

AMI Day 2 Agriculture Classes - Mrs. Moore

Vermiculture.

1 Earthworms are wonderful consumers of organic matter in the
soil. They are also quite efficient at producing a product that is fertile
and useful for many plants. Vermiculture is the use of worms to break
organic matter by some species of earthworms into vermicompost.
5 Vermicompost is also called worm castings or humus. It is the desired
product during the vermiculture process. Vermicompost is high in
nutrients that are used by plants. It is also used in improving the
texture and density of some soils. Vermiculture systems can be used
outdoors in compost piles for the rapid decomposition of lawn,
10 garden, and food wastes. Vermiculture can also be used indoors, most
often in kitchens, in order to break down household food waste.
Newspapers and other paper without chemicals can also be broken
down in a compost bin.

15 Indoor vermicomposting systems consist of covered plastic,
wood, or Styrofoam bins and a closeable tap at the bottom that allows
liquids to be removed. This container is filled with a layer of gravel
and stones on the bottom of the container. The stones are covered by
a fine mesh to prevent worms from falling into the liquid produced
during the decomposition process. Damp, shredded newspaper
20 provides the worm habitat, while common kitchen waste serves as
worm food. Newspaper is the best and easiest bedding material to
find and should be damp when placed into the container.

25 Many large-scale outdoor composting systems use earthworms
as decomposers. Decomposers are organism that break down dead
plants and animals. These outdoor systems can consist of windrows,
which are long piles of bedding materials that are laid on top of the
ground or concrete surface to prevent predators from feeding on the
worms. Outdoor systems may also use raised beds. In the raised bed
system, the worms are fed at the top of the bed. The vermicompost is
30 harvested from below the beds by using a breaker bar that is pulled
across a mesh screen at the base of the bed.

35 The containers can be designed for different indoor purposes.
For the purpose of continuous harvesting of the vermicompost, a
series of trays that are aligned horizontally should be used. Since
earthworms will migrate towards their food source, a piece of mesh
that has holes large enough for the worms to migrate through divides
the bin vertically into two separate compartments. When one

40 compartment is full of vermicompost and is ready to be harvested, the
food wastes are placed in the other compartment in order to
encourage the worms to migrate to the new compartment. Then, the
vermicompost can be collected from the old compartment without
worms being harvested in the process.

45 Another system that can be used indoors consists of a series of
trays that are stacked vertically. The tray on the bottom is filled first
with the newspaper bedding and food waste. When the tray is full of
vermicompost, second tray is placed on top of the first one and is
filled with newspaper and food waste. When the worms have
migrated from the bottom tray to the top tray, the bottom tray can be
removed and cleaned.

50 Yet another system for vermicomposting involves an undivided
container. All of the newspaper, food material, and worms are mixed
together in the same container. This system is easy to build, but it is
difficult to harvest the vermicompost because the worms and the
compost must be emptied at the same time.

55 There are many species of earthworms, molds, bacteria, as well
as other decomposing organisms in nature that naturally break down
organic matter and litter. Vermiculture uses two main earthworm
species: *Eisenia foetida*, the Common Red Wiggler and *Lumbricus*
rubellus, the Red Earthworm. (Nightcrawlers are not recommended
60 because they tend to crawl out of and away from the vermicompost.)
These species are preferred because of their ability to break down
vegetation and animal manure efficiently. Individuals of these species
eat and digest approximately their entire body weight in food waste
every day. Thus, they produce vermicompost more quickly than other
65 earthworm species. The worms can break down meat food wastes, but
cannot digest bones. Also, composters will want to minimize the
amount of food wastes containing high amounts of chemical pesticide
residues, such as banana peels. These chemicals can harm the worms.

70 When the vermicompost has been digested properly, it is a rich,
dark brown or black color. It can be used to amend, or improve, soils
that are used for food crops. It should be mixed into soil, and not used
alone, because it is very concentrated. When used alone, it can cause
poor plant growth. It can also be used indoors with houseplants by
sprinkling a small amount around the base of the plant, avoiding
75 contact with the leaves. When the plants are watered, the nutrients
from the vermicompost are washed down into the root zone of the
plant.

Write the letter of the answer choice on your answer sheet. We will input them into Google Classroom when we return to school.

1. In lines 2-3, the author states that earthworms produce a product that is fertile and useful for plants. What is that product?
 - a. Organic matter.
 - b. Humidity.
 - c. Nitrogen.
 - d. Vermicompost.
2. Why should nightcrawlers be avoided in the compost bin?
 - a. Nightcrawlers do not decompose household waste.
 - b. Nightcrawlers tend to crawl out of compost bins.
 - c. Compost is poisonous to nightcrawlers.
 - d. None of the above.
3. If you did use nightcrawlers in vermiculture, and they escaped into your house, based upon the passage, what would be one method to get them out of your house without harm?
 - a. Create a trail of vermicompost from the room where they escaped leading outside the house.
 - b. Use Red Wigglers as natural predators of the nightcrawlers.
 - c. Create a trail of moist newspapers leading from the room where they escaped to the outside of the house.
 - d. Create a trail of food, household waste, leading from the room where they escaped to the outside of the house.
4. What conditions of a worm's habitat should be recreated in a compost bin?
 - a. Cool, damp, dark conditions.
 - b. Warm, damp, dark conditions.
 - c. Cool, dry, dark conditions.
 - d. Warm, damp, light conditions.
5. In lines 50-54, the author presents ideas about a single-compartment compost bin. S/he states that these present difficulty in harvesting compost because it is difficult to separate the worms from the compost. What might be viable solutions to this challenge?
 - I. Pick the worms out by hand.
 - II. Use a screen to sort the worms from the compost.
 - III. Not worry about losing a few worms, as the ones left behind will likely reproduce.
 - a. I only.
 - b. II and III only.
 - c. I, II, and III.
 - d. None of the above.
6. What household materials are easily composted in vermiculture?
 - a. Food scraps and newspapers.
 - b. Non-meat food scraps and newspapers.
 - c. Non-vegetable food scraps and newspapers.
 - d. Newspapers and magazines.
7. What is the name given to organisms that break down dead plants and animals?
 - a. Producers.
 - b. Consumers.
 - c. Decomposers.
 - d. Predators.

- 8.** Compost bins use a couple of types of worms. Which are recommended?
- a.** Common Red Wiggler and Red Earthworm.
 - b.** Common Red Wiggler and Nightcrawlers
 - c.** Red Earthworm and Nightcrawlers.
 - d.** Redworms and Hookworms.
- 9.** Based upon information in the passage, if your home produced 12 pounds of food waste each day, how many worms would you need in your compost bin?
- a.** 4 pounds.
 - b.** 6 pounds.
 - c.** 12 pounds.
 - d.** 24 pounds.
- 10.** What could be a reason for the author writing this passage about vermicompost?
- a.** To inform readers about the basics of creating a vermiculture system.
 - b.** To persuade readers to create a vermiculture system at home in order to reduce waste going to landfills.
 - c.** To encourage readers to consider composting as a means of creating a useful plant product.
 - d.** All of the above.
 - e.** Two of the above.
 - f.** None of the above.

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Name _____ Date _____ Class Period _____

AMI Day 2 Answer Sheet

Directions: After reading the short article, answer the multiple choice questions. Select the best answer from the choices provided and write the letter on this sheet.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____