The Organic Farming Industry in Hawaii

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Organic Farming

Production of crops and livestock without the use of synthetic chemicals (pesticides and fertilizers)
Production Paradigms

Western Agriculture (conventional ag) vs. Indigenous systems

Western Paradigms

- Bend Nature for Human Benefit (Francis Bacon)
- Place priority on the parts over the whole (Rene Descartes)
- Indigenous systems

History of Conventional Ag

- Early 1800s in England
- Centralization of Agriculture Results in:
  - Disruption of natural nutrient cycles
  - Decline in soil Fertility
  - Rise of Fertilizer Industry (Guano)

Conventional Agriculture Research

- Short-term, single focus yields
- Look at single variables (e.g. fertilizer, pesticides)
- Single variable focus don’t necessarily explain system as a whole

Problems with Conventional Ag

- Soil Fertility decline
- Environmental damage
- Health hazards in food
- Reduced food quality
- Energy-intensive
- Costly to society (hidden-costs)
History of Organic Ag
(Early 1900s)

- Sir Albert Howard (India/England)
- Robert Rodale (US)
- Nature Farming (Japan)
- Indigenous Farming (10K years)

Conventional Monocultures
Simplified systems
Less vegetational diversity

Organic Systems
Complex systems
More vegetational diversity

Agroecology
The application of ecological concepts and principles to the study, design and management of sustainable systems

Eco-goals of organic farming

- Enrich the ‘living’ soil
- To promote ecological balance
- Develop biological processes to their optimum

Is organic farming = sustainable ag?
Not necessarily
Benefits of Organics

• Use locally available knowledge & resources
• Less reliant on potentially toxic products
• Ecologically sound
• Healthy produce= premium prices = $$

Key organic techniques

• Improve nutrient cycles
• Crop rotations
• Cover Crops, green manures
• Composts & organic mulches
• Crop diversity
• Biological control

Hot Issues with Org Farming

• Is Organic Sustainable?
• Is Organic Food Safer/better?
• Are biotech and organics compatible?
• Livestock production
• Value, does it pay?
• Can organics feed the world?

Importance of Org Industry

• 20% annual growth nationally
• Value over $14 billion annually
• Public (75%) concerned about pesticides and biotech products
• Deep supermarket (85%) and high-end restaurant (57%) mkt penetration

Is Organic Farming a viable Industry?

Last year in California:

• Organic livestock production increased by 40,000 acres, or 27%
• Organic vegetable production increased by 5,000 acres, or 12%

(Business Week, Wal Mart goes organic, March 29, 2006).

Vision:

• Hawaii as an ecological/environmental state
• A center of biodiversity and organic/ecological farming
• Hawaii as a high-end tourist destination to enjoy the environment, the arts, its culture, and food.
Organics In Hawaii

- Increase self-sufficiency in state
- High-value product for farmers
- Protect our environment
- Protect farm labor, family farm, consumers
- Excellent training for students

Organic Demonstration Plots 1993

Organic Farming Research in Waimanalo

Establishment of insectary ‘patches’

<table>
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<tr>
<th>Buckwheat borders</th>
<th>Natural weedy patches</th>
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Sudex windbreak

Bone meal experiments with Jicama (chop suey yam)

Compost and Aged Manure Experiments with Daikon

Effects of organic fertilizers on sweet corn

No-till and Organic mulch experiments

- No-till 2 cover crops x 3 crops x 6 reps
- Organic mulch Exp. with bulb onions

Pigeonpeas

Cowpeas

Sunnhemp

Mucuna
Organic Research Publications

Understanding of organic systems

Systems approach: Need to understand the changes that occur in space and time which are associated with:

- Soil quality
- Plant Growth
- Pest population dynamics (insect, diseases, nematodes, weeds)