**NCR-42 / NCCC42**

**Committee on Swine Nutrition**

**Refereed Journal Publications**

NCR-42 Committee on Swine Nutrition. 1969. **Cooperative regional studies with growing swine: Effects of source of ingredients, form of diet, and location on rate and efficiency of gain of growing swine.** J. Anim. Sci. 29:927-933.

NCR-42 Committee on Swine Nutrition. 1970. **Cooperative regional studies with growing swine: Effects of unidentified factor ingredients on rate and efficiency of gain of growing swine.** J. Anim. Sci. 31:900-905.

NCR-42 Committee on Swine Nutrition. 1974. **Cooperative regional studies with growing swine: Effects of vitamin E and levels of supplementary copper during the growing-finishing period on gain, feed conversion and tissue copper storage in swine.** J. Anim. Sci. 39:512-520.

NCR-42 Committee on Swine Nutrition. 1976. **Effect of supplemental choline on reproductive performance of sows: A cooperative regional study.** J. Anim. Sci. 42:1211-1216.

NCR-42 Committee on Swine Nutrition. 1978. **Effect of protein level during gestation and lactation on reproductive performance in swine.** J. Anim. Sci. 46:1673-1683.

NCR-42 Committee on Swine Nutrition. 1980. **Effect of supplemental choline on performance of starting, growing and finishing pigs: A cooperative regional study.** J. Anim. Sci. 50:99-102.

Lewis, A.J., G.L. Cromwell and J.E. Pettigrew. NCR-42 Committee on Swine Nutrition. 1991**. Effects of supplemental biotin during gestation and lactation on reproductive performance of sows: A cooperative study.** J. Anim. Sci. 69:207-214.

Yen, J.T., G.L. Cromwell, G.L. Allee, C.C. Calvert, T.D. Crenshaw and E.R. Miller. NCR-42 Committee on Swine Nutrition. 1991. **Value of raw soybeans and soybean oil supplementation in sow gestation and lactation diets: A cooperative study.** J. Anim. Sci. 69:656-663.

Cromwell, G.L., T.R. Cline, J.D. Crenshaw, T.D. Crenshaw, R.C. Ewan, C.R. Hamilton, A.J. Lewis, D.C. Mahan, E.R. Miller, J.E. Pettigrew, L.F. Tribble and T.L. Veum. NCR-42 Committee on Swine Nutrition. 1993. **The dietary protein and(or) lysine requirements of barrows and gilts.** J. Anim. Sci. 71:1510-1519.

Mahan, D.C., R.A. Easter, G.L. Cromwell, E.R. Miller, and T.L. Veum. NCR-42 Committee on Swine Nutrition. 1993. **Effect of dietary lysine levels formulated by altering the ratio of corn:soybean meal with or without dried whey and L-lysine·HCl in diets for weanling pigs.** J. Anim. Sci. 71:1848-1852.

Mahan, D.C., G.L. Cromwell, R.C. Ewan, C.R. Hamilton, and J.T. Yen. NCR-42 Committee on Swine Nutrition. 1998. **Evaluation of the feeding duration of a phase 1 nursery diet to three-week-old pigs of two weaning weights.** J. Anim. Sci. 76:578-583.

Cromwell G.L., C.C. Calvert, T.R. Cline, J.D. Crenshaw, T.D. Crenshaw, R.A. Easter, R.C. Ewan, C.R. Hamilton, G.M. Hill, A.J. Lewis, D.C. Mahan, E.R. Miller, J.L. Nelssen, J.E. Pettigrew, L.F. Tribble, T.L. Veum, and J.T. Yen, NCR-42 Committee on Swine Nutrition. 1999. **Variability among sources and laboratories in nutrient analyses of corn and soybean meal.** J. Anim. Sci. 77:3262-3273.

Hill, G.M., G.L. Cromwell, T.D. Crenshaw, R. Dove, R.C. Ewan, D.A. Knabe, A.J. Lewis, G.W. Libal, D.C. Mahan, G.C. Shurson, L.L. Southern, and T.L. Veum, NCR-42 and S-145 Regional Swine Nutrition Committees. 2000. **Growth promotion effects and plasma changes from feeding high dietary concentrations of zinc and copper to weanling pigs (regional study).** J. Anim. Sci. 78:1010-1016.

Cline, T.R., G.L. Cromwell, T.D. Crenshaw, R.C. Ewan, C.R. Hamilton, A.J. Lewis, D.C. Mahan, and L.L. Southern, NCR-42 Committee on Swine Nutrition. 2000. **Further assessment of the dietary lysine requirement of finishing gilts.** J. Anim. Sci. 78:987-992.

Cromwell G.L., T.R. Cline, J.D. Crenshaw, T.D. Crenshaw, R.A. Easter, R.C. Ewan, C.R. Hamilton, G.M. Hill, A.J. Lewis, D.C. Mahan, J.L. Nelssen, J.E. Pettigrew, T.L. Veum, and J.T. Yen, NCR-42 Committee on Swine Nutrition. 2000. **Variability among sources and laboratories in analyses of wheat middlings**. J. Anim. Sci. 78:2653-2658.

Carter, S.D., G.M Hill, D.C. Mahan, J.L. Nelssen, B.T. Richert, and G.C. Shurson. NCR-42 Committee on Swine Nutrition. 2000. **Effects of dietary valine concentration on lactational performance of sows nursing large litters**. J. Anim. Sci. 78:2879-2884.

Hill, G.M., D.C. Mahan, S.D. Carter, G.L. Cromwell, R.C. Ewan, R.L. Harrold, A.J. Lewis, P.S. Miller, G.C. Shurson, and T.L. Veum, NCR-42 Committee on Swine Nutrition. 2001. **Effect of pharmacological concentrations of zinc oxide with or without the inclusion of an antibacterial agent on nursery pig performance.** J. Anim. Sci. 79:934-941. **(Also listed in S-145/S-288 publications)**

Cromwell, G.L., J.H. Brendemuhl, L.I. Chiba, T.R. Cline, T.R. Crenshaw, C.R. Dove, R.A. Easter, R.C. Ewan, K.C. Ferrell, C.R. Hamilton, G.M. Hill, J.D. Hitchcock, E.T. Kornegay, D.W. Knabe, A.J. Lewis, G.R. Libal, M.D. Lindemann, D.C. Mahan, C.V. Maxwell, J.C. McConnell, J.L. Nelssen, J.E. Pettigrew, L.L. Southern, T.L. Veum, and J.T. Yen, North Central Region Committee on Swine Nutrition (NCR-42) and Southern Regional Committee on Nutritional Systems for Swine to Increase Reproductive Efficiency (S-288). 2002. **Variability in mixing efficiency and in laboratory analyses of a common diet mixed at 25 experiment stations.** J. Anim. Sci. 81:484-491. **(Also listed in S-145/S-288 publications)**

Mahan, D.C., E.P. Berg, J.H. Brendemuhl, S.D. Carter, L.I. Chiba, T.D. Crenshaw, G.L. Cromwell, C.R. Dove, A.F. Harper, G.M. Hill, G.R. Hollis, S.W. Kim, M.D. Lindemann, C.V. Maxwell, P.S. Miller, J.L. Nelssen, B.T. Richert,G.C. Shurson,L.L. Southern, T.S. Stahly, H.H. Stein, E. van Heugten, and J. T. Yen. North Central Regional Committee on Swine Nutrition (NCR-42) and Southern Regional Committee on Nutritional Systems for Swine to Increase Reproductive Efficiency (S-1012). 2005. **Comparison of dietary selenium fed to grower-finisher pigs from various regions of the United States on resulting tissue Se and loin mineral concentrations.** J. Anim. Sci. 83:852-857.

Hollis, G.R., S.D. Carter, T.R. Cline, R.D. Crenshaw, G.L. Cromwell, G.M. Hill, S.W. Kim, A.J. Lewis, D.C. Mahan, P.S. Miller, H.H. Stein, and T.L. Veum. 2005. **Effects of replacing pharmacological levels of dietary zinc oxide with lower dietary levels of various organic zinc sources for weanling pigs.** J. Anim. Sci. 83:2123-2129.

Hill, G.M., S.K. Baido, G.L. Cromwell, D.C. Mahan, J.L. Nelssen, and H.H. Stein. 2007. **Evaluation of sex and lysine during the nursery period.** J. Anim. Sci. 85:1453-1458.

Mahan, D.C., S.D. Carter, T.R. Cline, G.M. Hill, S.W. Kim, P.S. Miller, J.L. Nelssen, H.H. Stein, T.L. Veum, and the North Central Coordinating Committee on Swine Nutrition (NCCC-42). 2007. **Evaluating the effects of supplemental B vitamins in practical swine diets during the starter and grower-finisher periods – A regional study.** J. Anim. Sci. 85:2190-2197.

Stein, H. H., C. T. Kadzere, S. W. Kim, and P. S. Miller. 2008. **Influence of dietary phosphorus concentration on the digestibility of phosphorus in monocalcium phosphate by growing pigs.** J. Anim. Sci.86:1861–1867. doi:10.2527/jas.2008-0867.

Veum, T. L., J. D. Crenshaw, T. D. Crenshaw, G. L. Cromwell, R. A. Easter, R. C. Ewan, J. L. Nelssen, E. R. Miller, J. E. Pettigrew, M. R. Ellersieck, and the North Central Region-42 Committee on Swine Nutrition. 2009. **The addition of ground wheat straw as a fiber source in the gestation diet of sows and the effect on sow and litter performance for three successive parities.** J. Anim. Sci. 87:1003–1012. doi:10.2527/jas.2008-1119.

Stein, H. H., O. Adeola, G. L. Cromwell, S. W. Kim, D. C. Mahan, and P. S. Miller. 2011. **Concentration of dietary calcium supplied by calcium carbonate does not affect the apparent total tract digestibility of calcium, but decreases digestibility of phosphorus by growing pigs.** J. Anim. Sci. 89:2139–2144. soi:10.2527/jas.2010-3522.

Cromwell, G. L., M. J. Azain, O. Adeola, S. K. Baidoo, S. D. Carter, T. D. Crenshaw, S. W. Kim, D. C. Mahan, P. S. Miller, and M. C. Shannon. 2011. **Corn distillers dried grains with solubles in diets for growing-finishing pigs: A cooperative study.** J. Anim. Sci. 89:2801–2811. doi:10.2527/jas.2010-3704.

Che, T. M., O. Adeola, M. J. Azain, S. D. Carter, G. L. Cromwell, G. M. Hill, D. C. Mahan, P. S. Miller and J. E. Pettigrew. 2012. **Effect of Dietary Acids on Growth Performance of Nursery Pigs: A Cooperative Study**[.](https://www.animalsciencepublications.org/publications/search?search%5B-3%5D=&searchType%5B-3%5D=Any&search%5B-2%5D=pettigrew&searchFields%5B-2%5D%5BAuthor%5D=Author&searchType%5B-2%5D=Phrase&search%5B-1%5D=&searchFields%5B-1%5D%5BTitle%5D=Title&searchType%5B-1%5D=Phrase&volume=&issue=&year=&first-page=&journal%5Bjas%5D=jas&search%5B0%5D=&facet-year%5b%5d=2012#fn1)J. Anim. Sci. 90:12: 4408-4413. doi:10.2527/jas.2012-5110.

Adeola, O., D. C. Mahan, M. J. Azain, S. K. Baidoo, G. L. Cromwell, G. M. Hill, J. E. Pettigrew, C. V. Maxwell, and M. C. Shannon. 2013. **Dietary lipid sources and levels for weanling pigs.** J. Anim. Sci. 91:4216–4225. doi:10.2527/jas2013-629.

Mahan, D. C., M. Azain, T. D. Crenshaw, G. L. Cromwell, C. R. Dove, S. W. Kim, M. D. Lindemann, P. S. Miller, J. E. Pettigrew, H. H. Stein, and E. van Heugten. 2014. **Supplementation of organic and inorganic selenium to diets using grains grown in various regions of the United States with differing natural Se concentrations and fed to grower–finisher swine.** J. Anim. Sci. 92:4991–4997. doi:10.2527/jas2014-7735.

Adeola, O., M. J. Azain, S. D. Carter, T. D. Crenshaw, M. J. Estienne, B. J. Kerr, M. D. Lindemann, C. V. Maxwell, P. S. Miller, M. C. Shannon, and E. van Heugten. 2015. **A cooperative study on the standardized total-tract digestible phosphorus requirement of twenty-kilogram pigs.** J. Anim. Sci. 93:5743–5753. doi:10.2527/jas2015-9509.

Liu, Y., R. Jha, and H. H. Stein. 2018. **Nutritional composition, gross energy concentration, and in vitro digestibility of dry matter in 46 sources of bakery meals.** J. Anim. Sci. 96:4685-4692. doi:10.1093/jas/sky310.

NCR-42 / NCCC42

Committee on Swine Nutrition

Journal Abstracts

North Central Region, NCR-42 Committee on Swine Nutrition. V.C. Speer, D.E. Becker, J.H. Conrad, J.A. Hoefer, R.J. Meade, E.R. Peo, Jr., R.W. Seerley, and L.F. Tribble. 1967. **Dehydrated alfalfa meal, corn distillers dried solubles, and dried whey in diets for growing swine.** J. Anim. Sci. 26:1477.

NCR-42 Committee on Swine Nutrition. 1970. **Supplemental copper and vitamin E for G-F swine.** 1970. J. Anim. Sci. 31:1025.

NCR-42 Committee on Swine Nutrition. 1973. **Effect of supplemental choline on reproductive performance of sows.** J. Anim. Sci. 37:281.

NCR-42 Committee on Swine Nutrition. 1978**. Effect of supplemental choline in corn-soy-lysine diets for swine.** J. Anim. Sci. 47(Suppl. 1):16.

NCR-42 Committee of Swine Nutrition. 1978. **Effect of protein level during gestation and lactation on reproductive performance in swine.** J. Anim. Sci. 47(Suppl. 1):23.

NCR-42 Committee on Swine Nutrition (G. L. Cromwell). 1982. **Antibiotics for growing-finishing swine - a cooperative study.** J. Anim. Sci. 55(Suppl. 1):95.

NCR-42 Committee on Swine Nutrition. 1983. **Value of adding potassium chloride to brood sow diets - A cooperative study.** J. Anim. Sci. 57(Suppl. 1):263.

NCR-42 Committee on Swine Nutrition. 1984. **Protein levels for barrows and gilts-A cooperative study.** J. Anim. Sci. 59 (Suppl. 1):95.

Yen. J.T., G. L. Allee, C. C. Calvert, T. D. Crenshaw, G. L. Cromwell and E. R. Miller, NCR-42 Committee on Swine Nutrition. 1987. **Value of raw soybeans and oil supplementation in sow gestation and lactation diets.** J. Anim. Sci. 65(Suppl. 1):127.

Cromwell, G.L. T.R. Cline, T.D. Crenshaw, J.D. Crenshaw, R.C. Ewan, D.C. Mahan,, E.R. Miller, J.E. Pettigrew and R.C. Wahlstrom. NCR-42 Committee on Swine Nutrition. 1988. **Effects of dietary protein on performance and carcass traits of barrows and gilts**. J. Anim. Sci. 66(Suppl. 1):143.

Easter, R.A., G.L. Cromwell, D.C. Mahan, E.R. Miller and T.L. Veum, NCR-42 Committee on Swine Nutrition. 1988. **Response of weanling pigs to dietary lysine and whey.** J. Anim. Sci. 66(Suppl. 1):313.

Lewis, A.J., G.L. Cromwell and J.E. Pettigrew, NCR-42 Committee on Swine Nutrition. 1989. **Effect of supplemental biotin on the reproductive performance of sows.** J. Anim. Sci. 67(Suppl. 2):114.

Cromwell, G.L., T.R. Cline, T.D. Crenshaw, R.C. Ewan and C.R. Hamilton. NCR-42 Committee on Swine Nutrition. 1991. **Effects of dietary lysine and added fat on performance and carcass traits of barrows and gilts - A cooperative study.** J. Anim. Sci. 69 (Suppl. 1):122.

NCR-42 Committee on Swine Nutrition (Presented by G.L. Cromwell). 1992. **Variability among sources and laboratories in chemical analysis of corn and soybean meal.** J. Anim. Sci. 70 (Suppl. 1):70.

NCR-42 Committee on Swine Nutrition (Presented by G.L. Cromwell). 1993. **Variability among sources and laboratories in selenium analysis of corn and soybean meal**. J. Anim. Sci. 71 (Suppl. 1):67.

NCR-42 Committee on Swine Nutrition (Presented by G.L. Cromwell). 1993. **An attempt to counteract growth depression from overcrowding of finishing pigs with a nutrient-dense diet.** J. Anim. Sci. 71 (Suppl. 1):179.

Cromwell, G.L. NCR-42 Committee on Swine Nutrition. 1995. **Variability among sources and laboratories in analyses of corn and wheat middlings.** J. Anim. Sci. 73 (Suppl. 1):79.

Cline, T.R., T.D. Crenshaw, R.C. Ewan, A.J. Lewis, C.R. Hamilton, D.C. Mahan, and L.L. Southern. NCR-42 and S-145 Regional Swine Nutrition Committees. 1995. **Protein levels for gilts: A cooperative study.** J. Anim. Sci. 73 (Suppl. 1):86.

Hill, G.M., G.L. Cromwell, T.D. Crenshaw, R.C. Ewan, D.A. Knabe, A.J. Lewis, D.C. Mahan, G.C. Shurson, L.L. Southern, and T.L. Veum, NCR-42 and S-145 Regional Swine Nutrition Committees. 1996. **Impact of pharmacological intakes of zinc and(or) copper on performance of weanling pigs.** J. Anim. Sci. 74 (Suppl. 1):181. **(Also listed in S-145/S-288 publications)**

Ewan, R.C., J.D. Crenshaw, T.D. Crenshaw, G.L. Cromwell, R.A. Easter, J.L. Nelssen, E.R. Miller, J.E. Pettigrew, and T.L. Veum, NCR-42 Committee on Swine Nutrition. 1996. **Effect of addition of fiber to gestation diets on reproductive performance of sows.** J. Anim. Sci. 74 (Suppl. 1):190.

Mahan, D.C., G.L. Cromwell, R.C. Ewan, C.R. Hamilton, and J.T. Yen, NCR-42 Committee on Swine Nutrition. 1997. **Evaluating the feeding duration of a phase 1 nursery diet to pigs of two weaning weights.** J. Anim. Sci. 75(Suppl. 1):71.

NCR-42 and S-145 Regional Committees (presented by G.L. Cromwell). 1997. **Variability in mixing efficiency and in laboratory analysis of diets at 25 experiment stations.** J. Anim. Sci. 75(Suppl. 1):196. **(Also listed in S-145/S-288 publications)**

NCR-42 Committee on Swine Nutrition (presented by S.D. Carter). 1998. **Effects of elevated dietary valine concentration on lactational performance of sows nursing large litters.** J. Anim. Sci. 76 (Suppl. 2):54.

Mahan, D.C., S.D. Carter, G.M. Hill, and J.L. Nelssen. 1999. **Supplemental NaCl or KCl added to weanling pig diets containing naturally high Na and Cl contents.** J. Anim. Sci. 77 (Suppl. 1):195.

Hill. C.M., S.D. Carter, R.C. Ewan, D.C. Mahan, P.S. Miller, G.C. Shurson, and T.L. Veum. 1999. **Titration of pharmacological doses of zinc in the nursery pig.** J. Anim. Sci. 77 (Suppl. 1):177.

Ewan, R.C., G.W. Libal, and C.R. Hamilton. 1999. **Amino acid supplementation for sows nursing large litters.** J. Anim. Sci. 77 (Suppl. 1):180.

Mahan, D.C., S.D. Carter, G.L. Cromwell, G.M Hill, R.L. Harrold, A.J. Lewis, and T.L. Veum, NCR-42 Swine Nutrition Committee. 2000. **Efficacy of added zinc oxide levels with or without an antibacterial agent in the postweaning diets of pigs.** J. Anim. Sci. 78(Suppl. 2):61.

Hollis, G.A., D.C. Mahan, S.D. Carter, T.D. Crenshaw, G.L. Cromwell, G.M. Hill, A.J. Lewis, and T.L. Veum, NCR-42 Swine Nutrition Committee. 2001. **The efficacy of zinc methionine and zinc oxide in promoting nursery pig performance.** J. Anim. Sci. 79(Suppl. 1):149.

Mahan, D.C., S.D. Carter, T.R. Cline, G.L. Cromwell, G.M. Hill, and G.A. Hollis, NCR-42 Swine Nutrition Committee. 2002. **Evaluating phase feeding of gilts and barrows during the grower-finisher period.** J. Anim. Sci. 80(Suppl. 2):71.

Cline, T.R., S.D. Carter, G.M. Hill, S.W. Kim, A.L. Lewis, D.C. Mahan, H.H. Stein, and T.L. Veum, NCR-42 Swine Nutrition Committee. 2002. **Supplemental B-vitamins in pig nursery diets.** J. Anim. Sci 80(Suppl. 1):550.

Stein, H.H.,, C. T. Kadzere, S. W. Kim, P. S. Miller, and J. T. Yen. 2007. **Effects of the dietary phosphorus concentration on phosphorus digestibility in monocalcium phosphate. NCCC-42 Swine Nutrition Committee.** J. Anim. Sci. 85(Suppl. 2):89.

Mahan, D.C., J. E. Pettigrew, M. D. Lindemann, G. L. Cromwell, P. S. Miller, E. van Heugten, S. W. Kim, T. D. Crenshaw, M. J. Azain, and C. R. Dove. 2008. **Supplementing inorganic or organic Se to diets using grains grown in various regions of the United States.** J. Anim. Sci. 86(E-Suppl. 2):175.

Cromwell, G. L., M. J. Azain, O. Adeola, S. D. Carter, T. D. Crenshaw, S. W. Kim, D. C. Mahan, P. S. Miller, and M. C. Shannon. 2009. **Corn distillers dried grains with solubles (DDGS) in diets for growing-finishing pigs – a cooperative study.** J. Anim. Sci. 87(E-Suppl. 3):81.

Pettigrew, J. E., O. Adeola, M. J. Azain, S. D. Carter, G. L. Cromwell, G. M. Hill, D. C. Mahan, and P. S. Miller. 2009. **Effect of dietary acids on growth performance of weanling pigs – a cooperative study.** J. Anim. Sci. 87(E-Suppl. 2):437.

Mahan, D. 2010. **Evaluation of three commercial mycotoxin inhibitors added to vomitoxin (DON) contaminated corn diets for weanling pigs: A report from the NCCC-042, S-1044, and NCERA-89 Regional committee on swine Nutrition and management.** Midwest Swine Nutrition Conference. September 10, 2010.

Cromwell, G. L. M. J. Azain, O. Adeola, S. K. Baidoo, S. D. Carter, T. D. Crenshaw, G. M. Hill, P. S. Miller, J. F. Patience, M. C. Shannon, and H. H. Stein. 2012. **Withdrawal patterns of DDGS on performance, belly firmness, and fatty acids in pigs—A cooperative study.** J. Anim. Sci., 90, (Suppl. 3):467.

Adeola, O., M. J. Azain, S. D. Carter, T. D. Crenshaw, M. J. Estienne, B. J. Kerr, M. D. Lindemann, C. V. Maxwell, P. S. Miller, M. C. Shannon, and E. van Heugten. 2014. **Digestible phosphorus requirement of 20-kg pigs – A cooperative study.** J. Anim. Sci., 92(Suppl. 1):222.

Adeola, O., M. J. Azain, S. K. Baidoo, S. D. Carter, G. M. Hill, S. W. Kim, P. S. Miller, M. C. Shannon, and H. H. Stein. 2015. **Effects of superdosing of microbial phytase in diets for weanling pigs.** J. Anim. Sci., 93(Suppl. 2):227.

# S-145 / S-288 / S-1061 / S-1081

# Nutritional Systems for Swine to Increase Reproductive Efficiency

**Refereed Journal Publications**

Kornegay, E.T., B.G. Diggs, O.M. Hale, D.L. Handlin, J.P. Hitchcock, and R.A. Barczewski. S-145 Committee on Nutritional Systems for Swine to Increase Reproduction Efficiency. 1985. **Reproductive performance of sows fed elevated calcium and phosphorus levels during growth and development.** J. Anim. Sci. 61:1460-1466.

Knabe, D.A., T.J. Prince, and D.E. Orr, Jr. S-145 Committee on Nutritional Systems for Swine to Increase Reproduction Efficiency. 1986. **Effect of feed and(or) water deprivation prior to weaning on reproductive performance of sows: A cooperative study.** J. Anim. Sci. 62:1-8.

Cromwell, G.L., D.D. Hall, A.J. Clawson, G.E. Combs, D.A. Knabe, C.V. Maxwell, P.R. Noland, D.E. Orr, Jr. and T.J. Prince. S-145 Committee on Nutritional Systems for Swine to Increase Reproduction Efficiency. 1989. **Effects of additional feed during late gestation on reproductive performance of sows: A cooperative study.** J. Anim. Sci. 67:3-14.

Cromwell, G.L., D.D. Hall, G.E. Combs, O.M. Hale, D.L. Handlin, J.P. Hitchcock, D.A. Knabe, E.T. Kornegay, M.D. Lindemann, C.V. Maxwell and T.J. Prince. S-145 Committee on Nutritional Systems for Swine to Increase Reproduction Efficiency. 1989. **Effects of dietary salt level during gestation and lactation on reproductive performance of sows: A cooperative study.** J. Anim. Sci. 67:374-385.

Watkins, K.L., L.L. Southern, and J.E. Miller. 1991. **Effect of dietary biotin supplementation on sow reproductive performance and soundness and pig growth and mortality.** J. Anim. Sci. 69:201-206. (conducted as part of an objective of the S-145 Committee on Nutritional Systems for Swine to Increase Reproduction Efficiency and the only station that participated in the objective).

Coffey, M.T., B.G. Diggs, D.L. Handlin, D.A. Knabe, C.V. Maxwell, Jr., P.R. Noland, T.J. Prince, and G.L. Cromwell. S-145 Committee on Nutritional Systems for Swine to Increase Reproductive Efficiency. 1994. **Effects of dietary energy during gestation and lactation on reproductive performance of sows: A cooperative study.** J. Anim. Sci. 72:4-9.

Harper, A.F., M.D. Lindemann, L.I Chiba, G.E. Combs, D.L. Handlin, E.T. Kornegay, and L.L. Southern. S-145 Committee on Nutritional Systems for Swine to Increase Reproduction Efficiency. 1994. **An assessment of dietary folic acid levels during gestation and lactation on reproductive and lactational performance of sows: A cooperative study.** J. Anim. Sci. 72:2338-2344.

Maxwell, C.V., G.E. Combs, D.A. Knabe, E.T. Kornegay, P.R. Noland, and the S-145 Committee on Nutritional Systems for Swine to Increase Reproduction Efficiency. 1994. **Effect of dietary chlortetracycline during breeding and(or) farrowing and lactation on reproductive performance of sows: A cooperative study.** J. Anim. Sci. 72:3169-3176.

Knabe, D.A., J.H. Brendemuhl, L.I Chiba, and C.R. Dove. S-145 Committee on Nutritional Systems for Swine to Increase Reproduction Efficiency. 1996**. Supplemental lysine for sows nursing large litters.** J. Anim. Sci. 74:1635-1640.

Hill, G.M., G.L. Cromwell, T.D. Crenshaw, R. Dove, R.C. Ewan, D.A. Knabe, A.J. Lewis, G.W. Libal, D.C. Mahan, G.C. Shurson, L.L. Southern, and T.L. Veum. NCR-42 and S-145 Regional Swine Nutrition Committees. 2000. **Growth promotion effects and plasma changes from feeding high dietary concentrations of zinc and copper to weanling pigs (regional study).** J. Anim. Sci. 78:1010-1016. **(Also listed in NCR-42 publications list)**

Cromwell, G.L., J.H. Brendemuhl, L.I. Chiba, T.R. Cline, T.R. Crenshaw, C.R. Dove, R.A. Easter, R.C. Ewan, K.C. Ferrell, C.R. Hamilton, G.M. Hill, J.D. Hitchcock, E.T. Kornegay, D.W. Knabe, A.J. Lewis, G.R. Libal, M.D. Lindemann, D.C. Mahan, C.V. Maxwell, J.C. McConnell, J.L. Nelssen, J.E. Pettigrew, L.L. Southern, T.L. Veum, and J.T. Yen, North Central Region Committee on Swine Nutrition (NCR-42) and Southern Regional Committee on Nutritional Systems for Swine to Increase Reproductive Efficiency (S-288). 2002. **Variability in mixing efficiency and in laboratory analyses of a common diet mixed at 25 experiment stations.** J. Anim. Sci. 81:484-491. **(Also listed in NCR-42 publications list)**

**S-145 / S-288 / S-1061 / S-1081**

**Nutritional Systems for Swine to Increase Reproductive Efficiency**

**Journal Abstracts**

Kornegay, E.T., B.G. Diggs, O.M. Hale, and D.L. Handlin. S-145 Committee on Nutritional Systems for Swine to Increase Reproductive Efficiency. 1982. **Influence of elevated calcium and phosphorus on the performance of developing gilts.** J. Anim. Sci. 55 (Suppl. 1):58.

Knabe, D.A., T. D. Tanksley, Jr., and T.J. Prince. S-145 Committee on Nutritional Systems for Swine to Increase Reproductive Efficiency. 1982. **Effect of feed and water deprivation prior to weaning on subsequent reproductive performance.** J. Anim. Sci. 55 (Suppl. 1):192.

Cromwell, G. L., T. J. Prince, G. E. Combs, C. V. Maxwell, D. A. Knabe and D. E. Orr. S-145 Committee on Nutritional Systems for Swine to Increase Reproductive Efficiency. 1982. **Effects of additional feed during late gestation on reproductive performance of sows - A cooperative study.** J. Anim. Sci. 55(Suppl. 1):268.

Hall, D. D., G. L. Cromwell, T. J. Prince, D. A. Knabe, A. J. Clawson, C. V. Maxwell, P. R. Noland, D. E. Orr and G. E. Combs, S-145 Committee on Nutritional Systems for Swine to Increase Reproductive Efficiency. 1984. **Biological relationships of litter size and pig weight at birth on survival and weaning weight in pigs.** J. Anim. Sci. 59(Suppl. 1):388.

Hall, D. D., G. L. Cromwell, T. J. Prince, D. A. Knabe, A. J. Clawson, C. V. Maxwell, P. R. Noland, D. E. Orr and G. E. Combs. S-145 Committee on Nutritional Systems for Swine to Increase Reproductive Efficiency. 1985. **Depletion of body fat reserves; An explanation for decreased second parity prolificacy in sows.** J. Anim. Sci. 61(Suppl. 1):316.

Cromwell, G. L., D. D. Hall, G. E. Combs, 0. M. Hale, D. L. Handlin, D. A. Knabe, M. D. Lindemann, C. V. Maxwell and T. J. Prince. S-145 Committee on Nutritional Systems for Swine to Increase Reproductive Efficiency. 1986. **Salt levels for sows during gestation and lactation**. J. Anim. Sci. 63(Suppl. 1):265.

Maxwell, C.V., G.N. Dietz, D. A. Knabe, G.E. Combs, E.T. Kornegay, P.R. Noland, and R.W. McNew. S-145 Committee on Nutritional Systems for Swine to Increase Reproductive Efficiency. 1987. **Effect of dietary chlortetracycline during breeding and/or farrowing and lactation on reproductive performance of sows: A cooperative study.** J. Anim. Sci. 65(Suppl. 1):312.

Coffey, M.T., C.A. Bowie, P.R. Noland, C.V. Maxwell, Jr., D.A. Knabe, T.J. Prince, D.L. Handlin, and B.G. Diggs. S-145 Committee on Nutritional Systems for Swine to Increase Reproductive Efficiency. 1990. **Effect of different energy levels during gestation and lactation on reproductive performance: A cooperative study.** J. Anim. Sci. 68(Suppl. 1):370.

Harper, A.F., M.D. Lindemann, L.I. Chiba, G.E. Combs, D.L. Handlin, E.T. Kornegay, and L.L. Southern. S-145 Committee on Nutritional Systems for Swine to Increase Reproductive Efficiency. 1993. **An assessment of dietary folic acid levels during gestation and lactation on reproductive and lactational performance of sows: A cooperative study.** J. Anim. Sci. 71(Suppl. 1):172.

Knabe, D.A., L.I. Chiba, M.T. Coffey, and C.R. Dove. S-145 Committee on Nutritional Systems for Swine to Increase Reproductive Efficiency. 1993. **Supplemental lysine for sows nursing large litters: A cooperative study.** J. Anim. Sci. 71(Suppl. 1):172.

Hill, G.M., G.L. Cromwell, T.D. Crenshaw, R.C. Ewan, D.A. Knabe, A.J. Lewis, D.C. Mahan, G.C. Shurson, L.L. Southern, and T.L. Veum, NCR-42 and S-145 Regional Swine Nutrition Committees. 1996. **Impact of pharmacological intakes of zinc and(or) copper on performance of weanling pigs.** J. Anim. Sci. 74 (Suppl. 1):181. **(Also listed in NCR-42 publications list)**

Maxwell, C.V., B.Z. de Rodas, and D.A. Knabe. S-145 Committee on Nutritional Systems for Swine to Increase Reproductive Efficiency. 1996. **Effect of dietary Tylan® Sulfa-G during breeding and/or farrowing and lactation on reproductive performance of sows.** J. Anim. Sci. 74(Suppl. 1):196.

Darroch, C.S., L.I. Chiba, M.D. Lindemann, A.F. Harper, and E.T. Kornegay. 1998. **Effect of injections of high levels of vitamin A on reproductive performance of sows.** J. Anim. Sci. 76 (Suppl. 1):160.

NCR-42 and S-145 Regional Committees (presented by G.L. Cromwell). 1997. **Variability in mixing efficiency and in laboratory analysis of diets at 25 experiment stations.** J. Anim. Sci. 75(Suppl. 1):196. **(Also listed in NCR-42 publications list)**

Knabe, D.A., L.I. Chiba, E.T. Kornegay, and J.C. McConnell, S-145 Committee on Nutritional Systems for Swine to Increase Reproductive Efficiency. 1999. **Lysine requirement of sows nursing large litters. A cooperative study.** J. Anim. Sci. 77(Suppl. 1):180.

Lindemann, M.D., S.D. Carter, L.I. Chiba, C.R. Dove, and L.L. Southern. 2002. **A regional evaluation of chromium tripicolinate supplementation in sows.** Proc. 17th Internat. Pig Vet. Soc. Conf. 2:459.