1. rice stink bug adults
2. grasshoppers (long-horned)
3. rice water weevil larvae
4. rice stink bug nymphs
5. stalk (stem) borer larvae
6. rice water weevil pupae
7. leafhoppers
8. fall armyworms
9. rice water weevil adults
10. chinch bugs
11. hornworm

Items 12-19 are from the milling process and seed identification information. Identify each sample.

12. This rice comes directly from the combine. What is it called? rough rice
13. This rice does not have hulls. What is it called? brown rice
14. This rice has the bran layer removed leaving whole and broken grains. What is this rice called? milled rice
15. This rice has the bran layer removed and broken grains removed. What is this rice called? whole or head rice
16. This rice is left over after milling and whole grains removed. What is this rice called? brokens
17. This rice is subjected to a steam or hot water treatment before milling. What is this rice called? parboiled
18. What kind of rice will grow from these seeds? (*hint: this is a major weed pest*)
   red rice

19. This seed has been hulled so you can see the bran layer. From what weed were these seeds produced?
   red rice

In items 20-42 identify the common name of the weeds/plants and answer the questions.

20. Johnson grass
21. alligator weed
22. dayflower
23. Texas weed
24. goose weed
25. red stem or Ammania
26. morning glory
27. duck salad
28. ratoon rice or stubble rice
29. sprangletop
30. broadleaf signal grass
31. barnyard grass or water grass
32. rice seedlings
33. What is this weed?
   primrose
34. What is feeding on this host?
   hornworm or woolly bear caterpillar
35. What kind of control is this?
   biocontrol
36. soybeans
37. What are inside the nodules on the roots of this plant?  
   bacteria

38. What function do these organisms perform?  
   Fix nitrogen for the plant

39. sedge

40. spikerush

41. arrowhead

42. purslane

In items 43 and 44 identify the disease.

43. narrow brown leaf spot

44. panicle blight

45. What caused this damage to this panicle?  
   blackbirds

**TRUE/FALSE**

*Circle Answer* (T = True F = False)

46. The rice water weevil is a major pest of rice.  
   T  F

47. Grasshoppers are not major pests of rice.  
   T  F

48. The chinch bug has chewing mouthparts.  
   T  F

49. Rice water weevil adults feed on rice foliage.  
   T  F

50. Rice water weevils pupate in cocoons made of plant debris.  
   T  F

51. Rice stink bugs feed on developing grains.  
   T  F

52. Rice stink bug feeding can result in discolored rice which is called “pecky” rice.  
   T  F

53. The adult fall armyworm is a moth.  
   T  F
54. Generally, fall armyworms are more severe on rice before the permanent flood.  
   **T**  

55. Flooding frequently controls chinch bugs attacking seedling rice.  
   **T**  

56. Rice blast is caused by a fungus.  
   **F**  

57. Sheath blight is caused by a fungus.  
   **T**  

58. Leaf blast will usually appear in the high areas of fields where the flood has been lost or is shallow.  
   **T**  

59. The blast pathogen overwinters on infected straw and leaves.  
   **F**  

60. Agronomic practices that favor blast development include over-fertilizing with nitrogen.  
   **T**  

61. Environmental conditions that favor blast development include high relative humidity and long dew periods.  
   **F**  

62. Sheath blight is not favored by thick rice stands and high humidity.  
   **F**  

63. Continuous rice (a given field planted in rice year after year) does increase the amount of sheath blight inoculum in the field.  
   **F**  

64. Fungicides are applied to control weeds.  
   **F**  

65. The sheath blight organism produces sclerotia which helps the organism survive unfavorable environmental conditions.  
   **F**  

66. The most commonly grown rice variety in Texas is an aromatic variety.  
   **F**  

67. Clearfield 261 is a herbicide-resistant long grain rice variety.  
   **F**  

68. Ducksalad is a grass weed.  
   **F**  

69. Rice is a broadleaf plant.  
   **F**  

70. Rice water weevil larvae obtain oxygen from rice roots.  
   **F**  

71. The node is the joint of a stem from which leaves or branches arise.  
   **F**
72. Panicle blight causes poor grain filling.  
   T  F

73. Panicle blight is associated with a bacterium, but not the environment.  
   T  F

---

**FILL IN THE BLANK**

*(each correct answer is worth 1 point)*

74. A chlorophyll meter is used to determine the need for **nitrogen**.

75. The three major fertilizer nutrients are phosphorus, potassium and **nitrogen**.

76. Sierra is an **aromatic** rice possessing the flavor and aroma of certain rice from Thailand.

77. Reduced height of varieties can result in **less/reduced** lodging.

78. **Ratoon / 2nd** crop rice grows from main crop stubble.

79. The federal agency that regulates pesticide use in the United States is the **Environmental Protection Agency**.

80. The current Governor of Texas is **Rick Perry**, who graduated from Texas A&M and was a Texas Commissioner of Agriculture.

81. The current Texas Commissioner of Agriculture is **Todd Staples**.

82. A mite has an exoskeleton like an insect, but has **eight** legs.

83. The rice panicle mite may be associated with the **panicle blight** disease.

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**MULTIPLE CHOICE**

*(each correct answer is worth 1 point)*

**Circle 1 Letter Per Question**

84. Research shows that an average of 1 rice water weevil larva per plant reduces yield
   a. 1000 lb/acre
   b. 500 lb/acre
   c. 300 lb/acre
   d. none of the above
85. In 2006, Louisiana’s rice production was much less than normal. Why?
a. excessive hog damage
b. Roundup drift from soybeans
c. saltwater intrusion caused by Hurricanes Katrina and Rita
d. price of rice was at a record low

86. South American rice miner larvae move down to the inside of developing leaves where they_______________ the leaves.
   a. roll
   b. blast
   c. mine
   d. fold

87. Populations of rice stink bug are generally higher _____________________.
   a. in soybeans
   b. near field margins
   c. near airports
   d. in June

88. Fall armyworms damage rice by__________________________________.
   a. defoliation
   b. causing lodging
   c. pruning roots
   d. extracting nutrients from vascular tissue

89. Rice fields are flooded mainly to help control _________________________.
   a. diseases
   b. rice water weevils
   c. weeds
   d. rice stink bugs

90. Sometimes _____________________________ can be controlled by applying a permanent flood.
   a. rice water weevils
   b. fall armyworms
   c. South American rice miner
   d. leafhoppers

91. An average of only 1 adult _____________________________ per plant can kill seedling rice.
   a. rice stink bug
   b. leafhopper
   c. pinworm
   d. chinch bug
92. ________________ usually move in mass from weedy field margins to defoliate rice and broadleaf weeds.
   a. rice leaf miners
   b. blister beetles
   c. chinch bugs
   d. navyworms

93. Blackbirds are a pest of ________________.
   a. sprouting and heading rice
   b. tillering and booting rice
   c. rice in panicle differentiation
   d. postflood rice

94. Rice was grown on about ________________ acres in Texas in 2011.
   a. 1 million
   b. 500,000
   c. 180,000
   d. 20,000

95. The morphology of rice is divided into the ________________ phases (including germination, seedling, and tillering stages) and the reproductive phases (including panicle initiation and heading stages).
   a. beginning
   b. vegetative
   c. embryonic
   d. physiological

WORD PROBLEMS
(each correct answer is worth 1 point)

Show All Work

96. Hermione Granger has a 4000-acre rice farm that has a potential rice water weevil problem. She decided to apply the insecticide seed treatment “Where’s Harry?” at 0.05 lb active ingredient/100 lb seed. She planted the field at 80 lb seed/acre. How much active ingredient did she apply to her entire farm?

\[
0.05 \times 0.8 = 0.04; 0.04 \times 4000 = 160 \text{ LB AI}
\]
\[
(4000 \text{ A})(80 \text{ lb seed/A}) = 320,000 \text{ lb or 3200 cwt of seed}; (3200 \text{ cwt})(0.05 \text{ lb ai}) = 160 \text{ lb ai}
\]

97. “Where’s Harry?” contains 50% by weight active ingredient and 50% by weight inert ingredients. How much total “Where’s Harry?” did Ms. Granger apply to her 4000 acre farm?

\[
160 \div 0.5 = 320 \text{ lb product}
\]
Show All Work

98. “Where’s Harry?” costs $250/lb, so how much did Ms. Granger pay to treat her 4000 acre farm? How much did she spend on a per acre basis?

\[(\$250/\text{lb})(320) = \$80,000; \quad \$80,000 \div 4000 \text{ A} = \$20/\text{A}\]

99. Ms. Granger harvested her rice, which yielded 8000 lb/acre. She received $10/100 lb rice. How much money did she receive on a per acre basis?

\[8000 \text{ lb} = (80 \text{ cwt}); \quad (80 \text{ cwt})(\$10/\text{cwt}) = \$800/\text{A}\]

100. Ms. Granger did not treat an adjacent field on her farm (same variety, cultural practices and soil properties but with no insecticide seed treatment). This field yielded 6000 lb/acre, so she estimated that the seed treatment increased her yields 2000 lb/acre. How much money did Ms. Granger make on a per acre basis by controlling her rice water weevil problem?

\[2000 \text{ lb} = 20 \text{ cwt} \times 10 = \$200 - \$20 = \$180\]

101. M. Damon has a rice field next to a soybean field. His rice is dying downwind of the soybean field. What could cause M. Damon’s rice to die?

Herbicide applied to soybean field drifted onto rice field

102. The economic injury level is the population density of an insect which causes economic damage - cost of control is equal to the value of the increase in yield provided by the control. Assume an average of 1 rice insect per rice plant reduces rice yield 10 lb/acre. Assume this is a linear relationship, so 10 insects reduce yield 100 lb/acre. The cost of control is $18/acre. The price of rice is $10/100 lb or cwt. What is the economic injury level for this insect?

\[\$18/\text{A} \text{ IS EQUAL TO THE VALUE OF 1.8 CWT}\]

\[1.8 \text{ cwt} = \$180; \quad 180 = 100 \text{ lb} \quad \frac{\chi}{10} = 18 \text{ INSECTS/RICE PLANT}\]
103. Who is the current U.S. Secretary of Agriculture?  
**Tom Vilsak**

104. Who is the current United States Environmental Protection Agency Administrator?  
**Lisa Jackson**

105. What does GMO stand for and how has it influenced rice exports?  
**Genetically modified organism**

106. How many U.S. Senators represent Texas?  
**Two**

107. Name one current U.S. Senator from Texas.  
**Kay Bailey Hutchison or John Cornyn**

108. What Aggie recently died and won the Nobel Peace Prize in 1970?  
**Dr. Norman Borlaug**

109. The above person was known as the “Father” of what revolution?  
**Green**

110. What was the significance of this revolution?  
**The revolution increased grain yields dramatically in India and other Asian countries which saved millions of lives from starvation.**

111. What is Clearfield technology?  
**The Clearfield System offers, for the first time, the ability to selectively eliminate red rice from a production rice field with the use of an herbicide. The technology is based on an induced mutant resistant to imidazolinone herbicides. This mutant was developed by subjecting a large number of conventional rice seed to a chemical that can cause changes (mutations) in the genetic makeup of the seed. These seed were then planted and the resulting plants were sprayed with the herbicide. Naturally, most of the plants were susceptible and were killed by the herbicide. However, one plant survived the herbicide treatment and was resistant to the herbicide. This plant was resistant because the chemical had caused a subtle change in one enzyme system in that plant which allowed that plant to be resistant to the “imi” herbicides.**

112. Who is Ted Poe?  
**U.S. House of Representatives member – represents SE Texas**

113. Who is the Aggie mascot?  
**Reveille – collie dog**
114. What is organic rice?
- Grown without synthetic chemicals or fertilizers

115. Name a variety of organic rice?
- Sierra, Jasmine 85, Della, Jazzman

116. What state has the most rice acreage?
- Arkansas

117. What does the cross section of an ear of corn represent on the FFA emblem?
- Common agricultural interests across the U.S.

118. What does the plow represent on the FFA emblem?
- Hard work and dedication

119. What are the words on the FFA emblem?
- “Agricultural Education”

120. What does the owl represent on the FFA emblem?
- Knowledge and wisdom

121. Plague is a disease caused by a bacterium. What insect is responsible for transmitting this organism to humans?
- Flea

122. What other animal is involved in the spread of plague?
- Rat

123. What kind of microorganism causes yellow fever?
- Virus

124. What insect is involved in the transmission to humans?
- Mosquito

125. When was the first Texas Rice Festival?
- 1969

126. What is the most popular rice variety grown in Texas?
- Presidio

127. Who developed this variety?
- Dr. Anna McClung