

Final Exam
Issues in Agricultural and Natural Resources Biotechnology
Fall 2002

- This exam is OPEN BOOK. You can use any resources you like to answer the questions.
 - You can discuss questions and answers with other students, but your own answers to the test must be composed and written independently.
 - Put your name on the top of each page as they will be separated during grading
 - Answers can be typed or handwritten in a legible manner, single-spaced, no less than 12 pt font and 1 inch margins
 - Suggested lengths for answers are given with each question. Answers that are substantially longer or shorter are likely to receive less than full credit. In no cases should they exceed twice the suggested length.
 - Papers must be handed in no later than 5 PM on Monday Dec. 9 at Strauss (Corvallis) or Lomax (Bend) office (put under door if needed.) You can also pick up the graded exams and term papers there starting on Friday Dec 12.
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1. Define the following (total one page) (20 pts)
 - a. Pest resurgence
 - b. IACUC
 - c. rBST
 - d. Core electorate
 - e. Market failure
 - f. Restriction enzymes
 - g. Organic certification (USA)
 - h. Agrobacterium
 - i. Input vs. output traits
 - j. PIPs

2. Describe the nature of the regulatory system in the United States with respect to genetically engineered crops and other natural resources: (1 page) (20 pts)
 - a. Which agencies are responsible for what general kinds of products or crops?
 - b. In what cases would labeling be required of food produced with genetic engineering?
 - c. What is “substantial equivalence” and how is it operationally applied to GM crops and foods?
 - d. How is potential allergenicity assessed?
 - e. What was the “Brazil Nut saga?”

3. Hazards to the monarch butterfly from genetically engineered crops received broad media attention over the last few years. (1 page) (20 pts)
 - a. Which kind of crop and gene did it involve?
 - b. Describe the scientific study that led to this controversy.
 - c. What does current scientific evidence indicate about the level of risk to monarch butterflies from commercially grown engineered crops?
 - d. Do you believe that this case shows that regulation of GE crops is inadequate in the USA? Why or why not?

4. Cite and explain two of the most common arguments made for and two of the most common arguments made against labeling of all GMO-produced food? Which argument was featured in the campaign against Measure 27 in Oregon? (1/2 page) (5 pts)

5. Perception of risks from GMO crops vary widely among countries and groups within countries. (1/2 page) (10 pts)
 - a. Cite data that shows this statement is true.
 - b. Describe why Finucane believes that white males in the USA view risks differently than other social groups.
 - c. Describe what “dread risks” are, and give two reasons why Finucane believes that GMOs are regarded as dread risks by many people.

6. It has been stated that the current generation of GE crops with input traits benefit farmers and seed companies but not consumers. Cite at least three kinds of data from either economic, food quality, or environmental studies that support or refute this statement? (1/2 page) (10 pts)

7. There are diverse kinds of genes being inserted into farmed animals. (1/2 page) (15 pts)
 - a. Describe three kinds of projects underway (organisms, genes, goals)?
 - b. Do public opinion polls show strong public approval of animal GE compared to other forms of biotechnology?
 - c. What are two important technical hurdles to genetic engineering of animals?
 - d. Cite two ways in which animal health/welfare can be objectively assessed.