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EFFECT OF WINTER GESTATION ENERGY LEVEL ON SOW PRODUCTIVITY

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ABSTRACT

Sow winter gestation energy levels are being evaluated in a long term study to identify the energy regime that interacts most favorably with the environment, farrowing production, and rebreeding performance. Performance longevity is an important criteria with respect to profitability. Therefore, project objectives focus on wintering production over four years because the information obtained will be inferred to the environments of subsequent years.

Production means generated during the winters of 1995 and 1996 are shown in Table 1.

Due to the long term nature of this project, it is inappropriate to make comparative remarks at this writing. This information is being made available as a report of progress to date. As more gestation groups are added to the database, strength and year to year variation will become apparent. Year to year winter variation is an important element of the study, since conclusions and implications will be inferred to the environments of future years.

INTRODUCTION

High-producing, genetically lean sows farrow and nurse more pigs, produce more milk and, consequently, have higher nutritional requirements than less prolific sows. Accessing energy requirements for lactation are difficult due to the confounding effects of one reproductive cycle on another.

Energy consumption during gestation affects voluntary energy consumption during lactation and, ultimately, the rebreeding period following lactation. Maintaining a proper gestational energy balance that keeps sows in desirable body condition is essential. Overfeeding energy during gestation causes sows to have reduced appetites during lactation resulting in weight loss. Insufficient energy during gestation does not prepare sows adequately for lactation. Sows that enter the farrowing room thin are unable to nurse litters larger than seven pigs and gain weight simultaneously. Inability of thin sows to gain weight during lactation results in extended weaning to rebreeding intervals.

The objective of this investigation is to determine winter gestation energy levels that will optimize sow farrowing body condition, minimize lactation weight loss, and improve rebreeding performance of sows gestated in outdoor facilities and managed in an All In/All Out management system.

MATERIALS AND METHODS

This is a long term study encompassing four winters. Pig Improvement Company (PIC), Camborough 15 sows are being managed in an All In/All Out continuous group farrowing management system. Each winter, within this continuous flow production system, two farrowing groups that have been previously assigned to three gestation energy levels [Low, Medium, and High], in lifetime herd assignments, are being used to address the project's objectives. Due to the projects long term design, breeding group integrity is being strictly maintained. Females are not culled for production reasons, but, when culled for management reasons, are being replaced with gilts of similar type in lifetime assignments.

Pregnant sows are housed in outdoor dirt gestation pens (32' x 150') equipped with automatic frost-free waterers, portable steel shelters, constructed from discarded 400 barrel oilfield tanks, and bedded with straw. The respective energy levels are being fed once daily in individual feeding stalls. Due to the seasonal nature of the investigation, the time period of evaluation is from November through March. During non-recording seasons, those groups being studied will receive the control energy level.

Body condition scores are being taken visually at the beginning and end of gestation, within 12 hrs. after farrowing, and at weaning. Sows in all treatments are moved to farrowing crates 2 to 3 days prior to farrowing (based on

breeding date) and fed the same gestation diet offered outside. At farrowing, feed is withheld for the first 24 hours. Beginning with an initial offering of 6 pounds (3 lbs. morning and evening), the sows are brought up to full feed by daily increases of 1 pound/head/day until the twice daily offerings are not completely consumed. Nutrient specifications of the lactation diet are 18.5% crude protein, .75% lysine, 1.0% calcium, .95% phosphorous, and 5% added vegetable oil.

Pigs in the study are being weaned at three weeks of age without access to creep feed. Piglets will have access to sow feed, but consumption is anticipated to be negligible. At weaning, sows are weighed, condition scored, and placed in a common breeding pen with access to a self-fed breeding diet, and hand-mated using multiple sire breeding in a fourteen-day breeding period. Sows are mated morning and evening, in attended matings, until they will no longer stand for service.

Gestational data being recorded include: beginning and ending gestation weight and condition score. Farrowing data include: parity, sow weight and condition score, lactation days, feed/head, and condition score at weaning. Farrowing performance records include: pigs born alive, pigs weaned,

litter birth weight, litter wean weight. Rebreeding

performance is monitored based on days to effective service(pregnancy) using Pigtales sow performance data.

Data will be analyzed using a model that includes gestation energy level, animal within

gestation energy level, parity, parity x gestation energy level interaction, and error (SAS, 1988). When appropriate, sow weight will be used as a covariate.

RESULTS AND DISCUSSION

The first two years of this four year sow gestation energy study were completed during the winters of 1995 and 1996, and 1997 data is currently being collected.

Combined means for the two completed years are shown in Table 1. In addition to the main effects, all possible

interactions between year, treatment and replicate will be evaluated in the final report.

Due to the long term nature of this project, it is inappropriate to make comparative remarks at this writing. This information is being made available as a report of progress to date. As more gestation groups are added to the database, strength and year to year variation will become apparent. Year to year winter variation is an important part of this study since conclusions and implications will be inferred to the environments of future years.

Table 1. Gestation, Farrowing and Rebreedng Response: Winter performance means for 1995 and 1996.

	ENERGY LEVELS		
	LOW	**MEDIUM**	**HIGH**
Gestation Energy KCal, ME/Day	6681	7868	8682
No. Sows	18	21	19
Parity	2.3	2.6	2.6
Sow Weight Change			
Gestation Starting Wt.	431	429	435
Prefarrowing Wt.	491	494	506
Farrowing Wt.	455	460	460
Weaning Wt.	441	451	460
Lactation Wt. Change	-14	-9	0
LACTATION FEED CONSUMPTION			

Lactation Days	19.4	21.9	20.5
Lactation Feed/Head	262.1	309.6	286.9
Lactation Feed/Head/Day	13.5	14.1	14.0
SOW CONDITION SCORE			
Farrowing Condition	2.84	2.84	2.83
Weaning Condition	2.71	2.76	2.75
Condition Change	-.13	-.08	-.08
FARROWING PERFORMANCE			
Pigs Born Alive	11.7	10.8	11.8
Pigs Weaned	10.1	9.4	10.1
Litter Birth Wt.	37.8	36.9	40.5
Litter Gain	89.4	106.3	96.0
ADG/pig	.46	.52	.46
REBREEDING PERFORMANCE			
Days To Effective Ser.	15.4	20.2	19.7

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