

## 2006 Review – ISU Swine Nutrition Management and Research, Ames, Iowa

### A.S. Leaflet R2223

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Animal Science Swine Nutrition Unit

#### History

The present facility was constructed in 1990-1991, providing opportunities to continue research programs that had previously taken place at the old facility south of campus. Two small buildings from that initial research site and an Intensive Growth unit constructed in 1992 have also been incorporated into the overall research program in Swine Nutrition at Iowa State University.

#### Farm Area and Land Use

The main research unit occupies 20 acres in the approximate center of a 320 acre parcel of land, most of which is also owned by the university. Other than occasionally contributing small quantities of liquid waste as requested, the Swine Nutrition Management and Research Center (SNMRC) is not involved in the research programs conducted on the surrounding land.

#### Facilities

At the 1127 XL Ave location:

Production Facilities:

- 168-sow breeding and gestation unit
- 32-sow farrowing unit (4 rooms X 8 crates)
- 576 head nursery unit (4 rooms X 144 head/room)
- 300 head growing unit (60 pens X 5 head/pen)
- 300 head finishing unit (60 pens X 5 head/pen)
- 420 head finishing unit (28 pens X 15 head/pen)

Intensive Research Facilities:

- Animal surgery unit
- Metabolism pen unit (up to 24 head)
- 64 head growing room
- 48 head finishing room
- 8 sow farrowing unit
- Laboratory facilities leased to USDA for excretion studies

Feed Preparation Facility

Maintenance and Support Facility

At the State Street location:

- 100 head intensive growth unit
- 36 head sow unit
- 40 pen growth unit

Most of the facilities have been constructed or extensively remodeled in the last 12-15 years and are in

relatively good shape. A major factor concerning the main facility on XL Ave. is that there is no provision for segregated production, a substantial deviation from current industry practices.

The XL Avenue facility continues to follow protocols designed to retain a high health status – shower-in and 48-hour downtime precautions. The Swine Research Center of the USDA continues to lease a significant portion of the Intensive Research section of this facility. Several of the projects undertaken in 2006 represent cooperative efforts between the Swine Research Center and the Animal Science Department.

#### Research Activities

Efficacy of antibiotic alternatives in treatment of post weaning diarrhea in pigs

Obesity study with Ossebow pigs

Energy utilization of glycerin in weanling swine

Energy utilization of glycerin in growing-finishing swine

Improved dietary fiber digestion in the large intestine of swine through selection of “Fiber-biotics”

Impact of dietary nitrogen, sulfur and cellulose levels on swine manure composition and odor emission

Improvement of phosphorus digestibility of microbial phytase

Manure composition – Stability and validation

Blood collection from clinically healthy growing pigs for serum, plasma, and the isolation of peripheral blood mononuclear cells

Evaluation of dietary butyrate on growth performance and response to inflammatory stimuli in weanling pigs

Evaluation of dietary fiber sources as growth promotants in weanling pigs

Evaluation of the effects of lowering dietary crude protein on serum biomarkers of body composition and gene expression in muscle and adipose tissue in finishing swine

Mineral balances of diverse swine genetic sources as affected by dietary phosphorus levels

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Effect of genetics and nutrition on bone metabolism

Evaluation of sustained release formulations of Vitamin D for use in animal and human nutrition

Evaluation of salmon protein concentrate on growth performance of weanling pigs

Evaluation of field peas as a protein source for growing finishing swine

Oxidized biomarkers in blood of pigs

Role of 1,3 butanediol as a bioactive compound for enhancing sow and neonatal pig productivity

### **Education and Demonstration Activities**

Pigs furnished to AnSci 425 lab at discrete stages of development.