

**I. Single-Answer Multiple Choice** (2 points each): Circle the **one** solution that answers each question or completes each sentence.

1. Types of composting include

- a. carcass composting.
- b. vermicomposting
- c. in-vessel composting
- d. all of the above.
- e. both a and b.

2. The WSU Compost Facility

- a. manages much of the university's organic waste stream.
- b. began operations in 1960.
- c. composts its organic materials on an asphalt surface.
- d. all of the above.
- e. both a and c.

3. The dominant organic material added to the standard mixture at the WSU Compost Facility is

- a. coal ash.
- b. yard waste.
- c. food waste.
- d. animal manure and bedding.
- e. shredded wood waste.

4. The food taste tests or sensory evaluations that we do in class are not truly scientific because we have not ensured that the foods we are testing

- a. were grown in similar soil types.
- b. were of the same variety and, if necessary, grown on the same rootstock.
- c. were grown under similar environmental conditions yet different farm management systems.
- d. all of the above.
- e. both a and b.

5. The bedding compost mixture at the WSU Composting Facility needs to heat to temperatures in excess of \_\_\_\_\_, effectively pasteurizing the bedding and reducing pathogens.

- a. 100°F.
- b. 130°F
- c. 140°F
- d. 165°F

6. Green manure crops provide organic material to the soil which in turn

- a. provides a slow-release store of plant nutrients.
- b. provides substrate for beneficial organisms.
- c. decreases water holding capacity of the soil.
- d. all of the above.
- e. both a and b.

7. Possible disadvantages to composting include
- it being costly and time consuming.
  - it requiring adequate space.
  - the need to manage odors in urban areas.
  - all of the above.
  - both b and c.
8. Stages in the composting process include the \_\_\_\_\_ stage.
- mesophilic
  - thermophilic
  - curing
  - all of the above
  - both b and c
9. In the thermophilic stage in composting,
- heat-loving bacteria take over.
  - temperatures in the compost pile get their hottest.
  - the duration of this stage is only 1 to 2 days long.
  - all of the above.
  - both a and b.
10. Concerning composting,
- turning the compost pile stimulates decomposition.
  - low C/N materials are called “brown” materials.
  - if a compost pile is too dry, decomposition becomes retarded.
  - all of the above.
  - both a and c.
11. One characteristic of an effective biocontrol agent is
- low reproductive rate relative to the prey.
  - tolerance of environmental conditions
  - a high degree of prey specificity.
  - all of the above.
  - both b and c.
12. There are three types of biocontrol which include
- classical.
  - augmentative.
  - conservation.
  - all of the above.
  - both a and c
13. An advantage of “soft” pesticides is that they
- are more pest specific.
  - can be a ticket off the “pesticide treadmill”.
  - kill pests but leave beneficial bugs.
  - all of the above.
  - both a and b.

14. Tactics of weed control in organic farming systems include

- a. mechanical practices.
- b. chemical control.
- c. biological control.
- d. all of the above.
- e. both a and c.

15. A breeding strategy used at WSU for improving wheat varieties for organic farming systems is to

- a. evaluate historical varieties adapted to the Pacific Northwest.
- b. utilize farmer knowledge.
- c. look carefully at all generations of wheat varieties being produced.
- d. all of the above.
- e. both a and b.

16. Concerning wheat in the Palouse,

- a. the content of some minerals has declined in modern varieties compared to historical varieties.
- b. the development of perennial wheat could help reduce erosion in the Palouse.
- c. one objective of wheat breeders is to breed wheat varieties of higher yields.
- d. all of the above.
- e. both a and b.

17. Mechanical methods of weed control include

- a. tillage.
- b. flooding.
- c. burning.
- d. all of the above.
- e. both a and c.

18. Cultural practices used in organic weed control include

- a. crop rotation.
- b. mowing.
- c. mulching.
- d. all of the above.
- e. both a and c.

**II. Multiple-Answer Multiple Choice** (1 point for each answer): Each problem set below consists of one problem with four possible answers. At least one answer listed is correct but two, three, or four of the answers may be correct. Mark "T" (for true) for each answer that solves the problem correctly and "F" (for false) for each answer that is incorrect.

19-22. Concerning the WSU Compost Facility,

\_\_\_ 19. any water trying to run off the facility is diverted by dikes and collected in retention ponds.

\_\_\_ 20. run-on water to the facility is not permitted.

\_\_\_ 21. materials are composted in rows for about 10 to 14 weeks.

\_\_\_ 22. Compost is cured in static piles for 4 to 5 weeks after it has been composted in rows.

23-26. Concerning weed control management,

- 23. it's best to use weed-free crop seed.
- 24. it's smart to know that weed seed emergence can occur at different depths for different weeds.
- 25. it's best if one does not let weeds come in on equipment.
- 26. it's best if one avoids letting weeds go to seed.

27-30. Home composting

- 27. can be made with layers of "greens" and "blues"
- 28. will degrade the herbicides approved for use on lawns
- 29. significantly reduces the volume of wastes.
- 30. benefits from a bin or enclosure that provides insulation

31-34. The WSU Compost Facility

- 31. sells compost directly to anybody in the Pullman-Moscow communities.
- 32. accepts organic wastes, such as lawn clippings and leaves, from the Pullman-Moscow communities.
- 33. tests different batches of its finished compost regularly.
- 34. reduces the amount of material sent to the landfill.

35-38. Finished WSU compost is

- 35. used on WSU research farms.
- 36. used as animal bedding.
- 37. sold wholesale to local nurseries.
- 38. a good soil amendment but not a good short-term fertilizer.

39-42. Things **not** to compost for addition to one's vegetable garden generally include

- 39. dog and cat wastes.
- 40. food scraps.
- 41. meat and dairy wastes.
- 42. grass clippings

43-46. Concerning legumes,

- 43. different legumes can fix different amounts of nitrogen.
- 44. after seed pods are formed in a legume, little of the plant's total nitrogen is in the seeds.
- 45. beans and peas are legumes.
- 46. they gather nitrogen gas from the air through the nodules of beneficial bacteria on their roots.

47-50. Factors affecting N mineralization include

- 47. C/N ratio of added residue.
- 48. the amount of organic residue being added.
- 49. soil temperature.
- 50. soil aeration.

51-54. Trade-offs and barriers to adoption of cover crops include the following:

- 51. Cover crops compete for water.
- 52. Cover crops compete for nutrients and space.
- 53. The costs of cover crops can be prohibitive to a grower.
- 54. Particular cover crops can bring in new pests.

55-58. In the corn chip taste test in class,

- 55. we compared four different brands of chips.
- 56. more students voted the organic chips to have the best overall flavor.
- 57. the corn chips were blue, not yellow or white, corn chips.
- 58. we did the taste test with salsa.

59-62. Predators have different characteristics than parasitoids. Predators

- 59. eat many prey.
- 60. are larger than their prey.
- 61. live within their victim.
- 62. are generalists.

63-66. Legume crops commonly grown as a green manure

- 63. include clovers.
- 64. can reduce weeds.
- 65. improve the soil's tilth.
- 66. keep providing nutrients for 2-3 years.

67-70. Use of broad-spectrum insecticides

- 67. is not allowed in organic agriculture.
- 68. kills beneficial insects as well as pest insects.
- 69. creates conditions of a "pesticide treadmill".
- 70. is increasing due to "scouting" by conventional growers.

71-74. General characteristics of weeds include

- 71. very high seed output in favorable environmental circumstances.
- 72. very slow growth through vegetative phase to flowering.
- 73. pollination dominately by wild bees.
- 74. continuous seed production for as long as growing conditions permit.

75-78. Reasons given by conventional wheat farmers in Washington State for not converting to organic production methods included the following:

- 75. Organic weed control methods are inadequate.
- 76. Farmers cannot get same yields with organic methods compared to conventional methods.
- 77. Organic pest and disease control methods are inadequate.
- 78. Access to organic buyers is limited.

79-82. In comparing organic and conventional crop yields,

\_\_\_ 79. the majority of comparisons report slightly to moderately lower yields for organic systems.

\_\_\_ 80. the highest yielding wheat varieties in conventional systems are also the highest yielding wheat varieties in organic systems.

\_\_\_ 81. similar yields have been shown in apple production systems.

\_\_\_ 82. a separate breeding program for improving wheat varieties destined for organic agriculture could improve wheat yields in organic systems.

**III. Fill-Ins** (2 points for each space): Fill-in each space below with the correct word or words.

83. The use of earthworms to breakdown organic waste into compost is called \_\_\_\_\_.  
vermicomposting

84. A strip of plants that serves as a home for beneficial beetles is called a \_\_\_\_\_. beetle bank

85. The use of living organisms (animals, plants, microorganisms) or their products to reduce or prevent growth and reproduction of weeds is called \_\_\_\_\_. biological weed control.

86. \_\_\_\_\_ eat a single prey species, whereas \_\_\_\_\_ tend to eat whatever prey they can catch. Specialists or parasitoids; generalists or predators

87. Cultural weed control utilizes practices common to good land, crop, and water management.

Examples of cultural control practices are crop rotations, manipulation of crop row spacing, \_\_\_\_\_, and \_\_\_\_\_. using crop rotations; using smother crops or cover crops; maintaining critical weed-free periods; manipulation of crop cultivars and crop populations

88. Incorporating organic matter with a high C:N ratio of 100:1 will cause net \_\_\_\_\_.  
Immobilization

89. A temporary crop grown between cash crop production cycles for protection and soil improvement is called a \_\_\_\_\_. Soil incorporation of this temporary crop when green primarily for fertility benefit is called a \_\_\_\_\_. cover crop; green manure

90. A \_\_\_\_\_ is a crop that is sown to prevent nutrients being flushed out of the soil. Catch crop

91. A planned sequence of various crops growing in a regularly recurring succession on one field is called \_\_\_\_\_. crop rotation

92. A \_\_\_\_\_ is any plant that is objectionable or interferes with the activities or welfare of humans. weed

93. \_\_\_\_\_ kills weeds by intense heat wave so that plant cells rupture. Flaming or burning