



Grade: 9 to 12

Length: variable

Subjects: life science

Topics: inventory

Objectives

Exercises in this lesson help students achieve the following objectives:

- Understand what weed inventories are
- Understand why weed managers conduct weed inventories
- Experience some of the challenges associated with conducting weed inventories

Introduction

A weed inventory is one of the most important tools that weed managers use. Students will learn what inventories are, how weed managers use inventories, and which factors determine how weed managers conduct a weed inventory. Before teaching this lesson, read the entire lesson and make sure all materials are available.

Background

To manage weeds effectively, a weed manager must answer the following questions:

- Does the weed grow in this area?
- If so, where is the weed located?
- How serious is the **infestation**?
- How quickly is the infestation spreading?
- What are the characteristics of this weed?

To accurately answer these questions, a weed manager collects data by conducting a **weed inventory**. Data from a simple weed inventory shows which weeds are in an area, where they are located within the area, the number of weeds present, how rapidly they are spreading, and characteristics about the weed. Most inventories are in the form of a map.

One reason weed managers conduct inventories is to establish a baseline for data. This type of inventory provides an overall picture of the weed infestation problems in an area. The weed manager uses the data from the inventory to develop a weed management program. Later, the weed manager might conduct another inventory to determine the effectiveness of the management practices. This second inventory would show an increase or decrease in the size of the weed infestation over a period of several years.

Depending on the circumstances, weed inventories may be detailed and specific, or they may be broad. For example, time and money prohibit conducting an inventory on every square inch of a 10,000-acre Bureau of Land Management (BLM) parcel. In this situation, a broad inventory is appropriate. Specific inventories may be conducted at small, strategic sites within the BLM parcel. Trailheads and campgrounds are often the source of serious weed dispersal, so weed managers might conduct an inventory at these locations.

It is important to conduct an inventory at the correct time of year. If a weed manager conducts an inventory before the weeds have emerged from winter dormancy, the results of the weed inventory will be misleading.

For an inventory to be useful, weed managers must collect data that is reliable. Weed managers follow established weed inventory protocols to help ensure their data is reliable, useful, and usable by colleagues.

Preparation

Materials

- samples of different types of weed-inventory maps, including hand-drawn maps, digital maps, and possibly satellite images – See a local weed manager for samples of maps.

1 Show students different types of weed-inventory maps. Point out variations among the maps.

2 Discuss the range of possibilities when creating maps for inventories. Discuss the advantages and disadvantages of creating and using various types of maps.

Activity

Materials

- copies of the *Weed Inventory Plan* worksheet – Have available one copy for each student.

1 Review information about inventories with students. Students should understand what inventories are, how they are used, when and where they are conducted, and other important details.

2 Divide students into groups or have them work alone.

3 Give each student a copy of the *Weed Inventory Plan* worksheet; ask students to read and complete the worksheet.

4 Have students report their results to the class.

Conclusion and Evaluation

- Conclude the lesson when students turn in their *Weed Inventory Plan* worksheet or report their results to the class.
- Evaluate students on their weed inventory plan. Consider whether the plan is complete and comprehensive.

Independent Practice and Related Activities

- Contact a local weed manager and determine how students may participate in weed inventories.

Vocabulary

infestation, weed inventory

Expand the vocabulary list to include terms that are specific to individual weeds.

Resources

Weed managers from various local government agencies can often provide maps, data collection forms, and information about weeds and weed inventories.

National Science Education Standards

As a result of their activities in grades 9 to 12, students should develop abilities in and an understanding of the following areas:

Science in Personal and Social Perspectives – Content Standard F: personal and community health; environmental quality; science and technology in local, national, and global challenges



Completing the *Weed Inventory Plan* is a thought-provoking exercise that focuses on the logical-thinking process. There are no single, correct answers. Students should brainstorm ideas and keep in mind the overall “big picture” – how to control weeds in a 500,000 acre area. Some objectives may include determining the success of past weed-control efforts, determining where and how to focus future efforts, and developing a detailed weed inventory for the area. Students should determine if enough money is available to meet their objectives.

Inviting a local weed manager to talk about developing an inventory plan and budget may help students to better understand the process.



Weed Inventory Plan Page 1 of 2

Congratulations!

It is January 1st, and you have just been appointed the weed manager for Weed Haven County, Nevada. Your annual budget is two million dollars. Your county covers 500,000 acres, most of which is farm or ranch land. There are 20,000 miles of roads in the county. There are 13,000 miles of rivers and canals. There are 35 campgrounds, averaging two acres each. Each campground is a trailhead for hiking trails, ATV trails, or horseback trails.

As you review the records left by your predecessor, you see that his weed management efforts focused on spraying along roads and highways. Every year, he started his crews on roads in the east section of the county and had them spray as much as they could in a year's time. There are no records, but it appears that his crews were able to spray about 70% of the roads.

The county commissioners, your bosses, are concerned with the effectiveness of the county weed management efforts. They have spent nearly 10 million dollars on weed management efforts over the last 5 years, but have never heard if the efforts have been successful. They have increased your budget by \$100,000 for the current fiscal year to cover the costs of making digital inventory maps of the county. You must give your inventory to the commissioners by November 30th. They would also like for you to create an inventory plan for years 2 and 3, and they have allocated \$50,000 for inventory funds for each of the subsequent years.

Cost Breakdown

Equipment costs for:

computers, printers, and GPS units to create digital maps \$10,000

Labor costs to inventory:

roadways \$8 per mile

rivers and canals \$15 per mile
acreage (broad) \$1 per acre
acreage (specific) \$20 per acre

Volunteer Factor

Many weed managers feel overwhelmed at the task of managing weeds on so many acres with a limited budget. The most successful managers enlist volunteers to help in their management efforts. People from many different groups use the land, and these people can be taught how to help with the weed management efforts.

Listed below are some of the groups that have helped with weed control in different parts of the country. To use volunteers successfully, you must identify potential helpers, teach them how to help, use the information they gather, and report back to them on how their services have aided the weed management efforts.

Students - Students have participated in various types of inventories and have helped with mechanical weed-control efforts.

Recreationists - Backpackers, bird watchers, ATV users, horseback riders, senior citizens, and others have helped to inventory weeds at varying levels of difficulty.

Farmers and Ranchers - These individuals have a vested interest in weed conditions on their own land and neighboring land.

Miscellaneous - Every community has groups, such as hunting, fishing, botany, and hiking, that are unique to the community. Enlist the members of these groups to help inventory weeds.

Weed Inventory Plan Page 2 of 2

Name: _____ Date: _____

Objectives and Rationale

List and describe at least three major objectives for your weed inventory efforts and give the rationale behind those objectives.

1

2

3

Steps to Take

Explain the steps you will take to ensure that you reach your objectives successfully.

Budget

Describe, in detail, how much you will spend for labor and equipment.

Labor

Equipment

Total

Based on the information you have been given, what is the amount of your total budget for Year 1?