

# Sally L. Noll

## Professor

**Appointment** 30% Research, 60% Extension, 10% Service

**Research Area** Poultry Nutrition and Management

**Appointment History**

1994-present	Professor
1990-1994	Associate Professor
1985-1990	Assistant Professor

### Graduate Program Affiliations

Animal Sciences – Senior Member

### Professional and Honorary Societies

Member, Poultry Science Association

Member, World's Poultry Science Association

### Five Most Significant Publications

**Jirjis, F.F., S.L. Noll, D.A. Halvorson, K.V. Nagaraja, and D.P. Shaw. 2002. Pathogenesis of avian pneumovirus infection in turkeys. *Vet. Pathol.* 39(3): 300-10.**

Development of the disease in turkeys was detailed by study of clinical signs, histology of tissues, and blood and tissue PCR tests. The most significant clinical sign found was swollen sinuses and the best location for early sampling of the diseases was found to be the choanal cleft. Titers to the virus were found to develop 7 days post-inoculation and were present for 13 weeks after post-inoculation. These results have guided other researchers conducting vaccine studies and provided guidelines to the industry for sampling for disease detection.

**Jirjis, F.F., S.L. Noll, F. Martin, D.A. Halvorson, K.V. Nagaraja, and D.P. Shaw. 2001. Vaccination of turkeys with an avian pneumovirus isolate from the United States. *Avian Diseases* 45:1006-1013.**

Vaccination is used as a disease control method. This reported study was the first attempt at a study of vaccination of turkeys against APV. The study determined that the dose of cell-culture propagated APV vaccine that caused protection was higher than that required to produce infection in young turkeys.

**Noll, S.L. 2001. Nutrition and management effects on growth and breast meat yield. *In: Proc. 24th Technical Turkey Conference, Turkeys, Leyburn, England.* pp. 47- 51.**

The Technical Turkey Conference is one of the few meetings in the world that focuses on the turkey industry and this paper represented an opportunity to summarize recent research efforts from the University of Minnesota in the area of nutritional impacts on breast meat yield.

**Jirjis, F.F., S.L. Noll, D.A. Halvorson, K.V. Nagaraja, E.L. Townsend, A.M. Sheikh, and D.P. Shaw. 2000. Avian pneumovirus infection in Minnesota turkeys: Experimental reproduction of the disease. *Avian Diseases* 44:222-226.**

In response to an emerging disease threat in 1997, that of avian pneumovirus (APV), in Minnesota's turkey industry, research was started to develop an infection model for future vaccination and challenge. The first step was to be able to reproduce the disease in a laboratory setting as was successfully reported and published by my graduate student (F. Jirjis, co-advised by D. Shaw).

**Waibel, P.E., C.W. Carlson, J.A. Brannon, and S.L. Noll. 2000. Limiting amino acids after methionine and lysine with growing turkeys fed low-protein Diets. *Poultry Sci.* 78:1290-1298.**

The paper indicated the importance of the amino acids - threonine, isoleucine, valine, arginine and tryptophan in the feeding of low protein diets for market turkeys. This paper has formed the basis for current studies of amino acid balance in corn distiller grains with solubles for turkeys.

**Refereed Journal Publications and Book Chapters (Last Five Years)**

Authored or co-authored 13 papers in peer-reviewed journals and 1 book chapter.

- Grimes, J., **S. Noll**, J. Brannon, J.L. Goodwin, J.C. Smith, and R.D. Rowland. 2004. Effect of a chelated calcium proteinate dietary supplement on the reproductive performance of large white turkey breeder hens. *J. Applied Poult. Res.* (accepted for publication).
- Jirjis, F.F., **S.L. Noll**, D.A. Halvorson, K.V. Nagaraja, F. Martin, and D.P. Shaw. 2004. Effects of bacterial coinfection on the pathogenesis of avian pneumovirus infection in turkeys. *Avian Dis.* 48(1):34-49.
- Martinez Amezcua, C., C.M. Parsons, and **S.L. Noll**. 2004. Content and relative bioavailability of phosphorus in distillers dried grains with solubles in chicks. *Poultry Sci.* 83:971-976.
- Tucker, M.P., N.J. Nagle, E.W. Jennings, K.N. Ibsen, A. Aden, Q.A. Nguyen, K.H. Kim, and **S.L. Noll**. 2004. Conversion of distiller's grain into fuel alcohol and a higher-value animal feed by dilute-acid pretreatment. *Appl Biochem Biotechnol.* 113-116:1139-59.
- Velayudhan, B.T., V.C. Lopes, **S.L. Noll**, D.A. Halvorson, and K.V. Nagaraja. 2003. Avian pneumovirus and its survival in poultry litter. *Avian Diseases* 47(3):764-768.
- Jirjis, F.F., **S.L. Noll**, D.A. Halvorson, K.V. Nagaraja, and D.P. Shaw. 2002. Pathogenesis of avian pneumovirus infection in turkeys. *Vet Pathol.* 39(3):300-10.
- Jirjis, F.F., **S.L. Noll**, D.A. Halvorson, K.V. Nagaraja, E.L. Townsend, S.M. Goyal, and D.P. Shaw. 2002. Rapid detection of avian pneumovirus in tissue culture by microindirect immunofluorescence test. *J. Vet. Diag. Invest.* 14(2):172-5.
- Shin, H.J., F.F. Jirjis, M.C. Kumar, M.K. Njenga, D.P. Shaw, **S.L. Noll**, K.V. Nagaraja, and D.A. Halvorson, 2002. Neonatal avian pneumovirus infection in commercial turkeys. *Avian Diseases* 46(1):239-44.
- Jirjis, F.F., **S.L. Noll**, D.A. Halvorson, K.V. Nagaraja, and D.P. Shaw. 2001. Immunohistochemical detection of avian pneumovirus in formalin-fixed tissues. *Vet. Diag. Invest.* 13(1): 13-16.
- Jirjis, F.F., **S.L. Noll**, F. Martin, D.A. Halvorson, K.V. Nagaraja, and D.P. Shaw. 2001. Vaccination of turkeys with an Avian Pneumovirus Isolate from the United States. *Avian Diseases* 45:1006-1013.
- Jirjis, F.J., **S.L. Noll**, D.A. Halvorson, K.V. Nagaraja, and D. Shaw. 2000. Avian pneumovirus infection in Minnesota turkeys: experimental reproduction of the disease. *Avian Diseases* 44:222-226.
- Waibel, P.W., C.W. Carlson, J.A. Brannon, and **S.L. Noll**. 2000. Identification of limiting amino acids in methionine- and lysine-supplemented low protein diets for turkeys. *Poultry Sci.* 78:1299-1305.
- Waibel, P.W., C.W. Carlson, J.A. Brannon, and **S.L. Noll**. 2000. Limiting amino acids after methionine and lysine with growing turkeys fed low protein diets. *Poultry Sci.* 78:1290-1298.

**Book chapters:**

- Consortium (2003). A Report for the Animal Agriculture Alliance (AAA): Criteria for the Evaluation of Animal Care Guidelines (Turkeys). 2003. (Contributor). Consortium, Federation of Animal Sciences Societies, Savoy, IL. (CD, committee publication, not for public distribution at this time.)

**Invited Lectures – See Extension Section**

**Funding (Last Five Years) – \$495,633****Mycogen Seeds.** Gifts ongoing. \$35,000.**Finnfeeds.** Gifts ongoing. \$56,381.**Commodity Specialists.** Gifts ongoing. \$32,500.**Central Biproducts.** Gifts ongoing. \$10,926.**MN Turkey Research and Promotion Council.** Improving the nutritional value of corn DDGs for poultry diets from ethanol processing-influence of solubles addition. 2004-05. \$10,000.**Iowa State University/Midwest Poultry/USDA.** Evaluation of apparent metabolizable energy and phosphorus availability of DDGs for poultry. 2003-05. \$63,014.**Elanco Animal Health.** Gifts. 2004. \$8,000.**Minnesota Corn Growers Association.** Improving the nutritional value of corn DDGs for poultry diets from MN ethanol plants. 2004. \$25,000.**MN Special Liquids.** Gifts. 2004. \$4,000.**Elanco Animal Health.** Gifts. 2004. \$8,000.**Dakota Gold.** Gifts. 2004. \$10,971.**Minnesota Turkey Research and Promotion Council.** Strategies for maximizing breast meat yield of heavy toms while minimizing feed ingredient cost. 2001-04. \$62,250.**Novus, Inc.** Gifts. 2003. \$3,000.**UMN, AES Rapid Response Funds.** 2003. \$21,500.**Chemgen Corp.** Gifts. 2003. \$5,465.**Carolina Feed Industry Assoc.** Gifts. 2003. \$500.**Minnesota Corn Research and Promotion Council.** Strategies for maximizing breast meat yield of heavy toms while minimizing feed ingredient cost. 2003. \$19,960.**Elanco Animal Health.** Effects of anti-coccidial programs on male market turkeys. 2001-03. \$30,750.**Minnesota Turkey Research and Promotion Council.** Pathogenesis of avian pneumovirus in turkey. 2001-02. \$3,500.**Aventis.** Gifts. 2000. \$7,000.**Midwest Poultry, Turkey Nutrition.** Gifts. 2000. \$2,500.**Finnsugar Bioproducts.** Gifts. 2000. \$15,000.**Degussa-Huls Corp.** Gifts. 2000. \$5,000.**Minnesota Turkey Research and Promotion Council.** Effect of methionine, betaine, and lysine supplementation on breast meat yield of male turkeys. 1999-2000. \$20,000.**Brinton Veterinary Supply.** Gifts. 1999. \$3,600.**Kindstrom-Schmoll Inc.** Gifts. 1999. \$8,000.**Kemin Industries.** Gifts. 1999. \$12,500.**Roche Vitamins.** Gifts. 1999. \$4,316.**Optimum Quality Grains.** Gifts. 1999. \$5,000.**Minnesota Turkey Research and Promotion Council.** Energy sparing effects and energy to amino acid rations for growing male turkeys. 1998-99. \$10,000.**Dissertations and Theses (Last Five Years)**

Name	Program	Degree	Thesis Title
Jayne L. Kalbfleisch	Animal Sciences	M.S.	Lysine, threonine and arginine supplementation and effects on performance and carcass yield of young tom turkeys raised in a summer environment.
Faris Jirjis (co-Advise D. Shaw)	Vet Pathobiology	Ph.D.	Pathogenesis of avian pneumovirus infection in turkeys.
Alyssa Murray (undergraduate)	Science In Ag	Senior Thesis 2004	

## Graduate Student and Post-doctoral Supervision - Current Advisees

Chikako Abe	M.S.	Animal Sciences
Turgay Ergul (co-advise)	Ph.D.	Food Science
Ken Rost	M.S.	Animal Sciences

## Courses Taught (Last Five Years)

Designator	Name	Credits	% Effort	Term	Years
AnSc 1021	Avian Sampler	1	100%	Spring	2000-2004
UW Animal Sciences 511		3	50%		2000-2004

## Service

Reviewer: *Poultry Science Journal*, *Applied Poultry Research Journal*

Member, AAA/FASS/ARPAS Animal Care Committee, Subcommittee on turkeys, 2002

Member, AAA/FASS/ARPAS Animal Care Committee, Turkey Practices Audit, 2003

External Referee-P&T, Dr. Ahmed S. Hussein, United Arab Emirates University

Member, Coordinating Committee, 2001 International Animal Ag. & Food Science Conf.

Chair, 2002 PSA Program Committee

Member, PSA Pfizer/Phibro Extension Award Committee, 2000-2003

Member, MTGA Pneumovirus Task Force, MN Turkey Growers Association, 2000.

Chair, APV Protocols Subcommittee on Dead Bird Handling and Litter Disposal, 2000.

Member, Feedlot Manure Management Advisory Council, MPCA, 2000.

Member, Coordinating Council, Midwest Poultry Consortium, 2000.

Member, Long Range Planning Committee, Poultry Science Association, 2000.

## Service to National and Regional Research Committees

Chair, NE127 Regional Research Project, 2003

Chair, NE127 Rewrite Committee, 2003-04

MN rep, NE-127 regional research project on Poultry Production Systems, 2000.

Reviewer, AES Project #16-064, 2000.

## Extension Activities (Last Five Years)

### Program Team Involvement and Goals

#### The major programs include:

#### **Turkey Production Demonstration Program, Coordinator**

Audience: The general public, media, students

Goal: Demonstrate the production of turkeys to the public by having a day that media can visit the farm and interact with turkey producers and view the turkeys.

#### **Out State Area Meetings – Turkey Producer Educational Program**

Audience: Turkey producers

Goal: Meet with area turkey producers to examine various hot topic issues of importance to the turkey industry.

#### **Turkey Research Review, Coordinator and Contributor**

Audience: Turkey industry professionals

Goal: For industry professionals to meet. with University of Minnesota researchers to learn about current research of interest to the turkey industry.

**Turkey School I – Health of Turkeys, Program Development Leader**

Audience: Turkey industry professionals

Goal: Educate turkey industry personnel on health care practices for commercial turkey production.

**Ventilation School, Program Development Leader**

Audience: Poultry farm owners, managers and personnel, service representatives, allied industry

Goals:

- Provide basic understanding of ventilation principles and energy management.
- Ventilation and flock performance and health.
- Operation and maintenance of ventilation equipment.
- Ventilation problem solving.
- Energy costs (propane) and options.

**Nutrition and Feeding of Market Turkeys, Contributor**

Audience: Turkey producers, feed industry personnel, poultry nutritionists

Goals: Develop economical feeding programs that promote increased meat yield and quality, and provide that information to turkey producers and others in the industry.

**Product Development (selected materials developed)**

- Educational exhibits and supporting materials for Media Day at UMore Park
- Educational materials, program agenda and brochure for Out State Area Meetings
- Articles in the MTGA newsletter (Gobbles)
- Set of recommendations for the use of DDGs in poultry diets

**Program Delivery Events**

Programs are delivered in a variety of formats including, workshops, lectures, seminars, conferences, judging competitions, and county and regional meetings. On-going interactions with poultry producers also occur by telephone and email. Some examples include:

- Media Day at UMore Park, Turkey Research Unit
- Out State Area Meetings
- Midwest Poultry Federation Convention
- Turkey School I – Health of Turkeys
- Layer School I - Health
- Poultry Ventilation School
- Minnesota Nutrition Conference
- Turkey Research Review

**Extension Scholarship****Proceedings and invited lectures (18):**

**Noll, S.L.** 2003. Alternative feed ingredients for poultry: Turkeys. 50<sup>th</sup> Maryland Nutrition Conference for Feed Manufacturers, University of Maryland, March, 2003.

**Noll, S.L.** 2003. DDGs in turkey diets. Iowa Turkey Day, Iowa Turkey Federation, Des Moines, IA, December, 2003.

**Noll, S.L.** 2003. Feeding value of DDGs for poultry. U.S. Grains Council, Spain Trade Group, St. Paul, MN, November, 2003.

**Noll, S.L.** 2003. Turkey loadout and transport. Annual Animal Handling and Stunning Conference. AMI Foundation, Kansas City, MO, February, 2003.

**Noll, S.L.** 2003. Turkey performance – How to assess. Northwest Supply Company Producer Seminar, St. Cloud, MN, February, 2003.

- Noll, S.L.** 2002. Betaine and breast meat yield in turkeys. Multistate Poultry Nutrition and Feeding Conference, Universities of Kentucky, Illinois, Michigan State, Purdue and Ohio State Cooperating, Indianapolis, IN, May, 2002.
- Noll, S.L.** 2002. Feeding for live performance and breast meat yield. Multistate Poultry Nutrition and Feeding Conference, Universities of Kentucky, Illinois, Michigan State, Purdue and Ohio State Cooperating, Indianapolis, IN, May, 2002.
- Noll, S.L.** 2002. Nutrition and managements effects on growth and breast meat yield of toms. Midwest Poultry Federation Convention, St. Paul, MN, March, 2002.
- Noll, S.L.** 2002. Practicality of using distillers grains in poultry rations. 6<sup>th</sup> Distillers Grains Symposium, Distillers Grains Technology Council, Inc., Louisville, KY, May, 2002.
- Noll, S.L.** 2002. University of Minnesota turkey nutrition program – Research and value. Northwest Supply Company Producer Seminar, St. Cloud, MN, February, 2002.
- Noll, S.L.** 2001. Feeding DDGs to poultry. Ethanol Co-Products Workshop, National Corn Growers Association, Lincoln, NE.
- Noll, S.L.** 2001. Growing turkeys using dry mill co-products. Feeding Distillers Grains and Solubles – ICN Information and Training Session. Iowa Department of Agriculture and Land Stewardship, Ames, IA.
- Noll, S.L.** 2001. Turkey husbandry practices. Symposium Paper: The Science Behind Poultry Husbandry. *In: Proc. 52nd North Central Avian Disease Conference.* pp. 2-6.
- Noll, S.L., V. Stangeland, G. Speers, and J. Brannon.** 2001. Distillers grains in poultry diets. *In: Proc. 62nd Minnesota Nutrition Conference, University of Minnesota Extension Service.* pp. 53-61.
- Noll, S.** 2000. Improving breast meat yield: Effect of diet methionine and betaine. Turkey Research Review, University of Minnesota Extension Service, Willmar, MN.
- Noll, S.** 2000. Nutritional influences on meat quality in poultry. *In: Proc. 61st Minnesota Nutrition Conference, University of Minnesota Extension Service, Bloomington, MN.*
- Noll, S.** 2000. Poultry production management overview. Pastured/Free Range Poultry Workshop, SWROC, Lamberton, MN.
- Noll, S.** 2000. Sodium sesquicarbonate and sodium bicarbonate, sodium balance in turkey rations. FMC Symposium, New Orleans, LA.

### **Newsletters (10):**

- Bennett, R.S., F. Jirjis, H. Lwamba, B. Velayudhan, K.V. Nagaraja, **S. Noll**, M.K. Njenga, and D.A. Halvorson. 2003. APV infection model. *Gobbles* 60 (8): 10, 12.
- Noll, S.L.** and J. Brannon. 2003. Strategies for maximizing breast meat yield of turkeys – DDGS and limiting amino acids. *Gobbles* 60 (8): 18-19.
- Bennett, R.S., H. Lwamba, B. Velayudhan, K.V. Nagaraja, **S. Noll**, M.K. Njenga, and D.A. Halvorson. 2002. Establishment of an APV infection model. *Gobbles* 59 (8): 4-5.
- Noll, S.L., V. Stangeland, G. Speers, J. Brannon, and C. Parsons.** 2002. Utilization of corn dried distiller grains and threonine in market tom turkey diets - impact on performance and carcass yield. *Gobbles* 59 (8): 20-21.
- Halvorson, D.A., K.V. Nagaraja, D.P. Shaw, M.K. Njenga, **S.L. Noll**, and R. Bennett. 2001. Control of viral respiratory diseases of turkeys. *Gobbles* 58 (8): 9-10.
- Noll, S.L., V. Stangeland, G. Speers, and J. Brannon.** 2001. Strategies to maximize breast meat yield in heavy toms- feeding distillers' grains with solubles. *Gobbles* 58 (8): 20-21.
- Shaw, D., **S. Noll**, F. Jirjis, D. Halvorson, K.V. Nagaraja, S. Goyal, M.K. Njenga, and K.A. Janni. 2000. Pathogenesis of Avian Pneumovirus Infection of Turkeys. *Gobbles* 57(8):22.
- Halvorson, D., K.V. Nagaraja, , D.P. Shaw, M.K. Njenga, S. Goyal, and S. Noll. 2000. Control of viral respiratory diseases of turkeys. *Gobbles* 57 (8):6,
- Stangeland, V., **S. Noll**, I. Brannon, and J. Kalbfleisch. 2000. Methionine and betaine in diets for market toms. *Gobbles* 57(8):18.

**Other publications:**

**Noll, S.L.** 2003. Corn distillers dried grains for poultry. University of Minnesota, Department of Animal Science, DDGS Web site. ([http://www.ddgs.umn.edu/diets-poultry/mcga\\_ddgs\\_for\\_poultry.pdf](http://www.ddgs.umn.edu/diets-poultry/mcga_ddgs_for_poultry.pdf))