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# AURORA SPORÆALIS

1997

## Minnesota's AOS Presidents Edition



E.M. Freeman, 1918



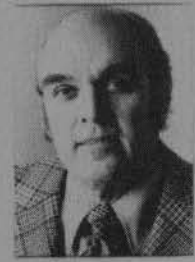
Wiley N. Garrett, 1981



E.C. Stakman, 1922



Carol E. Windels  
1998 President-elect  
1999 President



John F. Schaefer, 1979



J.G. Leach, 1941



James Tammen, 1975

### PLANT PATHOLOGY UNIVERSITY OF MINNESOTA

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Alumni Speak  
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J.J. Christensen, 1944



Thor Kommedahl, 1971



J.H. Craige  
1946



Helen Hart  
1956



C.S. Holton  
1963



Harold H. Flor  
1968

# AURORA SPOREALIS

VOLUME 67  
NUMBER 1

OCTOBER  
1997

The *Aurora Sporealis* is the alumni news magazine of the Department of Plant Pathology. First published in 1924, it is the oldest continuously produced departmental news magazine in the history of the University of Minnesota.

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*Aurora Sporealis* is an annual publication mailed to former and current faculty, staff and graduate students, and to *Old Timers* who worked in the Department of Plant Pathology, at some time or other. Any contributions can be sent to the Department Head at the address below.

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## COVER STORY

by Richard J. Zeyen

When Dr. Carol E. Windels, a faculty member stationed at the Northwest Experiment Station in Crookston Minnesota, becomes President-elect of the American Phytopathological Society in 1998 and President in 1999 she will join Minnesota's twelve previous APS presidents. In fact, a highly significant proportion of all former APS presidents were faculty and/or alumni of the Department of Plant Pathology at Minnesota.

Minnesota's APS presidents are a diverse group. In every decade, with the exception of the 1930's, there has been an APS president with direct ties to Minnesota. Some were Minnesota alumni or faculty who became presidents and some were presidents who later became Minnesota faculty. All had distinguished themselves in the eyes of their peers. They were elected to the APS presidency for a variety of reasons some because of their personalities and contributions to APS, and some primarily on the merits of scientific achievement.

In this issue of the *Aurora* we honor these twelve past presidents with Minnesota connections: Wiley Garrett (1981), John Schafer (1979), James Tammen (1975), Thor Kommedahl (1971), Harold Flor (1968), Charles Holton (1963), Helen Hart (1956), John Craigie (1946), Jonas Christensen (1944), Julian Leach (1941), Elvin Stakman (1922), and Edward Freeman (1918).

For this issue, professors Neil Anderson and Richard Zeyen collaborated on a profile article of "Minnesota's APS Presidents" (see pages 2-5). We hope you enjoy this piece of departmental history.

# MINNESOTA'S APS PRESIDENTS

by Richard J. Zeyen and Neil A. Anderson

The American Phytopathological Society (APS) was founded in 1908 with 130 charter members and has grown to approximately 5000 members. It is now an international organization whose members are research scientists, teachers, extension professionals, students, sales representatives, private consultants, administrators, technicians, agricultural field representatives and pest management personnel.

Faculty from the Department of Plant Pathology at the University of Minnesota have played crucial roles in APS history, and are largely responsible for locating APS Headquarters in Saint Paul Minnesota. Over the years, Minnesota's faculty and alumni have devoted tens of thousands of hours of service to APS. Even today it is difficult to find a senior faculty member at Minnesota who has not shared their expertise by serving on APS editorial and other committees.

Given this record of involvement by faculty and alumni of Minnesota it is not surprising that twelve of them have served as APS presidents. They were elected for a variety of reasons, some for their personalities and contributions to APS and some on the merits of their scientific achievements. No other department in the nation can compare with Minnesota when it comes to APS leadership.

When Carol Windels assumes the APS presidency in 1999 she will become the thirteenth "Minnesota President". Therefore we devote this issue of the *Aurora Sporealis* to those men and women faculty and alumni who have served as APS presidents. We have, for the sake of posterity, reached into departmental archives and our own memories to provide short biographies of each of these thirteen individuals.

## **E.M. Freeman—1918**

President of APS in 1918, E.M. Freeman was born February 12, 1875 in St. Paul, Minnesota. He received all of his academic degrees from the University of Minnesota and the PhD degree with Conway MacMillan as advisor in 1905. As part of his doctoral experience he studied for 2 years with Marshall Ward at Cambridge University. His book, *Minnesota Plant Diseases*, published in 1905 is said to be the first Plant Pathology text in the U.S. He was "Founder and guiding genius" of the department that he headed from 1907—1940. In 1913 he became Assistant Dean and in 1917 Dean of the College of Agriculture, Forestry, and Home Economics. He shaped educational efforts in Agriculture in the University as dean of the College for the next 26 years. A charter member of APS he was an associate editor of *Phytopathology* for its first 3 years. A mycologist by inclination his "In Praise of Parasitism" in the 1936 Proceedings of the Minnesota Academy of Sciences is a classic. Drs. Stakman and J.J. Christensen wrote of Dean Freeman that "his dreams were translated into sound concepts by his scholarship, and his concepts were translated into effective and far-reaching programs by his skill and wisdom."

## **E.C. Stakman—1922**

President of APS 1922, was born May 17, 1895 in Algoma, Wisconsin, and grew up in Brownton, Minnesota. He received the BA degree from the

University of Minnesota in 1906. Following two years of high school teaching in Red Wing and Mankato, he was superintendent at Argyle, Minnesota. In 1909 he began his graduate education under professor Freeman and received his MA degree in 1910 and his PhD degree in 1913. He received honorary doctorates from the Universities of Halle, Cambridge, Yale, Wisconsin, and Minnesota. A National Academy of Science member, and an architect of the green revolution, Dr. Stakman was noted for his epidemiology work on the wheat stem rust fungus. A marvelous communicator, teacher, researcher and statesman for science his influence still shapes and guides plant pathology today.

## **J.G. Leach—1941**

J.G. Leach, president of APS in 1941, was born November 16, 1885 in Somerville, Tennessee. His BS was from the University of Tennessee in 1917, and his MS (1918) and PhD (1922) in Plant Pathology from the University of Minnesota. His studies on the blackleg disease of potatoes is a classic and the insects involved with this disease in nature were the source of his interest and development of a course and a text "Insect Transmission of Plant Diseases" published in 1940. The course at Minnesota was co-taught by Dr. A.A. Granovsky the world famous aphidologist. Dr. Leach became head of the West Virginia Department of Plant Pathology in 1938. He remained head of that department until 1960 when he resumed his teaching and

research until retirement in 1965. An extremely able administrator, Dr. Leach encouraged excellence in teaching and research and will be remembered for his contributions to faculty welfare and government.

#### **J.J. Christensen—1944**

J.J. Christensen, president of APS in 1944, was born in 1872 in Hutchinson, Minnesota. His BS degree (1921), MS degree (1922), and PhD degree (1925) were all from the University of Minnesota. Pre-doctoral experiences included teaching in a rural school in Mercer, North Dakota, serving as a sergeant in the U.S. Army Medical Corps in World War I, as a field potato inspector, and instructor in Agricultural Botany in the School of Agriculture at the University of Minnesota. In 1925 he became an Assistant Professor in the department of Plant Pathology and Botany and Professor in 1938. From 1953-61 J.J. was head of the Department. Those of us fortunate enough to have taken his courses, Genetics of Plant Pathogens, Diseases of Field Crops, and Insects in Relation to Plant Disease, will never forget the subject matter nor his tremendous enthusiasm and unique teaching style. As a field crop pathologist, J.J. was among the very best and he worked tirelessly with plant breeders to develop disease resistant crops. He excelled as a mentor-advisor to graduate students. His concern for each student's development was genuine and the student's research experience with him an unforgettable adventure. Lots of honors and recognition came to Dr. Christensen but he remained himself and will be remembered for his unbounded enthusiasm and devotion to Plant Pathology.

#### **J.H. Craigie—1946**

John Hubert Craigie, President of APS in 1946 was born December 8, 1887 at Merigomish, Nova Scotia. He served 2 years on the western front in WWI and received a commission in the British Army. He received his AB from Harvard (1924), the MS in Plant Pathology, University of Minnesota (1925), and the PhD (1930) from the University of Manitoba. He was appointed to the Dominion Rust Research Laboratory in 1925 and was head of that laboratory from 1928-1945. He served administratively as the Dominion Botanist from 1945-52. His discovery of the function of rust pycnia made studies on host:parasite genetics possible. Scrupulously honest, he reported how he and A.H.R. Buller had observed the seasons first flies sipping pycnial nectar on plants in the Dominion Rust Research greenhouse in Winnipeg. It was May 17, 1927 (Stakman's birthday) and it was Buller who suggested that "the solution to the function of the

pycnia may be an entomological one". A fellow of the Royal Society of Canada and London, he received honorary doctoral degrees from the Universities of British Columbia, Saskatchewan, Manitoba and Dalhousie. He was President of the Canadian Phytopathological Society in 1934. From the University of Minnesota he received the Outstanding Achievement Award and the Stakman Award. A dedicated scholar, scientist, and administrator, Dr. Craigie lived to be 102 years old.

#### **Helen Hart—1956**

Helen Hart, president of APS 1956, was born in Janesville, Wisconsin in 1900. She received the BA (1922), MS (1924) and PhD (1929) in Plant Pathology from the University of Minnesota. She was an Instructor in the department before becoming an Assistant Professor in 1939. She became an Associate Professor in 1944 and full Professor in 1947. A marvelous editor, Dr. Hart chaired the departments Editorial Committee for 25 years. She was also Editor of the *Aurora Sporealis* for 2 decades and during the 1930's and 40's it was truly "Helen Harts Aurora". She was Editor-in-Chief of Phytopathology from 1944-1951 and served on the APS council for 12 years. She was APS' first woman President, Fellow, and Editor-in-Chief. Her research on cereal rusts was on the nature of resistance. A careful mentor to her graduate students, their theses and publications were promptly and beautifully done.

#### **C.S. Holton—1963**

C.S. Holton, president of APS in 1963, was born December 8, 1904 in Wilmer, Louisiana. His BS (1927) was from Louisiana State University and his MS (1929) and PhD (1932) were in Plant Pathology from the University of Minnesota. Early experiences involved farm work as a youth, lab instructor in Plant Pathology at Louisiana State University, barberry eradication work in Minnesota, instructor in Agricultural Botany in School of Agriculture, and instructor in Plant Pathology, University of Minnesota. In 1931 he joined the office of Cereal Crops and Diseases, USDA, as an Assistant Pathologist with headquarters at Pullman, Washington. He became an Associate Pathologist in 1935 and Pathologist in 1941. He was Head of the Cereal Disease Laboratory at Washington State University from 1932-1969. Dr. Holton was known internationally for his research work on cereal smut fungi and the diseases they cause. He authored two

books on the smut fungi. A Fulbright scholar in 1960 and as a Stakman Awardee in 1971 he was honored for "pioneering research and a life time of research on genetic variability on smut fungi."

#### **H.H. Flor—1968**

Harold H. Flor was president of APS in 1968. Born in St. Paul, Minnesota, May 27, 1900, he grew up in Minneapolis and graduated from Central High School in 1918. His BS (1922) and MS (1924) were from the University of Minnesota. During his doctoral work he was in residence at the University of Minnesota, Iowa State University for one year, and as a USDA assistant plant pathologist at the University of Louisiana for 3 years. His research there was on the root rot complex of sugar cane and this was presented as his thesis for a PhD from the University of Minnesota in 1929. He then became an Associate Plant Pathologist with the USDA Cereal Disease Laboratory at Pullman, Washington working on bunt of wheat. In 1931 he transferred to Fargo, North Dakota where he began his work on the flax rust disease. His simultaneous genetic studies on both the pathogen and host led to the "gene-for-gene" hypothesis where host resistance occurs when specific avirulent pathogen alleles interact with specific host resistance alleles. He also pioneered the development of single gene differential lines used in breeding for disease resistance. A quiet, deeply perceptive and thoughtful person, Harold was also a superb athlete. He received an Honorary Doctor of Science degree from North Dakota State University, an Outstanding Achievement Award from the University of Minnesota, the USDA's Superior Service Award and the Ruth Allen Award from APS.

#### **Thor Kommedahl—1971**

A native of Minneapolis Minnesota, Thor Kommedahl received the Ph.D. in Plant Pathology (1951) from Minnesota. He worked on factors affecting the pathogenicity of *Fusarium lini* under the direction of J.J. Christensen. After graduation from Minnesota Dr. Kommedahl spent two years on the faculty of the Department of Plant Pathology at Ohio State before returning as an assistant professor to Minnesota in 1953. Thor Kommedahl is renowned for his career-long association with the American Phytopathological Society and other professional organizations. Although officially "retired" from the University of Minnesota in 1990 Dr. Kommedahl devotes the majority of his time to volunteer services for various professional societies and the Science Museum of Minnesota.

#### **James Tammen—1975**

A native of Sacramento California, Jim Tammen received the Ph.D. in Plant Pathology (1954) from California, Berkeley. Dr. Tammen specialized in the diseases of ornamental and floricultural plants. He served as Head of the Department of Plant Pathology at the Pennsylvania State University from 1965-1975, before coming to Minnesota as professor of Plant Pathology and Dean of the College of Agriculture in 1976. At Minnesota Dr. Tammen introduced several administrative innovations and participated in setting the stage for the building of Borlaug Hall. Borlaug Hall is a 17.5 million dollar building, finished in 1985 and shared by Plant Pathology, Agronomy & Plant Genetics and Soil, Water, & Climate. James Tammen left Minnesota and academia in 1981 to become president of Oglevee Associates Inc. of Connellsville, a multinational horticultural company. Dr. Tammen has since retired from Oglevee Associates but remains active in the affairs of the American Phytopathological Society.

#### **John Schafer—1979**

A native of Pullman Washington, John F. "Jack" Schafer received the Ph.D. (1950) in Plant Pathology and Agronomy from the University of Wisconsin—Madison. He began his career as a cereal pathologist at Purdue University in 1949, becoming a full professor in 1958. He served as professor and head of the Department of Plant Pathology at Kansas State University and later as chairman of Plant Pathology at Washington State University, where his father "Ed" Schafer had served as chairman of the Agronomy Department. Jack and Ed became the only father-son combination ever to serve as department chairs in the history of Washington State. A well-known and highly respected cereal pathologist, Dr. Schafer joined the faculty of the Department at Minnesota in 1982 as supervisor of the USDA's Cereal Rust Laboratory. Dr. Schafer retired from Minnesota in 1987 and he and Joyce now reside in California.

#### **Wiley Garrett—1981**

A native of Kosse Texas, Wiley Garrett received the Ph.D. in Plant Pathology (1962) from Minnesota. He worked on the asexual production of new races of *Puccinia graminis* f. sp. *tritici* under the guidance of J.J. Christensen and Helen Hart. Prior to coming to Minnesota he graduated from Texas A&M University where he had played football for future coaching icon, Paul "Bear" Bryant. Dr. Garrett's entire 34-year career was spent at the University of Georgia, as an extension plant pathologist and department head. He headed the

Department of Plant Pathology and Genetics from 1970 through 1996. Dr. Garrett and his wife Diane reside in Athens, Georgia.

#### Carol Windels—1999

A native of Long Prairie Minnesota, Carol Windels (Schrenk) received the Ph.D. in Plant Pathology (1980) from Minnesota. Dr. Windels worked on the biological control of pea root rot by seed treatment with *Penicillium oxalicum* under the guidance of Thor Kommedahl. In 1984 she joined the faculty of Plant Pathology as an assistant professor at the Northwest Experiment Station

in Crookston Minnesota.

Dr. Windels is a specialist in soil borne fungi and in the taxonomy of the genus *Fusarium*, and works closely with the sugar beet industry in the Red River Valley region of Minnesota and the Dakotas. She is renowned for her professional service contributions to the American Phytopathological Society and other professional societies. Dr. Windels assumes her APS Presidency in 1999 and joins Helen Hart as the second woman alumnus of Minnesota to become an APS president.

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## MESSAGE FROM THE HEAD

Dear Friends of the Department:

This past year has been interesting, challenging, and rewarding for the department. Let me share with you what I mean.

First, there has been a change in department headship. Dr. Neil Anderson decided that he wanted to release the headship responsibilities and resume his research and teaching activities. Neil plans to join the ranks of Emeritus Professor at the close of the academic year. He has several interesting research projects that he plans to bring to closure. He is actively working on projects such as biocontrol of potato scab, evaluation of potato breeding lines with potential resistance to verticillium wilt and screening Aspen for resistance to hypoxylon canker. Neil will resume teaching mycology in partnership with Dr. Jim Groth and Dr. Jim Percich. The department extends its appreciation to Neil for the leadership and service he provided over the past 3 years.

The search for Neil's successor was internal and after several months from application through the interview process, I was offered and pleased to accept the position of head. I consider it an honor to serve the department, college and University in this capacity. My new duties officially began July 1, 1997. Let me take this opportunity to share with you my background and responsibilities as a faculty member of the department. I received my Ph.D. degree from Oregon State University in 1972. I then accepted a position with ARS-USDA Plant Pathologist in the Regional Plant Introduction Station at Cornell University. In 1974, I accepted an Assistant Professor position in Plant Pathology at the University of Minnesota. My research and extension

work has been in the areas of vegetable and floriculture pathology and arbuscular mycorrhizal fungi. I have had a long-standing battle with common root rot (*Aphanomyces euteiches*) on peas grown for processing. This work includes cooperative breeding efforts with Horticulture for selection and identification of plant disease resistance, fungicide seed treatments, cultural management practices such as soil compaction and its influence on disease development and soil incorporation of oat plants in the fall that results in suppression of root rot. Control of this disease certainly represents a major challenge and it seems the pathogen is well equipped to continue to elude our efforts to provide effective control. The mycorrhizal research that I have been involved with includes the interaction of these symbionts on roots of soybean and corn in various crop rotations with sustainable agriculture in mind. Additionally, I am studying the importance of these fungi in restoration ecology of severely disturbed sites for example, mine tailings in northern Minnesota.

On August 20, the department had a wonderful birthday party for Dr. Carl Eide. There was standing room only as the group enthusiastically joined in celebration of Carl's 93rd birthday. We started the party in the morning with cake and all the trimmings honoring Carl and Johanna and son Charles along with friends, graduate students and staff joining in the gala affair. Dr. Eide expressed his appreciation as he wrote "A thousand

thanks for the wonderful party. It was the best I ever had and probably the best I ever shall have, although I am optimistic and shall be looking forward to August 20, 1998". Dr. Eide's message should serve as an inspiration to all of us.

Good news—we plan to have two new assistant professors in the department in 1998. We have been given permission to hire a potato pathologist and a turf grass pathologist. The search committees for both positions will be meeting soon to put the finishing touches on the position descriptions and to initiate the search process. This is, of course, very good news and represents what I hope is a turn around from the retrenchment mode that we have experienced for several years. It will be good to see new faces and be apart of the excitement that these young faculty members will bring into the department.

The faculty continues to be very active in research, teaching and extension. Traditional sources of funding for the University continue to shrink, and retrenchment has caused faculty to seek external sources for funding their programs. The faculty has responded to this challenge. In fact, approximately 75% of our research funding come from external sources and from endowment funds. The success of the faculty to secure grant funds was also reflected in publications in 1996 as 47 referred articles, 40, abstracts, 8 book chapters, 1 book, over 70 extension papers were published and 6 patents issued. We continue to make adjustments in our teaching program as we move to semesters beginning the fall of 1999. Members of the teaching committee as well as other faculty have been working over time to make sure all the necessary changes are reflected in graduate level courses. We are now in the process of identifying faculty who will teach these courses once semesters are in place. Several retreats were organized by the Education Committee to facilitate active discussion by the faculty to address all the issues that arise from such major changes in our graduate curriculum. Moreover, conversion to semesters has presented an opportunity for our faculty to negotiate with other departments on offering plant pathology courses to students in various undergraduate majors. I am pleased to say that we were successful and now certain plant pathology courses are an integral part of several majors and in some cases are required. The extension faculty continues to be very active with their extension and applied research programs. Their programs are excellent and are highly visible throughout the state and region. Diseases of high profile include soybean cyst nematode, white mold on

soybean, wheat and barley *Fusarium* head blight, *Aphanomyces* on sugar beet, potato scab, and blight, white mold and root rot on dry and snap beans.

I would like to share with you some highlights of faculty involvement over the past year. Dr. Carol Windels will assume the responsibilities of President of APS in 1999. She somehow continues to find time to carry on a very active research program even with her additional society activities. Dr. Nyvall continues his duties as editor of *Phytopathology News* and has agreed to an additional 3-year term of duty. Even Bob wonders how in the world did he agree to another 3 years as editor. I certainly have enjoyed reading Bob's editorial column. He writes with feeling and describes situations that we all can relate to. He is working on the 3rd edition of his book *Field Crop Diseases* that should be published in early 1999. Kurt Leonard was invited to present a paper on stem rust at the APS meetings in Rochester, New York. He is Editor-in-Chief of the APS Press and participated in meetings with APS Council, APS Financial Advisory Committee and APS Publication Board. In late August, he traveled to Mexico to participate in the North American Cereal Rust Workshop at CIMMT. Kurt and Don McVey were successful in obtaining a US-Egypt Science and Technology Joint Fund, Agricultural Technology Utilization and Transfer grant to fund research on diversity of virulence in the U. S. and Egyptian populations of *Puccinia recondita* f. sp. *tritici* and genetics of resistance to leaf rust in wheat. Dr. Chet Mirocha attended the International Symposium of *Fusarium* held in Szeged, Hungary. He presented a paper on the chemistry and physiology of *Fusarium* head blight in wheat and barley. Also, he was invited to present several lectures in the Polish Academy of Science and the Food Institute of the University. Dr. Ruth Dill-Macky attended the same meeting and presented a paper authored with Dr. Roger Jones on the effect of previous crops and tillage on *Fusarium* head blight of wheat. Ruth went on to visit several scientists in Austria who are conducting research on *Fusarium* head blight. *Fusarium* head blight continues to cause devastating losses to growers in Minnesota and the Dakotas. This disease is why Dr. Bill Bushnell will shift a part of his research from rusts and powdery mildew to *Fusarium* head blight in response to the serious problems with this disease. Dr. Nevin Young maintains a highly visible research program and either he or persons in his laboratory have attended numerous meetings related to biotechnology and disease control. A Ph.D. student of Nevin's, Dr. Vergel Concibido recently accepted a position with

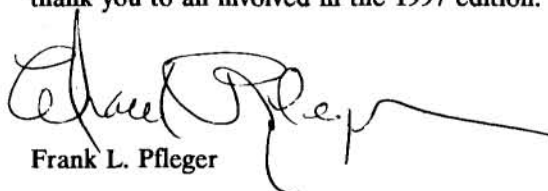
Monsanto as Project Leader for Soybean Breeding. Dr. Ward Stienstra is part of a new regional Soybean Cyst Nematode education program funded by the North Central Soybean Research Program. Twelve Midwestern land grant universities and Canada will work with seed companies, chemical firms, farm media, co-ops, private consultants and local elevators to increase the awareness of this serious disease. Dr. Deborah Savaş is actively working cooperatively with scientists at Monsanto to produce high value products in transgenic alfalfa. She presented a poster on developing transgenic alfalfa plants with delayed leaf senescence and improved disease resistance held in Colorado. She continues her work with Minnesota Agri-Power in development of alfalfa varieties for biomass production for use in generating electricity. Dr. Linda Kinkel, who always welcomes a challenge, found one when she co-taught an undergraduate Agricultural Honors course with Dr. Deborah Allan in the Department of Soil, Water, and Climate titled Women in Science. She says that the students (16 women and 2 men) were highly motivated and that she learned a lot and had fun teaching this new audience. The interactions and activities described above represents only a portion of our faculty; there is not time or space to include activities of all the departmental faculty. What is presented certainly provides you with an overview of the diversity of some of the departmental activities and programs.

We have had several faculty changes this year. Dr. Earnest Banttari retired after an extremely productive and successful career. Since we were not able to replace this position, Dr. Benham Lockhart has agreed to pickup Ernie's virology research and teaching responsibilities. Ernie continues to be active in the department, as he wants to bring closure to several projects and to finalize manuscripts for submission. Also, Dr. Chet Mirocha retired on September 30, 1997. Chet also has enjoyed a highly productive and successful career. He plans to continue his mycotoxin research on *Fusarium* head blight on wheat and barley via a 2 year grant from the Minnesota Wheat Research and Promotion Council and the Minnesota Association of Wheat Growers. There is no doubt, both Ernie and Chet have had a very positive impact on the department and we sincerely thank them for their many contributions.

Our graduate student numbers are down, but the quality remains high. The current group of students is highly motivated, energetic and actively engage faculty in lively discussion. They continue to organize and coordinate a yearly symposium that is sponsored by the department and they host a Friday happy hour several

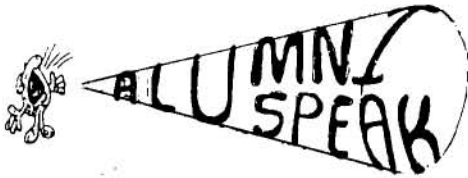
times throughout the academic year. I am sorry to report that they continue to dominate the Stakman Softball Game and true to form, again this year managed to squeak out another victory by the score of 18 to 4. The faculty has no trouble hitting the ball we just can't run. Just wait until next year as we will have two new and younger faculty members then when I write this letter for the next *Aurora* the outcome will be different (hopefully, maybe, well, ok probably not).

As I finish this letter to you, I would like to express our sincere appreciation for all the moral and financial support that all of our alumni and friends has extended to the department over the years. The department is truly fortunate to have so many loyal supporters who really care about the department and its programs. Be assured we will continue to provide high quality research, teaching and extension programs for our students and for the people we serve. Please remember you are always welcome and by all means, if you are in the area stop by and see us. The lights are on, there is coffee in the pot and we would be delighted to see you anytime. We appreciate the efforts of Dr. Richard Zeyen who again is the editor of *Aurora Sporealis* and I extend a hearty thank you to all involved in the 1997 edition.



Frank L. Pflieger





# ALUMNI SPEAK

by Richard J. Zeyen

Alumni speak is a column devoted to news and views from alumni as told directly to us. We are interested in what you are doing, advice you might have for today's students, and favored reminiscences. All alumni are invited to drop us a line (see envelope enclosed) or push some pixels our way <alumnis-plpa@puccini.crl.umn.edu>. We are especially interested in alumni from the following decades. Don't delay, have your say, write or push some pixels our way!

YEAR AND STUDENT	DEGREE	ADVISOR	YEAR AND STUDENT	DEGREE	ADVISOR
<b>1996</b>			John H. Hill	MS	Hart
Wendy Jo White	MS	Blanchette	Mengistu Hulluka	MS	J.J. Christensen
Kasia M. Duellman	MS	Meronuck	Bobbie Lee Keeling	PhD	Banttari
Dennis N. McDouball	MS	Blanchette	M.J. Kenney	MS	Eide
Kuo-Chih Lin	PhD	Bushnell	Kenneth T. Leath	MS	Rowell
Bruce E. Paulsrud	MS	N.A. Anderson	Kenneth T. Leath	PhD	Rowell
Bruna Bucciarelli	PhD	N.A. Anderson	Clark H. Livingston	PhD	Eide
Junping Chen	PhD	Mirocha	Luis C. Lopez-Frias	PhD	C.M. Christensen
Miriam Newton	MS	Kinkel,Leonard	Robert F. Nyvall	MS	Kommedahl
Akhilesh N. Mishra	PhD	Roelfs	Mahesh M. Pandey	MS	Wilcoxson
Dionicio Alvarado-Rosales	PhD	Blanchette	Paul D. Rick	MS	Mirocha
<b>1986</b>			Eugene E. Saari	PhD	Kernkamp
Therese Atcham	PhD	Banttari	Meria Bogin Silberman	MS	Sudia
Adalberto M. Barreras	MS	Roelfs	Mark A. Smith	MS	Hart
Peter J. Bedker	PhD	Blanchette	Gilbert F. Stallknecht	MS	Calpouzos
Mohammed Boulif	PhD	Wilcoxson	Ming-hsien Sun	MS	Kommedahl
Brahim Ezzahiri	PhD	Roelfs	<b>1956</b>		
In-Sung Hoang	PhD	Teng,Reolfs	Julio Bird	PhD	King
David R. Johnson	MS	Rothman	Robert F. Drescher	PhD	C.M. Christensen
Kenneth B. Johnson	PhD	Teng	George C. Failes	MS	Kernkamp, DeVay
David A. Ross McQueen	PhD	N.A. Anderson	Eugene B. Hayden, Jr.	PhD	Stakman
Nora S. Plesofsky-Vig	PhD	Brambl	Elmer J. Hawn	PhD	Kernkamp
Frisby Davis Smith III	MS	Banttari	Kenneth Knutson	MS	Eide
<b>1976</b>			P. Narayanan Nair	PhD	J.J. Christensen
Jon D. Jeresek	MS	French	Charles R. Olien	PhD	Rowell,Hart
John A. Laurence	PhD	Wood,Kennedy	Kishun D. Paharia	PhD	J.J. Christensen
Gusti Sarbini	MS	Kommedahl	Manuel Rojas-Garciduenas	MS	Kommedahl
Bent Skovmand	PhD	Wilcoxson	Joaquim C. Santiago	PhD	Hart
Gloria M. Warner	PhD	French	Charles L. Schneider	PhD	J.J. Christensen
<b>1966</b>			Sheodhan Singh	PhD	J.J. Christensen
George E. Ahlgren	PhD	Sudia	John F. Tuite	PhD	C.M. Christensen
Kenneth E. Bohnenblust	PhD	Eide	<b>1946</b>		
Sister M. Stephana Choong	MS-B	Linck	Mohan Lal Gattani	PhD	Stakman
John E. Cross	PhD	Kennedy	Nancy Ju Shen Hsu	MS	Stakman,Eide
Charles E. Dorworth	PhD	C.M. Christensen	Martha A. Kotila	MS	Eide,Stakman
John Dueck	MS	Bushnell,Rowell	C. Benjamin Ortega	MS	Stakman,Eide
Leslie H. Fuchigami	MS	Kernkamp	Leonel Hildebrando Robles	MS	J.J.Christensen
			Morris N. Teller	MS	Stakman
			Coyt T. Wilson	PhD	Stakman(?)

# OLD TIMER NEWS

## (Alumni Speak)

**Virgil L. Jons** (MS 1975) brings greetings from the land of high waters. "What a year! We had record snow fall (119 inches), record blizzards, destructive ice storms, and are now having record floods. I have lived in the fertile Red River Valley (Moorhead) for the past 20 years. I worked for APHIS/USDA for two years and the rest as a private self employed agricultural consultant. My clients grow wheat, sugarbeets, field corn, barley, soybeans, sunflowers, alfalfa, crambe, and edible beans. This area is one of the most fertile dryland, agricultural regions of the world and one of the most challenging. The summer of 1993 was one of the coldest and wettest, and now 1997's snow and floods. Aerial views of spring flooding reminds us that we live in the bottom of the old glacial lake Agassiz which stretched from the South Dakota border northward into Canada."

"I have many good memories from the days on the St. Paul campus. Afternoon and evening seminars and lively discussions in the coffee room with the likes of Drs. Stakman and Eide were highlights. There have been many changes in agriculture the past 20 years. Exciting advances in biotechnology to enhance pest resistance, new environmentally friendly low rate pesticides, the use of satellites and computers to guide the applications of fertilizers and farm chemicals, the fine tuning of integrated pest management, and the dissemination of information on the Internet have all changed farming in a very short time."

"What an exciting time to be in agriculture! What an exciting and opportunistic time to be a student. We are motivated by the increasing power of technology, science, and research. We are challenged to grow food for an expanding population. At the same time we are humbled by the incredible and awesome power of nature."

**Edward A. Andrews** (MS 1943, Ph.D. 1953 — advisers Stakman and J.J. Christensen).

The news concerning Ed Andrews was E-mailed by his son, Bruce Andrews. We share with you excerpts from Bruce's communication. "Greetings from Wyoming! My name is Bruce L. Andrews. I am Ed's son and one of the 'Hatcher Hall' progeny. My father-in-law, Richard S. Davidson recently had you send a copy of last year's *Aurora Sporealis* — the one that had the write up about Norm Borlaug. I grew up hearing stories about how kind he (Norm) was to Dad when practicing some wrestling together. I have also heard the names 'Stake', C.M. Christensen, Chen and the like since I was young. I have

often envied experiencing such a 'graduate school family'. Such a combination of learning and nurturing are to be cherished."

Bruce goes on to say that Ed is now 88 and living in Sheridan, Wyoming close to his family. Ed is as healthy as his years allow. Ed taught for 20 years (1955-1975) in the Plant Science Department at the University of Wyoming and also worked in South America. He made trips for FAO, the United Nations and USAID to Ecuador and Uruguay where he was reunited with another old timer Constancio Lazaro. After retirement Ed and his wife moved to Milwaukee where Ed worked part time and finished his work years at the Performing Arts Center at age 80. Ed enjoys beautiful voices and by working at the Performing Arts Center could listen to practices by Beverly Sills and other great stars. In 1988 Ed and his wife moved back to Sheridan, Wyoming to be near his son's family. Ed remains an avid Green Bay Packer fan. He sends his greeting to all Plant Pathology 'Old Timers' and wishes us well.

**Howard L. Bissonnette** (MS 1958; PhD 1964) says plans are being made for the 4th "Pea Pickers Convention". We have had 3 conventions at Haines City, Florida. The convention is held the last week in February. Annual meeting members are **Ted Reiling** (PhD 1957) (retired Green Giant), **Bill Haglund** (MS 1958; PhD 1960) (retired University of Washington), **Howard Bissonnette** (retired University of Minnesota) and wives. "We do not have too many papers but a lot of 'old' presentations are brought up." For registration etc.—contact: Howard Bissonnette, 2122 St. Andrews Blvd., Panama City, FL 32405.



Left to Right: Howard Bissonnette, Lois Reiling, Jean Haglund, Ted Reiling, and Bill Haglund. Behind the camera—Karwyn Bissonnette.

**Kuo-Chih Lin (K.C.)**, who received a PhD in 1996 under the direction of Bill Bushnell, spent a year in the laboratory of Pete Lindgren, North Carolina State University, working on genes for calcium binding protein, thought to have a role in the hypersensitive resistance. Currently he works with David Byrd, also at NC State, on genes specific for giant cell formation in tomato in response to the tomato cyst nematode. In October, K.C. will start in a permanent position at the Taiwan Sugar Research Institute as an Assistant Research Scientist. This is in the city of T'ainan, in southern Taiwan, not far from the home of K.C.'s wife, Sandy, in Kaohsiung. K.C. and Sandy have a son, Justin, born in April, 1997.

**Beth E. Hazen (MS 1981)** owns Willows End, a desktop publishing and design company in Cortland, NY and specializes in scientific editing and writing. She edits English manuscripts for the *Annals of the Phytopathological Society of Japan*, as well as teaches scientific writing and editing. Beth received her MS under the direction of Dr. W. Bushnell at the Cereal Rust Lab and a PhD with Dr. J. Aist at Cornell University.

**Cecilia Jones (MS 1994 with Deborah Samac)** has recently started a PhD program at the University of California—Davis with Ariena Van Bruggen in the area of biological control of plant disease. Cecilia worked the past three years as a member of the faculty of Agronomy in Paysandu, Uruguay where she instructed students and conducted research, including a survey of plant parasitic nematodes in Uruguay.

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## MINNESOTA'S GREAT TENURE DEBATE

by Richard J. Zeyen

The University of Minnesota attracted unwanted national and international attention during its recent, grueling "tenure debate". Many friends and alumni have been concerned by what they've read and heard about the debate. So numerous have been the questions that we decided to briefly chronicle the debate, the accompanying turmoil, and to relay the resolution of "Minnesota's Great Tenure Debate".

Aspects of the "Great Minnesota Tenure Debate" were featured in dozens of newspapers, magazines, scientific journals and were addressed by many professional organizations. Because of its importance to research universities and higher education in general, aspects were covered by the *New York Times*, the *Washington Post*, the *Chronicle of Higher Education*, the *American Association of University Professors*, and the *American Association for the Advancement of Science* among others. It was also a hot topic on the Internet, and between serious legal scholars. The debate and turmoil surrounding it resulted in numerous resolutions of support for Minnesota's faculty from other universities across the United States and internationally. It seemed like everyone weighed in with an opinion(s). What factors precipitated the uproar? Why did the University of Minnesota, a normally placid institution, attract so much attention?

The uproar stemmed directly from the economics of managing a large research institution. This was coupled with a misunderstanding of the necessity for freedom of inquiry which is the backbone of a research university. In retrospect most would agree that the genesis of the

debate began with financial problems in the University's Academic Health Center (AHC). The AHC was highly dependent on revenues from the University's Hospital. The popularity of Health Maintenance Organizations (HMO's) and resultant managed-care economics of HMO's led to a drastic decline in AHC patients, and in a dramatic decline in the University Hospital's and AHC's revenues.

AHC's revenues had not only maintained the University Hospital but also paid for many of its tenured faculty and staff. Thus, the AHC had become a severe and chronic financial drain on the University. Because many of the clinical positions in the AHC were tenured, a rapid downsizing of the AHC was not an option. The University's Board of Regents seized this issue as central to changing the existing tenure code, which they believed would help resolve the AHC dilemma.

The Board of Regents hired the Washington law firm of Hogan and Hartson to draft a new tenure code. The first draft of this code made it easier to lay off tenured faculty, to cut their salaries, or to discipline them for not maintaining a "proper attitude of industry and cooperation." This and other language in the Hogan-Hartson draft struck at the heart of free inquiry, freely

pursued; *i.e.* the time-honored right to academic freedom which has existed in western universities for 350 years. Academic freedom is prized above all other things by university faculty members everywhere. In addition, the University's faculty senate had already put forward a new tenure code to the Regents. Many faculty saw the Hogan-Hartson draft code as a repudiation of their efforts and a breach of faith.

Factors in addition to the AHC's financial woes, and the lack of faculty trust in the Board of Regents, served to increase the range and fury of the debate. Decades of decreased state funding, internal budget cuts and "reallocations", rise in the number of administrative positions within the University, rising tuition rates, lack of legally mandatory retirement, low faculty salaries, and post-tenure review processes mixed into and fueled the debate. Lurking in the background was the public perception that tenure with academic freedom is simply a lifetime guarantee of employment regardless of performance. Lost was the fact that many tenured faculty are subjected to annual performance reviews and that the existing tenure code included removal of "deadwood" provisions.

When the Hogan-Hartson draft tenure code was examined in detail, scholars throughout the nation responded. Historians reminded the Board of Regents that the University of Minnesota had a checkered and unsavory history relative to academic freedom, especially in the early 1900's and 1950's. Others said that if the language of the Hogan-Hartson draft was incorporated into a new tenure code that there would be severe long-term consequences for the University of Minnesota. Minnesota would cease to be a high quality research institution. They argued that research would be stifled, only "safe" or "politically correct" research would be conducted because faculty engaged in unpopular research could be intimidated, harassed and fired. Attracting and keeping quality faculty under these circumstances would be very difficult. In addition, some faculty from other universities had warned their graduates not to consider the University of Minnesota as a place for a career.

While faculty and some administration, including University President Nils Hasselmo, searched for ways to relay their objections to the harsh wording and implications of the draft Hogan-Hartson tenure code, the Board of Regents pushed for adoption. To make an economic argument, faculty pointed out that only 11 % of University employees held tenured positions and that their salaries accounted for only 13% of the University's total budget. In addition they pointed out that faculty

annually brought in about 300 million dollars of research support through grants and contracts, most of which financed students and technical help in the University. They argued that research support dollars they brought in could be jeopardized if faculty and staff lacked adequate freedom of inquiry. The Board of Regents seemed unfazed by these arguments and concerns. The rhetoric flew on all sides and the "debate" became white hot when a member of the Board was quoted as stating that they were not interested in learning about history but rather in "making history". At this point the faculty responded.

The faculty response took the form of a legal maneuver. Wide-spread faculty support, including most Regent's Professors, was mustered to call for a collective bargaining vote, and this call was approved. According to Minnesota law, once the faculty agreed to take a vote on collective bargaining the conditions of their employment could not be altered, until after the vote was taken. Essentially, faculty "froze" adoption of the Hogan-Hartson draft tenure code. They bought time for further debate which they hoped would lead to a resolution of the problem. However, this maneuver fueled yet another debate, whether to vote in collective bargaining (unionize the faculty). Thus, a new chapter in the "Great Minnesota Tenure Debate" began.

The prospect of an impending collective bargaining vote by faculty of the Twin Cities campuses was sobering. Old wounds were opened and long-standing grievances were introduced into the debate. Faculty opposed to collective bargaining argued that although the situation was grave, collective bargaining might make things worse by imposing yet another level of bureaucracy between faculty and the Regents. They argued that collegial-governance of the University might be destroyed by collective bargaining. Faculty in favor of collective bargaining argued that the Board of Regents had proven untrustworthy and that collegial-governance of the University was a concept of the past. Furthermore they pointed to the fact that faculty salaries had declined for decades and were now at the very bottom of the top 30 research universities in the nation.

As the pros and cons of collective bargaining were being debated, the Board of Regents began to entertain the possibility of changes in their Hogan-Hartson draft tenure code. Dean Sullivan of the University Law School proposed yet another version of a potential tenure code, whose language was remarkably like that of other Big Ten Universities tenure codes. This "Sullivan Compromise" stimulated discussion, as all concerned

looked for a way to end the hostile rhetoric surrounding the debate. Meanwhile, the Regents began formalizing an agreement by which the AHC would partner with the private sector's Fairview Hospitals. This partnership would create a "Fairview-University Hospital" and relieve the financial pressures by moving many university employees into this private sector partnership.

Other events added to the tension and turmoil surrounding the issues. Simultaneously with the debate, faculty and administration were busy converting the University from a quarter-based system to a semester-based system. A series of scandals and law suits emanating from mismanagement charges against areas of the Medical School added to the gloomy atmosphere.

As the collective bargaining election date drew near a number of behind-the-scenes events took place. Some members of the Board of Regents announced their resignations. There was evidence that the Minnesota State Legislature would review the process by which University Regents are selected and appointed. A new University of Minnesota President, Mark Yudof from the University of Texas at Austin, was hired. Then, the University of Minnesota Law School, independent of the rest of the University, adopted the "Sullivan Compromise" tenure code. What followed was a statement by the Board of Regents indicating that the "Sullivan Compromise" code could form the basis of a University-wide code.

On February 11 and 12 of 1997 the faculty of the University of Minnesota Twin Cities campuses voted on the collective bargaining issue. The election was conducted by the Bureau of Mediation Services. A total of 1,358 out of 1,595 eligible faculty voted. The vote required a simple majority and was very close, 692 against and 666 in favor. Following the vote, University of Minnesota Board of Regents Chair Tom Reagan was quoted as stating: "I hope we can build from the strong foundation of shared governance, incorporate the lessons we have learned over the last six months and bring our university to a new level of greatness. I look forward to working with our new president, with his administration and the traditional faculty governance structure to prepare our university for the 21st century."

In the spring of 1997 a new University of Minnesota tenure code, very closely aligned with those used by other Big Ten Universities like Michigan State and Purdue, was adopted. The new code defends academic freedom and has provisions allowing better financial management and control. With a huge sigh of relief from all concerned the "Great Minnesota Tenure Debate" ended.

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"Drama often obscures the real issues."

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## University of Minnesota Facts

### Higher Education Rules!

For a state with 4.7 million people, Minnesota has an abundance of institutions of higher learning. Minnesota has 107 colleges and universities within its borders. Sixty six of these are public supported, the remainder are privately supported. The state also has 79 vocational institutions.

### Many Students!

Minnesota-Twin Cities campuses have the second largest student enrollment in the United States. The five largest are the Community College of the Air Force (69,611), University of Minnesota-Twin Cities (51,445), Ohio State University - main campus (48,676), University of Texas at Austin (47,905) and Miami-Dade Community College (47,060).

### Alumni Support

The University of Minnesota ranked 12 th among all institutions of higher learning in the United States in fund raising, and fifth among public supported institutions in 1996. Stanford ranked number one and Ohio State number twenty.

### U of MN the Oldest in State?

Minnesotans disagree over which is the oldest higher education institution in the State. The University of Minnesota - Twin Cities was chartered in 1851 but did not admit freshman until 1869. Hamline University was chartered in 1854 and began classes in Red Wing that same year.

# THE FACULTY OF THE 90'S

by Richard J. Zeyen

In the past decade there have been many changes in the composition of the department's faculty. The faculty of the 1990's are truly as diverse and talented as we have ever had at Minnesota. By way of introduction to friends and alumni, each faculty member prepared a short statement of their research interests and provided two or three relevant publications.

## State-Supported Faculty

**Neil A. Anderson**, Professor and former Department Head, Genetics of Plant Pathogens, Ph.D. 1960, University of Minnesota. E-mail address: neila@puccini.crl.umn.edu



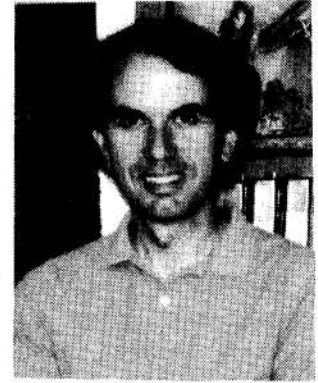
Our laboratory personnel are involved in an interdisciplinary study on biological control of soil-borne plant pathogens.

Cooperators in this project are Dr. Janet Schottel, biochemistry, and Dr. Linda Kinkel, plant pathology. We also have forest resource studies on mycorrhizal genetics and resistance in aspen to Hypoxylon canker. Collaborators in this research are Dr. Glenn Furnier, forest resources, and Dr. Mike Ostry, USDA Forest Service. As a member of the Minnesota Potato Breeding Project, I help develop cultivars with resistance to late blight, scab, and Verticillium wilt diseases.

### Sample Publications:

- Bowers, J. H., Kinkel, L. L., Jones, R. K., and Anderson, N. A. 1996. Influence of disease suppressive strains of *Streptomyces* on the native *Streptomyces* community in soil as determined by the analysis of cellular fatty acids. *Can. J. Microbiol.* 42:27-37.
- Hoyos, G. P., Zambino, P. J., and Anderson, N. A. 1991. An assay to quantify vascular colonization of potato by *Verticillium dahliae*. *Am. Potato J.* 68:727-742.
- Doudrick, R. L., Furnier, G. R., and Anderson, N. A. 1990. The number and distribution of incompatibility alleles in *Laccaria laccata* var. *moelleri* (Agaricales). *Phytopathology* 80:869-872.

**Robert A. Blanchette**, Professor, Forest Pathology; Deterioration of Wood Products, Ph.D. 1978, Washington State University. E-mail address: robertb@puccini.crl.umn.edu



My major interests are in the area of forest pathology with research in tree defense mechanisms, microbial degradation of wood, biotechnological uses of forest fungi, biological control of forest pathogens, and the conservation of archaeological wood and wood of historic value. Projects involve novel, interdisciplinary approaches to solving tree disease problems and understanding biodegradation processes.

### Sample Publications:

- Blanchette, R. A. 1995. Degradation of the lignocellulose complex in wood. *Can. J. Bot.* 73:999-1010.
- Behrendt, C. J., Blanchette, R. A., and Farrell, R. L. 1995. Biological control of blue-stain fungi in wood. *Phytopathology* 85:92-97.
- Zimmerman, W. C., Blanchette, R. A., Burnes, T. A., and Farrell, R. L. 1995. Melanin and perithecial development in *Ophiostoma piliferum*. *Mycologia* 87:857-863.

**Senyu Chen**, Assistant Professor, Southern Experiment Station, Waseca, Nematology, Ph.D. 1994, University of Florida. E-mail address: chenx099@gold.tc.umn.edu



My research interests include the biology, ecology, and management of plant-parasitic nematodes. Current research focuses on

the biology and management of the soybean cyst nematode (SCN). Research projects involve determining life cycle, population dynamics, and race composition of the soybean cyst nematode in southern Minnesota; optimizing crop rotation schemes for SCN management; evaluating soybean cultivars for SCN-resistance; and investigating biological control of the nematode.

#### Sample Publications:

- Chen, S., and Dickson, D. W. 1996. Fungal penetration of the cyst wall of *Heterodera glycines*. *Phytopathology* 86:319-327.
- Chen, S., Dickson, D. W., and Mitchell, D. J. 1996. Population development of *Heterodera glycines* in response to mycoflora in soil from Florida. *Biol. Contr.* 6:226-231.

**Ruth Dill-Macky**, Assistant Professor, Small Grains Pathology, Ph.D. 1993, The University of Queensland, Australia. E-mail address: ruthdm@puccini.crl.umn.edu



My research focuses on the management of diseases of barley, wheat, and oats. My principal interests include: studies of plant disease losses, epidemiology and the effects of the environment, and cultural practices on disease development. At present, significant efforts are being directed toward Fusarium Head Blight of both wheat and barley and the smut diseases of oats. We collaborate closely with the scientists in small grain breeding programs in developing strategies for the management of plant disease through the deployment of host resistance.

#### Sample Publications:

- Dill-Macky, R., and Roelfs, A. P. 1994. Stand density effect on the development of *Puccinia graminis* f. sp. *tritici* — QCCJ in barley (*Hordeum vulgare*). *Phytopathology* 84:1139.
- Dill-Macky, R., Rees, R. G., and Boyd, W. R. J. 1992. Sources of resistance to *Puccinia graminis* in barley. *Plant Dis.* 76:212.
- Dill-Macky, R., and Rees, R. G. 1991. Inoculum pressure and the development of stem rust epidemics in barley. *Aust. J. Agric. Res.* 42:769-777.

**James V. Groth**, Professor, Population Genetics of Plant Pathogens, Ph.D. 1974, University of British Columbia, Canada. E-mail address: jamesg@puccini.crl.umn.edu



I use the bean rust fungus as a model organism to better understand the population/ecological genetics of plant pathogenic fungi; it can be readily crossed or selfed and it has high levels of variation in the field. Virulence and isozymes have traditionally been used to describe diversity. More recently, DNA markers (RFLPSs and RAPDs) are proving to be useful phenotypically and genetically. These markers are used descriptively and ultimately, to reveal the underlying forces determining variation. Experimental greenhouse studies, often involving genetic manipulation, are also featured. In cooperation with plant breeders, I also have a long-term involvement in resistance breeding to common rust of processing sweet corn and, most recently, to head scab of wheat.

#### Sample Publications:

- Martinez, J. P., Groth, J. V., and Young, N. D. 1996. Non-Mendelian and skewed segregation of DNA markers in wide crosses of the bean rust fungus, *Uromyces appendiculatus*. *Curr. Genet.* 29:159-167.
- Gingera, G. R., Davis, D. W., and Groth, J. V. 1995. Identification and inheritance of delayed first pustule appearance to common leaf rust in sweet corn. *J. Am. Soc. Hort. Sci.* 120:667-672.
- Groth, J. V., McCain, J. W., and Roelfs, A. P. 1995. Virulence and isozyme diversity of sexual vs. asexual collections of *Uromyces appendiculatus* (bean rust fungus). *Heredity* 75:234-242.

**Roger K. Jones**, Associate Professor, Minnesota Extension Service, Diseases of Small Grains, Sugar Beets, and Potatoes, Ph.D. 1980, North Carolina State University. E-mail address: rogerj@puccini.crl.umn.edu



I work primarily with small grain, sugar beet, and potato growers. My

responsibilities include the development of educational programs and recommendations that integrate the genetic, chemical, and cultural control tactics into profitable but environmentally sound production strategies.

#### Sample Publications:

Milus, E. A., Rothrock, C. S., Lorince, T., and Jones, R. K. 1995. Ecology of seedborne *Pantoea agglomerans* and *Enterobacter agglomerans* on wheat. in: Proceedings 6th International Symposium on Microbiology of Aerial Plant Surfaces, Bandol, France. 88 pp.

Jones, R. K. 1994. Understanding head scab epidemics in wheat. Pages 88-89 in: Proceedings of the 14th Annual Crop Pest Management Short Course, November 15-16, University of Minnesota Extension Service.

Johnk, J. S., and Jones, R. K. 1994. Comparison of whole-cell fatty acid compositions in intraspecific groups of *Rhizoctonia solani* AG-1. *Phytopathology* 84:271-275.

**Linda L. Kinkel**, Associate Professor, Epidemiology and Microbial Ecology, Ph.D. 1988, University of Wisconsin, Madison. E-mail address: lindak@puccini.crl.umn.edu



In my lab, we investigate the ecology of microbes on plant surfaces, including both leaves and roots. Specifically, I am interested in the relative importance of different mechanisms of interaction (for example, competition for resources, antibiotic production, and parasitism) in microbial community dynamics on plants. I am involved in collaborative research with Dr. Neil Anderson on the biological control of potato scab using antibiotic-producing soil bacteria. Overall, our goal is to use information on microbial ecology to enhance the sustainability of agricultural systems through strategies such as biological control.

#### Sample Publications:

Bowers, J. H., Kinkel, L. L., Jones, R. K., and Anderson, N. A. 1996. Influence of disease suppressive strains of *Streptomyces* on the native *Streptomyces* community in soil as determined by the analysis of

cellular fatty acids. *Can. J. Microbiol.* 42:27-37.

Jacques, M. A., Kinkel, L. L., and Morris, C. E. 1995. Population sizes, immigration and growth of epiphytic bacteria on leaves of different ages and positions of field-grown *Cichorium endivia* var. *latifolia*. *Appl. Environ. Microbiol.* 61:899-906.

Kinkel, L. L., Wilson, M., and Lindow, S. E. 1995. Effect of sampling scale on the assessment of epiphytic populations. *Microbial Ecol.* 29:283-297.

**Sagar V. Krupa**, Professor, Effects of Air Pollutants and Global Climate Change on Plants, Fil. Dr. 1971, University of Uppsala, Sweden. E-mail address: sagark@puccini.crl.umn.edu



Since 1972, I have conducted interdisciplinary research on atmospheric processes and the effects of air pollutants (ozone and sulfur dioxide) on crops and trees. My research emphasizes the integration of atmospheric chemistry, meteorology, air pollutant removal processes and vegetation response functions. My most recent research is directed to modeling crop response to whole growth season exposures to ambient ozone. I have also examined the issue of continental scale surface level ozone background. I am presently developing methods for modeling the response of sensitive plant species to ozone in Class I wilderness areas.

#### Sample Publications:

Manning, W. J., Krupa, S. V., Bergweiler, C. J., and Nelson, K. I. 1996. Ambient ozone (O<sub>3</sub>) in three Class I wilderness areas in the northeastern USA: Measurements with Ogawa passive samplers. *Environ. Pollut.* 91:399-404.

Krupa, S. V., and Legge, A. H. 1995. Air quality and its possible impacts on terrestrial ecosystems in the Great Plains: An overview. *Environ. Pollut.* 88:1-11.

Krupa, S. V., Grünhage, L., Jäger, H.-J., Nosal, M., Manning, W. J., Legge, A. H., and Hanewald, K. 1995. Ambient ozone (O<sub>3</sub>) and adverse crop response: A unified view of cause and effect. *Environ. Pollut.* 87:119-126.

**Philip O. Larsen**, Professor and Associate Dean of Research, Turfgrass Diseases, Diseases of Plants in the Urban Landscape, Ph.D. 1969, University of Arizona. E-mail address: phill@puccini.crl.umn.edu



I have resumed full time administrative duties, as Associate Dean for Research in the College of Agriculture, Food and Environmental Science at Minnesota. Therefore, my research and teaching obligations are suspended at the present time.

**Benham E.L. Lockhart**, Professor, Virus Diseases; Diagnostic Technology, Ph.D. 1969, University of California, Davis. E-mail address: benhaml@puccini.crl.umn.edu



My research involves the identification, characterization, and epidemiology of plant viruses and virus diseases, including those of tropical and subtropical crops. Research activities include serology, electron microscopy, and insect transmission of plant viruses of cereals, legumes, vegetables, and ornamentals.

**Sample Publications:**

- Ahlatwat, Y. S., Pant, R. P., Lockhart, B. E. L., Srivastava, M., Chakraborty, N. K., and Varma, A. 1996. Association of a badnavirus with citrus mosaic disease in India. *Plant Dis.* 80:590-592.
- Lockhart, B. E., Morelli, G., and Websterdorp, J. 1995. Occurrence of tobnavirus infections in *Peperomia*, *Hosta* and *Phlox* in the Midwestern U.S. *Plant Dis.* 79:1249.
- Lockhart, B. E. L., and Olszewski, N. E. 1994. Badnavirus Group. in: *Encyclopedia of Virology*. R. G. Webster and A. Granoff, eds. Academic Press, New York. 516 pp.

**David H. MacDonald**, Professor, Plant Parasitic Nematodes, Ph.D. 1966, Cornell University. E-mail address: davidm@puccini.crl.umn.edu

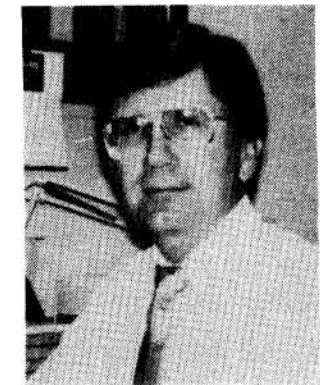


Plant parasitic nematodes can be significant pathogens of several crops of importance grown in the Upper Midwest. I am most interested in the study of the ecology of some of those nematodes. I believe that a better understanding of the environmental requirements of those nematodes should aid in their management.

**Sample Publications:**

- Orf, J. H., and MacDonald, D. H. 1995. Registration of 'Faribault' soybean. *Crop Sci.* 35:1227.
- Orf, J. H., MacDonald, D. H., and Wallace, M. K. 1995. Registration of M87-1569 soybean germplasm resistant to soybean cyst nematode. *Crop Sci.* 35:1516.

**Richard A. Meronuck**, Professor, Minnesota Extension Service, Deterioration of Stored Grains, Ph.D. 1971, University of Minnesota. E-mail address: richm@puccini.crl.umn.edu



I have an extension appointment with the responsibility for grain storage pathology, mycotoxins, dry bean diseases, and pesticide applicator training. My extension programs in crop production are designed to assist producers in minimizing losses in stored grain and in dry bean production. My research programs are in the area of grain storability and dry edible bean diseases. Research programs in storability are designed to quantify mold development and subsequent losses in nutrition, quality, grade, and dry matter in grain stored at various moisture contents, temperatures, and fungicide treatments.

**Sample Publications:**









































