Applied Animal Nutrition VPP 5431

 Charles E. Wallace, D.V.M.

 cwallace@rossvet.edu.kn

 Website: [rossskb.homestead.com](http://rossskb.homestead.com)

Suggested text for reference: Animal Feeding and Nutrition by Jurgens

Outline

Chapter 7. Swine feeding guides

I. Introduction

Objective: 1. List and describe the major factors that affect the nutritional requirements of

swine.

2. Identify, describe and compare stages of swine growth and development.

 3. Explain the importance of post-natal nutrition.

 4. Identify and relate factors important in the post-weaned starter pig.

 5. Describe factors important in feeding the grower-finisher pig.

 Some useful references:

 <http://www.ag.auburn.edu/~chibale/an11pigfeeding.pdf>

 <http://www.ansc.purdue.edu/courses/ansc443/Papers/Nutrition_Problems.htm>

 <http://www.pork.org/wp-content/uploads/2009/11/nutritionalefficiency.pdf>

 <http://extension.psu.edu/courses/swine/nutrition>

II. Terminology

Objective: 1. List and define the terms used in describing life cycle nutrition in swine.

 Boar adult intact male pig

 Sow adult female pig that has had young

 Gilt young female pig

 Barrow castrated male pig

 Piglet young pig

 Farrowing act of giving birth to pigs

III. Life stage feeding of swine

 A. Nursing piglets

 B. Weaned piglets

 C. Gilts

 D. Gestating gilts

 E. Sows

 F. Boars

III. Methods of feeding pigs

 Objectives: 1. Recognize the various types and methods used in feeding swine.

 A. Pet pigs

 B. Range feeding

 Videotape--Outdoor Pig Production

 Objectives: List the major points from the videotape.

1. Capital cost of outdoor production is about 25% of indoor production. Why?

2. Perceived as better from animal welfare point of view. Why?

3. Reduction of pollution with outdoor systems. How?

4. Healthier animals. Why?

5. Higher feed intake by about 15% compared with indoor systems. Why?

6. Not possible to raise until slaughter weight outdoors; hogs need to be confined during the finishing phase.

<http://www.prairieswine.com/pdf/1169.pdf>

<https://www.ipic.iastate.edu/publications/340.feedandgrowth.pdf>

C. Confinement feeding

 Objectives: List the major points from the videotapes.

Videotapes--3 set--Phase Feeding Today, Getting A Healthy Start, Growing And Finishing

1. What is phase feeding?

2. What is the role of phase feeding in herd productivity?

3. Why is it important to match the nutritional needs to the growth rate characteristics of the pigs?

4. What three factors are most important in the productivity of the early-weaned pig?

5. What digestive changes occur in the early weaned pig which affect growth?

6. Does phase feeding pay?

7. What is split-sex feeding?

8. How does phase feeding have an effect on the environment?

IV. Problems in feeding swine

 Objective: List and describe some of the problems associated with swine nutrition?

 A. Anemia--a problem of suckling pigs

 What element is primarily involved in this regard?

 B. Vitamin deficiencies

Why are vitamin requirements so important in the feeding of swine compared with ruminants or horses?

 C. Minerals

<http://www.ncsu.edu/project/swine_extension/nutrition/nutritionguide/minerals/minerals.htm>

 1. Calcium:Phosphorus ratios Ca 1.0-1.3 : P 1.0

 2. Zinc 50 to 125 ppm

3. Copper 5 to 10 ppm when supplied at high concentrations (100 to 250 ppm for

copper and 2000 to 3000 ppm for zinc), these two minerals are known to exert positive influences on growth rate

D. Essential amino acid requirements

 Do swine have specific requirements for amino acids and fatty acids?

 E. Energy--flushing of gilts

 1. What is flushing?

 2. What does flushing do?

 3. When is flushing done?

V. Miscellaneous topics related to swine nutrition

A. Vitamin E supplementation has been shown to prolong shelf life of meat and improve color appeal to consumers.

 link: [Swine Nutrition Guide--Vitamins](http://www.ncsu.edu/project/swine_extension/nutrition/nutritionguide/vitamins/vitamins.htm)

B. Addition of palatability enhancers to starter feed formulations can increase pig preference for good quality starter feeds. According to trials, increased preference for a particular feed can result in increased pig performance. While traditional flavors often add aroma and sweetness to feeds, the pig producer usually cannot smell or detect these new palatability enhancers in the feed. The enhancers work in synergy with the good quality ingredients in the feed to make it more desirable to the pig. Enhancers are found by screening large numbers of ingredients that are generally recognized as safe at palatability testing facilities.

 link: <http://www.ncsu.edu/project/swine_extension/publications/factsheets/821s.htm>

C. Supplemental enzymes. Adding enzymes may improve the energy release in grains and thus improve growth performance up to 5% or more. Enzymes may help reduce total manure and nutrient output as well as control odor. Phytase is getting the most attention. Other methods of reducing nitrogen and ammonia excretion in hog manure involve reducing nitrogen, balancing the limiting amino acids, and adding special cellulose to the diet.

 Link: <http://porkgateway.org/resource/feed-additives-for-swine-enzymes-and-phytase/>

 Link: CIBENZA® DP100 feed additive is an intrinsically heat stable, potent protease enzyme feed additive that optimizes the digestibility of proteins in poultry and swine feed ingredients. This aids in the reduction of feed cost, improved production performance and better ingredient risk management.

 <http://www.novusint.com/en-us/pages/cibenzadp100forswine>

 link: [Nutritional Strategies To Decrease Nutrients In Swine Manure](http://www.omafra.gov.on.ca/english/livestock/swine/facts/04-035.htm)

D. Conjugated linoleic acid. This feed ingredient may have the ability to improve average daily gain and feed efficiency, cut backfat by 20%, and improve the pig's immune system.

 Link: <http://www.omafra.gov.on.ca/english/livestock/swine/facts/info_n_conjugated.htm>

E. Fiber and infectious disease.

link: <http://www.nationalhogfarmer.com/mag/farming_feeding_enhance_swine>

F. Increasing carcass lean content.

 1. Restricted feeding.

 2. Porcine somatotropin.

 3. Beta agonists. Ractopamine (Paylean). Ractopamine is a feed additive to promote

leanness in animals raised for their meat. Pharmacologically, it is a beta-adrenergic agonist.

 link: [Ractopamine, Response, Economics, and Issues](http://www.ansc.purdue.edu/swine/porkpage/nutrient/paylean/ractopamine/index.htm)

 4. Transgenic pigs.

 Link: [New](http://www.newscientist.com/article/dn8900-transgenic-pigs-are-rich-in-healthy-fats.html) Scientist

 Link: [Medical News: Transgenic Pigs May Bring Home Heart-Healthy Bacon - in Genetics, Genetics from MedPage Today](http://www.medpagetoday.com/Genetics/GeneralGenetics/2934)