

# Challenges Facing a Second Green Revolution—Expanding the Reach of Organic Agriculture

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Thomas L. Dobbs  
South Dakota State University



# The first Green Revolution

- *The word “revolution” has been greatly abused, but no other term adequately describes the effects of the new seeds on the poor countries where they are being used. The technological breakthrough achieved by agricultural scientists foreshadows widespread changes in the economic, social, and political orders of the poor countries. [Lester Brown (1970, p. 6), describing the “Green Revolution” in developing countries, in his book Seeds of Change: The Green Revolution and Development in the 1970’s]*



# A second Green Revolution based on organic systems?

- *The future for organic farming is uncertain. Much depends on the availability and price of fertilizer (especially nitrogen) and farm labor, produce-price relationships, the domestic and world demand for food, concern for soil and water conservation, concern for health and the environment, and U.S. policies toward the development and promotion of organic farming practices. Due to one or more of the above factors, it may be economical for some farmers to produce certain crops and livestock organically rather than conventionally.*  
[From the USDA's classic Report and Recommendations on Organic Farming (USDA Study Team on Organic Farming, 1980, p. 46)]



# 'Influences' emphasized by analysts of both the 'first' and 'second' Green Revolutions

- Technology, prices, and markets
- The structure of agriculture
- Public policies

# Technology, prices, and markets

- US organic consumption expanding 20% annually.
- Organic food sales 2% of US food sales by 2003.
- US organic cropland increased 53% between 1997 and 2001.
- But organic cropland still only 0.36% of total US cropland in 2001.
- Roles of technology, markets, and prices in increasing that percentage?

# The dilemma of price premiums

- Some research suggests price is the leading barrier to greater organic food consumption.
- Economic studies suggest that price premiums needed for profitability competitiveness of some organic farming systems in some areas, but not in others.
- Even where prices appear adequate to assure profitability, on average, risk and other factors inhibit expansion of organic farming systems.



## **9-year average (1995-2003) ratios of organic-to-'conventional' (US) prices**

- Corn: 1.76
- Soybeans: 2.52
- Spring wheat: 1.75
- Oats: 1.79

## Top 8 organic production, marketing, and regulatory problems (OFRF 2002 Organic Farmers' Survey)

- Weather-related production losses (*risk*)
- Organic certification costs
- Obtaining organic price premiums (*risk*)
- High input costs
- Lack of organic marketing networks
- High labor costs
- Weed-related production losses (*risk*)
- Production losses due to pests or diseases (*risk*)

**Most common open-ended responses  
on marketing conditions that have  
greatest negative impact on organic  
farming economic sustainability and  
profitability (OFRF Survey)**

- Competition with large-scale producers
- Competition with organic imports
- Low prices
- Buyer consolidation in organic market place
- Finding buyers and markets
- Market overproduction (espec. soybeans)



# Challenges for markets and prices

- Continue efforts to expand consumer demand
- Continue to expand retail outlets
- Continue to expand all elements of the marketing and processing chain, and improve linkages, to help reduce 'transactions costs'

# Technology: positive and negative lessons from the first Green Revolution?

- **Positive**

- Need long, sustained efforts (e.g., the plant breeding that led to high-yielding wheat and rice varieties).
- Have *systems orientation* focused on technology packages.
- Need integrated strategy (e.g., India's targeted Districts with high production potential).

- **Negative**

- Need to focus on “appropriate technologies”
  - Don't just try to tweak ‘conventional’ crop and livestock systems to make them ‘organic’.
  - First ask what crops, livestock, and systems may be “appropriate” to each region.

# **‘Influences’ emphasized by analysts of both the ‘first’ and ‘second’ Green Revolutions**

- Technology, prices, and markets
- The structure of agriculture

# Structure of agriculture considerations

- Cause

What structures are conducive to expansion of organic agriculture?

- Effects

How do particular organic structures impact the goals of organic agriculture?



# Implications of current structure for adoption of organic systems

- Organic farming systems tend to be more labor- and management-intensive.
- Both very large and small, part-time farms are more conducive to specialized and capital-intensive operations.
- Even the moderate-sized farms have less family labor and management available than in earlier eras.
- Small-area organic farms near urban markets that focus on horticultural crops and small-animal livestock systems may fit within the current structure.

# Can 'industrial organic' achieve the goals of organic agriculture?

- Environmental and ecological goals?
  - What organic rules will prevail?
- Agrarian tradition goals?
  - Guthman argues that California, for example, “never had an agrarian tradition”.
  - Is the “Jeffersonian” family farm adequate, in itself, as a social goal for organic agriculture, anyway? What about hired laborers in the organic farm and food system, also?
- Food safety and nutrition goals?



# Structure of agriculture lessons from the first Green Revolution?

- The first Green Revolution had one overriding goal—to satisfy pressing food needs of large and rapidly growing populations in developing countries.
- Other social and environmental goals have taken on importance in the revolution's aftermath, as unintended consequences have become increasingly apparent.
- Will expansion of organic production area and consumption be the overriding goals of the second Green Revolution, or will other goals also be given substantial weight?

# **‘Influences’ emphasized by analysts of both the ‘first’ and ‘second’ Green Revolutions**

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# Public policies

- Public policies played important role in the first Green Revolution, and economic policies, especially, took on even greater importance as the revolution seemed to stall in the mid-1970s.
- Policies within the European Union have actively supported a second Green Revolution based in part on organic agriculture for more than a decade.
- Public policy support for organic agriculture within the US is largely passive, rather than active.

# Prospects for more active policy support in the US for organic agriculture?

- Growing evidence of the negative externalities associated with 'conventional' agriculture
- Growing evidence of organic agriculture's positive externalities and public goods
- The hope of some that the new Conservation Security Program (CSP) would serve as a European-style organic incentives program

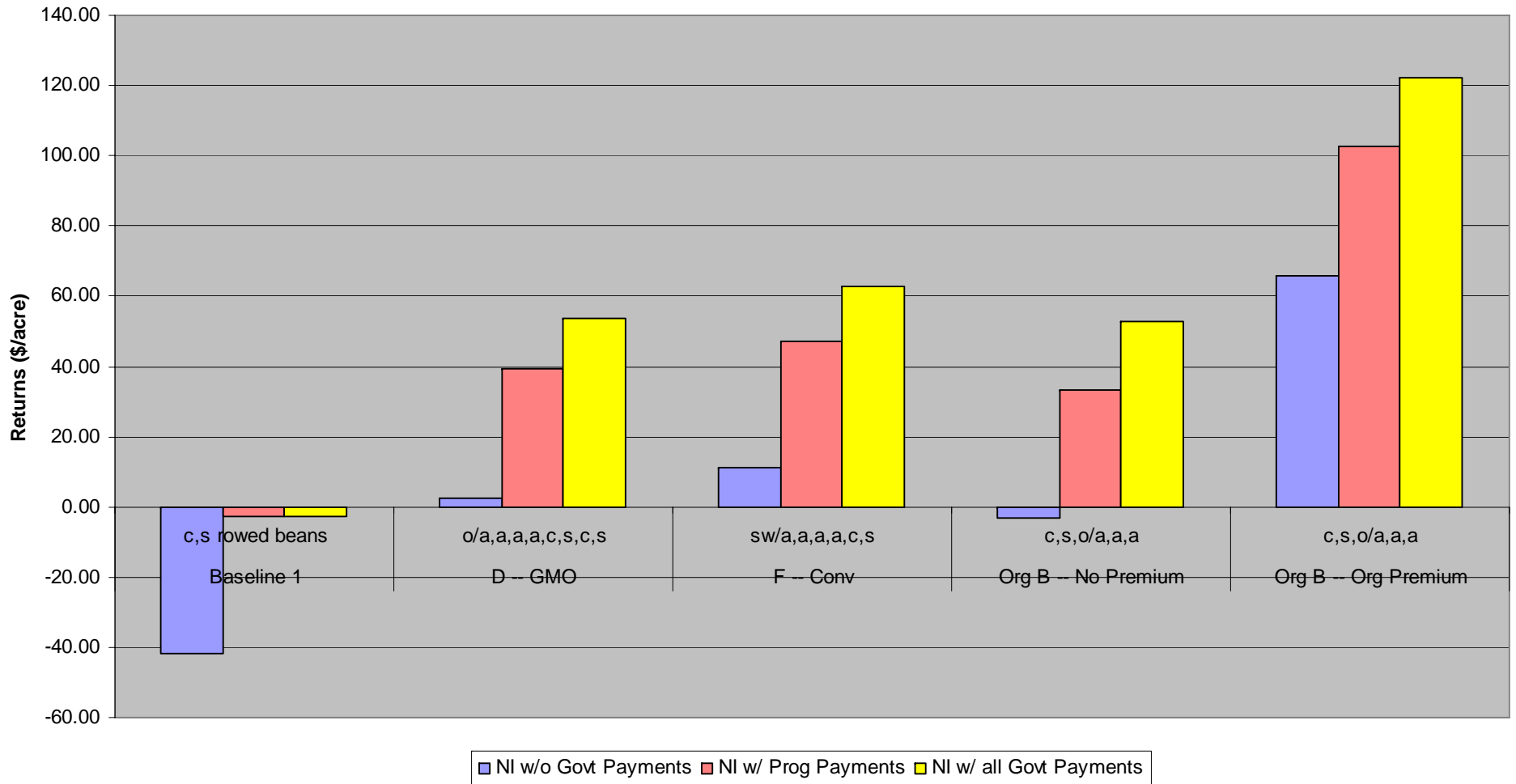




# Crop systems compared in South Dakota CSP study

- **Baseline 1:** corn, soybeans
- **Rotation D:** oats/alfalfa, then 3 more yrs alfalfa, corn, soybeans, corn, soybeans
- **Rotation F:** spring wheat/alfalfa, then 3 more yrs alfalfa, corn, soybeans
- **Organic B:** oats/alfalfa, then 2 more yrs alfalfa, corn, soybeans

### Profitability Comparisons, Selected Simulations



# Implications of the South Dakota CSP study findings

- Factors other than average or ‘typical year’ profitability appear to be holding back adoption of organic and other ecologically diverse farming systems.
- The magnitude of Federal ‘commodity’ payments makes it easier for farmers to stay with ‘conventional’ systems (also has been true until recently under the European Union’s Common Agricultural Policy).
- CSP or some type of organic program cost-share and incentive payments may be needed to overcome obstacles to adoption (including the current ‘commodity-type’ payments).

## Challenges for this workshop in identifying the bases for a second Green Revolution

<b>Technology, prices, markets</b>	<b>Structure of agriculture</b>	<b>Public policies</b>
<b>Session 2</b> (producer obstacles and options)	<b>Session 2</b>	
<b>Session 3</b> (market growth)	<b>Session 3</b>	<b>Session 4</b> (strategies)
<b>Session 5</b> (education infrastructure)	<b>Session 5</b>	<b>Session 6</b> (benefits of organic food production)
<b>Session 7</b> (research base)	<b>Session 7</b>	