1. TODAY: Food and its implications
2. Lecture schedule updates on your website
3. ECOL 206 Lab Website for handouts and assignments
   Lab this week – van to Tumamoc Hill

- next installment of Group Project due Mon 27 March
- Lab Notebook (returned Wed?),
- Current Events (Mon after SB?, and Friday)
Feeding the World’s people:

Under nutrition:
Malnutrition:
Overnutrition:

Subsistence Farming vs. Cash Crops
Poverty, Consumption, Equality

Pesticides

<table>
<thead>
<tr>
<th>PRO</th>
<th>CON</th>
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<tbody>
<tr>
<td>- DDT saves lives (malaria etc.)</td>
<td>- Genetic Resistance to Pesticides</td>
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<tr>
<td>- Increase Food Supplies</td>
<td>- Kill natural predators</td>
</tr>
<tr>
<td>- Increase Profits</td>
<td>- Pesticides move in environment</td>
</tr>
<tr>
<td>- Work Quickly</td>
<td>- Harm wildlife</td>
</tr>
<tr>
<td>- New Technologies safer</td>
<td>- Harm human health</td>
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1. Reduced Pesticide use is feasible and may increase crop yields
   - rice in Indonesia
   - tomatoes in Mexico
2. Integrated Pest Management (IPM; more ecological approach)
3. Chemical Industry Lobby
4. Environmental Justice (What goes around comes around)

Kingcorn.org, also known as the Corn Growers’ Guidebook, is a World Wide Web site devoted to more profitable corn management systems. The Guidebook has been available on the Web since 1994!

http://www.agry.purdue.edu/ext/corn/about.htm

Grass, Zea mays ssp.
Domesticated 6,000 years ago by mesoamerican civilizations in tropical Mexico
- still a region of genetic diversity
456.2 million tons/year
- Food
- Animal Feed
- Pharmaceuticals
- Industrial Production

http://maize.agron.iastate.edu/maizearticle.html

Corn Blight
USA 1970s, 15% corn died, $1 billion lost
Fix:
Mexican heirloom varieties and traditional cross breeding

Similar stories (peruvian tomato contribution)
(see discussion in McPherson, KIN, chapter 5)

Teosinte
To conserve, distribute and document the adapted and diverse varieties of agricultural seed, their wild relatives and the role these seeds play in cultures of the American Southwestern and northwest Mexico.

We safeguard 2000 varieties of arid-land adapted agricultural crops. Some, like watermelons, were adapted from seeds brought by early Europeans. Most of our collection consists of varieties of indigenous crops developed over centuries or millennia to suit the needs of their human partners.

We promote the use of these ancient crops and their wild relatives by distributing seeds to traditional communities and to gardeners worldwide. Currently we offer 350 varieties from our collection, grown out at our Conservation Farm in Patagonia, Arizona.

We also work to preserve knowledge about the traditional uses of the crop we steward.

To protect biodiversity and to celebrate cultural diversity: crop loss means an inevitable reduction in genetic diversity: thousands of years of evolution down the drain. The loss, in human terms, is equally severe.

Contact Us
Phone: (520) 622-5561
Fax: (520) 622-5591
info@nativeseeds.org
Mailing Address:
Native Seeds/SEARCH
526 N. 4th Ave.
Tucson, AZ 85705-8450

http://www.nativeseeds.org/

Pesticides
biocides, herbicides, insecticides, fungicides, etc.

Chemical arms race is hundreds of millions of years old!

Some banned in US but still produced here and exported. Ethical implications?

Ideal:
1. kill only target pest
2. not lead to genetic resistance
3. disappear or breakdown into harmless components
4. more cost effective than doing nothing

US: Pesticide use up 33x since 1942, but lose more crops to pests than in 1940s (37% vs. 31%; Miller p. 166)

Levidow 1999 (Regulating Bt Maize in the U.S. and Europe)

Bt = Bacillus thuringiensis bacterium
contains gene that codes for protein toxic to some insects
Genetically Modified Crops (cotton, potatoes, maize)

Costs and Benefits
- Yields and Fewer Agrochemicals
- Agriculture, Environment (Monarchs), Humans
- Resistance, Arms Race, 'Genetic Treadmill'
- Herbicide and Ampicillin markers

IRM = Insect Resistance Management
"High-Dose/Refuge" Strategy
3-5 year time window

Solutions
Crop Rotation, IPM etc.

EPA, EU
Monarch Butterfly
*Danaus plexippus*

- Lepidoptera (order)
- Papilionoidea
- Danainae

Milkweed Butterflies

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Canada ↔ Mexico
(Hawaii, Australia)
Millions
Multiple Generations!

Solomon et al. 1993

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Local Ideas:

**Tucson CSA (community supported agriculture)**
- food from Organic farm in Glendale

**Terra Cycle Farms (located near Rio Rico)?**

**Tucson COOP (4th Ave.)**

**17th Street Market**

**Farmers Markets**

**CONSUMER DRIVEN CHANGE!**

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**Ending Hunger and Disease (Miller p. 155):**

- Immunizations
- Breast Feeding
- Sugar+Salt+Water to fight dehydration from diarrhea
- Vitamin A 2x/year to prevent blindness
- Family planning services
- Educate women nutrition, sterilize drinking water, child care

**Cost: $5-10/child/year**