

***Is CAFO  
Just Another  
Four Letter Word???***

Green Drinks  
June 28, 2018

Dr. Bob Thaler

# WHAT IS THE DEFINITION OF A CONCENTRATED ANIMAL FEEDING OPERATION?

A CAFO is a lot or facility that stables or confines and feeds or maintains animals for a total of 45 days or more in any 12-month period and meets the following criteria for a large, medium, or small concentrated animal feeding operation

<http://denr.sd.gov/des/fp/cafoFAQ.aspx#CAFO>

Table 1. Number of Animals to Define Large, Medium, and Small Concentrated Animal Feeding Operations

Animal Units (AU)	<u>Concentrated Animal Feeding Operations</u>		
	<u>Large</u>	<u>Medium</u>	<u>Small</u>
	1,000+	300-999	<300

Table 1. Number of Animals to Define Large, Medium, and Small Concentrated Animal Feeding Operations

Animal Units (AU)	<u>Concentrated Animal Feeding Operations</u>		
	<u>Large</u>	<u>Medium</u>	<u>Small</u>
	1,000+	300-999	<300
	Animal numbers equal to or more than:	Animal numbers equal to:	Animal numbers less than:
Dairy cows (mature – milked or dry)	700	200 to 699	200
<i>Cattle other than mature dairy cows or veal calves<sup>1</sup></i>	<i>1,000</i>	<i>300 to 999</i>	<i>300</i>
Swine (weighing more than 55 pounds)	2,500	750 to 2,499	750
Swine (weighing less than 55 pounds)	10,000	3,000 to 9,999	3,000
Horses	500	150 to 499	150
Sheep or Lambs	10,000	3,000 to 9,999	3,000
Turkeys	55,000	16,500 to 54,999	16,500
Laying hens or broilers <sup>2</sup>	30,000	9,000 to 29,999	9,000

**What Are Some Examples of  
Current CAFOs  
in South Dakota?**



# Larry Wipf

## Plainview Colony

### Leola



**850 sows**

**12,750 pigs**



**1,400 hd  
finisher**

**Off-Site 700 hd  
finisher**

**1300 hd W-F**

**700 hd  
nursery**





# Murphy Brown Finishing Site





## Fred & Ann Schultz, Menno

Three 1100 hd  
finishing barns





# 1500 Cow Dairy





South Dakota 1976



BICENTENNIAL  
HOMESTEAD

THORSTEN THOMPSON

1874

*The Boadwines*  
*Lynn & Trish*



# 8,250 hd Beef Feedlot



Brothers Bill and Todd Wilkinson partnered with their brother, Ed (not pictured), in running Redstone Feeders, the 8,250-head feedlot.





**DURALITE TRAILERS**  
www.duralitetrailers.com  
Quality Built & Owned with 10's Heart & Soul!  
CLARK, SD  
1-800-437-8931

**FIRST NATIONAL BANK**  
**FORT PIERRE**  
605.223.2521  
www.firstnationalbank.com

**Trails End Ranch**  
Livestock Breeding Center  
FROZEN SEMEN SALES SERVICE  
Kerry & Lu Briscoe  
605.223.2521

David West Cooperative  
605-234-3123  
davidwestcooperative.com

**American BANK & TRUST**

**HEAD COUNT**  
**AVERAGE WT.**  
**TOTAL WT.**  
**PRICE \$**  
**BUYER**

**We Salute All VETERANS**

**Your Full-Service Ag Financial**  
**BankWest**  
www.bankwest-sd.com | 605





# CAFOs Can Be:

- Family Farms
- LLC
- Corporate entities
- Hogs
- Dairy
- Poultry
- Beef Cattle

# Regulation of CAFOs in SD

- Administered by the SD Dept of Environment & Natural Resources
- February 1, 1997 General Permit for swine
- February 10, 1998 General Permit for all Livestock
- March 10, 2017 New General Permit adopted

# The SD General Permit

- What it DOES:
- Establishes the minimum environmental standards for livestock operations defined as a CAFO to ensure protection of the state's surface and ground waters;
- Establishes a clear process that a producer can follow to obtain state approval, get a state permit, and obtain a certificate of compliance;
- Allows local governments and planning and zoning commissions to concentrate on land-use and zoning issues instead of water pollution control issues;
- Allows interested persons to have input in the permit since the permit issuance process is open to the public;

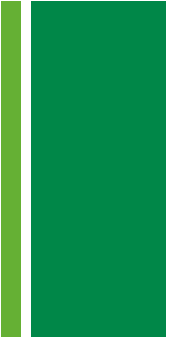


# The SD General Permit

- Provides a mechanism that applies the state bad actor law to permitted operations.
- What it DOES NOT Do:
- The permit does not regulate odors or local land use planning.



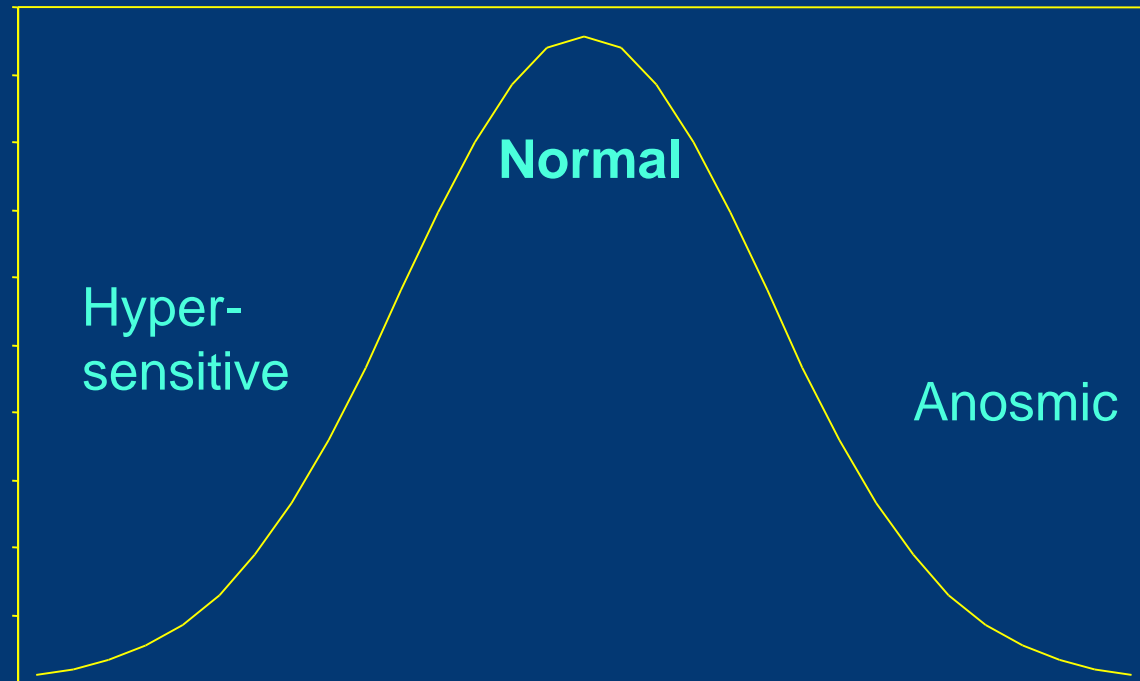
# Odor



- No specific composition
- Humans can detect over 10,000 different odors
- Difficult to measure

# Normal Olfactory Sensitivity

People  
Detecting  
Odor



Low

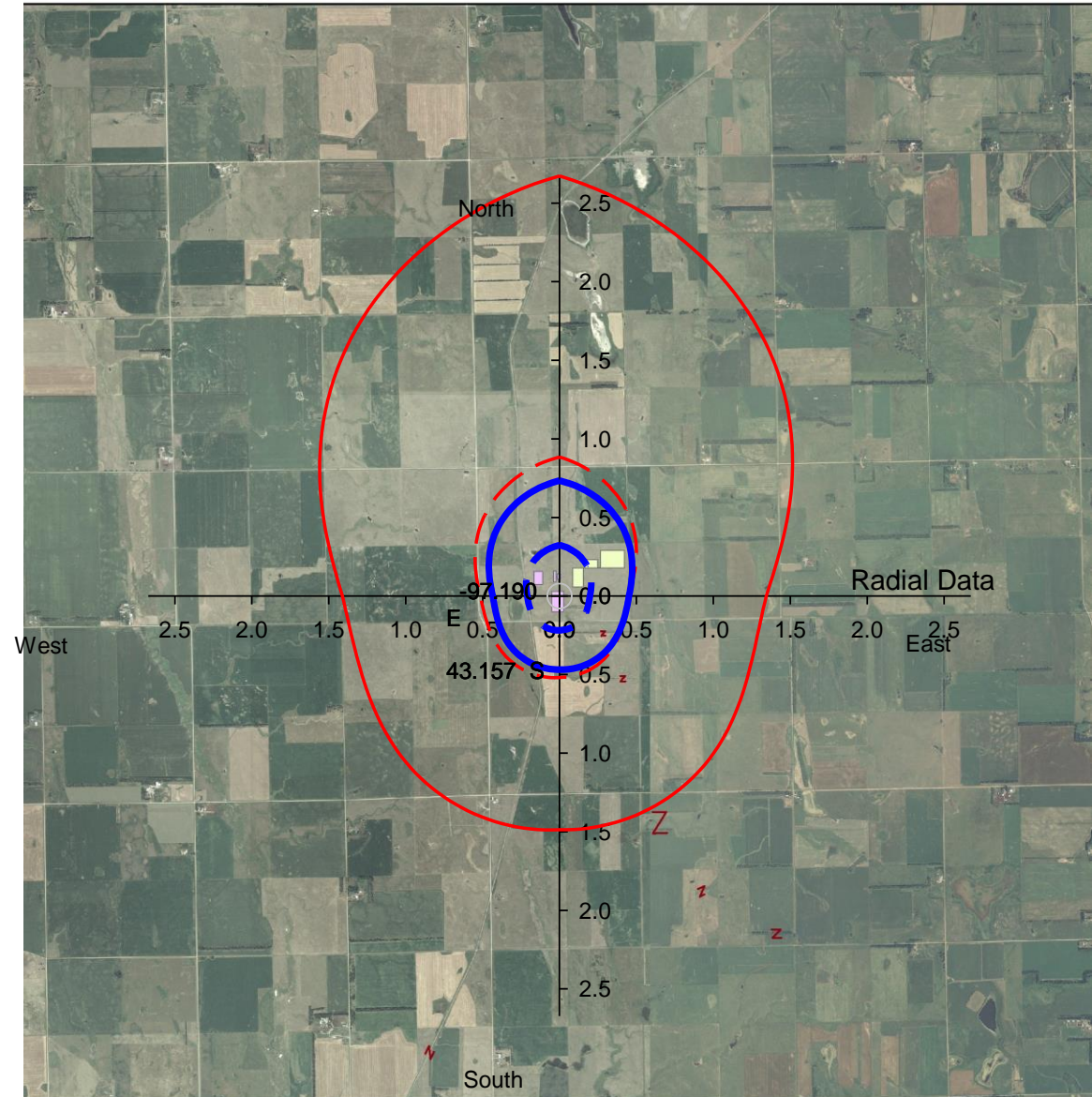
High

Odor Detection Concentration

# SD Odor Footprint Tool: Starting Point for Discussion

Gestation Barn 80 X 430  
Farrowing Barn 100 X 175  
Nursery Barn 80 X 243  
Finishing Barn (2) 101 X 412

———— 98% No Odor Control  
- - - - 94% No Odor Control  
———— 98% with Biofilter and Deep Pit  
- - - - 94% with Biofilter and Deep Pit





# Health Impacts

- Physiological and psychological symptoms have been reported in various studies
- Systematic study of available literature by O'Connor et al. (2010):
  - A weak and inconsistent association between self-reported disease in people with allergies or familial history of allergies
  - No consistent dose-response relationship between exposure and disease

# WHAT ARE THE REQUIREMENTS OF THE GENERAL PERMIT?

- **Planning Requirement**

- The producer must contact local governments and obtain approval, if required
- The producer must follow permit application procedure to obtain state approval
- The permit contains location standards the producer needs to consider when siting a new operation.

# • Collection & Storage of Manure

- New structures used to store manure must be able to hold at a minimum all the manure and wastewater generated during 270 days.
- Manure storage structures used to store runoff from open lots must contain the annual runoff expected from the lot plus the 25-year, 24-hour storm event (100 year, 24-hour storm event for new swine, poultry, and veal operations).
- Earthen storage structures must have at least two feet of freeboard above the required storage to ensure protection of the dikes.
- To minimize leakage, all earthen storage structures must be lined with at least 18 inches of properly compacted clay. Synthetic liners or concrete may be used.

- **Protection of Surface and Ground Water**
  - Discharges of manure to surface water are not allowed from a housed lot. Discharges of manure are allowed from an open lot only if the 25-year, 24-hour storm is exceeded, which is a federal standard
  - Feeding operations located over shallow aquifers have to conduct ground water monitoring or obtain a ground water discharge permit
  - Lagoons and manure application areas have to be at least 1,000 feet away from public drinking water supplies, 250 feet away from a private well, and 150 feet away from the producer's well



# Nutrient Management Plan

1. Operator:														2. County:				3. Prepared By:									
4. Spreadsheet A.) Total Nitrogen And Phosphorus Produced From Operation																											
5. Print "Calc Sheet A" and "Calc Sheet B"	6. Animal Type:	7. No. of animals	8. Avg. weight (lbs.)	9. N / day / animal (lbs.)	10. P <sub>2</sub> O <sub>5</sub> / day / animal (lbs.)	11. Days of Confinement	12. Total Manure as Excreted (lbs.)	13. N retained	14. Total N available for application (lbs.)	15. Time of application	16. N Retained																
<b>CATTLE</b>																											
	- Dairy (system 1)																										
	- Dairy (system 2)																										
	- Dairy (system 3)																										
	- Dairy (system 4)																										
	- Beef (system 1)																										
	- Beef (system 2)																										
	- Beef (system 3)																										
	- Beef (system 4)																										
<b>SWINE</b>																											
	- Nursery pig																										
	- Growing pig																										
	- Finishing pig																										
	- Gestating sow																										
	- Replacement Gilt																										
	- Sow and litter																										
	- Boar																										

# • Soil and Manure Testing

- The producer must take annual soil and manure samples and have samples tested for nitrogen and phosphorus
- The proper manure application rate is designed to supply the nitrogen needs of the crops. By applying nitrogen to meet the needs of the crop, it will minimize any nitrogen left in the field. The less residual nitrogen left in the field, the less chance there is for nitrogen to leach down through the soil and into ground water.
- The producer is required to keep certain records on manure application: soil and manure testing results, records of application rates and calculations used, fields used for manure application, dates and times of application, and methods of manure application. DENR has a handbook to assist producers with keeping records.

# Which is Really Sustainable????

- Commercial fertilizer
  - From natural gas in an “energy intensive process”
  - ***NOT regulated by state***
- Corn/Soybeans to Livestock
- Livestock producing high quality protein & manure
- Manure supplying crop nutrients at agronomic rates
- ***Regulated by state for CAFOs***









# • Manure Application Restrictions

- Spray irrigation or surface broadcast of manure is allowed provided manure is incorporated within specified time frame. Incorporation is not required if the field is no-till cropland. A 35-foot permanently vegetated or 100-foot buffer zone is required to be maintained to wetlands or waterways.
- Incorporation of manure is not required for cropped fields, pasture, grassland, and alfalfa fields.
- Spray irrigation of liquid manure on frozen ground is prohibited.
- Surface broadcasting liquid manure on frozen and snow-covered ground should be avoided. If surface broadcasting liquid manure, the land must have slopes of less than 4% a 100 foot buffer zone must be maintained to wetlands and waterways, and DENR shall be notified prior to application.
- Applying dry or solid manure on frozen and snow-covered ground should be avoided. If manure is surface broadcast on frozen or snow-covered ground, the land must have slopes of less than 4% and a 100-foot buffer zone must be maintained to wetlands and waterways.

# • Other Producer Responsibilities

- Producers applying for coverage under the general permit must submit verification to DENR that the producer has taken a training program on the operation and maintenance of a manure management system and natural resource management. SDSU Cooperative Extension Service currently offers a one-day training course about four times a year to meet this requirement.
- Producers must inspect the manure containment structure on a weekly basis. Producer must inspect the land application sites on a daily basis while manure application is occurring. Inspections must be documented and records maintained for five years.
- Producers must report any discharge to DENR within 24 hours of becoming aware of the discharge

- **WILL PERMITTED OPERATIONS BE INSPECTED?**
  - Yes. As required by state regulation, DENR will inspect these operations as follows:
    - Construction Inspections - DENR will inspect each new operation applying for coverage under the general permit at least once during construction.
    - Operational Inspections - DENR will inspect the larger operations at least once per year, while the other feeding operations will be inspected at least once every three years. All new operations will be inspected at least once during the first 18 months of operation.
    - Complaint Inspections - DENR will respond to complaints made in accordance with the SD Complaint Law.



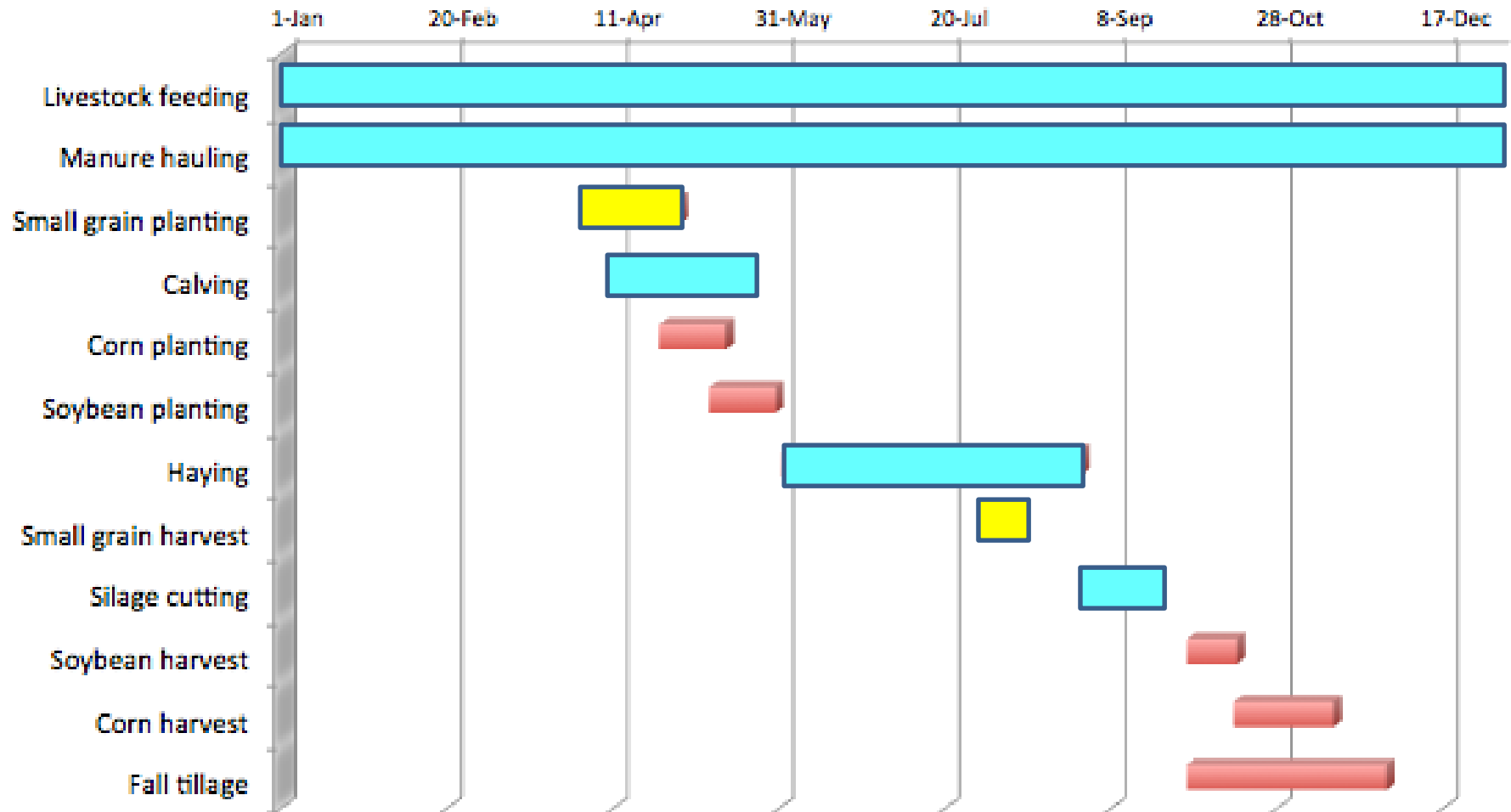
# Why CAFO's????

- Livestock production, like all businesses, has changed
  - 1935 SD had 3.1 million head of hogs inventory
  - June 28, 2018 SD has 1,425,000 hogs
- Farm size has changed, too
  - 1935 was 445 acres
  - 2016 was 1,397 acres
- Technology has changed everywhere



# ***“If you want jobs, you have to have chores”***

Former SD Secretary of Ag Bill Even



# Economic Impact:

- Trucking companies
- Veterinarians
- Feed mills – Kaylor, SD
- Manure haulers
- Power washers
- Carpenters
- Yield bump to livestock manure







Evan Schoenfelder





- Valedictorian at Parkston
- Graduated from MTI & wanted to come home
- 2013 built two 2,400 WF barns
- He was 20 years old & broke ground on graduation





Norman Borlaug, a scientist who used his work on selective breeding to help feed 2 billion people in Africa & Asia, never wanted money or fame. And you've probably heard

" IF YOU DESIRE PEACE, CULTIVATE JUSTICE, BUT AT THE SAME TIME CULTIVATE THE FIELDS TO PRODUCE MORE READ; OTHERWISE THERE WILL BE NO PEACE."

"The world has the technology to feed, on a sustainable basis, 10 billion people. The pertinent question today is whether farmers and ranchers will be permitted to use this technology."

– Norman Borlaug, 2000

*Norman Borlaug*

**Truth <sup>for</sup> Trade & Technology**



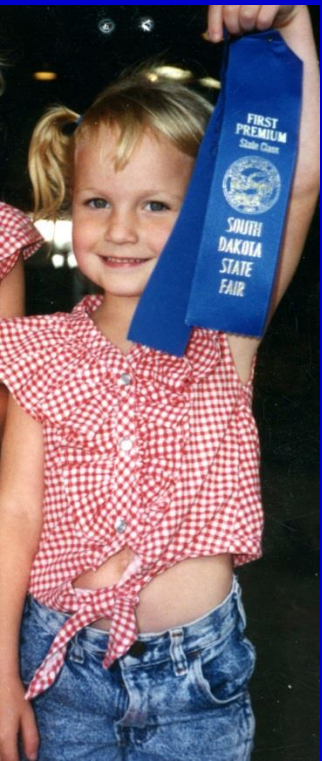
RealRanchers.com - Photos: www.cowgirlgraphics.net

“We’re all in this together”





# Thank You!





# Economic Impact

- 5,000 Sow Barn (annually)
  - 190,714 bu of corn (1,090 acres)
  - 1,293 tons of SBM
  - (53,854 bu of soybeans) (1,077 acres)
- 2,400 hd W-F Barn (annually)
  - 45,737 bu of corn (261 acres)
  - 320 tons of SBM
  - (13,340 bu of soybeans) (267 acres)
- 5,000 sow produce 135,000 piglets/year
  - 1,215,000 bu corn (6,943 acres)
  - 375,188 bu soybeans (7,504 acres)

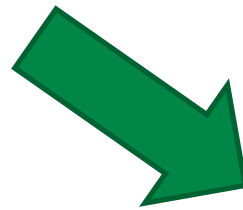
# Today's Swine Production Housing



# Multi-site Production



- Using off-site weaning breaks the vertical transmission of disease from sow to piglet



# Systems Approach –

*Sow units often  
owned by group of  
producers*



4,300 head gestation/farrowing unit



8 – 2,000 head nurseries



16 – 2,000 head finishers





# TODAY'S PORK

50 YEARS of Improvements Make Today's Pork  
More Sustainable Than Ever.

Over the decades, America's pig farmers have made dramatic improvements in how they raise pigs:



*Enhanced  
protection from  
harsh weather  
and predators*



*Better genetics  
and animal care*



*Improved diets  
to better match  
animals' needs*



DOING WHAT'S RIGHT.



# TODAY'S PORK

50 YEARS of Improvements Make Today's Pork  
More Sustainable Than Ever.

- Hogs marketed increased 29%
- Breeding herd decreased 39%
- Over 2X carcass wt. produced/sow/per



DOING WHAT'S RIGHT.

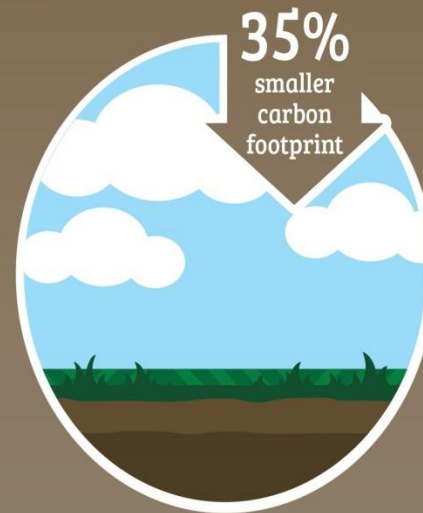
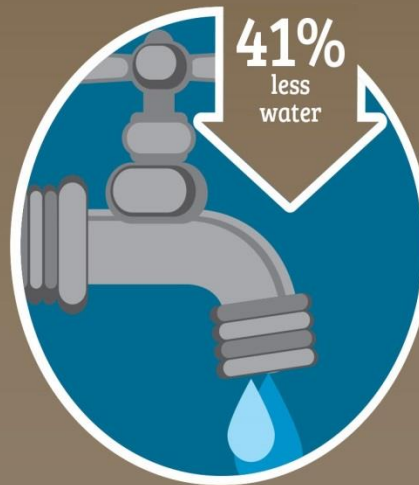


# TODAY'S PORK

50 YEARS of Improvements Make Today's Pork  
More Sustainable Than Ever.

Today's on-farm efficiency means that pound for pound of pork, farmers are now using far fewer of our earth's precious resources than they were in 1959.

*Per unit basis, such as a pound of pork produced*



DOING WHAT'S RIGHT.

**pork**  
checkoff®