Next Steps : University & State Programs

A Virtual Renewable Energy Education Field Day

October 26. 2011

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NM, TX and AZ – 3rd largest milkshed!

(milk production in millions of lbs)

#1 California:	39,512
#2 Wisconsin:	25,239
New Mexico, Texas and Arizona	20,820
#3 New York:	12,424
#4 Idaho:	12,150
#5 Pennsylvania	10,551
#6 Minnesota:	9,019
#7 Texas:	8,840
#8 Michigan:	7,968
#9 New Mexico:	7,904
#10 Washington:	5,561
#13 Arizona	4,076

NM, TX and AZ produce 11% of US milk with 10% of the cows!

New Mexico, Texas and Arizona combined: #3 nationally!

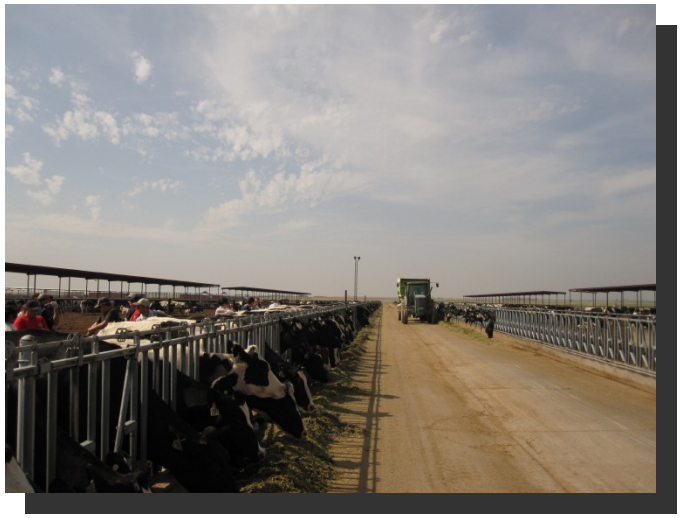
Source: 2010 Milk Production Report, USDA

U.S. Top 5 – Average cows per herd

- 1. New Mexico 2,167
- 2. Arizona 1,609
- 3. California 987
- 4. Colorado 946
- 5. Idaho 917

- **Average herd size in US: 167**

- Wisconsin 95
- New York 113
- Pennsylvania 74



Source: 2010 Milk Production Report, USDA

U.S. Top 5 – Milk per Cow

• 1. New Mexico	24,320
• 2. Washington	23,171
• 3. Colorado	23,089
• 4. Arizona	23,028
• 5. Michigan	22,445
• **Average US milk per Cow:**	**20,567**
• Arkansas	12,615
• Louisiana	11,870

Source: 2010 Milk Production Report, USDA

U.S. Top 10 – Number of Dairies

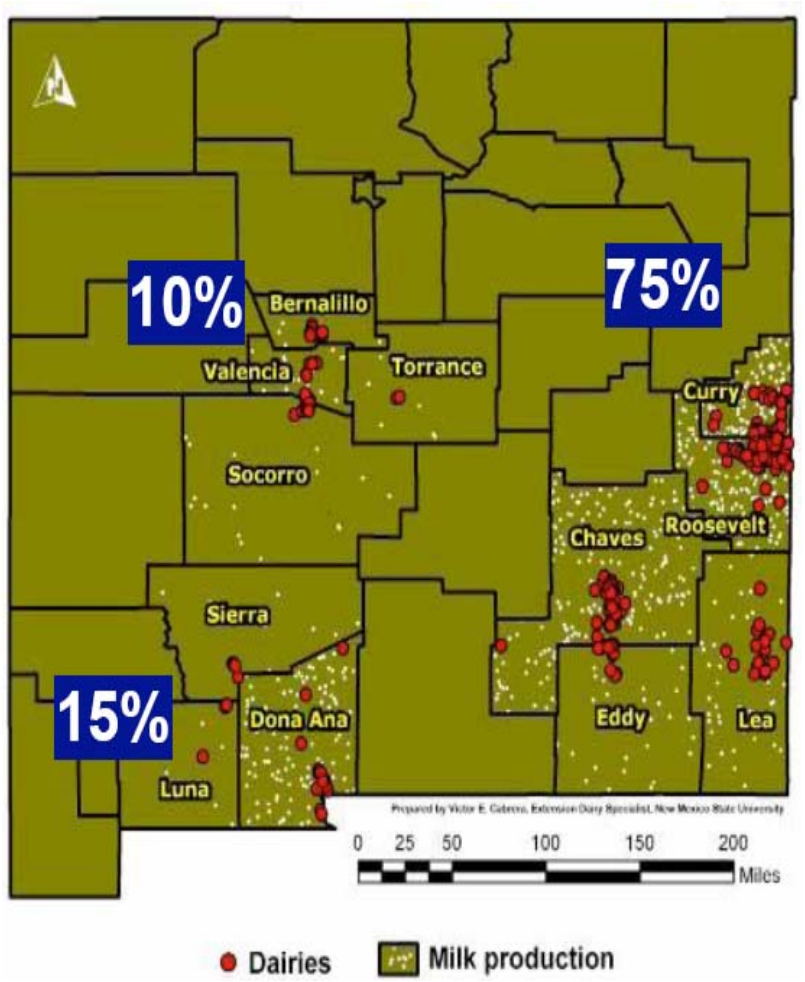
- 1. Wisconsin 13,170
- 2. Pennsylvania 7,400
- 3. New York 5,470
- 4. Minnesota 4,700
- 5. Ohio 3,310
- 6. Michigan 2,310
- 7. Iowa 1,890
- 8. California 1,820
- 9. Indiana 1,680
- 10. Missouri 1,740

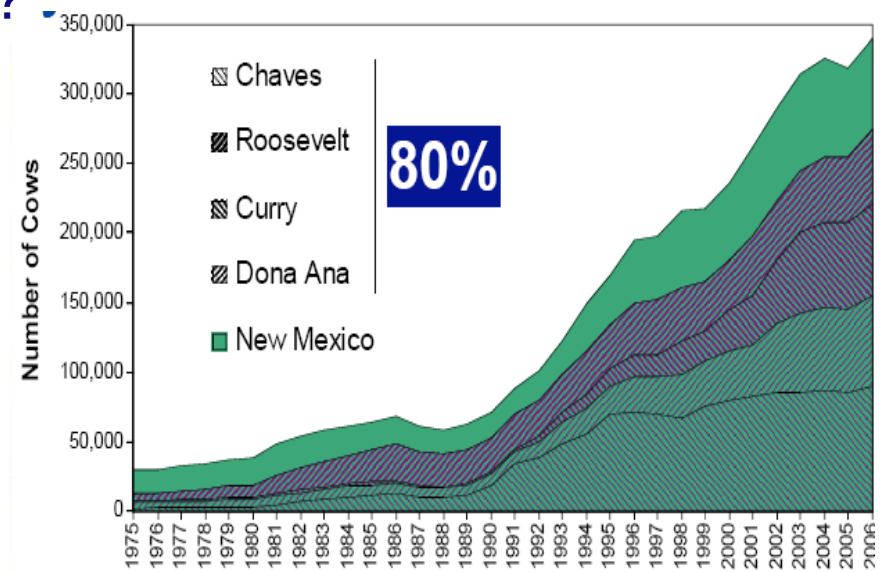
New Mexico: was 180 dairies today 158 ?

Source: 2010 Milk Production Report, USDA

Where is the milk in New Mexico?

(August 2011)





County	No. Producers	Milk Cows	Milk production
Chaves	35	82,000	24.0%
Curry	26	87,000	22.2%
Roosevelt*	37	57,000	20.6%
Dona Ana	22	40,000	12.2%
Lea	13	19,000	7.6%
Socorro	8	11,000	3.1%
Luna	3	6,000	2.7%
Valencia	5	7,000	2.4%
Eddy	3	6,000	2.4%
Bernalillo	4	3,000	0.9%
Other Counties Total*	2	-	1.8%
New Mexico Total	158	318,000	100%

Economic Impact of Dairy Processing and Milk Production in the Southwest

Terry L. Crawford, Carlos Mayen-Solórzano, and G. Robert Hagevoort

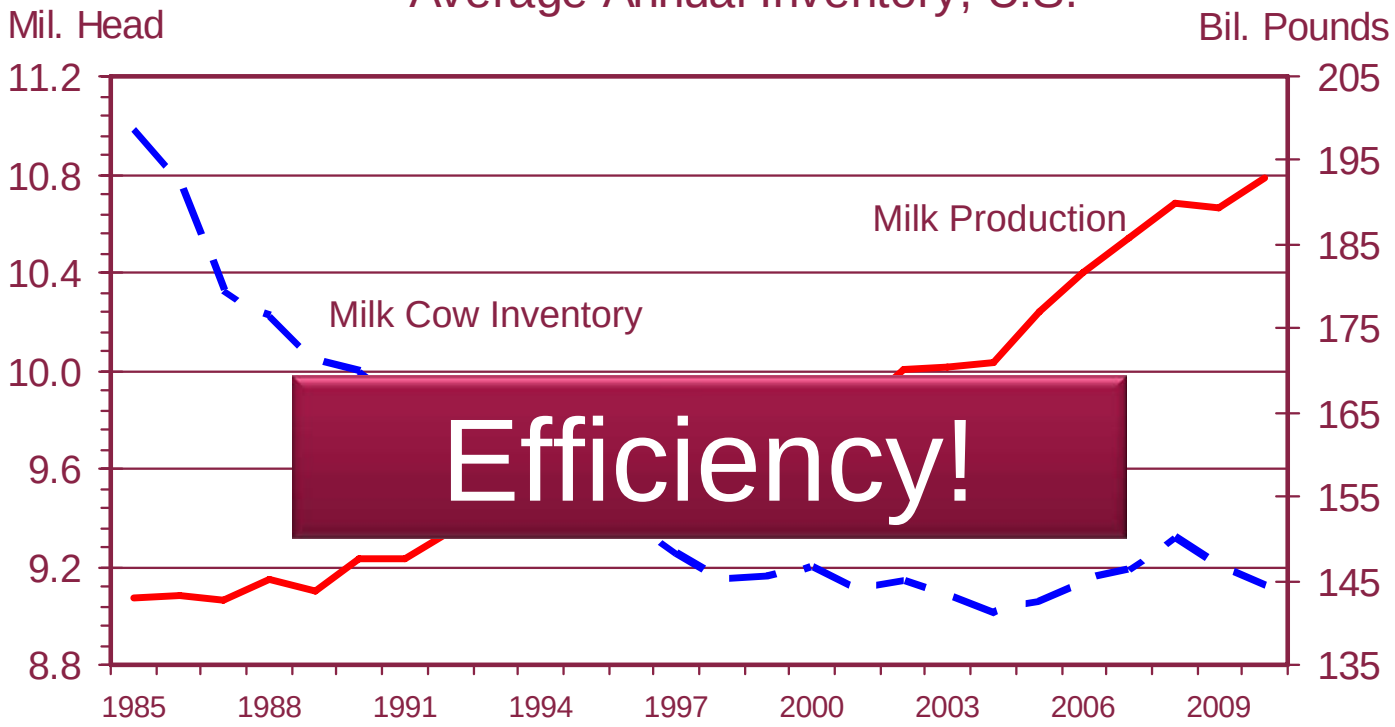
(2011, unpublished data)

- Direct, Indirect, & Induced Economic Effects Attributed to the Southwest Dairy Industry (NM, TX, OK, AZ)

Impact Type	Output ($)	Employment	Labor Income ($)
Direct Effects	7,572,367,000	9,343	648,001,741
Indirect Effects	7,102,664,181	31,140	1,668,227,564
Induced Effects	2,224,312,875	16,999	714,956,220
Total Effects	16,899,344,056	57,482	3,031,185,525

MILK PRODUCTION
vs. MILK COW INVENTORY

Average Annual Inventory, U.S.



Livestock Marketing Information Center

Data Source: USDA/NASS

Dairy farms, milking cows, and milk production August 2011 vs. 05/06.

County	No. Producers	Difference from 05/06	Milk Cows[1]	Difference from 05/06	Milk (Million lbs.)[2]
Chaves	35	-4	82,000	-8,000	162,540,189
Curry	26	+2	87,000	+20,000	150.509,839
Roosevelt*	37	-4	57,000	-8,000	139,864,458
Dona Ana	22	-2	40,000	-13,000	82,704,138
Lea	13	-1	19,000	-6,000	51,222,684
Socorro	8	+1	11,000	-	21,085,233
Other Counties Total*	2	-1	-	-	12,098,000
New Mexico Total	158	-14	318,000	-22,000	676,720,593

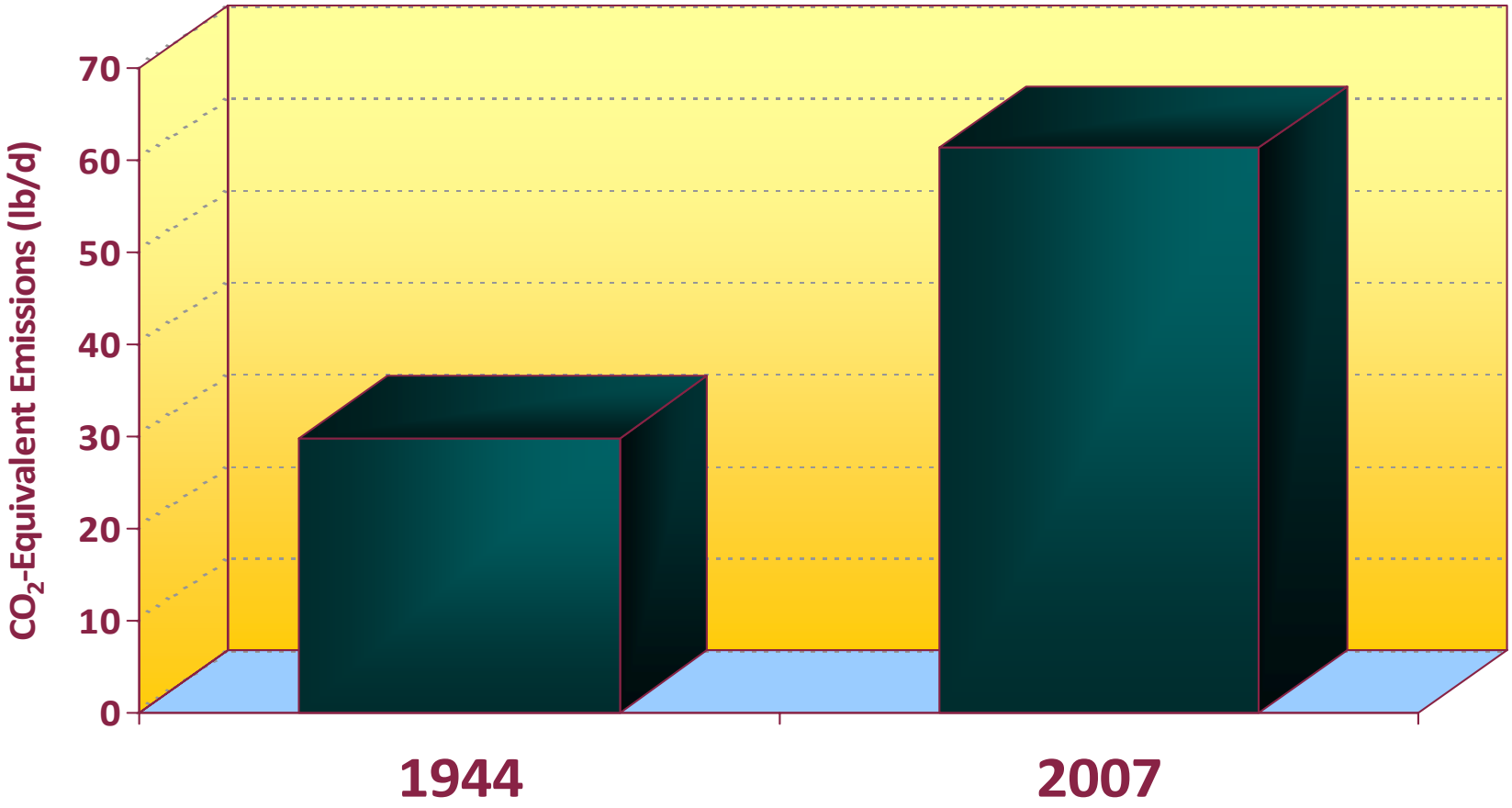
Average monthly production from April 05 to April 06 was 593,086,147 lbs.;

That is 12.4% more milk with 6.5% less cows!

[1] NMDA as of January 1, 2010.

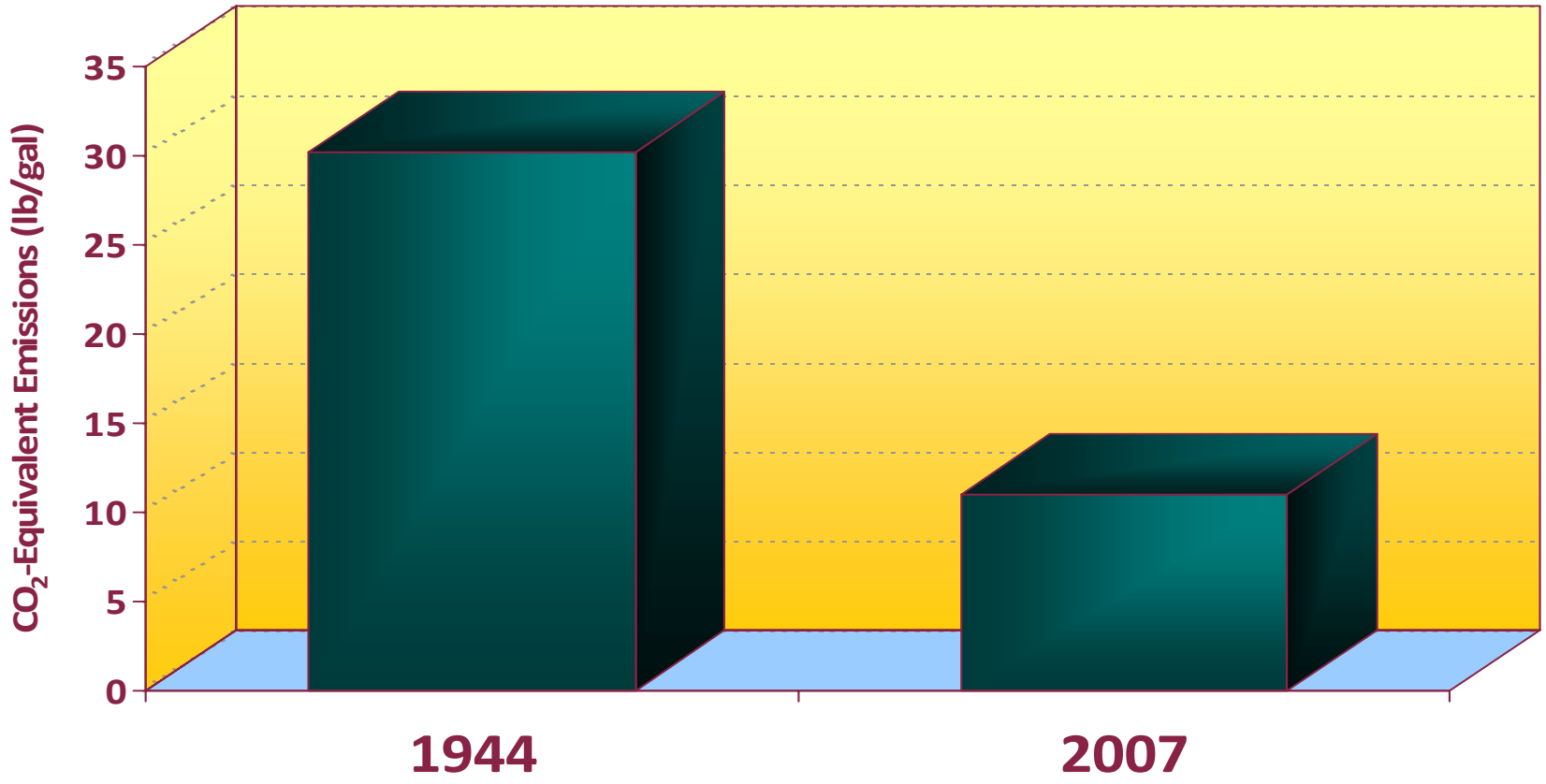
[2] Million lbs. for August 2011 (NASS)

Carbon Footprint of the Average U.S. Dairy Cow Has Doubled Since 1944



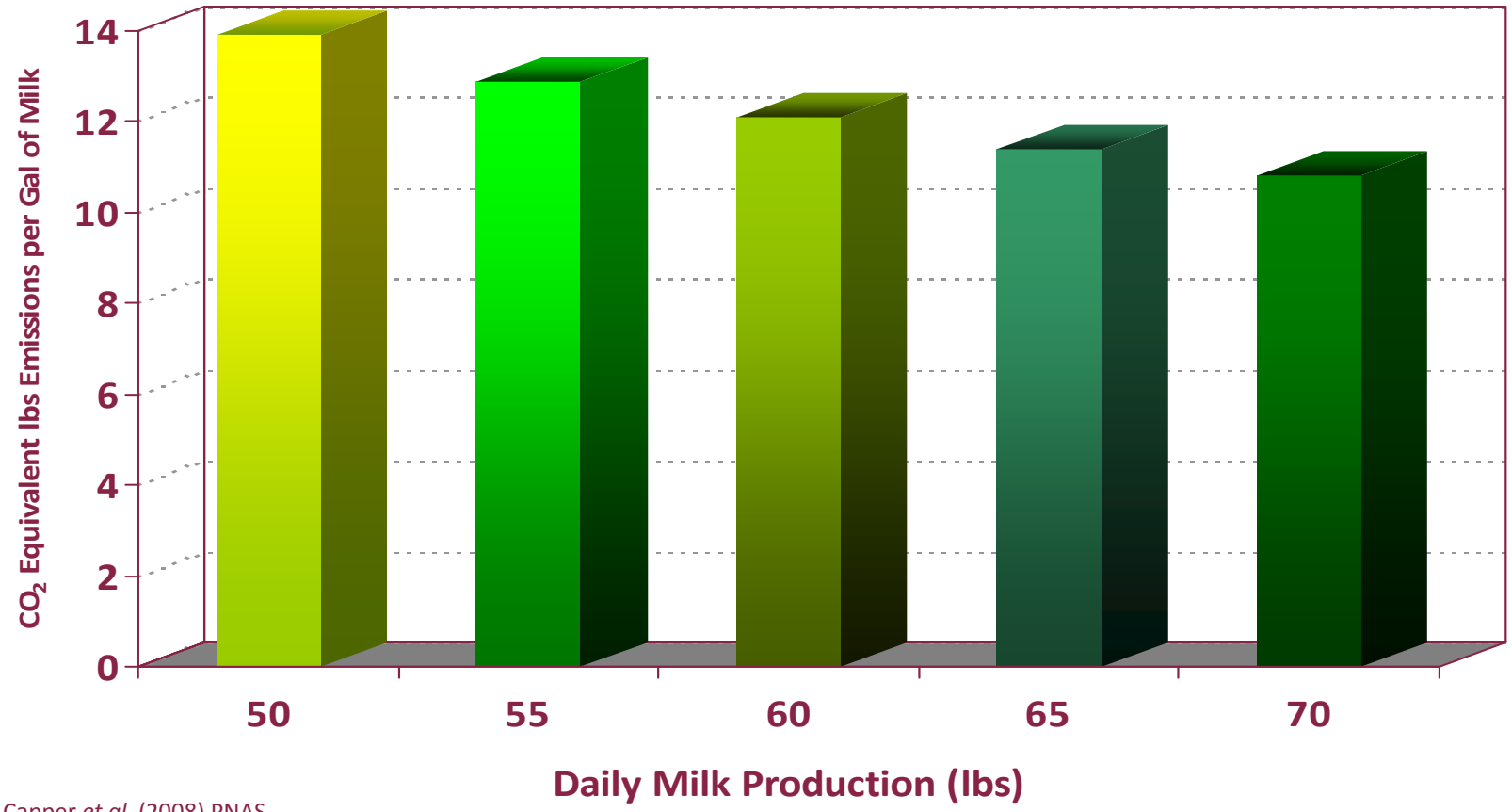
Adapted from Capper *et al.* (2008) ADSA-ASAS Annual Meeting, JDS 91 (E-suppl1) LB3

Carbon Footprint of a Gallon of Milk Has Been Reduced by 2/3 Since 1944



Adapted from Capper *et al.* (2008) ADSA-ASAS Annual Meeting, JDS 91 (E-suppl1) LB3

Increased Production = Increased Efficiency



Adapted from Capper *et al.* (2008) PNAS

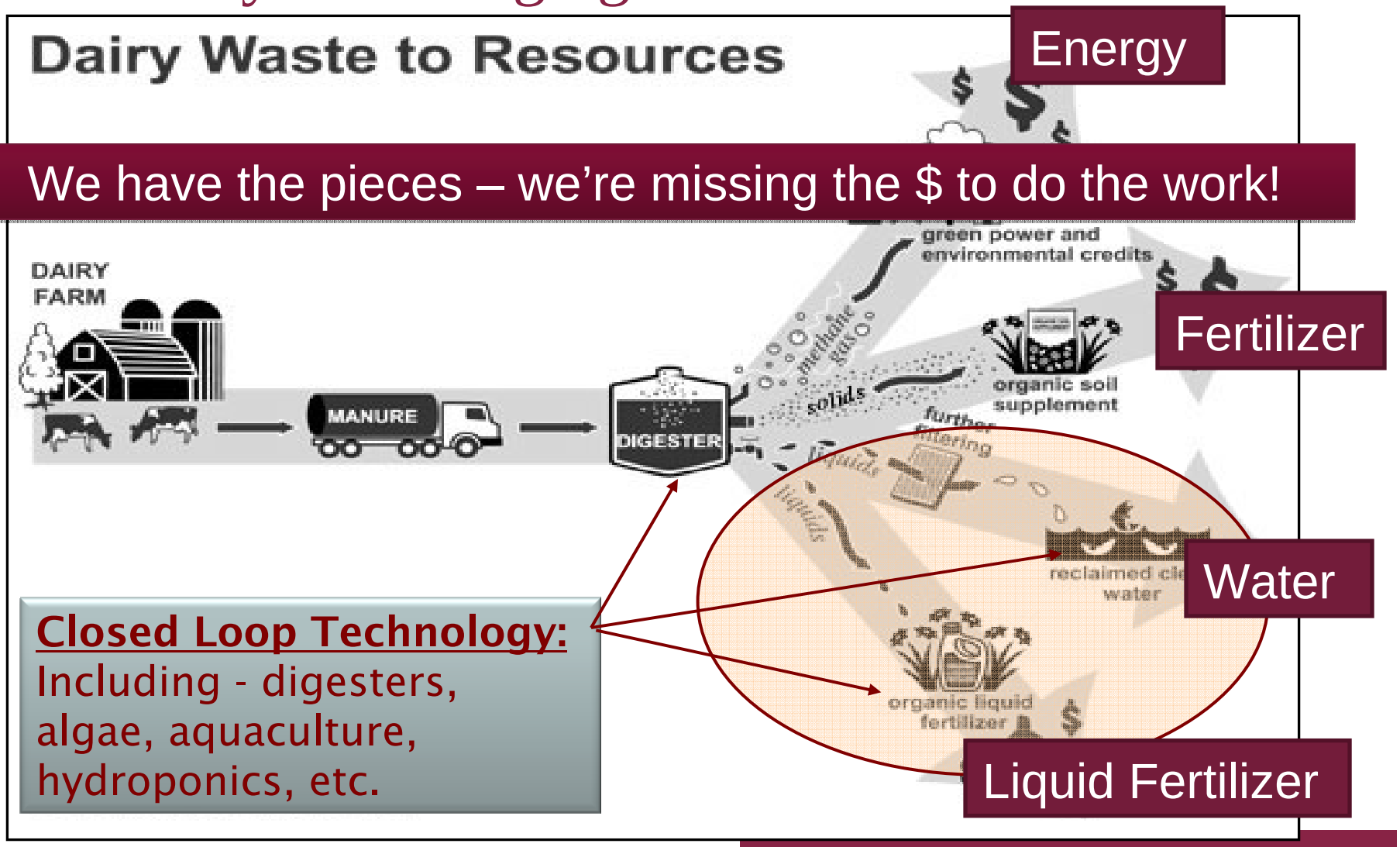
Capper's et al work in '08 and '09 was confirmed by the Innovation Center for US Dairy in 2010:

The Center collected data from a large number of US Dairies and calculated the actual Carbon Footprint for Fluid Milk ("Cradle to Grave"):

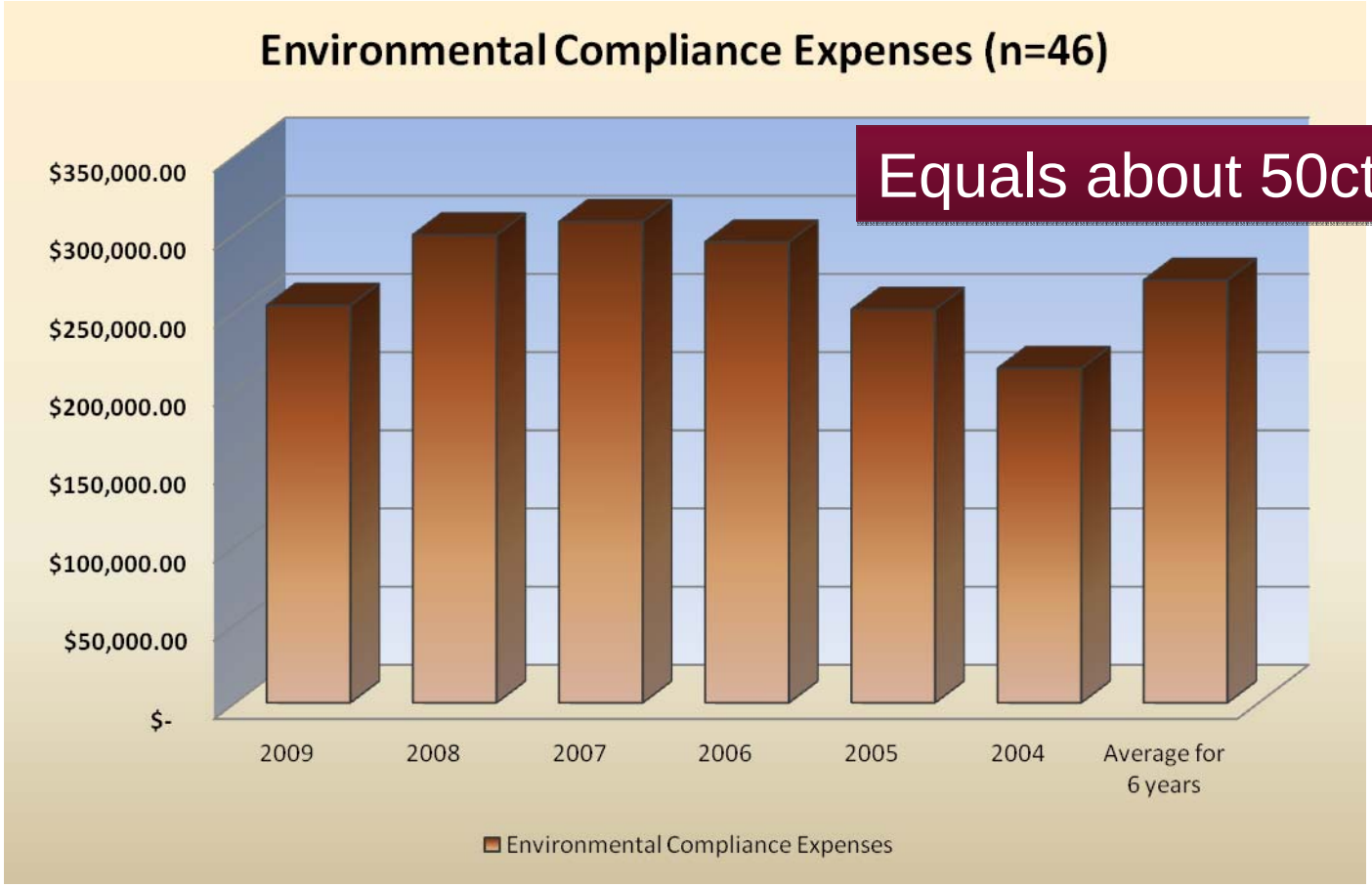
"The Fluid Milk Carbon Footprint Study validates that U.S. dairy accounts for approximately 2% of total U.S. greenhouse gas emissions. This is far less than the often misused 18% which is the Food and Agriculture Organization's estimate for global livestock."

Presented at LCA Food 2010, Sept. 22, 2010
(VII International Conference on Food LCA)

Efficiency of Managing Nutrient Flows:



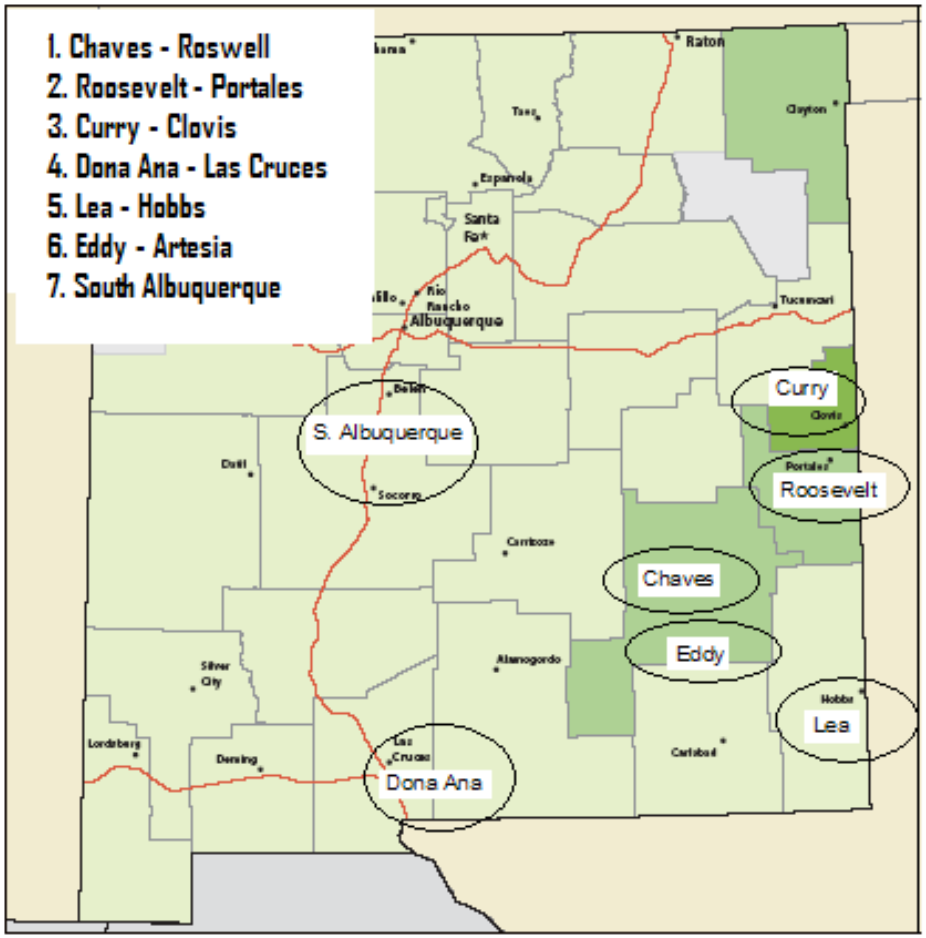
Why: 1. Reduce Environmental Impact
2. Reduce Environmental Compliance Costs



Equals about 50cts/hd/d

Source: Hagevoort 2010, unpublished data

Where is the NM Dairy & other Biomass?



Concentrations of dairies in NM

Dairy Biomass can act as an "**anchor**" feedstock supply

…for a regional biorefinery system which can in turn utilize the state's other variable and seasonal Biomass supplies

Future local Biomass

- Chili and Cotton residues
- Tumble weeds?

Southern Great Plains Dairy Consortium

- *Southern Great Plains Dairy Consortium was established (2007)*
- *Consortium is the framework for coordinating Research & Extension and Teaching efforts*
- *Research & Extension –*
  - *producer identified issues*
  - *leverage expertise across participating universities*
  - *leverage research equipment and facilities across participating universities*
- *Teaching –*
  - *leverage knowledge and expertise to advance students in hands-on large herd management class*

Southern Great Plains Dairy Consortium

- Supporters:
  - Dairy Producers of New Mexico (DPNM)
  - Texas Association of Dairymen (TAD)
  - United Dairymen of Arizona (UDA)

  - Dairy Farmers of America (DFA)
  - Select Dairy Producers
  - Lone Star Milk Producers

  - DairyMax
  - Southwest Dairy Museum

Southern Great Plains Dairy Consortium

- Participants:
  - NMSU Extension & Experiment Station
  - Texas AgriLife Research & Extension Service
  - West Texas A&M University
  - Texas Tech University
  - Tarleton State University
  - University of Arizona
  - Oklahoma State University
  - USDA – Agricultural Research Service
  - Texas Veterinary Medical Diagnostic Lab

Southern Great Plains Dairy Consortium

- Focus areas as defined by producers:
  - Environmental Quality
  - Dairy Production
  - Dairy Products & Milk Quality
  - Human Resource Development
  - Water Utilization
  - Energy Resources
  - Economics & Marketing
  - Resources for Industry

Southern Great Plains Dairy Consortium

- >$1.0M in Grant Funding since ’07:
  - Air Quality - expansion of NAEMS
  - Water Usage
  - Economic Impact – producers & processors
  - Expansion of NMPF/DMI’s Lifecycle Analysis
  - Air Emissions Study (expansion from yr. 1)
  - Lagoon Seepage Study
  - Water Use Study (expansion from yr. 1)
  - AD Decision Support Tool
  - Extension Component for Repro Study
  - Herdsman Short Course Series
  - Assessing Blood Metabolites Profile Study
  - Dairy Employee Safety Training Development

Southern Great Plains Dairy Consortium

- ✓ Biomass
- ✓ Collaboration and support from producers
- ✓ Collaboration and support from allied industries
- ✓ Academic infrastructure and expertise
- ✓ Multi-state, multi-university, multi disciplinary
- ✓ Have not been able to find the funding to support the R&D to develop the pieces (“suites of technologies”) to develop a Closed Loop System!
  - ✓ Digester - kind, design, size: producing: heat, CO_2, N & P
  - ✓ Algae - kind, design, size: utilizing: heat, CO_2, N & P
  - ✓ Aquaculture - kind: utilizing: heat, water
  - ✓ Hydroponics - kind: utilizing: heat, water
  - ✓ Dairy - clean water returned to dairy.


Thank You!
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