APES – Chapter 11 – Feeding the World

Intro: A Farm Where Animals Do Most of the Work

1. Give examples of how "farming done proper" replicates nature's processes.

2. How does this farmer heat his cow barn in winter?

3. How does he use his pigs to produce compost come spring?

I.   Meeting Nutritional Requirements

A. Terminology:
Undernutrition

Malnourishment

Food security vs. Food insecurity

Anemia and Vitamin deficiency

Overnutrition

    Associated problems:

Grains vs. Meat

B. Reasons for Undernutrition and Malnutrition

II.   The Green Revolution

A. Industrial Agriculture / Agribusiness

Energy subsidy (see fig. 11.4) how many kcals go into producing a kcal of food?

B. Green Revolution – Practices and their Consequences

1. Mechanization

2. Irrigation

Consequences

3. Fertilizer

"Organic" vs. Synthetic

4. Monocropping

   Advantages:

   Disadvantages:

5. Pesticides
   a) Herbicides

   b) Insecticides – broad spectrum vs. selective

   Persistence – Bioaccumulation and Biomagnification

   Non-persistent (degradable and biodegradable)

   Development of genetically resistant populations… Pesticide Treadmill

III. Genetic Engineering – the New Agricultural Revolution
   A. Benefits:

   B. Concerns:

IV. Alternatives to Industrial Agriculture Methods
   A. Shifting Agriculture

   B. Nomadic Grazing

   C. Sustainable Agriculture Techniques

   Intercropping

   Crop rotation

   Contour plowing

   No-till

   D. Integrated Pest Management (IPM)

   E. Organic Farming

V. Modern Agricultural Business – Raising of Meat and Fish

A. Concentrated Animal Feeding Operations (CAFO's)

Consequences:

Free-range livestock

B. Fishing / Fisheries

Fishery collapse

The problem of "Bycatch"

C. Making Fishing Sustainable

1973 – Individual Transferable Quotas

1996 – Sustainable Fisheries Act

Environmental Defense Fund's "Best" and "Worst" Fish Choices

D. Aquaculture

Pros:

Cons:

VI. Working Toward Sustainability

Protecting the Land – Planting Perennials

Converting Annuals to Perennials

VII. Science Applied...Defining Organic Food...What does that label mean?