Advanced Breeding Herd Management Seminar
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Gestation: Nutrition and Management of the Sow

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Gestation Feeding

Goals:

- Prepare sows to be in proper body condition at farrowing
- Maximize reproductive performance
  - Farrowing rate and litter size
- Meet daily nutrient requirements at the lowest cost possible
  - Cost per sow per day

Feeding Methods Used In Gestation

- Floor Feeding +/ -
- Skip Day Feeding (floor, feeder) +/-
- Trickle Feeders +/ - ?
- Free-Access Stalls +/ - ?
- Individual Feeding Stalls +/ - ⟸
- Electronic Sow feeders +/ - ⟸

KEY: Address Individual Sow Nutrition Needs

Gestation Feeding

Problems with overfeeding gestating sows:

- Unnecessary expense
- Impaired mammary development
- Reduced feed intake in lactation

Problem with thin sows:

- Poor reproductive performance
- Increased mortality
- Welfare (ex. shoulder sores)

Gestation Feeding Programs:

- **Maintaining Body Condition**

determines

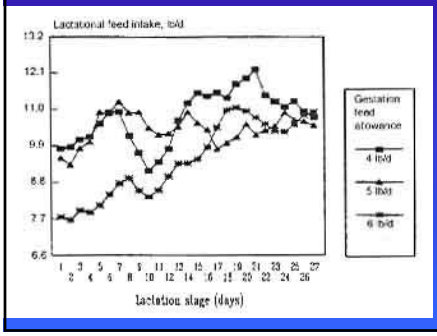
- **Feeding Level (lbs per day)**

determines

- **Ration Formulation**

Managing Sow Condition

Manage Sows to Maximize Their Feed Intake During Lactation



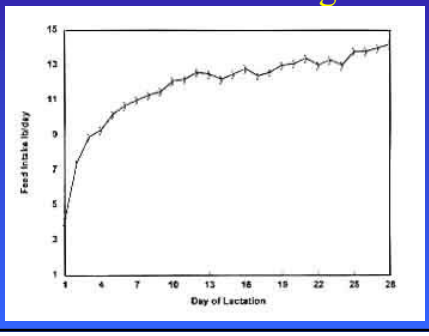
- High feeding levels in Gestation depresses feed intake during lactation

Manage Sows to Maximize Their Feed Intake During Lactation

Target feed intake to maintain body weight

Litter Weight gain	Feed intake, lb/day
3	10.9
4	13.2
5	15.6
6	17.9

Manage Sows to Maximize Their Feed Intake During Lactation

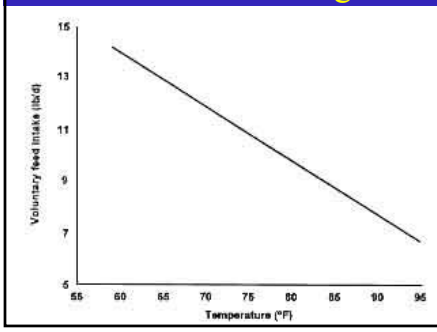


Feeding management has a big impact on feed intake

Manage Sows to Maximize Their Feed Intake During Lactation

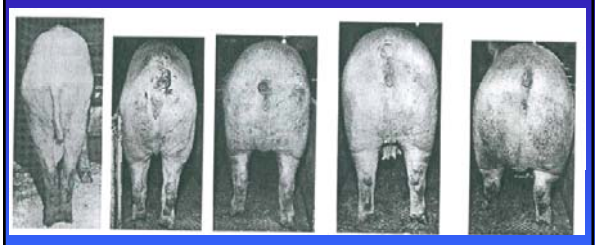
- Feed sows at least two times per day
- Remove any old, stale, or spoiled feed the builds up in corners of feeder daily
- Observe for constipation in sows
- Use wide, deep bowl feeders with no blind corners or sharp edges
- Consider wet feeding or mixing water with feed during hot weather

Manage Sows to Maximize Their Feed Intake During Lactation



Cooling sows in confine ment

Feeding Based on Body Condition Score



Body Condition Score is Variable

- Variability among evaluators
- Amount (lbs) of gestation feed is *arbitrarily* estimated from body condition score
- Feed amounts frequently bounce up **and** down

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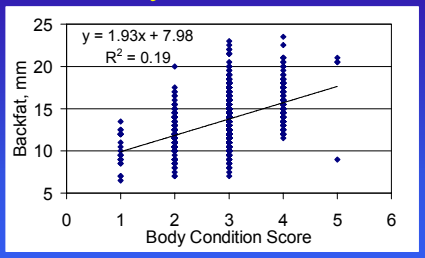
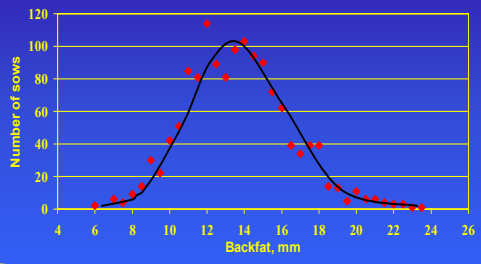
Relationship between backfat and body condition score



Source: Kansas State University

Number of sows at each backfat thickness (1,306 sows)



Source: Kansas State University

Feeding level from day 0 to 101, lb/day

Girth, in	Est.weight, lb	Backfat at breeding, mm			
		9 to 11	12 to 14	15 to 17	>18
43 to 46.5	250 to 325	4.7	4.2	3.7	3.2
46.6 to 50.0	325 to 400	5.2	4.7	4.2	3.7
50.1 to 53.0	400 to 475	5.6	5.1	4.6	4.1
53.1 to 65.0	475 to 600	6.1	5.6	5.1	4.6

-Assumes diet with 1.5 Mcal ME/lb
-All sows fed additional 2 lb/d from d 101 to 115
-Sows maintained at or above 68°F

Source: Kansas State University

Estimating sows feed requirements from backfat and weight categories

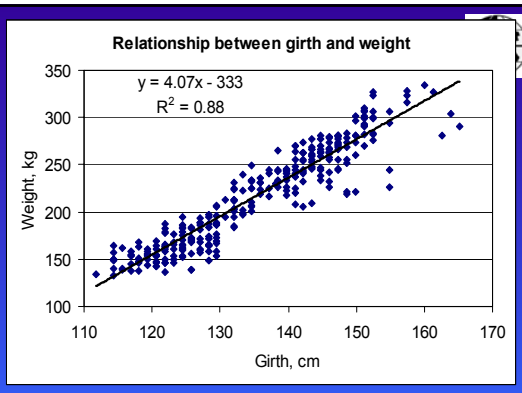
- Use Renco Lean-meater to scan for backfat at last rib
- More accurate than condition scoring

Source: Kansas State University

Do we have to weigh sows?

- No, use a girth tape to estimate weight
- Goal is to put sows into one of 4 weight categories

Source: Kansas State University



Source: Kansas State University

Sow Maintenance Requirements in Gestation

Feeding level from day 0 to 101, lb/day

Girth, in	Est.weight, lb	Backfat at breeding, mm			
		9 to 11	12 to 14	15 to 17	>18
43 to 46.5	250 to 325	4.7	4.2	3.7	3.2
46.6 to 50.0	325 to 400	5.2	4.7	4.2	3.7
50.1 to 53.0	400 to 475	5.6	5.1	4.6	4.1
53.1 to 65.0	475 to 600	6.1	5.6	5.1	4.6

-Assumes diet with 1.5 Mcal ME/lb
-All sows fed additional 2 lb/d from d 101 to 115
-Sows maintained at or above 68°F

Source: Kansas State University

Procedures during the first week after breeding

- Scan and determine weight category on all sows that were bred in the last week
- Write the backfat on the sow card
- Use the feed chart to adjust the feeding level
- Other issues:
  - must train a person to scan and estimate weight
  - must know the energy level of diet
  - must know volume (lb) dropped at each setting

Source: Kansas State University

Procedures for extra feed adjustment at 7 weeks postmating

- Lines will be walked at 7 weeks post mating
- Visually very thin sows will be marked and scanned to determine if backfat gains are on target.
  - Approximately 10 to 15% of sows may be below target
- If they are not reaching targets, feed intake is increased by 1 lb/day.

Source: Kansas State University

Dietary lysine level from day 0 to 101, %

Girth, in	Estimated weight, lb	Backfat at breeding, mm			
		9 to 11	12 to 14	15 to 17	>18
43 to 46.5	250 to 325	0.55	0.57		0.62
46.6 to 50.0	325 to 400	0.51	0.52	0.54	0.55
50.1 to 53.0	400 to 475	0.48	0.49	0.50	0.50
53.1 to 65.0	475 to 650	0.45	0.46	0.47	0.46

-Assumes diet with 1.5 Mcal ME/lb

Source: Kansas State University

Dietary available phosphorus from day 0 to 101, %

Girth, in	Estimated weight, lb	Backfat at breeding, mm			
		9 to 11	12 to 14	15 to 17	>18
43 to 46.5	250 to 325	0.31	0.34		0.45
46.6 to 50.0	325 to 400	0.28	0.31	0.34	
50.1 to 53.0	400 to 475	0.26	0.28	0.31	0.35
53.1 to 65.0	475 to 650	0.24	0.26	0.28	0.31

-Assumes diet with 1.5 Mcal ME/lb

Source: Kansas State University

High Fiber Ingredients in Gestation Diets

Dietary Fiber in Sow Gestation Diets

D. Reese, U of Neb
Summary of 24 trial using fiber:

- Sows fed high fiber diets during gestation **weaned .3 to .7 more pigs/litter** on average than low fiber diets

Observations:

- Improved lactation feed intake
- Reduced sow weight gain during pregnancy
- Reduced pig birth weight
- Reduced stereotypic behavior

Dietary Fiber in Sow Gest Diets

D. Reese Concluded: sows should consume 350 to 400 grams/day of NDF to increase pigs weaned/litter

	% of Diet	Lbs/day
Corn/SBM		4.1
Wheat Midds	45%	4.4
Soy Hulls	20%	4.4
Alfalfa Meal	25%	4.6
Beet Pulp	30%	4.6
Oats	40%	4.5

- All provide Daily intake: M.E. 6.1 Mcal & Lysine 11 gram

Feeding & Diet Formulation:

- Diet lower energy thus feed more lbs/day and increases meal consumption time
- Evaluate Economics: Cost/Sow/Year not Cost/Ton basis
- High fiber ingredients: Nutrient and Quality variation (ie. vomitoxin in wheat midds)
- High fiber ingredients: Consistent Available Supply
- High fiber ingredients: Not appropriate with all premix, basemix or supplement product (calcium:phosphorus ratios)

Possible Limitations of High Fiber

- Some mixing and handling equipment may not handle fibrous ingredients
- High fiber diets are bulky – may bridge in bins and feeders
- Feeding systems calibration and capacity (drop box systems may need to feed 2X instead of 1x per day)
- Cost associated with manure handling may increase – greater volume of solids
- Handling liquid manure may be more difficult due to larger particles and less liquid

Feed Ingredient Cost:

	Lbs/day	$/ton	$/110 days	$ diff
Corn/SBM	4.1	$122.00	$27.61	
Wheat Midds	4.4	$116.00	$27.94	$.33
Soy Hulls	4.4	$118.00	$28.27	$.66
Alfalfa Meal	4.6	$124.00	$30.91	$3.30

Benefit: What is value of weaned pig?

Value $/pig	$20	$25	$30	$35
Increase .1 pig/litter	$2.00	$2.50	$3.00	$3.50
Increase .3 pig/litter	$6.00	$7.50	$9.00	$10.50

IPIC Research Project: Gestation Feeder Design

Feeder Design Project

Dr. Arlin Karsten, Kirkwood Community College, has designed a new "non-traditional" tube feeder design for crated gestation.the new feeder and the study will be performed at Kirkwood Community College

Larry McMullen, ISU Extension Swine Field Specialist, will lead the project to compare the new "non-traditional" feeder design to traditional tube style gestation feeders

Project will monitor:

- Sow Condition
- Reproductive Performance
- Animal Behavior

Gestation Feed Drops

Conventional Gestation Feeder

New Style Gestation Feeder

New Style Gestation Feeder

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Sow Handling Can Impact Performance

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Handle the Sow with Respect and Care to Ensure Optimum Reproductive Performance and Maximum Worker Safety

- Use slow, deliberate movements so as not to excite sows
- Use patience and proper equipment when moving sows
- Gently slap sows in flank, push on tail head, or tap on the hocks with your foot to move them if they appear tentative at moving
- Never use any electrical device to shock sows
- Place a solid barrier in front of sows to halt forward movement and direct accordingly

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- Sows are often more willing to walk forward than backward
- Use feed to encourage sows, especially in outdoor systems, to move where desired
- Keep floors dry and clean to insure good footing for sows and workers
- Scratch sows behind ears and talk to them to create trust

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For easy movement, maintain well-lit alleyways with no shadows or obstacles

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Physical restraint of a sow is sometimes necessary and should be performed to minimize discomfort to the sow

Observe for Signs of Stray Voltage

- include reduction in appetite
- restlessness
- nervousness
- increases in aggressive encounters
- piglets being crushed
- poor weaning performance
- impaired growth

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