

# Organic Agriculture

## An Alternative In The Future Of Family Farming

P. J. Hamlett, PhD

UT Extension Service - Center for Profitable Agriculture  
731-455-4711 (Hamlett) / 931-486-2777 (Center)





# Hopeful future

- Family farms disappearing by 1000s
    - Pressure from industrialization of agriculture
  - Public more aware of environment and personal health... leading to demand for safer food
  - Organic = hopeful alternative!
    - Economically healthy
    - Environmentally healthy
  - Organic Rule – October 2002
    - National Organic Standards
- Good for consumer,  
Good for farmer,  
Good for community

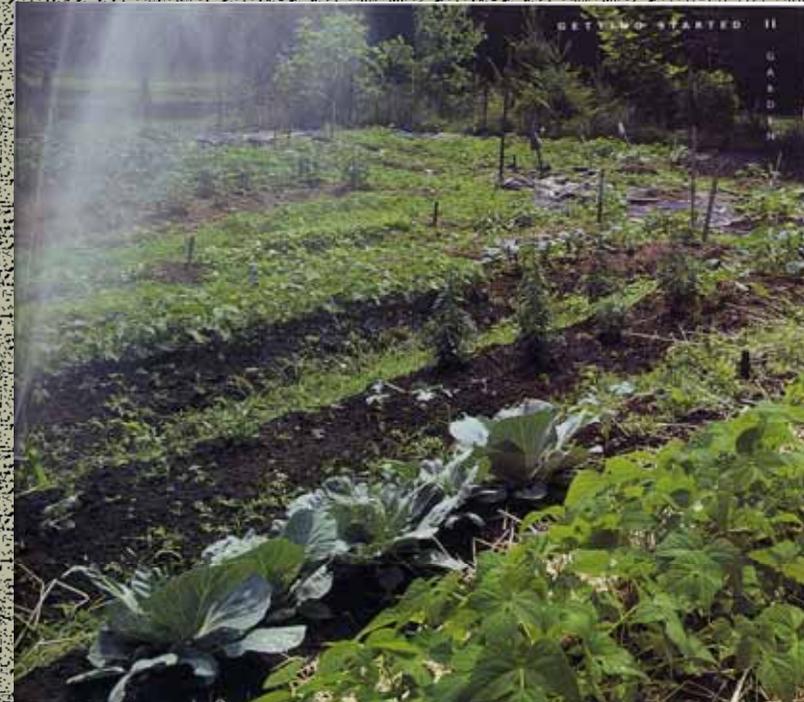
# Addressing Organic Information Need



- Organic industry growing
- Grower-based knowledge system
- Shortage of public research programs
- 2001 Congress authorized
  - Organic Ag. Research & Extension Initiative
- An organic agenda for TN

# What is organic farming?

- Produce food & fiber
- Relies on biological diversity
  - Disrupt pests' habitat
- Purposeful maintenance & replenishment of soil nutrients
- No synthetic pesticides or fertilizers





# Essential Characteristics of Organic Systems

- Implementation of organic system plan
- Detailed record keeping system
  - Tracks from field to point of sale
- Adequate buffer zones
  - Prevent contamination from adjacent conventional fields



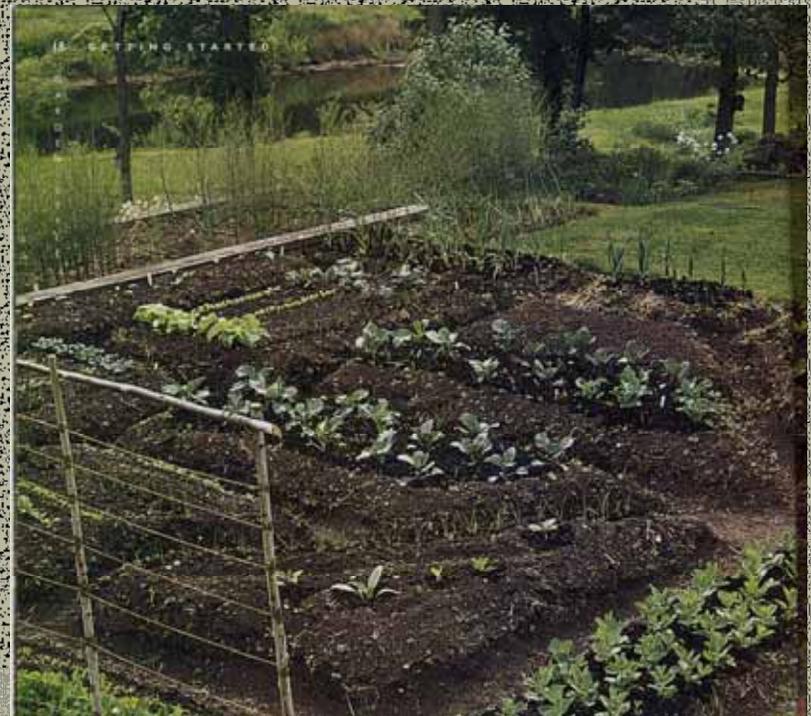
# Certified Organic

- Certification includes
  - Organic system plan
  - Inspections
    - Farm fields
    - Processing facilities



# Rejections for organic foods or ingredients

- Synthetic agrochemicals
- Irradiation
- Genetically engineered



# Maintain Integrity of Organic

- No artificial ingredients
- No preservatives
- Minimal processing





# Is organic food more nutritious than conventional food?

- Organic food less likely to contain pesticide residues
  - 13% of organic samples
  - 71% of conventional samples

- *Pesticide residues in conventional, integrated pest management (IPM)-grown and organic food: insights from three US data sets*
- Food Additives and Contaminants  
19:427-446

# The National Organic Certification Requirements



[www.ams.usda.gov/nop](http://www.ams.usda.gov/nop)

# Misconception

- *E. coli* contamination
- Strict guidelines for raw manure use
  - Composted
  - 90 days before harvest
- Microbial breakdown of any pathogens



# Why does organic cost more?



- Stricter regulations
- Intensive management & labor
- Organic price tag reflects true cost of growing

# Markets

- Consumer groups
  - Community Supported Agriculture
- Farmers' Markets
- Niche markets
  - Health Food Stores
  - Natural Markets
- Restaurants
- Supermarkets
- Internet



# Are organic yields lower?

- Organic crops yielded 95% of conventional, high-input crops
- Organic has potential to match or surpass conventional



# Soil Microbial Health is Critical



- 3-year transition period = low yield
- Re-establish soil microbes & nutrient cycling = high yield



# National Standard for Organic

- National Organic Rule
  - [www.ams.usda.gov/nop/index.htm](http://www.ams.usda.gov/nop/index.htm)
- Uniform standards
  - Organic production
  - Organic processing
  - Organic labeling
- USDA oversees implementation of Rule
- Accredited independent certifiers
  - TN Crop Improvement



# Organic Crop Standards (from USDA NOP)

- No prohibited substances applied to the land for 3 years
- No genetically engineered, ionizing radiation or sewage sludge
- Soil fertility & crop nutrients managed through
  - Tillage & cultivation practices
  - Crop rotations & cover crops
  - Supplemented with animal & crop waste materials
  - ... and, allowed synthetic materials
  - National List of Allowed Synthetic and Prohibited Non-Synthetic Substances
- Preference to organic seed/plants
- Pests, weeds and diseases controlled by management practices
  - Physical
  - Mechanical
  - Biological
  - Other methods approved on National List



# Organic Livestock Standards (from USDA NOP)

- Raised under organic management
  - From the last third of gestation
  - No later than the second day of life for poultry
- 100% organic feed/nutrition products
  - Allowed vitamins and minerals
- No hormones or antibiotics
- Use preventative practices
  - Vaccines
  - Clean habitat

# ...Livestock Standards (cont.)

- Do not withhold treatment from sick animals
- But, animals treated with 'organic label' prohibited medication may not be sold as organic
- Access to outdoors
- Ruminants access to pasture





# Civil Penalty up to \$10,000.00

- Want more information
  - <http://www.ams.usda.gov/nop>
  - USDA NOP 202-720-3252
  - P. Hamlett for the publication
    - Organic Farm Certification and the National Organic Program
    - 731-425-4711

# How do organic farmers fertilize crops?



- SOIL BIOTA
- Soil microbes
- Good soil structure
- Good water-holding capacity
- Cover crops
- Compost
- Biologically based soil amendments

# How do organic farmers control pests, diseases and weeds?

- Prevention!!!
  - Through good plant nutrition
  - And, management
- Disrupt habitat
  - With cover crops
  - Crop rotations



Effectively changing field ecology!!

# Organic weed control...



- Crop rotation
- Mechanical tillage
- Hand-weeding
- Cover crops
- Mulches
- Flame weeding
- Other techniques

# Controlling pests...



- Diversity of
  - Soil organisms
  - Beneficial insects
  - Beneficial birds
- Strategies
  - Insect predators
  - Mating disruption
  - Traps & barriers



# National Organic Rule strictly enforced

[www.OMRI.org](http://www.OMRI.org)



Organic Enforcer

- First line of defense
  - Sanitation
  - Cultural practices
- 2<sup>nd</sup>: Material application
  - Broccoli worm
    - Bt formulation
    - Dipel
- Last resort
  - Botanical pesticides
  - Non-synthetic pesticides

# How are organic poultry raised?

- Organic feed only
- Allowed access to outdoors/pasture
- In absence of illness
  - No antibiotics, hormones or medications
- Preventative vaccinations permitted



# Preventative = Primary Control



- Parasiticide
  - Strictly regulated
- Preventative measures
  - Rotational grazing
  - Balanced diet
  - Sanitary housing
  - Stress reduction

# How can I reach an organic certification agent near me?

- Federal USDA qualified
- TN USDA Certifying Organic Agent
  - TN Crop Improvement  
2640-C Nolensville Rd.  
Nashville, TN 37211  
Tel: 615-242-0467



U.S. Governmental Organic Web Site:  
[www.ams.usda.gov/nop](http://www.ams.usda.gov/nop)

