Sir Albert Howard inspired by ‘Eastern’ agriculture

• Small farms
• Mix of people, plants and animals; wastes recycled as nutrients
• Human and animal labor, not machines
• Food crops, not cash crops (subsistence)
• Nitrogen fixed by legumes
• Reduced cultivation
• Composting
• Mimic natural ecosystems
Howard contrasted ‘Eastern’ and ‘Western’ models

- Large, growing farms
- Monocultures
- Mechanization
- Synthetic fertilizer dominates
- Increasing crop disease/pest problems
- More processed and preserved foods
- Success judged by profit
- Too much food (low prices force farmers off land and into cities)
MyPlate vs. Actual US Diet

- USDA recommends
  - Twice as much fruit and dairy as typical
  - 50% more vegetables
  - One-quarter to one-third of oil, fat, sugar
  - 20% fewer calories

Meet or exceed USDA’s daily recommendation (%)

Kids, 2-17

Grains: 72%
Meat/Fish/Nuts/Eggs: 32%
Vegetables: 8%
Fruit: 11%
Dairy: 25%

Adults, 18+

Grains: 59%
Meat/Fish/Nuts/Eggs: 35%
Vegetables: 6%
Fruit: 6%
Dairy: 6%

NPD Group, 2011
Vegetables

• Major dietary source of
  – Minerals (essential elements for life)
  – Vitamins
  – Fiber
  – Phytochemicals

• Some are major energy (calorie) source; most are not
US Vegetable Use, 1980-2009

Farm weight (annual lbs per person)

- Total
- Processed
- Fresh

US Census Bureau, 2012
Certified organic farms, by zip code: 10,159

Data from 2007, the most recent agricultural census.

Map from New York Times, May 3, 2009
Kentucky Certified Organic Producers, 2012
Major Vegetable Growing Areas

- Mild climate
  - Ocean moderates temperature
- Near urban centers
  - Perishable product
  - Mostly water
- Available labor
Vegetable Production Scales

- **Garden**
  - Containers on porch
  - Small and large backyard gardens
  - Community gardens
  - Market gardens

- **Small, medium, and large farms**
  - An acre or two up to hundreds of acres
  - Vegetable farms usually smaller than grain farms or ranches (500 acres is huge for veg.)

- **Greenhouses**
ORGANIC. CONSUMER DRIVEN. FARMER POWERED.
ORGANIC FOOD AND FARMING FUELS JOBS, RURAL ECONOMIES, AND CONSUMER CHOICE.

78% of U.S. families are buying organic.

94% of organic operations nationwide are planning to maintain or increase employment in 2012.

40% of the organic market is fruits and vegetables.

The organic industry generates over $31 billion per year.

More than half of parents have a high level of trust for organic products.

Organic farms are 35% more profitable than the average farm.

Organic is not just food. Over $2 billion worth of organic fiber, cosmetic, and household products were sold last year.

In 2011, the organic industry grew by over 9%.

The organic industry is creating jobs at 4 times the national average.

There are organic farms in all 50 states.

Organic is an important part of the diverse U.S. agricultural landscape. The Organic Trade Association represents over 6,500 farmers, ranchers, handlers, processors, distributors, and retailers across the organic supply chain.

Learn more at www.ota.com

Organic Trade Association
Organic Rule of Thumb

- Naturally-sourced products allowed
- Synthetically derived products prohibited
- … some exceptions!
Kentucky State University
Site Selection

• Climate
  – Warm season crops need long hot summer (e.g. sweetpotato, sweet corn)
  – Cool season crops do not tolerate heat (e.g. lettuce, spinach, carrot, potato)

• Resource availability
  – Cost of land
  – Soil quality
  – Water
  – Proximity to labor pool, processors, markets
What is soil?

- Water: 25%
- Minerals: 45%
- Air: 25%
- Organic matter: 1-5%
- Stabilized organic matter (humus): 33% - 50%
- Decomposing organic matter (active fraction): 33% - 50%
- Living organisms: <5%
- Fresh residue: <10%
Soil Organic Matter

- Fresh
  - incompletely decomposed
  - adds bulk
  - food for soil organisms

- Humus
  - decomposed
  - dark brown or black
Humus

• Stores nutrients
  – 30-70% of CEC
  – 90-95% of soil N
  – 15-80% of soil P
  – 50-70% of soil S

• Makes nutrients available

• Aggregates soil

• Buffer
  – stabilizes pH
  – protects against high salt levels and toxic ion levels

• Moderates temp.

• Holds water

• Stimulates soil life
Soil Fertility: Compost

- No pre-harvest interval
- Strict requirements for manure-based compost
  - 131-170°F for 15 days in windrows
  - C/N = 25-40
Soil Fertility: Animal Waste

- Raw manure pre-harvest interval:
  > 90 days if edible portion does not contact soil
  > 120 days if edible portion contacts soil
Soil Fertility: Cover crops

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Crops</th>
</tr>
</thead>
<tbody>
<tr>
<td>N source</td>
<td>Hairy vetch, crimson clover, subterranean clover, berseem clover, cowpea</td>
</tr>
<tr>
<td>Soil builder</td>
<td>Rye, sudex, subterranean clover</td>
</tr>
<tr>
<td>Erosion fighter</td>
<td>Subterranean clover, cowpea, rye</td>
</tr>
<tr>
<td>Subsoil loosener</td>
<td>Sudex, forage radish, sweet clover</td>
</tr>
<tr>
<td>Pest fighter</td>
<td>Rye, sudex, mustard/rape</td>
</tr>
<tr>
<td>Weed fighter</td>
<td>Buckwheat, subterranean clover, rye, sudex</td>
</tr>
</tbody>
</table>

Adapted from SARE, 2007. Managing Cover Crops Profitably.
Why Mulch?

• Weed management
• Moisture retention
• Add O.M.

What Mulch?

• Organic
  – wood chips, shredded bark, chopped leaves, straw, grass clippings, compost, sawdust, pine needles, paper

• Inorganic
  – gravel, stone, black plastic, landscape fabric
Planting

• Direct seeding
  – Organic or Untreated seed
  – Resistant varieties

• Transplanting
  – Organic transplants, slips must be purchased or grown on-farm
  – Head start, but more expensive
  – Works with mulch
Organic Seed

- Grown on certified organic land
- No GMOs
- Hybrids OK
- No synthetic seed treatments
- Expect premium price
Pest management: Resistant varieties
Pest Management: Farmscaping
Pest Management: Natural Enemies
Pest management:
Physical Control
Management

- Vegetables often more labor intensive than other crops
  - Irrigation
  - Fertilization
  - Pruning
  - Scouting
  - Weed management
  - Pest management
Harvest

- Timing important
  - Ripe, but not over-ripe
  - Refractometer useful to measure sugar content
- Hand harvest
  - Labor intensive
- Mechanical harvest
  - Specialized machinery (often expensive)
Post Harvest

• Rapid removal of field heat extends shelf life
  – Early morning harvest
  – Vacuum cooling
  – Into cooler quickly

• Sorting, trimming & washing on site adds value
How hard to grow in KY?

• Some crops are harder to grow organically than others.

• Easy:
  – Okra, radish, garlic, beets

• Moderate:
  – Cabbage, onion, potato, bean

• Difficult:
  – Muskmelon, eggplant, cauliflower
# It’s the Law:
Who can sell farm products labeled “organic”?

<table>
<thead>
<tr>
<th>Organic Exempt</th>
<th>Certified Organic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Those who can answer ‘yes’ to ALL of the following can legally sell ‘organic’ products without certifying.</td>
<td>Those who answer ‘yes’ to ANY of the following MUST certify in order to sell products as ‘organic.’</td>
</tr>
<tr>
<td>I sell less than $5,000 worth of organic product each year.</td>
<td>I sell more than $5,000 worth of organic product each year.</td>
</tr>
<tr>
<td>I sell directly to the consumers.</td>
<td>I sell to wholesalers or resellers.</td>
</tr>
<tr>
<td>I have read, understand, and comply with national organic program standards.</td>
<td>I sell feed for organic livestock.</td>
</tr>
<tr>
<td>I have registered my farm as ‘exempt’ with the KDA.</td>
<td>I sell ingredients for organic processed foods.</td>
</tr>
<tr>
<td>I do not use the USDA organic seal.</td>
<td>I use the USDA organic seal.</td>
</tr>
</tbody>
</table>
GOLD New Potatoes
$1.50 per pound
Scott County from our farm

Fayette Co.
$1.50
100% Chemical Free

Heirloom Tomatoes
Organic Certification Requirements

1. Management plan, approved by certifier
   - Required:
     • Boundaries, buffer zones separate organic from conventional
     • Organic seed, transplants
     • Maintain/improve soil fertility, organic matter
     • Rotation
   - Prohibited:
     • Synthetic fertilizers and pesticides
     • Genetically modified organisms
     • Sewage sludge
     • Burning (some exceptions)

2. Record keeping
Certification Paperwork

- General
  - Name, address, farm type
- Land
  - Crops, fields, 3 years of organic management
- Seed, seedlings, planting stock
  - Source, organic availability, treatments, GMO free
- Soil & fertility management
  - Composts, manures, fertilizers, irrigation
- Crop management
  - Rotation, weeds, pests, diseases
- Organic integrity
  - Buffers, barriers, handling, storage, transport
- Records
  - Maps, history, management, inputs, harvest, sales
The less obvious skills…

• Record keeping
  – Often computer-based
  – Required for organic certification and many other gov’t. programs
  – Best farmers are good record keepers

• Maintenance
  – Mechanical skills needed
  – Best farmers are comfortable with their tools

• Continuing education
  – Keep abreast of changing markets, tools, consumer demand
  – Best farmers are always learning
http://www.kyagr.com/marketing/organic-marketing.html
Organic Marketing

The Kentucky Department of Agriculture is accredited by the United States Department of Agriculture National Organic Program as a Certifying Agent for the certification of Crops, Wild Crops, Livestock, and Handling Operations. KDA currently certifies only entities located in the state of Kentucky.

2013 Applications available early January 2013.

Regulations and Resources:
- USDA organic regulations: 7 CFR Section 205 includes a prohibited practices, requirements, and the National List of Organic Commodities.
- National Organic Program Handbook: This compilation of instructions is intended to clarify policies and assist those conducting operations with complying with NOP regulations.
- ATTRA: Guide to Organic Crop Production
- ATTRA: Guide to Organic Livestock Production
- ATTRA: Guide to Organic Processing
- ATTRA: Guide to Organic Certification

USDA NOP Certified Operations:
- USDA NOP: What is Organic Certification
- USDA NOP: Do I Need To Be Certified Organic?
KDA Organic Program Fees

- In state only
  - $125 to file plan
    - Crop Production
    - Livestock Production
    - Processor/Handler
- Free inspection
- $25 to register as exempt
- Lowest price in USA?
PURPOSE

OAK is a member-driven nonprofit organization. Members work together to:
- Promote Kentucky’s organic farms and farmers
- Share information with one another
- Guide research programs related to organic agriculture
- Educate consumers about organic food and farm products

Membership is open to anybody willing to support OAK and does not require an annual

MISCELANEOUS

OAK participates in various programs and initiatives that strengthen communities by

FORMATIONS

During 2000, OAK began the Vegetable Growers Partnership Program.

OAK events

Saturday, April 10
10:00am Early Earth Day

Thursday, April 15
10:00am KSU Third Thursday W

Thursday, May 20
10:00am KSU Third Thursday W

Thursday, June 17
10:00am KSU Third Thursday W

This market is being made by the exceptional goodness of the exception good

"I know from friends and neighbors and from my own family that it is now possible for farmers to sell at a premium to local customers such products as organic vegetables, organic beef and lamb, and pasture-raised chickens."
Organic Association Field Day at Cedar Ring Greens

Published by Cheryll Frank under Farm Topics, Happenings, News

Saturday, November 9, 2013 – 2:30 PM
7134 Owenton Rd, Frankfort, KY 40601
Event is FREE, but please RSVP to cmfrank@savannaorganics.com!

Cedar Ring Greens – Cedar Ring Greens is a certified-organic market garden located on 12.5 acres in Peaks Mill that is owned by Connie Lemley and Andy McDonald. Cedar Ring Greens specializes in salad mixes and cooking greens, and they also grow a wide variety of other vegetables. The farm includes two high-tunnels (unheated greenhouses) for extending the growing season and growing greens through the winter, a small greenhouse with solar fan for starting
Dr. Michael Bomford
michael.bomford@kysu.edu
http://organic.kysu.edu
502-597-5752