Week 4: How Can Developing Countries Increase Their Food Production?

Modernizing Agriculture
CGIAR, “Who We Are”
1. What are the 5 research foci of the CGIAR?

2. To whom are the benefits of CGIAR research available?

Hazel, “Green Revolution: Blessing or Curse?”
1. In the mid-1960s, what problem did Asia face and how did the Rockefeller & Ford Foundations respond to this crisis?

2. To achieve higher yields for rice & wheat, what were 3 things that scientists needed to do (i.e., plant traits needed)?

3. What impact did the rice & wheat HYVs have on farmer adoption, yields, production, and caloric availability in Asia?

4. How did the Green Revolution stimulate the rural economy and improve nutrition (i.e., social impacts) in Asia?

5. According to critics, what were 4 shortcomings of the Green Revolution?

FAO. “Biotechnology in Agriculture”
1. What are the 4 biotech applications in agriculture and what is each used for?
2. What are the 4 issues of special concern to developing countries aiming at increasing their involvement in biotechnology?

Emerging Technologies and Strategies
World Bank, “Science Helps Poverty Fight”
1. What are 4 new technologies that illustrate the effective use of science to solve problems facing the world’s poor?

2. What 2 concerns are noted in the CGIAR report?

Elton, “Peru’s Potatoes Saved by Science”
1. What is the new process developed by CIP and how is it helping potato farmers in Peru?

Spott, “Rice Genes Offer Grains of Hope for Hungry”
1. What have plant scientists in the US, China, Switzerland accomplished and what is this expected to enable scientist to do?

2. Why are Asian & African nations reluctant to embrace food crops modified through gene-spicing and what are the implications of this reluctance for plant breeding?

UC Davis, “New Flood-Tolerant Rice Offers Relief for World’s Poorest Farmers”
1. What did researchers at the International Rice Research Institute and UC-Davis discover and why will this benefit rice farmers in both developing countries and the US?

2. According to David Mackill, what techniques were used to help improve the lives of the world’s poorest?
Avery, “Hope for Sustainable Farming in Bio-tech Crops”
1. Why is the development of a gene-altered tomato that is salt-tolerant such an important breakthrough?

Avery, “Feed the World’s Hungry While Protecting Wildlife”
1. According to the World Conservation Union, what is the cause of current wildlife extinctions?

2. Why is Avery critical of some environmental groups?

Thompson, “Poor Nations Can’t Afford Debate on Gene-Altered Crops”
1. What issues/concerns dominate the biotechnology debate in Europe and why does Thompson feel that these issues are of little relevance to LDCs?

2. How has biotechnology benefitted farmers in South Africa and on what problems are scientists now—or will be—focusing?

Cowan, “Wheat: Out With the New, In with the Old”
1. Why are plant scientists at Purdue using traditional plant breeding, rather than genetic engineering, to transfer new genes to wheat plants?

2. According to Prof. Williams, what is needed to afford (give) the best protection (i.e., against the Hessian fly)?

Itano, “African Food on Table at Summit”
1. Why does Mr. Nkosi like Montsanto’s CRN 4549Bt corn seed? What is his complaint about it?

2. Why do anti-GMO groups worry about the focus on new miracle seed and what is their solution?
Baldauf, “Farmers’ New Hotline in India Sizzles With Requests”
1. How is the government of India trying to better meet the needs of small farmers?
2. According to Phogat, what is the hot topic these days?

Pflanz, “Principal Helps Village Feed Itself”
1. After taking over the school as principal in 2004, what was the scheme that Joseph Mbindyo introduce to harvest water and what crops did he grow/why didn’t he grow maize and beans?
2. What new (farming) techniques (2 examples) did the schoolchildren learn, that they could take home to their family’s farms?

Montero, “Trash for Cash in Bangladesh”
1. What is “Waste Concern” now doing in Bangladesh and what are the two founders planning to do in the future?
2. What makes the Bangladesh project novel and who is financing it?

FAO, “Water Precious and Finite Resource”
1. According to FAO, what is the answer to the question “So where will we get the water to grow the crops that feed the world”?
2. Agricultural intensification can cause environmental problems. What are 3 such problems and what is the cause of each?

Baldauf, “Market Approach Recasts Often-Hungry Ethiopia as Potential Bread Basket”
1. According to Ms. Gabre-Madhin, how will a commodity exchange (and a national network of warehouses) benefit both small farmers? How will it benefit traders?
2. While most academics applaud Ethiopia’s embrace of the free market, why do they say that there are no easy fixes (i.e., what problems does Ethiopia face in modernizing its agriculture)?

Hanes, “Urban Farmers Empower Africa”
1. How are urban gardening projects–started by UN agencies in collaboration with local organizations/NGOs–benefitting children in many cities in developing countries? How has urban gardening benefitted some people, such as Mulopo Wally?

Chauvin, “In Peru, a Project to Get Farmers to Trade in Fish Rather than Cocoa”
1. What is Mr. Honost roza’s research center, in partnership with the Ucayali state government (Peru) and with funding from USAID, doing to save the paiche population–an endangered species–and create an alternative to growing cocoa?

2. What are 2 obstacles to the success of the piaches project?

Reasons for Concern, Controversies
Dickson, “Africa Urged to Double Support to Agricultural Research”
1. Of Africa’s 40 farming systems, which 4 are the most promising targets for immediate improvement?

2. According to Swaminathran, who should be closely involved in deciding priorities and framing system research programs?

Spotts, “A Food Revolution Beckons, but Few Show Up”
1. Why have farmers found first-generation GMO varieties quite useful (2 examples) and what will the next generation offer consumers?

2. According to analysts, what has slowed the introduction of GM crops both outside the US and in the US?

3. What (nutritional characteristics) are several charitable foundations & international research institutes working to enhance and why has golden rice languished?