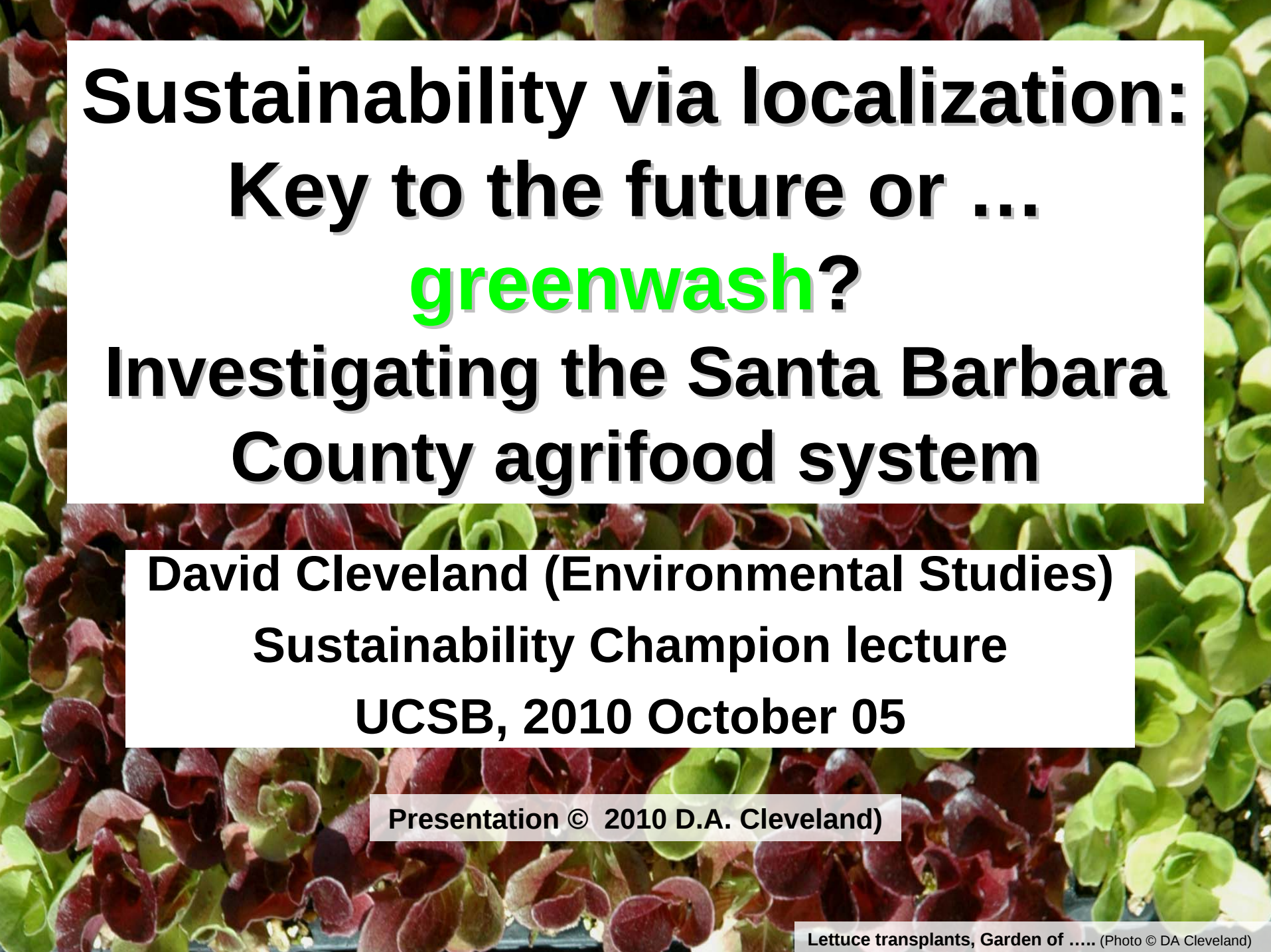




Sustainability via localization: Key to the future or ... **greenwash?**

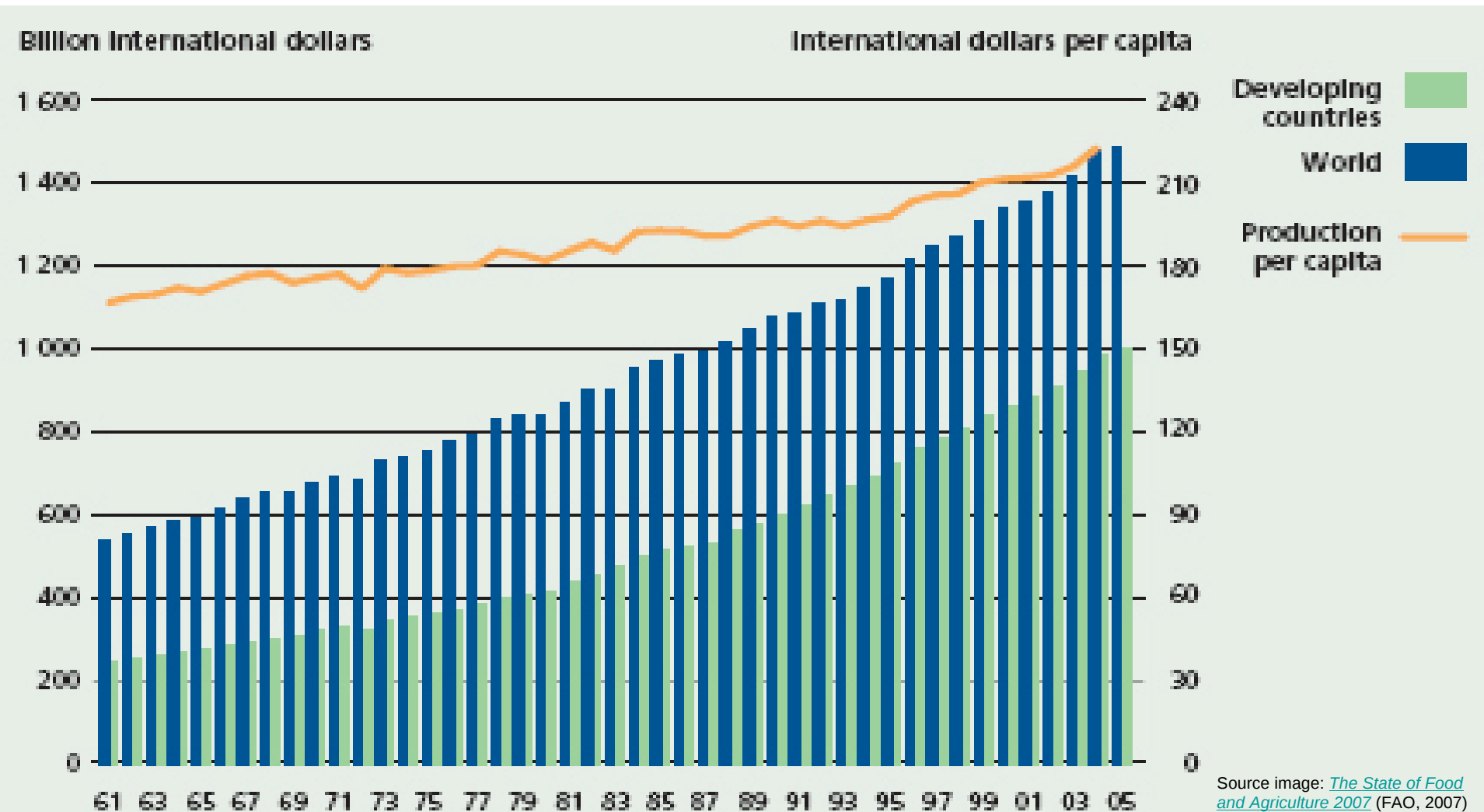
Investigating the Santa Barbara County agrifood system

**David Cleveland (Environmental Studies)
Sustainability Champion lecture
UCSB, 2010 October 05**

Presentation © 2010 D.A. Cleveland)

Dominant agrifood system very productive

Total and Per Capita Global Agricultural Production, 1961-2005



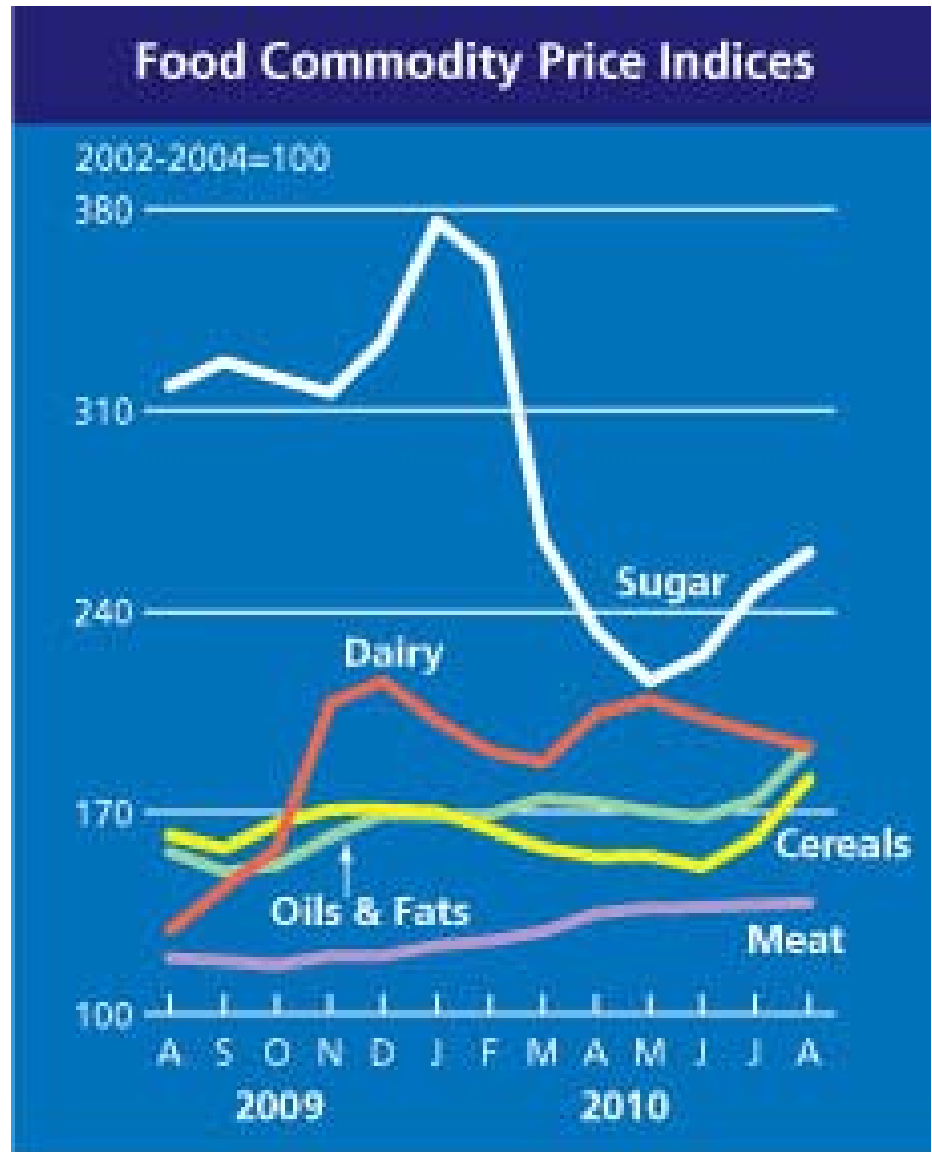
Dominant system

- Centralized & industrialized growing & processing
- Emphasizes production, growth, profits

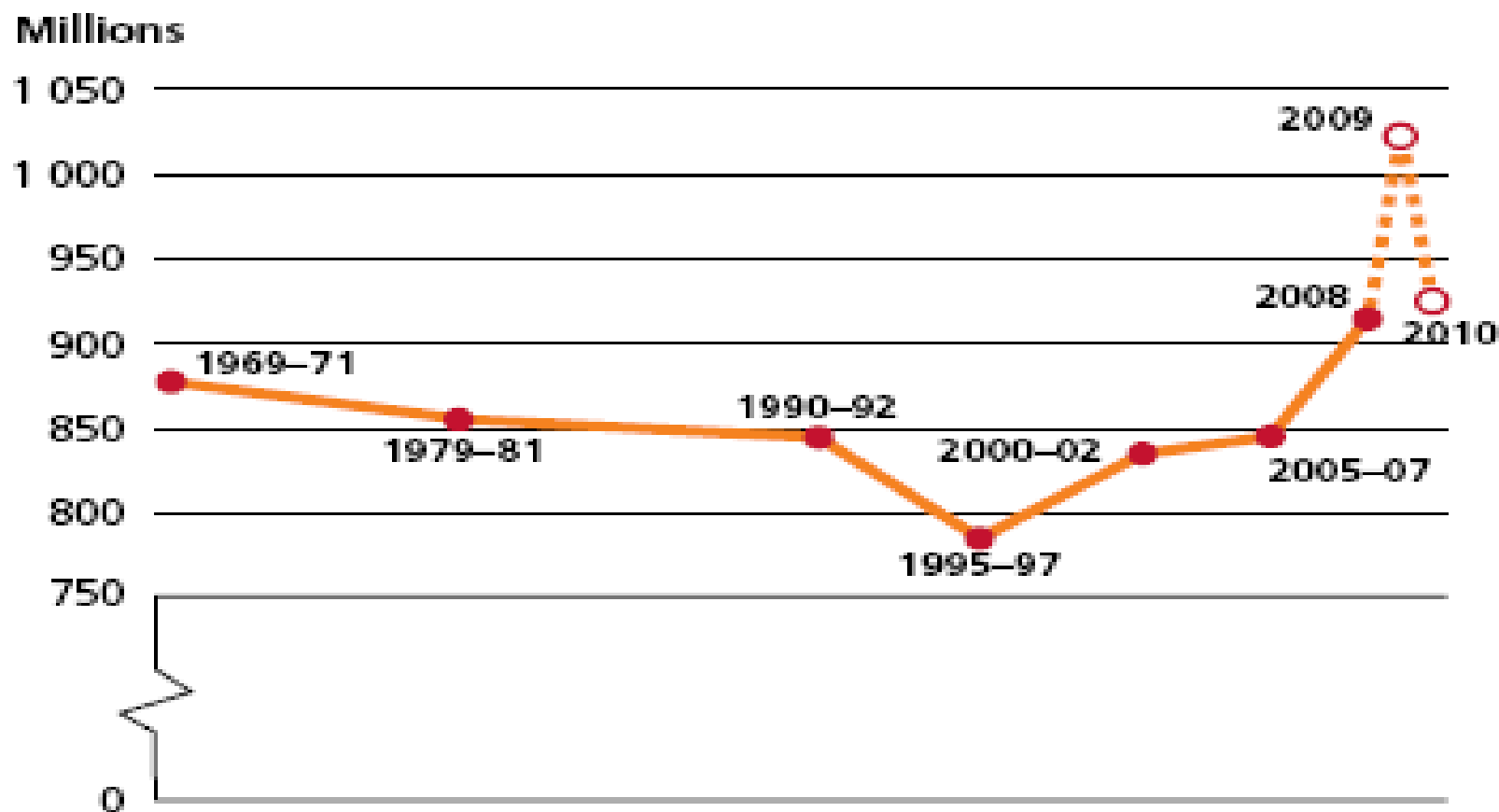


**Dominant
system has
also caused
lots of
problems,
e.g.....**

**the world
food crisis**



Number of undernourished in the world, 1969-71 to 2010

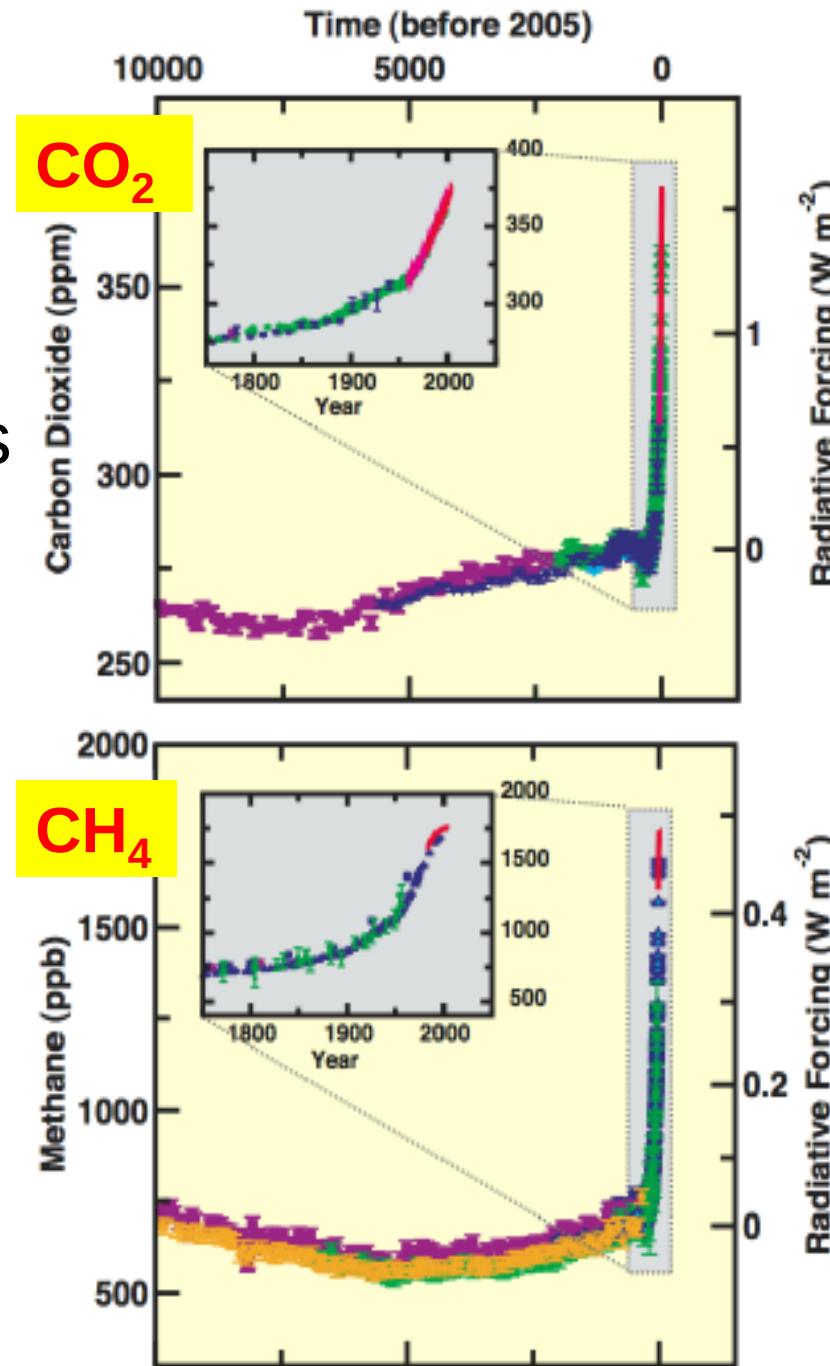
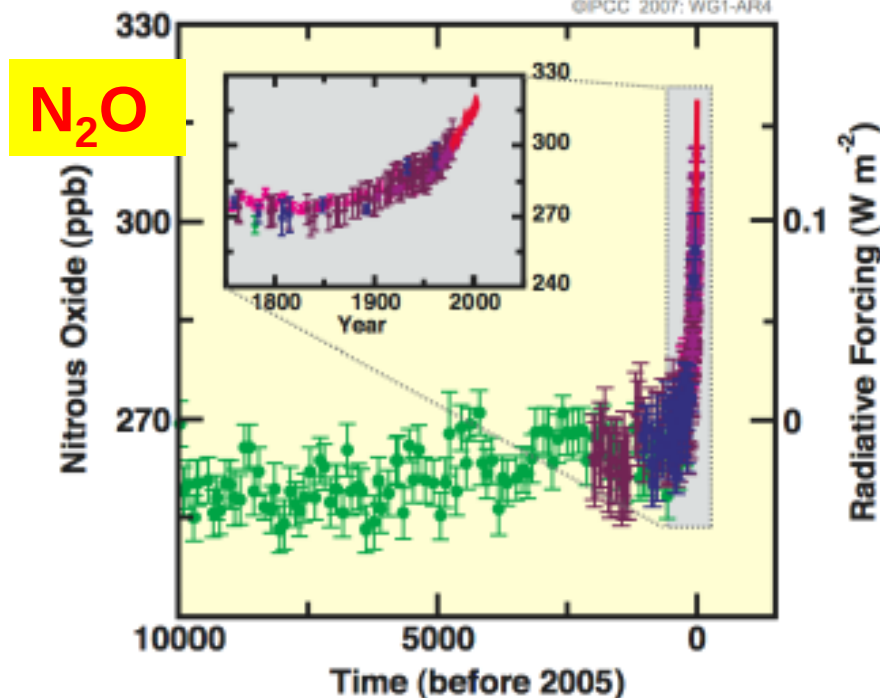


Note: Figures for 2009 and 2010 are estimated by FAO with input from the United States Department of Agriculture, Economic Research Service. Full details of the methodology are provided in the technical background notes (available at www.fao.org/publication/sofi/en/).

Source: FAO.

Environmental problems

Global warming: globally agrifood systems contributes 20-80% of greenhouse gas emissions (GGE)



Santa Barbara County (SBC)

...part of dominant agrifood system

High production

Farm gate value, 2009

- **\$1.24 billion gross from SBC agriculture**
- **13th of 58 California counties**
- **top 1% US agricultural counties**

broccoli, Santa Maria Valley

(Photo © DA Cleveland)

SBC nutrition problems, 2010

Indicator	SB County	Rank (58 CA counties, (1 = best))
# of Adults in Food Insecure Households	37,000	n/a
% of Adults in Food Insecure Households	39.5%	47
% of Overweight or Obese Adults	53.3%	11
% of Children Overweight for Age	7.9%	11
# of Individuals with Type II Diabetes	17,000	n/a

<http://www.cfpa.net/2010CountyProfiles/SantaBarbara.pdf>

Household food insecurity: reduced quality, variety, and desirability of their diets, or at times during the year, eating patterns disrupted and food intake reduced because of lack of money and other resources <http://www.ers.usda.gov/Briefing/FoodSecurity/measurement.htm#and>



Source image: <http://www.dailymail.co.uk/health/article-1020020/Britains-couch-potato-children-fattest-Europe.html>

SBC environmental problems

- SBC residents generate ~9.3 million MT CO₂e annually

Source: Based on average US person⁻¹ GGE, calculated from data in EPA (US Environmental Protection Agency). 2010. 2010 U.S. Greenhouse Gas Inventory Report. Washington, D.C.: EPA.
<http://www.epa.gov/climatechange/emissions/usinventoryreport.html>.

- The agrifood system accounts for up to >50% of GGE

strawberry, Santa Maria Valley

(Photo © DA Cleveland)

Is “sustainability”



the answer?

What is sustainability?



...three steps

a. Definitions

Sustainability is chameleon word
– like “good” = value-based goals



**What do we
think the world
*should be?***



**Challenge:
negotiate
agreement**

**This means
all of us!**



b. Indicators.

**How will we measure
our shared
definition?**

**What do we think the
world *is*?**

**Where are we?
Indicator base line**



Small-Scale Food Production class, 2008
(Photo © DA Cleveland)

c. Actions and policies

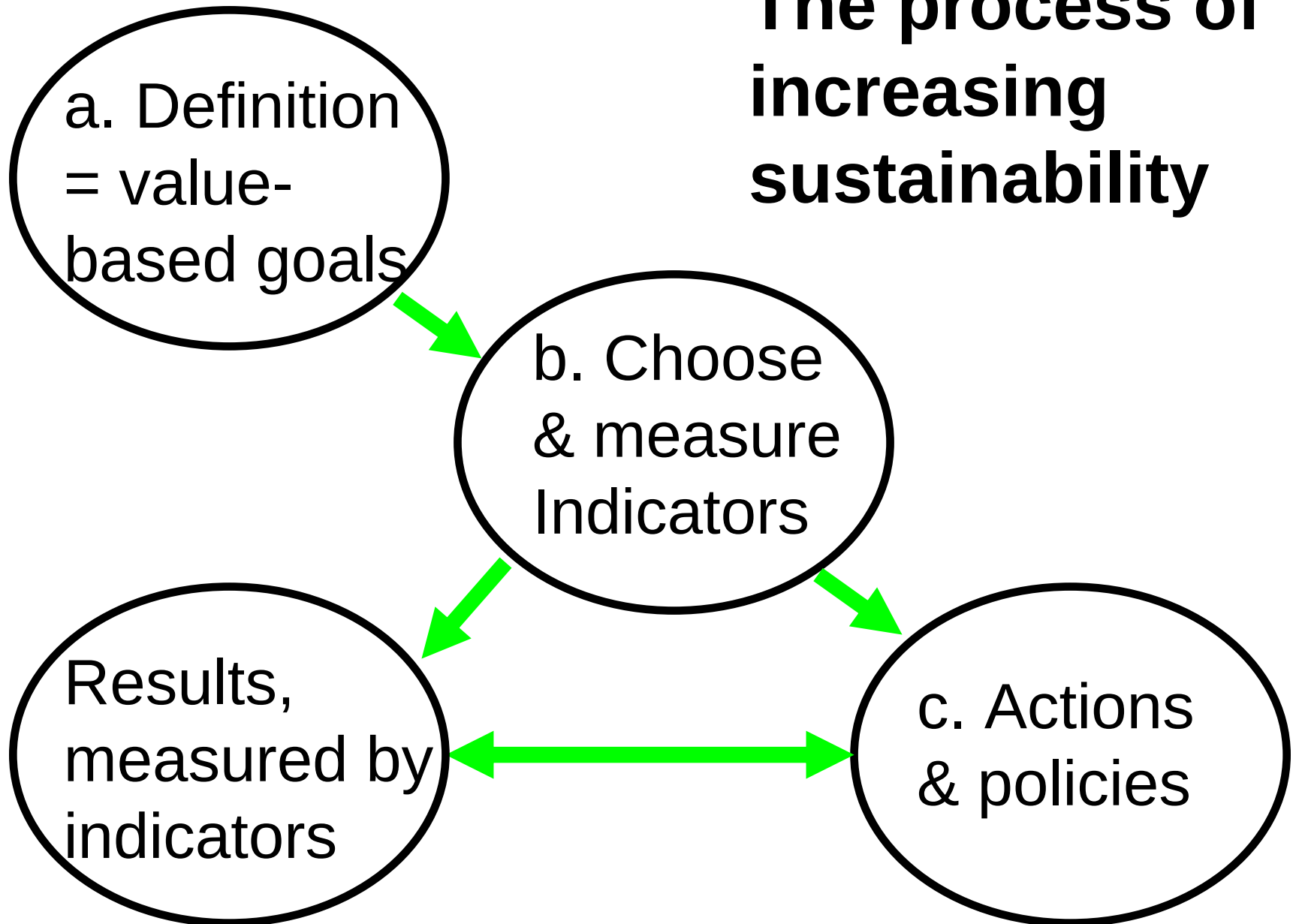
- How will we increase sustainability?
- Need to use indicators to evaluate action



**Small-Scale Food Production class,
Garden of Los Olivos. 2010**

(Photo © DA Cleveland)

The process of increasing sustainability



**Students' interest in our
agrifood systems is high!**

**I brought together team of
undergrads to study
sustainability of SBC
agrifood system**



**Small-Scale Food Production class,
Earthtrine Farm, Ojai, 2008**

(Photo © DA Cleveland)

Our team has been assessing sustainability in SBC agrifood system

Because of problems, two common ways of defining sustainability are

- Environmental health, e.g. lower GGE (greenhouse gas emissions)
- Human health, e.g. improved food access and nutrition



Coleman Family Farm, Carpinteria

(Photo © DA Cleveland)

Many people see
localization (food miles)
as an *indicator* of
sustainable alternative
to the dominant agrifood
system



Domingo Farms, SB Certified
Farmers Market (Photo © D Soleri)

Issues that haven't been investigated

1. indicator not measured
2. relationship of indicator to goals not measured

Danger of greenwash?

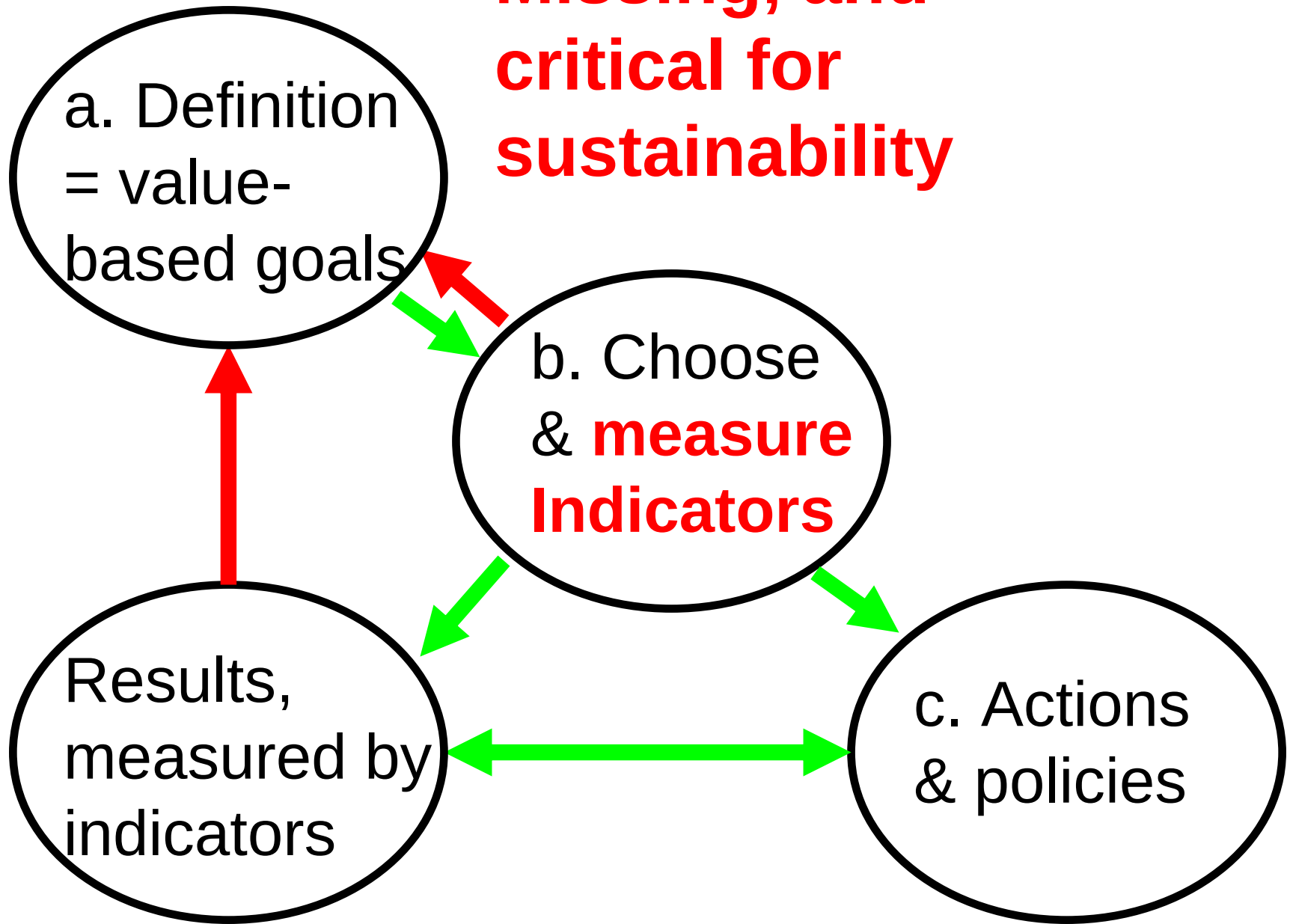
We wanted to know!



Salvador Gomez explains differences between managing his family farm in Jalisco, Mexico, and Fairview Gardens farm

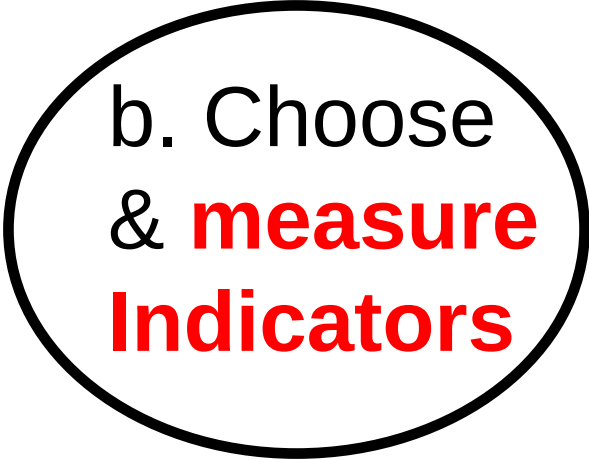
(Photo © DA Cleveland)

**Missing, and
critical for
sustainability**



Question #1:

How *local* is the SBC agrifood system?



b. Choose
& **measure**
Indicators

We measured “local” as % produce grown in
& directly consumed in SBC

We focused on fruits & vegetables (produce) because

- **80% value of SBC agriculture**
- **main crops sold locally**
- **lack in diet major cause of poor health**

There were *no* existing data for SBC grown & consumed produce!

Methods

Obtained data for grocery stores, farmers markets, CSAs, farm stands, food assistance programs, UCSB Residential Dining

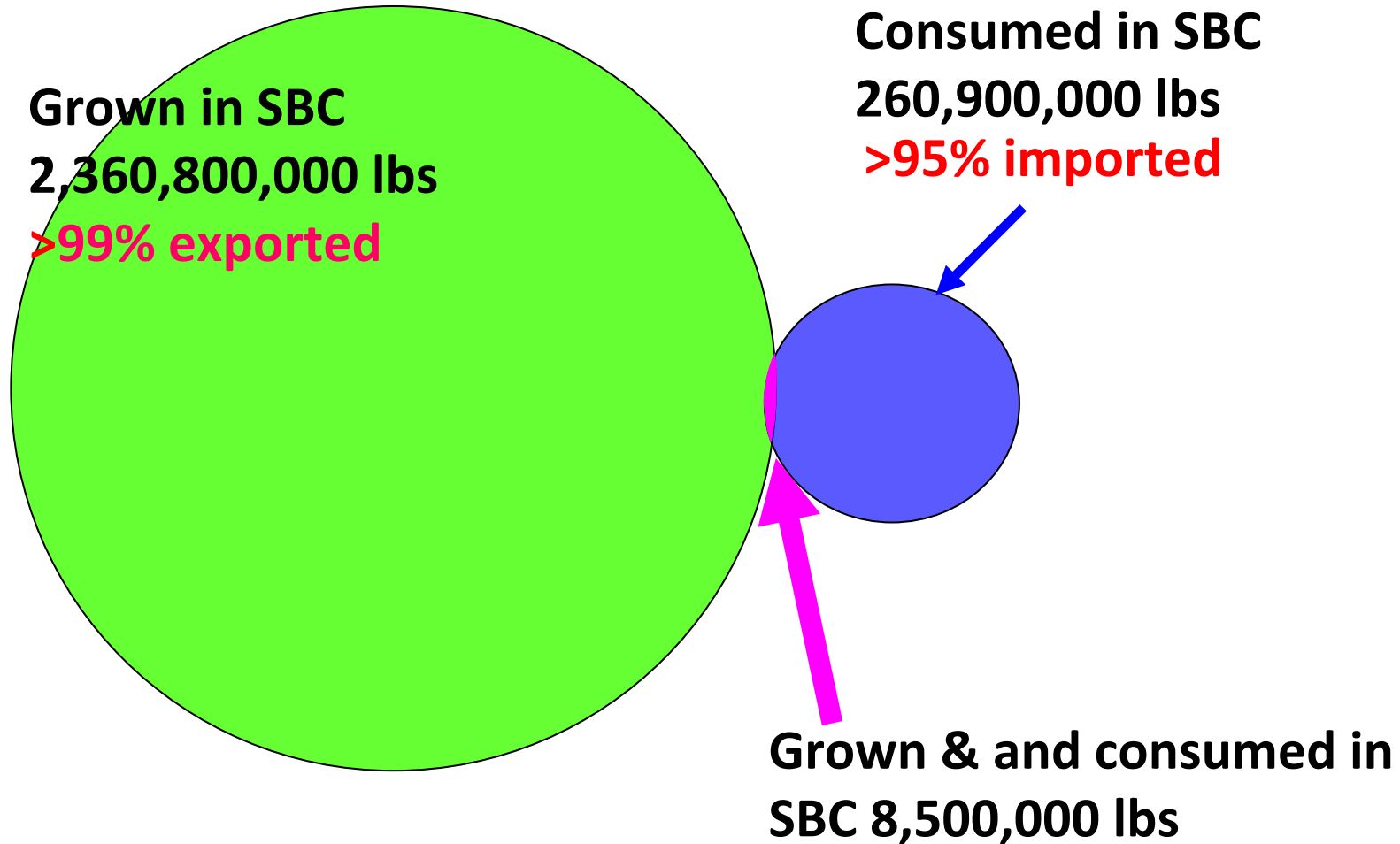
Estimated for K-12 schools and other institutions

Converted all transaction data to weight of SBC grown produce

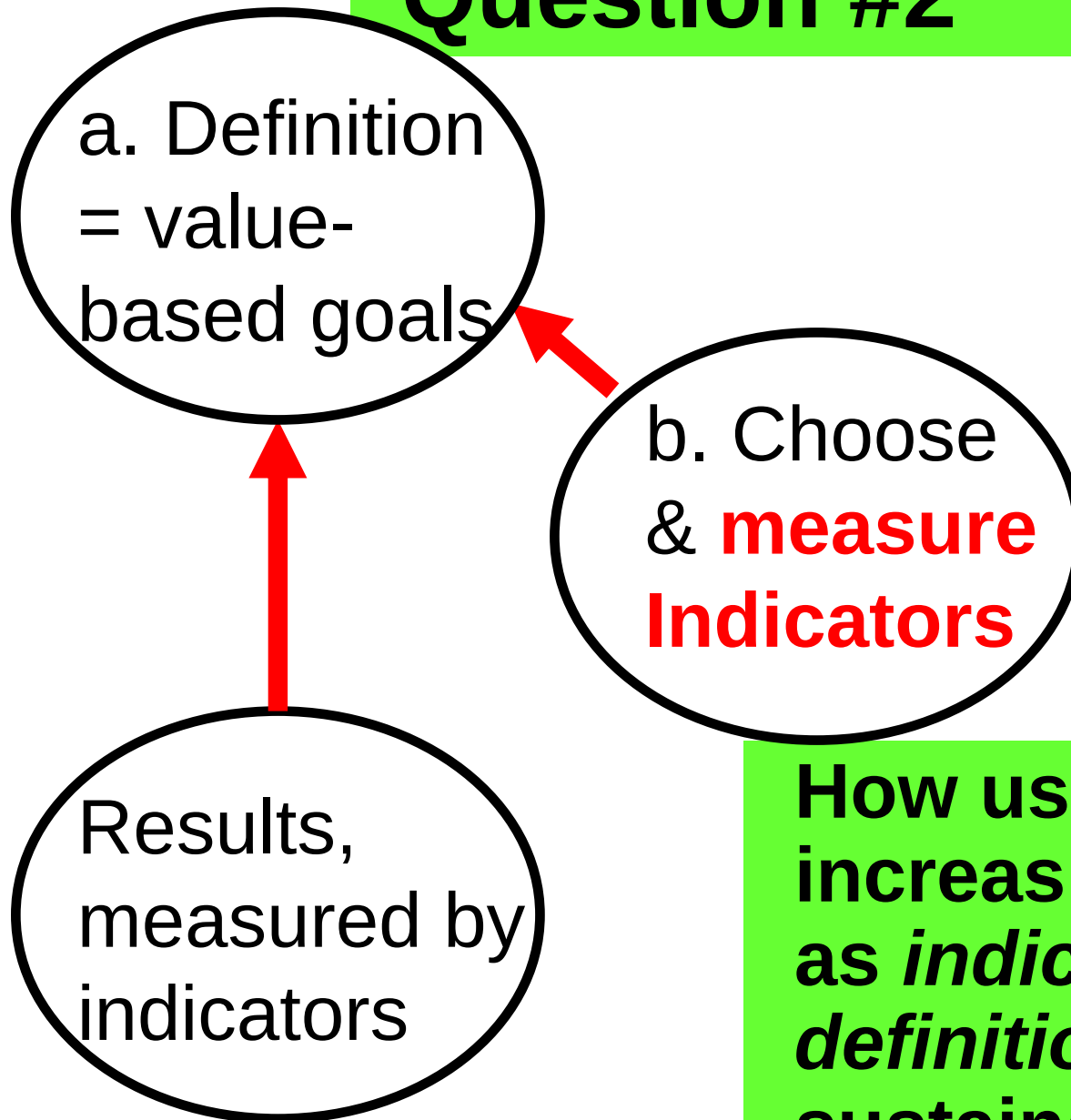


Ellwood Canyon farms

Results

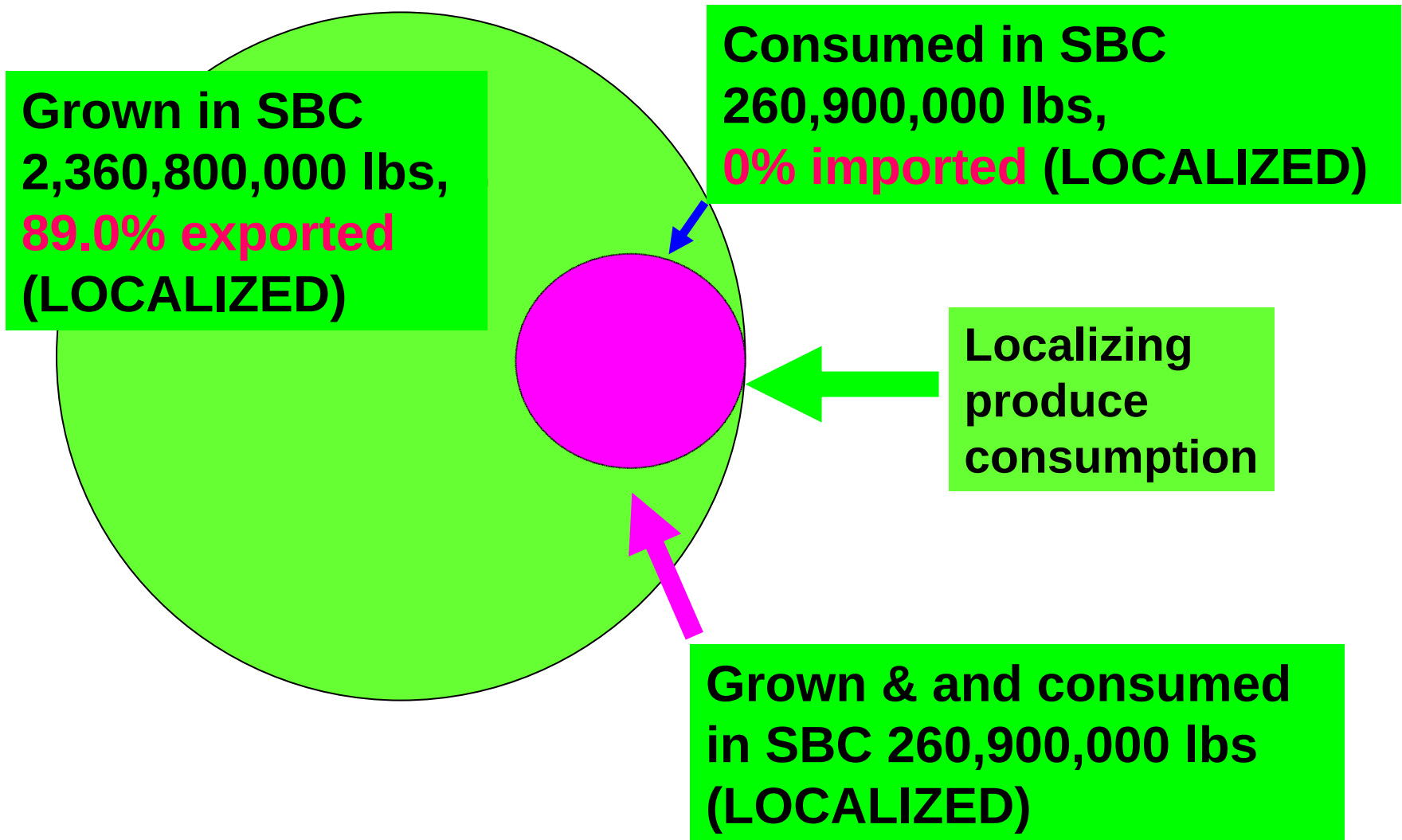


Question #2



How useful is
increasing localization
as *indicator* of our
definition of
sustainability?

Tested a scenario: What if we could completely localize produce?



Results. Reduction in food miles & GGE

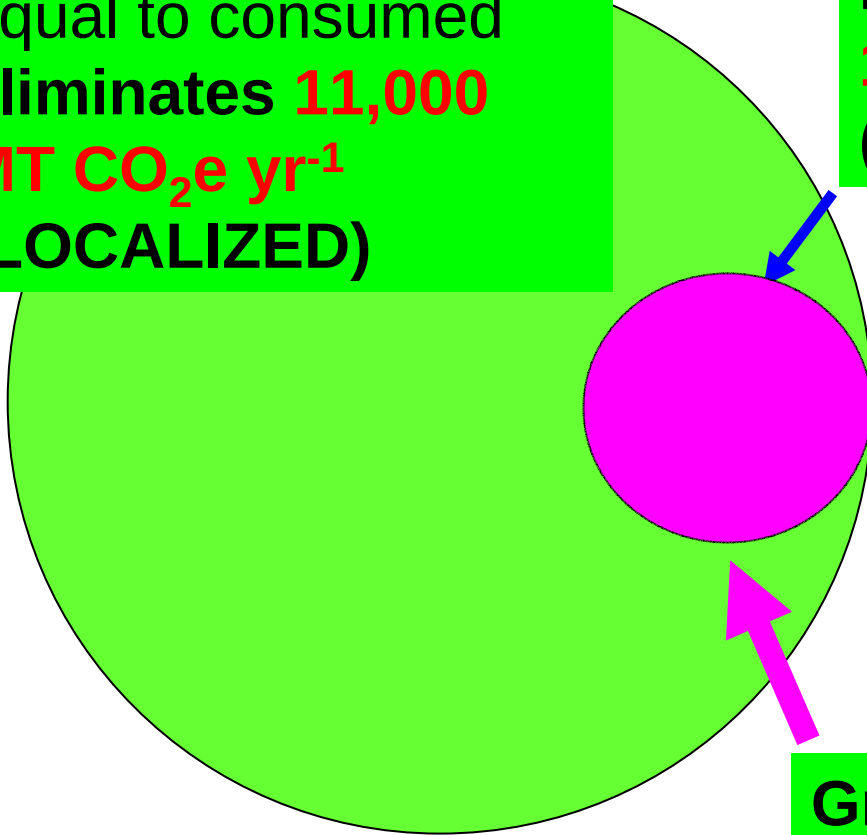
No export of amount
equal to consumed
eliminates **11,000
MT CO₂e yr⁻¹**
(LOCALIZED)

No imports eliminates
11,000 MT CO₂e yr⁻¹
(LOCALIZED)

Net savings of GGE = 6,800
MT CO₂e yr⁻¹ by complete
localization

<<1% of ave. household GGE

Grown & consumed in
SBC **7,600 MT CO₂ yr⁻¹**
(LOCALIZED)



Results: Effect of localization on nutrition

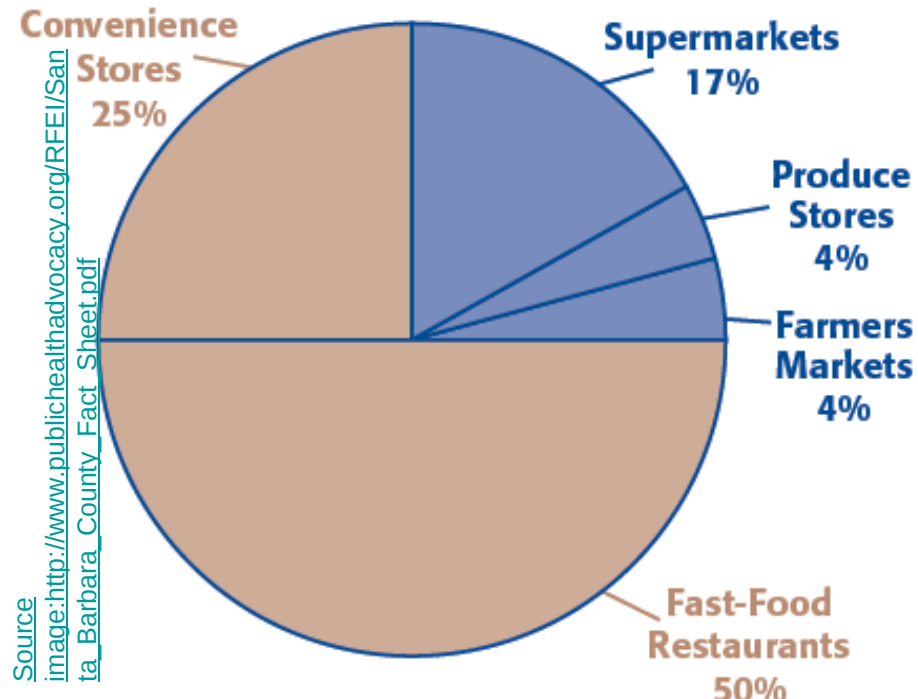
Improvement can't be assumed

- **Poverty:** In SBC ~14% of children at or below 100% Federal poverty level

<http://www.cfpa.net/2010CountyProfiles/SantaBarbara.pdf>

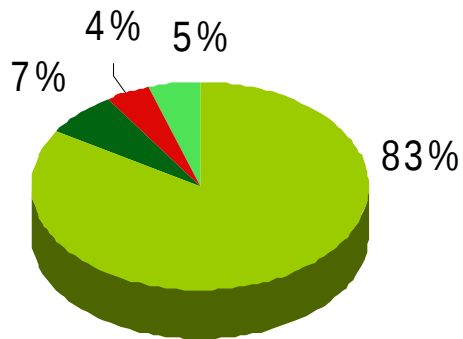
- **Food deserts:** SBC has 3x as many fast-food restaurants and convenience stores as supermarkets & produce vendors

Source
image: <http://www.flickr.com/photos/ableman/archives/date-posted/2006/11/22/>



Why such small effect of localization?

- Production
- Transporation of supply chain
- Final Delivery
- Wholesailing and Retailing



GGE by Sector, US

Most GGE (90%) are from

- production (fertilizers, soil management)
- processing
- Packaging
- Other transportation

Small trucks inefficient

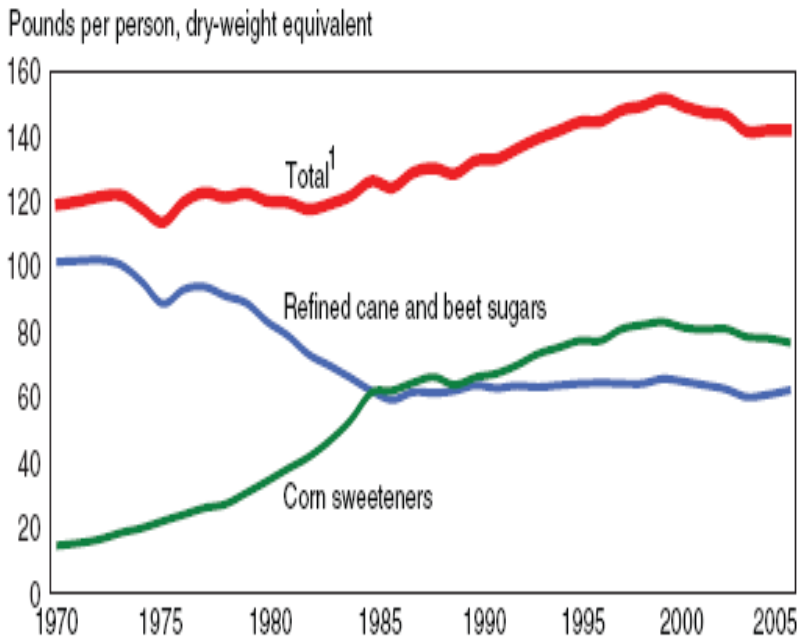
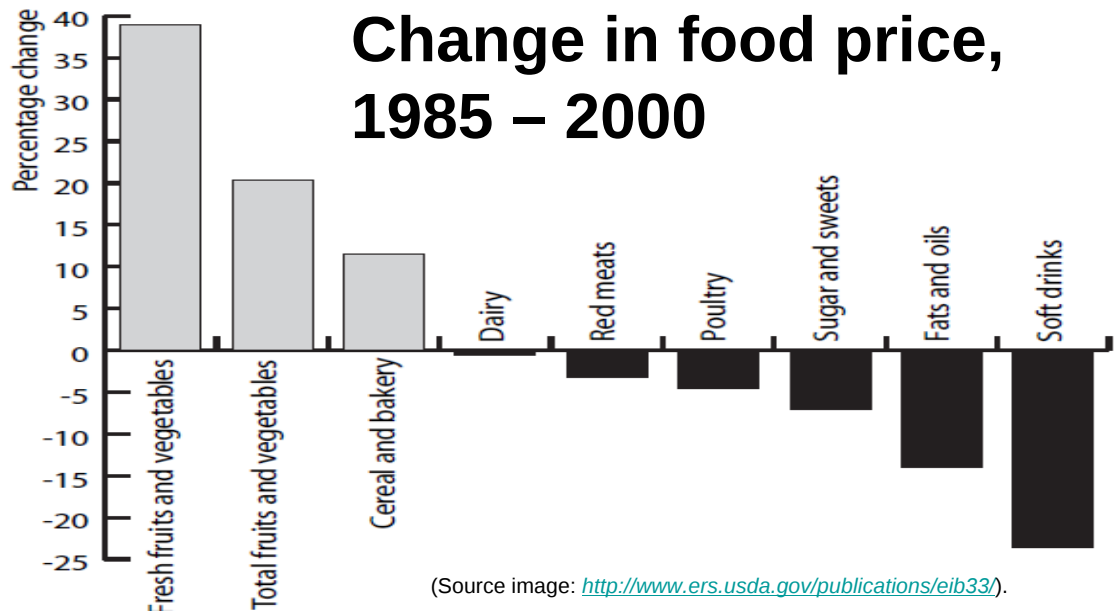


Source image: <http://www.dakotafarmer.com/story.aspx/striptill/new/products/14/18337>

BLU-JET AT6010 Commercial Class Fertilizer Injection Applicator

applying anhydrous ammonia

SBC problems exacerbated by national trends



¹Includes honey, maple, and sugarcane syrup, edible molasses, and edible refiners' syrup.

Source: USDA, ERS Food Availability (Per Capita) Data System.

(Source image: <http://www.ers.usda.gov/publications/eib33/>).

Corn sweetener consumption up 387%, 1970- 2005

\$3.9 billion USDA subsidy to corn production (2009)

(Source:

<http://farm.ewg.org/progdetail.php?fips=00000&progcode=corn>)

>\$2 billion in US annually advertising soft drinks

(Source: Dharmasena, S., Capps, O., Jr, and Clauson, A. 2010. Advertising in the U.S. Non-Alcoholic Beverage Industry: Are Spillover Effects Negative or Positive? Revisited using a Dynamic Approach. Selected Paper prepared for presentation at the Agricultural and Applied Economics Association 2010 AAEA, CAES & WAEA Joint Annual Meeting, Denver, Colorado, July 25-27, 2010. (Accessed,

[http://ageconsearch.umn.edu/bitstream/61321/2/Dharmasena,%20Capps%20and%20Clauson%20AAEA%202010%20Paper%20\(Advertising%20%26%20NAB\)%20AAEA%2310729.pdf](http://ageconsearch.umn.edu/bitstream/61321/2/Dharmasena,%20Capps%20and%20Clauson%20AAEA%202010%20Paper%20(Advertising%20%26%20NAB)%20AAEA%2310729.pdf))

Conclusions

Therefore, localization as currently used (< food miles) may not be a good *indicator* of our *definition* of sustainability

- It does not automatically make significant difference in GGE or nutrition

Greenwash =
mistaking indicators for goals

**Need research &
action to link
indicator**

**(localization) with
goals of
sustainability:
improved human &
environmental
health**

**We're doing it
here in SBC!**

1. Food acquisition & preparation level

- Improve nutrition by cook from scratch of fresh SBC grown produce
- Lower GGE by reducing storage, reducing outsourcing of preparation (32% of agrifood energy), reducing produce waste (22% at this level)



Source image: <http://www.scoolfood.org/>

2. Farm to retail level

- Improve nutrition by increasing purchase and consumption of fresh, SBC grown produce
- Lower GGE by reducing produce waste (49% at this level), increase transport efficiency, e.g. local food hubs like Farmer Direct Produce, UCSB Residential Dining



3. Production level

- Improve nutrition by increasing supply of SBC grown produce by saving peri-urban farms, supporting young and “organic” farmers
- Lower GGE at production level (60% of agrifood system total) by reducing manufactured chemicals, improving water, nitrogen, carbon management



Students in Small-Scale Food Production class, at “Garden of” Los Olivos, Shu Takikawa & Noey Turk (Photo © DA Cleveland)

4. Diet to production level

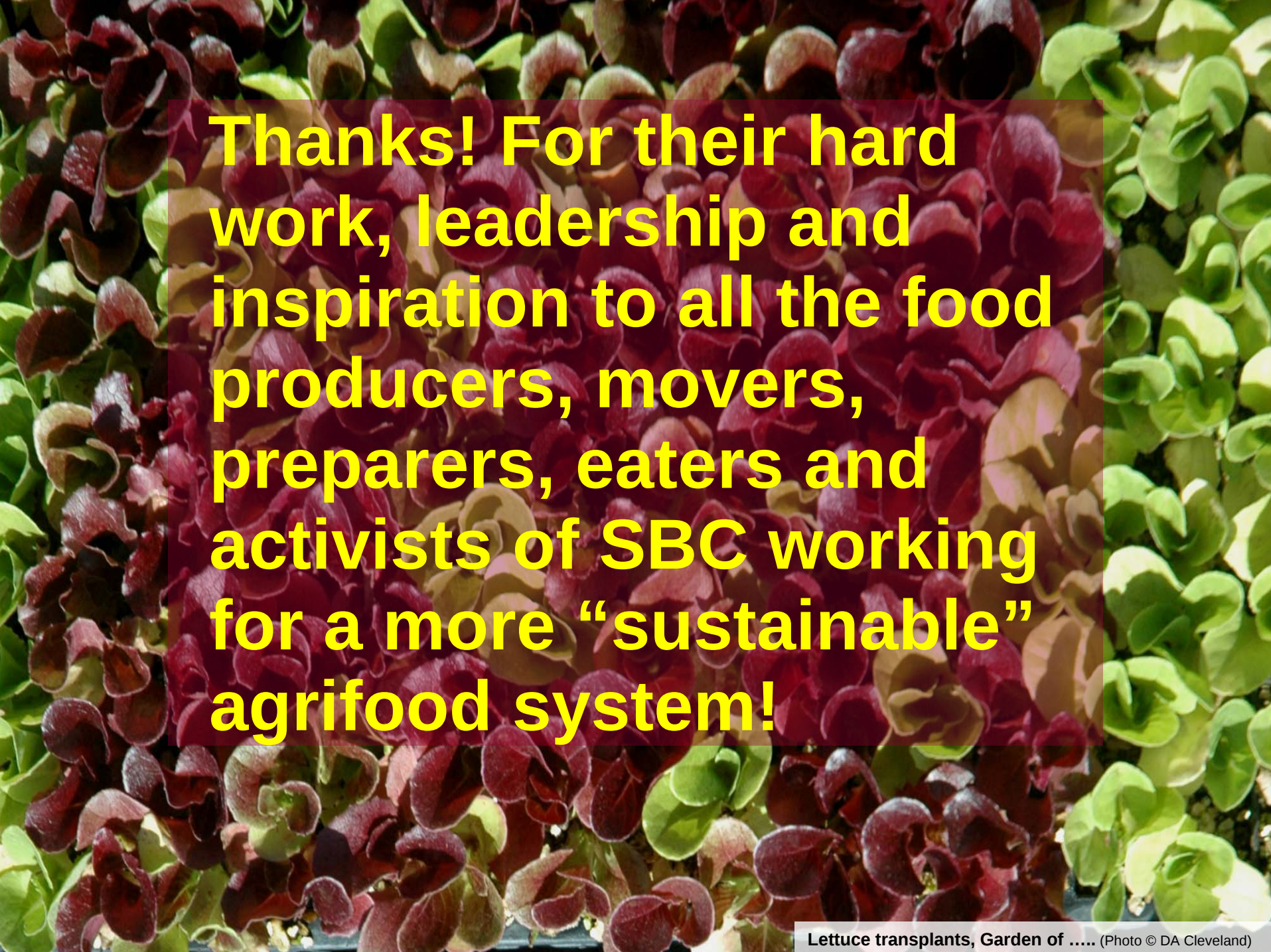
- Improve nutrition by replacing calories from animal products, oils, refined carbohydrates with calories from fresh fruits & vegetables
- Lower GGE at production level by reducing animal production (up to 80% of total ag GGE), processing, transport & packaging



Localization has great potential to increase the sustainability of our agrifood system,

No greenwash!

We need to agree on the goals for sustainability, and make sure we don't conflate these with indicators!



**Thanks! For their hard
work, leadership and
inspiration to all the food
producers, movers,
preparers, eaters and
activists of SBC working
for a more “sustainable”
agrifood system!**

Special thanks to the following

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