Week 4: Increasing Food Production

1) What is the Green Revolution? Discuss 1 way that it benefitted Asian farmers or consumers? (2 pts.)

**Answers**

**Green Revolution (Any of the following ideas, 1 pt.)**
- The application of science and technology to increasing crop yields in developing countries
- An effort to transfer/adapt scientific achievements to the conditions of developing countries
- An effort to develop new crop technologies for developing countries
- An effort to reduce hunger in Asia by developing new agricultural technologies
- Research to increase rice/wheat yield in Asia

**Ways that it benefitted Asian farmers and/or consumers (Any of the following, 1 pt.)**

**New Green Revolution varieties/technologies:**
- Increased farmers’ rice/wheat yields
- Increased farmers’ production
- Increased farmers’ profits
- Crops took less time from planting to harvest, crops matured earlier
- Enabled farmers to plant more crops/year
- Enabled farmers to grow the rice/wheat anytime of the year
- Crops were more disease-resistant,
- Resulted in lower consumer prices (rice/wheat), which especially benefitted the non-urban poor
- Increased the availability of calories
- Increased farmers’ incomes, which enable them to buy more consumer goods
- Improved nutrition (rice/wheat became less expensive, so people could afford to buy more)
- Increased farmers’ incomes (which enable them to afford to buy more inputs like fertilizer)
- With higher incomes, farmers were able to diversity their diets
- With greater income, farmer could buy more inputs/consumer goods, which stimulated the rural economy/created more jobs

2) Using biotechnology and traditional plant breeding methods, scientists are able to develop new crop varieties that benefit farmers in developing countries. Describe 2 specific traits that have been (or will be) bred into crops grown in developing countries (e.g., rice, corn, tomatoes, potatoes) and discuss how each technology/trait benefits/will benefit farmers, consumers, and/or the environment.

**Answers (Any of the following, 1 points each. Count off if the answer doesn’t identify a trait, followed by a benefit of the trait. Student’s don’t have to identify a specific crop)**
- **Resistance to pest/insects (Bt corn, cotton).** **Benefit**—will: a) enable farmers to use less pesticide, thereby increasing profits, b) less pesticide contamination in the environment, c) benefit consumers by producing-pesticide free crops
- **Resistance to herbicides (soybeans).** **Benefit**—will: a) enable farmers to use less herbicide, thereby reducing costs, b) less herbicide contamination in the environment
- **More nutritious crops like Golden rice with vitamin A.** **Benefit**—will reduce blindness
- **Tolerance to salt water research (tomato).** **Benefit**—will lead to salt resistance in other crops, so crops can be grown in irrigated areas with high salt levels in the soil
- **Resistant to drought (corn).** **Benefit**—will result in less yield loss in dry weather
- **New maize.** **Benefit**—will: a) give higher yields, even when grown under drought/low fertility conditions, b) crop will mature earlier
- **Virus-free seed/planting material (potatoes).** **Benefit**—will: a) increase yields, b) reduce cost of planting material
- **Bio-pharming.** **Benefit**—will: enable farmers to grow crops for medicine
- **Higher crop yield.** **Benefit**—will reduce the need to cut down forests to plant more land to crops
- **Flooding tolerance.** **Benefit**—will reduce yield losses due to flooding/submergence/insure a more dependable food supply
3. **What issues/concerns dominate the debate about biotechnology in Europe and why does Thompson argue that these issues/concerns are of little relevance to LDCs? (2 pts.)**

**Answers (Any of the following)**

**Issues/concerns?**
- Cultural/ethical issues
- Potential food and environmental safety issues
- Suspicion of multinational corporations
- Concern about the industrialization of agriculture

**Why of little relevance to LDCs?**
- LDCs urgently need the benefits of biotechnology to increase food production

4. **How is the government of India trying to meet the needs of small farmers? (2 pts.)**

**Answer**
- Established a call center/service, so farmers can phone in and get answers to their agricultural questions
- Answering farmers agricultural questions via telephone

5. **How are urban gardening schemes–started by UN agencies in collaboration with local organizations–benefitting children in many cities in developing countries? (2 pts)**

**Answer (Any of the following):**
- Improving children’s nutrition
- Reducing child malnutrition
- Improving children’s access to vegetables