should be tailored to each operation's conditions and risk tolerance.

The key is to ensure that the person making pest control decisions has the ability to apply IPM principles in practice and document that process consistently. This level of reasoning and recordkeeping meets the requirements for IPM implementation under PrimusGFS.

I am being asked to have well-defined action or economic thresholds documented for my farm. What does this mean and how do I define my thresholds?

In an IPM program, thresholds are decision points. They help you determine when pest populations or conditions on your farm justify taking action—such as applying a treatment—to prevent crop damage or quality loss.

Thresholds can be based on:

- Data and economic predictions
- Expert knowledge from a qualified crop consultant, PCA, agronomist, or experienced grower

- Observations from your own field monitoring

Even if you don't have exact numbers, you can still document thresholds using practical knowledge and conditions specific to your farm.

Types of Thresholds You Can Use

There are two main types of thresholds you can define in an IPM program:

1. **Economic Threshold**

This is the pest population level at which the cost of the damage caused by the pest equals the cost of taking control measures. In simpler terms, the economic threshold is the point where it becomes cost-effective to intervene and manage the pest to prevent further damage to your crop.

Example: For a lettuce crop, if a certain level of aphid infestation is predicted to result in yield losses that cost more than the cost of applying a treatment, the economic threshold would be the point at which you would take action.

You do not need to calculate exact dollar values, but it is important to show how your decision was based on practical experience and anticipated impact. For example, if a pest has caused significant losses in similar conditions before, a knowledgeable advisor may recommend control before it happens again.

2. **Action Threshold**

This threshold is broader and may be used to trigger pest control actions for reasons beyond economic losses, such as maintaining crop quality, reducing environmental impact, or meeting health and safety standards. Action thresholds are often set lower than economic thresholds to allow for timely interventions before pests can cause significant harm.

Example: For a lettuce farm, the action threshold might be set based on the number of pests observed per plant during scouting. If the action threshold is reached, pest management actions are initiated to prevent further population growth, even if economic damage hasn't occurred yet.

In some cases, product quality is so tightly linked to marketability that quality thresholds effectively become economic thresholds. If a crop's visual appearance (free of blemishes or cosmetic damage) is a key determinant of its market price, a quality threshold (e.g., minimal pest damage) could be treated the same as an economic threshold because failing to meet quality standards would result in economic loss. This is common in high-value fresh produce or export commodities, where buyers demand flawless products.

Choosing the Right Threshold for Your Farm

You don't always need to have exact numbers—but you do need a clear process for when and why you take action. Consider the following questions when defining thresholds:

- What crop am I growing?
- What are the key pests that impact this crop in my region?
- Is this a high-risk or low-risk crop for pest damage?
- Are there quality standards or buyer requirements I need to meet?
- Are there weather or environmental conditions that increase pest risk?
- Have I experienced similar pest problems in the past?

These questions can help you determine whether your thresholds should be based on economic impact, crop quality, environmental conditions, or a combination of these factors.

Using Observation-Based or Expert-Guided Thresholds

Not all thresholds are based on exact numbers. Many valid pest control decisions in IPM rely on field observations, experience, and the professional judgment of qualified individuals such as growers, agronomists, crop consultants, or PCAs.

These thresholds are sometimes referred to as qualitative thresholds, and they are fully acceptable under an IPM program when they are well-reasoned and documented.

To support this type of decision-making during an audit, it's important to show what observations or expert knowledge led you to act.

Be sure to document:

- Scouting notes that show increasing pest activity or visible crop damage
- Observations tied to specific crop growth stages or risk windows
- Weather or environmental conditions that trigger pest outbreaks (e.g., heat waves, high humidity)
- Professional recommendations from trusted advisors (include names, dates, and reasoning)
- Relevant pest alerts, regional bulletins, or local extension publications

These observation-based thresholds may not include a hard number like "10 pests per plant," but they should still show a clear, science-informed rationale for taking action. When linked to field-specific conditions and documented with care, they demonstrate a thoughtful, preventative approach to pest management.

I am unable to find specific quantitative or numeric thresholds for my key pests of concern. What are my alternatives?

Not all pests have published numeric thresholds available, particularly for certain crops, regions, or production systems. However, you can still build a strong Integrated Pest Management (IPM) program by documenting a clear and consistent decision-making process that explains when and why you take action.

When specific thresholds are not available, you can rely on observation-based or expert-guided thresholds. These thresholds use visible crop conditions, pest pressure trends, and local knowledge to determine when pest control is needed. They are acceptable within an IPM program if they are well-documented and grounded in real conditions on your farm.

Consider the following approaches:

- Record what factors trigger your pest control decisions, such as scouting observations, crop stage, visible crop damage, or weather conditions that increase pest risk
- Consult with a qualified IPM professional, such as a PCA, agronomist, crop consultant, or experienced grower, to define reasonable thresholds that align with your region and crop
- Use historical pest data or past damage in your fields to support early or preventive treatment decisions
- Consider market quality standards, especially if even minor pest damage leads to product rejections or reduced pricing

These types of thresholds may not rely on exact pest counts, but they should show a thoughtful and proactive approach to pest management. The key is to ensure that your pest control actions are based on consistent, observable field conditions.

If you are unsure how to define your thresholds, you can use the IPM Threshold Worksheet to help you evaluate your crop, market, and pest risks. The worksheet provides structured questions that can guide you in developing thresholds that are appropriate for your operation.

By clearly explaining your decision-making process and linking it to what is actually happening in the field, you can meet audit expectations and demonstrate that your IPM program is both practical and responsible, even without numeric thresholds.

What kind of records and notes should I be keeping for my IPM program to be ready to justify my farm pest control activities and during an audit?

To effectively support pest control decisions in an IPM program, it is essential to keep both quantitative and qualitative records. These records should reflect your reasoning, pest pressure, and the context around each control decision. Documentation helps show that your decisions are science-based, preventive, and tied to observable field conditions.

Start by maintaining an IPM SOP for your farm that includes a description of key pests, thresholds, and the control strategies you use. Many supporting records may already exist, such

as crop rotation logs, field activity records, or fertilization plans showing how crop health is managed to prevent pest issues.

Common record types to support pest control decisions include:

Scouting and Monitoring Records
These logs should include pest counts, crop and pest growth stages, location details, and changes in pest pressure over time. Visual aids such as photographs or maps of infested areas can provide additional support.

> *Example:*
> During weekly scouting of your lettuce field, you observe a steady increase in aphid populations, with counts rising from 5 to 20 aphids per plant over a two-week period. You note in your records the areas most affected and the growth stage of the crop, which helps justify the decision to apply a control measure before populations reach damaging levels.

Documented Damage Exceeding Thresholds
Write down the percentage or severity of crop damage that exceeds a threshold and relate it to potential yield loss or quality downgrade.

> *Example:*
> You observe that leaf defoliation caused by cutworms has exceeded your economic threshold of 10 percent in several sections of the field. Your scouting notes estimate 15 percent defoliation, which supports the decision to initiate treatment.

Environmental Conditions
Document weather patterns or environmental triggers that justify pest control. This could include temperatures, humidity, degree-day accumulation, or rainfall.

> *Example:*
> Based on degree-day models, you note that the accumulated heat units have reached the reproduction threshold for spider mites. With temperatures consistently above 85°F, you apply a miticide and record this justification in your pest control log.

Extension Publications, University Updates, or Local Pest Alerts
Save and reference recommendations from credible outside sources that reflect your crop and region. Include the source name, date, and a summary of why it was relevant.

> *Example:*
> A local university update warns of increasing aphid pressure in leafy greens due to regional weather patterns. You summarize the notice and cite it in your records to support your decision to intervene early.

Expert Recommendations and IPM Decision Support
When you rely on the advice of a qualified IPM professional, document their name, qualifications, and reasoning. Explain how their advice aligns with your field conditions and thresholds. If advice is given verbally, summarize the recommendations and the basis for action.

I utilize some pre-plant treatments on my farm intended to prevent pest populations from reaching threshold levels. How do I document these as part of my IPM program, and how do I justify them if there are no observable pests on my farm to link to thresholds?

In an IPM program, pre-plant treatments are considered preventive controls. These may include seed treatments, soil fumigants, herbicides, or other inputs designed to limit pest pressure before planting or during early crop development.

Because these actions are applied proactively, they are not typically triggered by pest thresholds. Instead, they are justified by:

- Field history and prior pest issues
- Crop susceptibility
- Seasonal risk factors
- Predictive models or regional forecasts

To document these treatments as part of your IPM plan, include:

- A description of the treatment and its purpose (e.g., nematode control, seedling disease prevention)
- Supporting evidence such as historical pest pressure, past crop damage, or pest forecasts
- Any supporting recommendations from local experts or university resources
- An explanation of how the treatment fits into your overall pest management strategy

The goal is to show that these preventive actions are strategic, not routine, and that they are part of a broader effort to reduce the need for reactive chemical applications later in the season. When documented properly, pre-plant treatments can reflect a strong IPM program focused on long-term prevention and sustainability.

What are examples of non-chemical or biological pest control practices I can include in my IPM plan?

Non-chemical and biological controls are essential parts of a proactive IPM program. A strong plan should show that your operation prioritizes prevention and sustainability, using chemical controls only when necessary. These practices can include **direct pest control actions** as well as **indirect strategies** that reduce crop susceptibility or pest pressure.

Examples of IPM practices you can document include:

Biological Controls

- Conservation biological control, such as maintaining habitat to support naturally occurring beneficial insects
- Releasing predatory mites, nematodes, or other field-suited biological control agents
- Applying biopesticides, including microbial-based products that target specific pests

Cultural Controls

- Crop rotation or intercropping to disrupt pest cycles
- Selecting pest- or disease-resistant crop varieties
- Adjusting planting dates to avoid peak pest periods
- Custom nutrient management based on plant tissue or soil testing to avoid overfertilization and improve plant resilience

Mechanical and Physical Controls

- Using pest exclusion netting, row covers, or reflective mulches
- Hand-removal of pests or infested plant material
- Installing sticky traps, pheromone traps, or light traps
- Flame weeding or cultivation for weed suppression

Environmental and Habitat-Based Controls

- Enhancing soil health through compost or cover crops
- Planting hedgerows, flowering strips, or insectary crops to attract beneficials
- Reducing irrigation during pest-prone periods to discourage certain pests (e.g., fungus gnats, thrips)

Indirect Prevention Strategies

- Monitoring canopy density to reduce humidity and disease risk
- Cleaning and sanitizing equipment between fields to prevent pest spread
- Maintaining consistent sanitation practices in and around production areas

For each practice, include what was done, when, and the intended purpose—even if there were no pests present at the time. These strategies demonstrate that you are managing pest risk throughout the season, not just reacting to problems once they appear.

I often receive recommendations from my customer or shipper to spray my crop. How do I justify these applications under an IPM program?

These applications should still be supported by thresholds. Under an IPM program, it is not appropriate to apply chemicals without considering actual pest populations or conditions in the field. Begin by recording the details of the recommendation and note whether it was based on visual pest damage, market quality standards, local pest activity, or other factors. The more specific you can be, the easier it will be to reference this information later as part of your pest control justifications.

Consider conducting or reviewing pest scouting reports. If your observations align with the concerns raised by the shipper or customer, this can be documented as part of your justification. Link observed pest levels to your established thresholds to support the decision to apply chemicals.

A strong IPM program prioritizes the use of non-chemical methods for pest control and focuses on prevention. Chemical applications should be used as a last resort when other strategies are not effective in keeping pest populations below thresholds. IPM is also dynamic. Thresholds may need to be adjusted based on your farm's unique conditions and your experience with meeting market requirements for specific crops or customers.

I often rely on regional university extension or PCA recommendations for when I need to implement pest control practices. How do I document this local expert knowledge that I utilize in my IPM decision-making process?

University extension programs and qualified crop advisors—including PCAs, agronomists, or other professionals—are valuable resources to inform pest management decisions. You can document their input by saving relevant sources such as newsletters, email alerts, or written recommendations. Be sure to include dates, regions, and crop-specific details to show how the information applies to your farm.

These materials should be organized and referenced in your IPM plan, demonstrating how expert advice supports your pest control decisions. When regional experts recommend taking action, link their advice to your own field conditions to explain why that recommendation is appropriate.

While outside recommendations are useful, on-farm monitoring is still the most reliable way to determine actual pest pressure. Aligning expert advice with your own field observations ensures your IPM strategy is both scientifically sound and tailored to real-time conditions.

I do not have detailed scouting records for my farm. My PCA provides pest control advice that is based in IPM using a variety of factors, not just current pest populations in my field. How do I document this decision-making process as a part of my program to be audited?

If you rely on an external or internal IPM advisor—such as a PCA, agronomist, certified crop adviser (CCA), or experienced grower—who supports pest control decisions using multiple IPM tools (not just current pest counts), you can still document their role as part of your program to meet audit requirements.

Start by recording the qualifications of the person providing guidance, such as a license, certification, documented training, or job role within the operation. You can also include a summary of their IPM decision-making process, whether through written reports, an internal IPM SOP, or communication logs that show how pest pressures are assessed and how recommendations are developed.

If scouting records are not detailed, ensure you include notes from these communications that explain the reasoning behind pest control actions. These should be linked to your farm's thresholds and IPM plan, showing how pest decisions were tied to observed conditions, historical pest data, crop stage, or other environmental factors.

Even when quantitative thresholds are not available, your IPM representative can still provide sound, science-based recommendations. You can document this decision-making by showing how pest actions were based on crop-specific risks, field history, pest behavior, and regional conditions. It is important to show that pest control decisions are proactive and grounded in IPM principles, not based on routine or default applications.

If your pest control advisor is a licensed PCA, you may wish to include a copy of their license or a letter of qualification for your audit records, along with any SOP or IPM guidance they've helped develop. If you are not using a PCA, you should be prepared to show how the person making pest decisions is qualified and how they apply IPM practices consistently—through training, field experience, or ongoing documentation.

What if my pest control decision differs from my advisor's recommendation?

IPM allows flexibility in decision-making, provided the reasoning is sound and well-documented. It is acceptable for a grower or IPM lead to take an alternative approach, as long as it is grounded in observation, relevant thresholds, and clearly explained.

If you choose not to follow a specific recommendation from a PCA, agronomist, or other advisor, you can justify that decision by:

- Recording what was recommended and why
- Documenting your chosen action and the reasoning behind it
- Linking your decision to thresholds, crop stage, environmental conditions, or quality standards
- Following up with additional monitoring to show that the decision was effective

This shows auditors and buyers that pest control decisions are proactive, responsible, and appropriate for your farm.

How do I document pollinator protection practices as part of my IPM program?

Pollinator protection is an important part of IPM and is referenced in PrimusGFS audit guidance. Your documentation should show that you considered how pesticide applications could affect pollinators and what steps were taken to reduce risk.

You can document pollinator protection by including the following:

- Notes on the **timing of pesticide applications**, especially avoiding applications during peak pollinator activity
- Records showing the use of **low-risk or pollinator-safe pesticides**
- Communication logs with **nearby beekeepers or managed colonies** before spraying
- Field maps showing **buffer zones or untreated areas** near flowering plants or habitat

These records can be added to your spray application logs, pesticide risk assessments, or environmental protection section of your IPM SOP. If your operation does not use managed pollinators but is in a region with pollinator activity, it's still helpful to show how your spray schedule avoids unnecessary exposure.

What goes into a pesticide risk assessment in an IPM program?

A pesticide risk assessment evaluates the potential impact of a pesticide application on human health, beneficial organisms, the environment, and pest resistance. It helps ensure that chemical applications are justified, appropriate, and part of a larger IPM strategy.

A basic pesticide risk assessment should consider:

- **Human health risks**, including re-entry intervals, pre-harvest intervals, toxicity levels, and PPE requirements
- **Impact on pollinators and beneficial insects**, especially when crops are in bloom or near pollinator habitat
- **Environmental conditions**, such as wind speed, drift potential, runoff risk, and proximity to water sources
- **Resistance management**, including rotating pesticides with different modes of action
- **Application frequency and cumulative exposure**

You can document this by including:

- Labels and Safety Data Sheets (SDS) for each pesticide
- Notes in your spray records or decision log explaining why a particular pesticide was chosen
- Any mitigation steps taken, such as buffer zones or timing sprays when pollinators are less active

This documentation helps show that your pest control actions are balanced with safety, sustainability, and long-term effectiveness in mind.

How do I document follow-up monitoring after a pesticide or pest control decision?

Follow-up monitoring is a key part of IPM because it helps confirm that your pest control decisions were effective and that future actions are based on updated conditions.

Your follow-up monitoring records should include:

- The **date and location** of the follow-up inspection
- The **target pest population** level before and after treatment
- Any **new observations**, such as beneficial insects returning, visible crop recovery, or pest resurgence
- Notes on whether additional action was needed or if the threshold was no longer exceeded

These notes can be added directly to your scouting records, pesticide application logs, or a dedicated follow-up section in your IPM documentation. Including follow-up information shows that your pest management process is responsive and evidence-based, which supports audit compliance and long-term program improvement.

What are some resources I can use for more information on agricultural pests and IPM?

Here are a variety of IPM and pest management resources. Keep in mind when referencing IPM information from online it is important to note how it relates to your particular operation, whether it is relevant due to similar climates, crops, pest pressures, or other factors.

- **Arizona Pest Management Center.** University of Arizona. Available at: https://acis.cals.arizona.edu/agricultural-ipm.
- **Arizona Vegetable Field Crop Integrated Pest Management (IPM).** The University of Arizona Cooperative Extension. Available at: https://extension.arizona.edu/field-crop-ipm.
- **Arizona Vegetable IPM Updates.** The University of Arizona. Available at: https://vegetableipmupdates.arizona.edu/.
- **California Strawberry Pest Management Strategic Plan.** California Strawberry Working Group. 2019. Available at: https://ipmdata.ipmcenters.org/documents/pmsps/Strawberry%20PMSP.pdf.
- **California UC IPM Statewide Integrated Pest Management Program.** University of California Agriculture & Natural Resources. Available at: https://ipm.ucanr.edu/.

- **Colorado Integrated Pest Management Program - Agricultural Pests.** Colorado State University College of Agricultural Sciences. Available at: https://agsci.colostate.edu/agbio/ipm/agricultural-pests/.
- **Florida Integrated Pest Management Program.** University of Florida Institute of Food and Agricultural Sciences (UF/IFAS). Available at: https://ipm.ifas.ufl.edu/.
- **Georgia Integrated Pest Management Program.** University of Georgia Cooperative Extension. Available at: https://ipm.uga.edu/.
- **Integrated Pest Management Strategic Plan for Potatoes in Oregon, Washington, and Idaho.** Oregon State University. February 2020. Available at: https://extension.oregonstate.edu/sites/default/files/documents/em9275.pdf.
- **Maryland IPM Threshold Guide for Vegetable Crops.** University of Maryland Extension. Available at: https://extension.umd.edu/resource/ipm-threshold-guide-vegetable-crops/.
- **New York State Integrated Pest Management Program.** Cornell University College of Agriculture and Life Sciences. Available at: https://cals.cornell.edu/new-york-state-integrated-pest-management.
- **North Carolina Integrated Pest Management Program.** North Carolina State University Cooperative Extension. Available at: https://ipm.ces.ncsu.edu/.
- **Pacific Northwest Pest Management Handbooks.** Oregon State University, Washington State University, and University of Idaho Extension. Available at: https://pnwhandbooks.org/.
- **Pennsylvania Mushroom Integrated Pest Management Handbook.** Pennsylvania State University & American Mushroom Institute. Available at: https://www.americanmushroom.org/clientuploads/IPM/mushroomIPMhandbook.pdf.

Regional IPM Centers:

- **Northeast Integrated Pest Management Center.** Available at: https://www.northeastipm.org/.
- **Southern Integrated Pest Management Center.** Available at: https://southernipm.org/.
- **North Central Integrated Pest Management Center.** Available at: https://www.ncipmc.org/.
- **Western Integrated Pest Management Center.** Available at: https://westernipm.org/.