

## Trends in Sustainable Agriculture



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### 3 Questions

- What would a sustainable agriculture look like?
- How do current trends (global, national, regional) support or detract from this vision?
- What are the implications for the agricultural workplace?



# Sustainable Agriculture

"A long-term goal"

**Economically  
Viable**

**Environmentally  
Sound**



A "3-legged stool"

Not a set of farming practices

**Socially Acceptable**

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## Sustainability

### Farm

Economically viable

Environmentally sound

Socially responsible

### Worker

Economic survival

Human health

Family & community



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## What would a sustainable agriculture look like ?

- Open space
- Clean water and air
- Minimal toxins
- Biodiversity, habitats
- Improved soil quality
- Renewable energy
- More people involved in agriculture
- Vibrant rural communities
- Plentiful, nutritious food
- Consumer connections
- Safe workplace



- Lower costs, fewer fatalities agriculture
- Better profits, wages, benefits
- New farmers – young, farmworkers

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## Global Influences

- Energy – increased dependence on fossil fuels, shrinking supply; demand for bioenergy
- Population growth, changing demographics urban vs. rural
- More international competition; downward pressure on prices to producers
- Reduce labor expense – move crops to other countries (e.g., asparagus from WA to Peru); more mechanization (cherry harvester)



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## Globalization

### Asparagus – From Washington to Peru

**50% reduction in WA acres since 1991  
(US-Peru trade agreement signed)**

**All canneries closed – lost 400 factory  
jobs, 5,000 seasonal farm laborers**

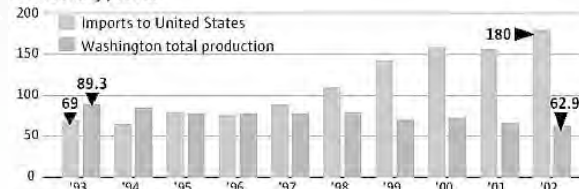


**Asparagus sorter  
reduces labor need  
by 50% on Yakima  
farm**

### Outsourcing asparagus

Washington state asparagus production has fallen steadily and imports have risen since 1993, when the United States dropped its tariffs on Andean crop imports.

*In millions of pounds*



Source: Washington Asparagus Commission

THE SEATTLE TIMES



**Asparagus plant in  
Peru**

## Global Sustainable Ag Trends

**Direct seeding**

**IPM / Biocontrol of pests**

**Organic farming – trends**

**More product identity – organic, other  
ecolabels, wine grape sustainability code,  
fair trade, origin**

**Social accountability in business- SASA;  
sustainable business practices**

**Water quality protection (pesticides,  
nutrients, pathogens)**

## National, regional trends

**Food system consolidation**

**Increasing portion of farm sales on largest farms**

**Pressure to reduce public subsidies**

**More direct marketing, more value added enterprises**

**Workforce training – WVC programs**

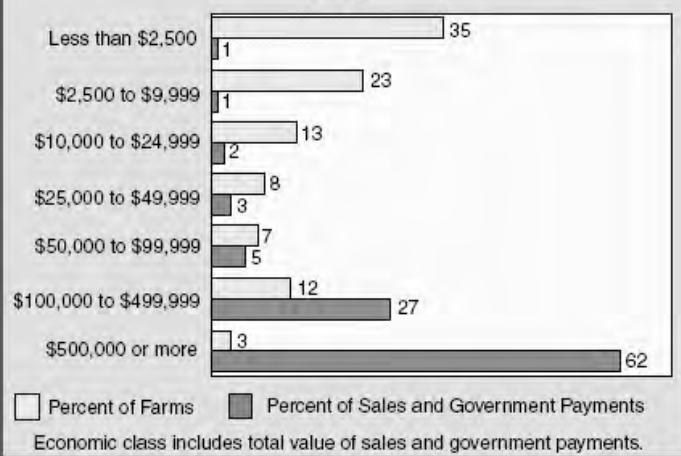
**Increasing number of Latino farm owners**

**Farms as habitat – ‘Wild Farm Alliance’**

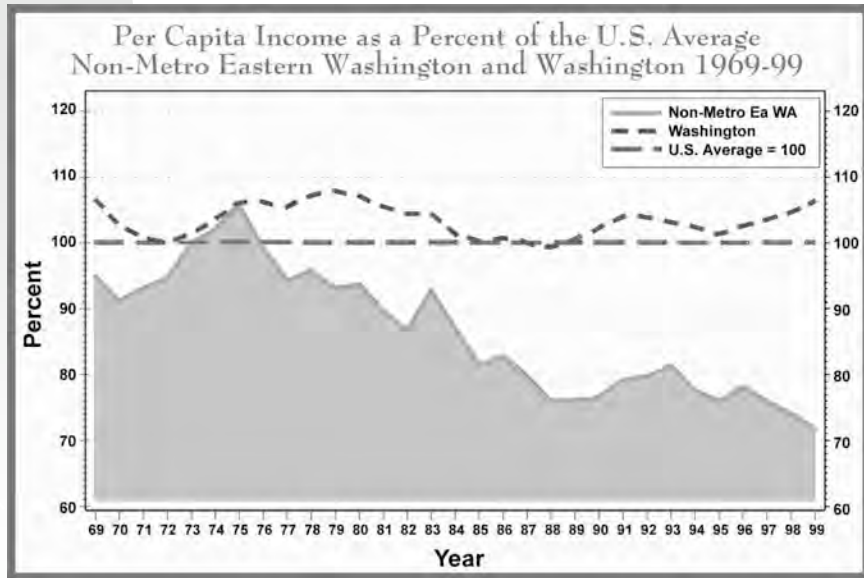
**Agroecosystem redesign – ‘pedestrian orchard’**



**Distribution of Farms by Economic Class:  
2002**



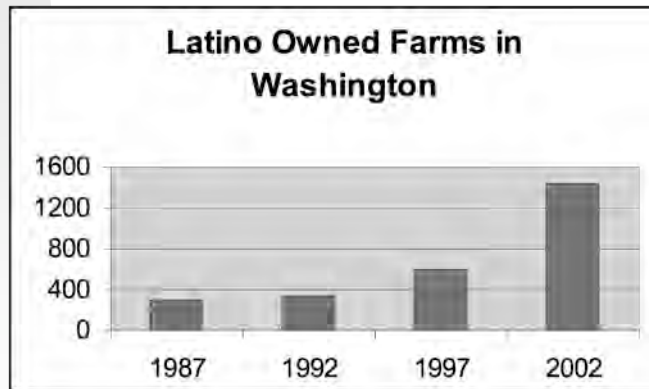
Source: USDA NASS



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Source: CSANR, 2002

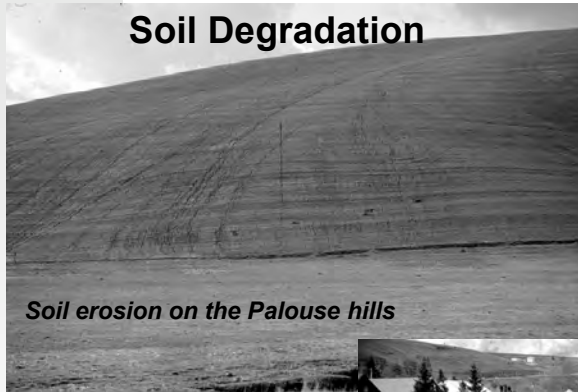
## Farmworker to Farm Owner



Source: USDA NASS

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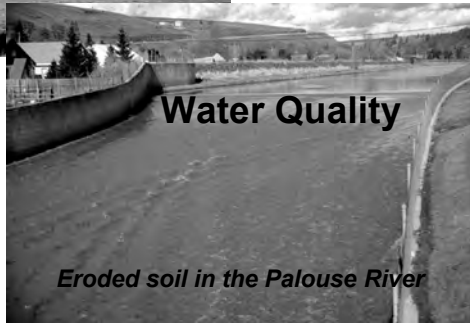
## Soil Degradation



Soil erosion on the Palouse hills

Still a leading sustainability challenge worldwide

Degraded soil and water impoverish people's lives



Eroded soil in the Palouse River

## Water Quality

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## Direct Seeding (No-till)



1987-1997 – NT increased 20x in Latin America, 4x in US

Western US – NT on only 4% of cropland, 12% of small grains; 160% increase over 10 yr



No-till planted potatoes



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Source: CTIC, 2000

## Benefits of Direct Seeding

**Reduced costs – less tractor time, fuel use, machine complement**

**Increased yields – better soil, more moisture**

**Decreased soil erosion, improved water quality**

**Less dust**

**Carbon sequestration**



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## Product Identity - Labels



## Social Labels Expand

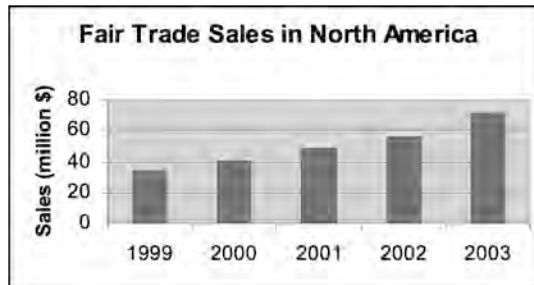
**SASA – Social Accountability in Sustainable Agriculture**

**Sustainability codes:**

**Columbia cut flower growers (FLORVERDE)**

**CA wine grapes**

**Few fair trade food products from U.S.**



Source: 2003 Fair Trade Trends Report

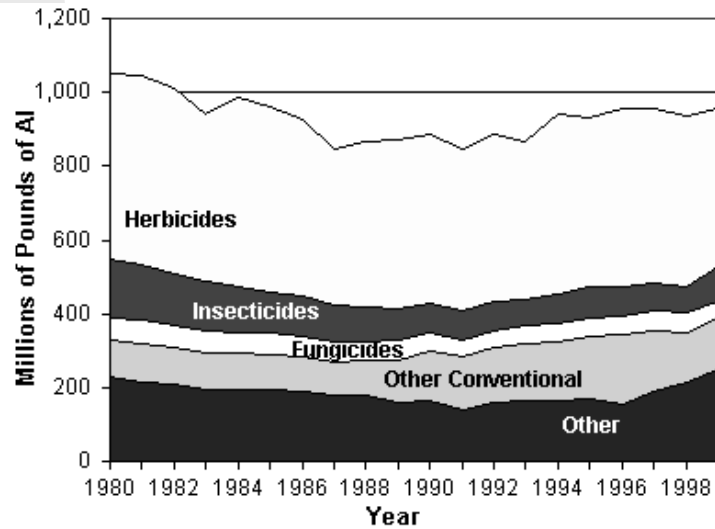
## Social Standouts

- Youngquist family farm, Mt. Vernon, WA
- Produce berries and vegetables
- Founded the 'Berry Good School' for children of farmworkers and other community members



Food Alliance

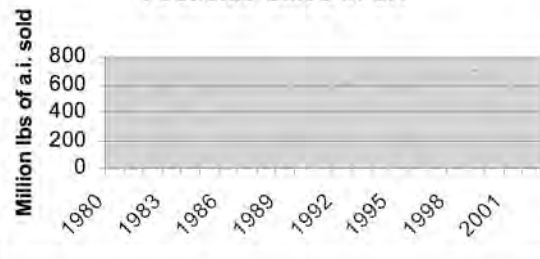
## U.S. Pesticide Use



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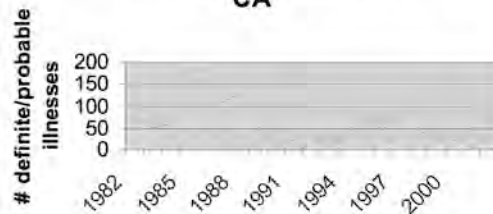
Source: US EPA

## Pesticide Sales in CA



**California, 2001 – 57 cases of documented pesticide exposure of ag field workers; 79% from residue exposure, 18% from drift**

## Illness from Pesticide Exposure - CA



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Source: CA DPR

## IPM and Biocontrol in WA Apples

<b>Pesticide</b>	<b>Total lb a.i./yr</b>	
	<b>1989</b>	<b>2000</b>
<b>Guthion</b>	<b>425,200</b>	<b>258,900</b>
<b>Dimethoate</b>	<b>11,900</b>	<b>140</b>
<b>Malathion</b>	<b>63,400</b>	<b>3,800</b>
<b>B.t.</b>	<b>820</b>	<b>24,400</b>
<b>Kaolin</b>	<b>n.a.</b>	<b>71,500</b>
<b>Spinosad</b>	<b>n.a.</b>	<b>6,600</b>


  

<b>Practice</b>	<b>% growers using</b>	
<b>Field monitor</b>	<b>91</b>	<b>99</b>
<b>Alt. row spray</b>	<b>28</b>	<b>76</b>
<b>Econ. threshold</b>	<b>37</b>	<b>92</b>
<b>Use biocontrols</b>	<b>34</b>	<b>81</b>


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Source: WSU IPM survey

### Pheromone Communication




### Pheromone Confusion



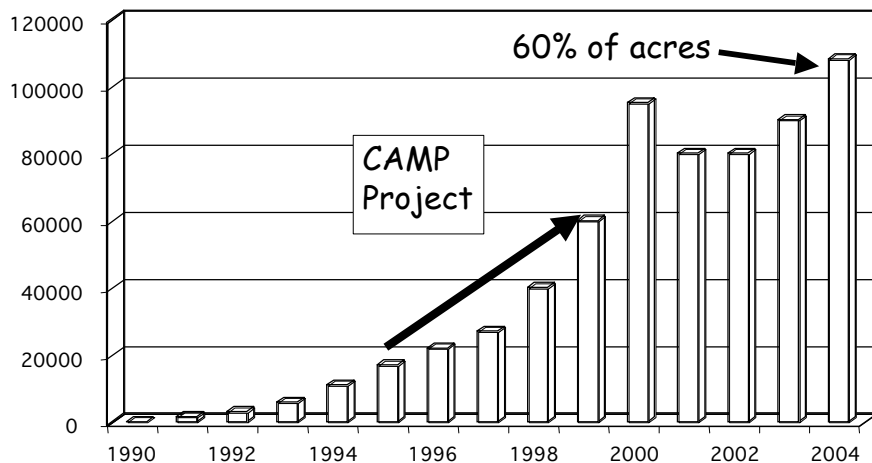
### Mating Disruption in Apples

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## Codling moth pheromone products uses in Washington apple and pear orchards

Total acres treated with pheromone products



Source: J. Brunner

## Surround® - A 'soft' pesticide

- Made from kaolin clay, a natural material used in cosmetics
- Not toxic – works by host plant masking, repellency
- Need respiratory protection for applicators, small allergic potential



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## Other Workplace Implications

**Mechanization – reduces number of jobs, reduces repetitive motion injuries, machines can be source of serious injuries**

**Intensive management – new types of jobs, higher skills, higher pay (e.g. South African field hands being trained as IPM scouts, and receiving additional pay)**

**Direct market, value added – higher farm profitability, potential to pay higher wages and provide benefits**

## Redesigning Agroecosystems



Large trees



Dwarf trees

**'Pedestrian' orchard benefits:**

- **economic (faster returns, higher quality fruit, potentially lower labor costs for maintenance)**
- **environmental (better IPM)**
- **social (less worker risk of injury with few or no ladders)**

## Summary

- Sustainable ag trends are benefiting the workplace (reduced pesticide risk) but don't guarantee it
- Awareness about social issues in ag is growing
- Labels offer one avenue for change
- Trade-offs exist: mechanization vs. repetitive motion vs. jobs
- Does scale matter ? Related to diversity of operation?

