



ECS 030

# *Pest Friends* Classroom Integration: A Guide for High School Educators

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## **Contents**

- 1 Standards
- 2 Introduction
- 5 Conclusion
- 6 Worksheets
- 7 Post-Reflection

## **Standards**

### **Idaho State Standards**

#### *AG 150 Plant Science*

- Std 3.0 Irrigation
  - » 3.01 List reasons for irrigating
  - » 3.05 Calculate irrigation frequency
- Std 11.0 Insect Pests of Crops
  - » 11.01 List ways that insects cause losses in plants
  - » 11.02 List beneficial effects of insects
  - » 11.06 Discuss the importance of economics in relation to plant insect control
  - » 11.07 List cultural, biological, and chemical control practices for insects
  - » 11.08 Match classifications of insecticides to their correct description
  - » 11.09 Identify the insects having an economic impact on Idaho agriculture
- Std 13.0 Crop Chemicals
  - » 13.01 Discuss the economic importance of pesticide use
  - » 13.02 List ways improper use of pesticides can harm the environment
  - » 13.03 List information contained on a pesticide label
  - » 13.04 Discuss advantages, disadvantages, and principal uses of various types of formulations
  - » 13.12 List reasons for keeping records of pesticide use
  - » 13.13 Describe the purpose of pesticides



**University of Idaho**  
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# Agriculture, Food, and Natural Resources Federal Standards

## Plant Systems Career Pathway

- PS.01.01 Determine the influence of environmental factors on plant growth
  - » PS.01.01.03.b Analyze and describe plant responses to water conditions
- PS.03.03. Develop and implement a plan for integrated pest management for plant production
  - » PS.03.03.01.a. Identify and categorize plant pests, diseases, and disorders
  - » PS.03.03.02.b. Predict pest and disease problems based on environmental conditions and life cycles
  - » PS.03.03.01.c. Devise solutions for plant pests, diseases, and disorders
  - » PS.03.03.02.c. Design and implement a crop scouting program
  - » PS.03.03.03.a Identify and summarize pest control strategies associated with integrated pest management and the importance of determining economic threshold
  - » PS.03.03.04.a. Distinguish between risks and benefits associated with the materials and methods used in plant pest management
  - » PS.03.03.03.b Demonstrate pesticide formulations, including organic and synthetic active ingredients and selection of pesticide to control specific pest
  - » PS.03.03.03.c. Employ pest management strategies to manage pest populations, assess the effectiveness of the plan, and adjust the plan as needed
- PS.03.04. Apply principles and practices of sustainable agriculture to plant production
  - » PS.03.04.03.a Identify and summarize impacts of environmental conditions on plants
- PS.03.05. Harvest, handle, and store crops according to industry standards
  - » PS.03.05.02.a. Research and summarize reasons for calculating crop loss or damage

- » PS.03.05.02.b. Evaluate crop yield and loss data and make recommendations to reduce crop loss
- » PS.03.05.02.c. Implement and evaluate the effectiveness of plans to reduce crop loss

## Resource Systems Pathway

- NRS.04.03.01.a. Categorize harmful and beneficial insects, as well as signs of insect damage to natural resources
- NRS.04.03.02.a. Identify and classify invasive species common to a particular region
- NRS.04.03.03.a. Research and summarize strategies and benefits of preventing the introduction of harmful species to a particular region
- NRS.04.03.01.b. Analyze signs of insect infestation, identify if it needs to be reported to authorities, and determine which authorities it should be reported to
- NRS.04.03.02.b. Analyze signs of the spread of invasive species, identify if they need to be reported to authorities, and determine which authorities they should be reported to
- NRS.04.03.03.b. Assess and implement a plan for preventing the spread of harmful species for its effectiveness

## Introduction

Welcome to *Pest Friends*!

*Pest Friends* is an educational strategy board game designed to help youth and adults understand the principles of Integrated Pest Management (IPM), an ecosystem-based approach for managing pests and the damage they cause via economic thresholds. The IPM approach relies on thorough scouting, research, and a variety of techniques to address pest issues while minimizing their environmental impact. The game is designed to allow players to explore the different factors of IPM and how they affect a crop and species living within it. Each game consists of eight rounds. At the end of a game, players are awarded points based on their crop yield and the amount of money they have collected/earned. *Pest Friends* provides a variety

of options to engage in, including a physical board game and its digital version.

Introduction and Conclusion Video: The link for intro and outro videos can be found on pestfriends.org under the “Resources” tab on the top right of the page.

## Moderator Tips

Moderator training is crucial to ensure a smooth and enjoyable experience for players in any game, especially in games that require strong facilitation, such as those hosted on platforms like pestfriends.org. A good moderator must not only understand the game’s rules thoroughly but also be able to manage the flow of the game, resolve conflicts, and engage players in a fair and balanced way. Some key tips for effective moderator training include the following:

- 1. Know the Rules Inside and Out:** A moderator must be familiar with the game’s rules, mechanics, and any nuances that could arise during gameplay. PestFriends.org offers a detailed rule book that should be reviewed carefully. It includes key sections on game setup, player actions, and how to handle edge cases that might require moderator intervention.
- 2. Familiarize Yourself with Tools and Platforms:** Moderators should be proficient with the platforms and tools used to run the game (pestfriends.org) or specialized game components. Training for these tools can often be found in the game’s training materials or rule book.
- 3. Practice Active Listening:** Moderators should always pay attention to what players are saying, both during gameplay and in chats or discussions. This helps resolve disputes quickly and keeps the game moving smoothly. Take notes as well if the conversation needs to be highlighted in the postgame debrief and discussion.
- 4. Stay Neutral and Fair:** It’s important for moderators to remain impartial. Avoid taking sides in player disputes and always enforce rules consistently to ensure fairness.
- 5. Create a Positive Atmosphere:** The game’s success often hinges on the energy a moderator brings to a session. A great moderator

encourages positive interactions, keeps the game lighthearted, and ensures everyone is having fun.

- 6. Prepare for Unexpected Situations:** No matter how well-trained a moderator is, surprises happen. Nevertheless, know how to handle unforeseen issues, such as player misconduct or technical difficulties, as outlined in the pestfriends.org moderator guide. Practice playing the game with peers prior to your first gameplay with students.

By following these training tips, moderators will be better prepared to lead a fun and fair game, providing an enjoyable experience for all players involved.

When utilizing a physical copy of the board game and running it with the entirety of your class plan for two class periods, the time it takes to explain the game rules with gameplay varies widely across learners.

**This time is optimized by the utilization of the moderator tool found on pestfriends.org.**

While utilizing the player code system or commonly called “online only play,” students tend to complete gameplay much faster and are likely able to play through a game multiple times in one class period. Hence, prepare multiple codes before a class starts.

## Supporting Student Engagement and Understanding

To help all learners get the most out of *Pest Friends*, consider the following tips for introducing the game, debriefing key concepts, and supporting students who may need extra help:

- 1. Introduce the Game with a Walk-Through**  
Before gameplay begins, provide a short demonstration of how a typical round works. Use a sample turn to walk students through scouting, selecting strategies, and making decisions based on economic thresholds. Visual aids, printed guides, or a projected version of the board can help.
- 2. Connect Game Concepts to Class Content**  
Briefly review the key principles of IPM beforehand. Consider using real-world examples from recent class discussions to anchor students’ thinking. Reinforce that the game simulates real pest management decision-making.

### 3. Scaffold Instructions

For students who struggle with reading comprehension or decision-making under time pressure, provide simplified reference sheets or step-by-step guides. Assigning student helpers or playing in small teams also reduces cognitive load and encourages peer support.

### 4. Offer In-Game Support

Circulate during gameplay to answer questions, clarify rules, and help students interpret game data. Encourage students to think aloud about their strategies and provide gentle nudges to guide their reasoning when needed.

### 5. Debrief After Gameplay

Hold a brief discussion or reflection activity after the game. Ask students to share what strategies worked or didn't, how they applied IPM principles, and what trade-offs they noticed. This helps reinforce the educational objectives and translate in-game experiences to real-world contexts.

### 6. Use *Pest Friends Junior* Materials

For younger students or those needing more support, *Pest Friends Junior* (in development) and accompanying simplified resources may be a better fit. Contact [pestfriends@uidaho.edu](mailto:pestfriends@uidaho.edu) to access these materials.

### Ways to increase learning and mindful decision-making:

One obstacle educators may run into is students randomly clicking options to finish as quickly as possible. Such a strategy may lead to poor scores and learning outcomes, which can be mitigated through a reward or grading system. Purchase *Pest Friends*'s game-based stickers as an incentive by contacting [pestfriends@uidaho.edu](mailto:pestfriends@uidaho.edu) or through other rewards systems available in your classroom. We encourage this type of system to promote mindful decision-making that will allow students to gain the most information by discouraging random clicking.

### Ways to Play

#### 1. Physical Board Game

- a. This version requires a **moderator** to conduct the game, updating the field bag after each round depending on the players'

choices. These updates can be made based off the moderator screen/rule book or by beginning a "moderated game" online and making the changes accordingly.

- b. Players can work individually or in teams that include roles, such as
  - i. Team leader—makes all final decisions;
  - ii. Reporter—records the teams' choices; and
  - iii. Banker—keeps track of all the money
2. Digital Version (accessible on mobile or laptops). This version can be done on large scales (as a whole class/large group) or individually on mobile devices through [pestfriends.org](http://pestfriends.org). Each participant is not required to create an individual account; only moderators (teachers) create them and provide the code to students/participants.

Note: A worksheet is available for the physical or digital version so you can keep track of participants' choices.

## Getting Started

### Board Game Edition

1. Open your copy of the *Pest Friends* board game.
2. Pull out the *Pest Friends* Rulebook and begin setting up the board.
3. Play the introduction video at [pestfriends.org](http://pestfriends.org) under the "Resources" tab.
4. Following the rulebook and prompt boards, begin the game!

**Digital Edition** (can be used in conjunction with the board game to keep track of monthly changes/progressions)

1. Go to [www.pestfriends.org](http://www.pestfriends.org).
2. Play the introduction video at [pestfriends.org](http://pestfriends.org) under the "Resources" tab.
3. While the video plays, click "Moderator Access" in the top right corner and log-in/create a new account.
4. Once logged in, choose which game version to play:
  - a. "Begin an invite game." This version gives you a code for others to input to play their own game individually. It creates a unique

code for each participant to enter after going to [pestfriends.org](https://pestfriends.org).

- b. “Begin a moderated game.” This option is for moderators using the physical board game. It allows moderators to keep track of the changes each month and to update the physical board/bag accordingly as the game directs.
5. Each participant will click “begin game” and choose options that they believe will help them to achieve the highest score.
6. The teacher can see all sessions in progress or completed on their screen as well as the results of each participant.

## Conclusion

Review the game scores with your participants. Choose one volunteers’ game and show the changes/growth of their farms’ pest levels as a year progressed. Review each card and identify the results/consequences of each action. An editable quiz has also been added:

### Links:

- Introduction and Conclusion Video: (this link can also be found through the “Resources” tab on the [pestfriends.org](https://pestfriends.org) website)
- Conclusion Video: <https://www.youtube.com/watch?v=nFxl-thH1bk>

## Additional Expansion

The *Pest Friends* board game offers additional expansions that enhance the learning experience and provide additional simulation scenarios:

- The *Events Expansion* introduces unpredictable events that change each playthrough. Contact the *Pest Friends* team for further information and additions.
- A *Weeds Expansion* version—focused on herbicide use and tank-mixing strategies—is currently in development and set for release in 2025.

More expansions are also in progress, each designed to broaden the game’s educational scope. For additional information on expansions, please contact [pestfriends@uidaho.edu](mailto:pestfriends@uidaho.edu).

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### Caution: Read Pesticide Labels

Pesticide labels override other recommendations.

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ALWAYS read and follow the instructions printed on the pesticide label. The pesticide recommendations in this UI webpage do not substitute for instructions on the label. Pesticide laws and labels change frequently and may have changed since this publication was written. Some pesticides may have been withdrawn or had certain uses prohibited. Use pesticides with care. Do not use a pesticide unless the specific plant, animal, or other application site is specifically listed on the label. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

**Trade Names**—To simplify information, trade names have been used. No endorsement of named products is intended nor is criticism implied of similar products not mentioned.

**Groundwater**—To protect groundwater, when there is a choice of pesticides, the applicator should use the product least likely to leach.

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## ***Pest Friends Team Worksheet***

Name(s): \_\_\_\_\_

Date: \_\_\_\_\_

Each round you will pick 1–3 actions you would like to do in your field. At the beginning of each round, you will need to explain what you think has changed in your field from the previous round. One action is required per round. If you choose not to use action 2 or 3, write NA.

### **Round 1: March**

Action 1: \_\_\_\_\_

Action 2: \_\_\_\_\_

Action 3: \_\_\_\_\_

### **Round 2: April**

What do you think changed from the last round? Why?

\_\_\_\_\_

Action 1: \_\_\_\_\_

Action 2: \_\_\_\_\_

Action 3: \_\_\_\_\_

### **Round 3: May**

What do you think changed from the last round? Why?

\_\_\_\_\_

Action 1: \_\_\_\_\_

Action 2: \_\_\_\_\_

Action 3: \_\_\_\_\_

### **Round 4: June**

What do you think changed from the last round? Why?

\_\_\_\_\_

Action 1: \_\_\_\_\_

Action 2: \_\_\_\_\_

Action 3: \_\_\_\_\_

### Round 5: July

What do you think changed from the last round? Why?

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Action 1: \_\_\_\_\_

Action 2: \_\_\_\_\_

Action 3: \_\_\_\_\_

### Round 6: August

What do you think changed from the last round? Why?

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Action 1: \_\_\_\_\_

Action 2: \_\_\_\_\_

Action 3: \_\_\_\_\_

### Round 7: September

What do you think changed from the last round? Why?

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Action 1: \_\_\_\_\_

Action 2: \_\_\_\_\_

Action 3: \_\_\_\_\_

### Round 8: October

What do you think changed from the last round? Why?

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Action 1: \_\_\_\_\_

Action 2: \_\_\_\_\_

Action 3: \_\_\_\_\_

## ***Pest Friends Post-Reflection***

**Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_ **Score:** \_\_\_\_/100

1. What were the actions that you chose most and why?
2. Did you use any pesticides? Do you think this was a good or bad idea?
3. Why is it important to read the pesticide labels?
4. What would you do differently next time?
5. How might this game be different than Integrated Pest Management in real life?
6. How do you think this game is similar to real-life pest management?