

Professor Tony J. Vyn
(Partial Curriculum Vitae)
July 11, 2018

Contact Information:

Department of Agronomy
Purdue University
915 W State Street, West Lafayette, IN 47907-2054
Home Page: <https://ag.purdue.edu/agry/directory/Pages/tvyn.aspx>
Email: tvyn@purdue.edu
Office Phone: 765-496-3757 Cell: 765-427-4375

Education:

<u>Degree</u>	<u>University</u>	<u>Month/Year</u>
Ph.D. (Crop Science)	University of Guelph, Ontario, Canada	(10/1987)
M.Sc. (Crop Science)	University of Guelph, Ontario, Canada	(05/1978)
B.Sc. (Agriculture)	University of Guelph, Ontario, Canada	(05/1976)

Professional Positions:

Purdue University

2002-present Professor & Cropping Systems Extension Agronomist, Purdue University
1998-2002 Associate Professor, Cropping Systems, Agronomy Department, Purdue

University of Guelph

1998-2001 Adjunct Professor, Plant Agriculture, University of Guelph
1998 Professor, Cropping Systems, Plant Agriculture Dep't., Univ. of Guelph,
1991-98 Associate Professor, Crop Science Department, University of Guelph
1987-91 Assistant Professor, Cropping Systems, University of Guelph
1984-87 Assistant Professor (contract), Crop Science, University of Guelph
1980-84 Lecturer, Departments of Crop Science and Land Resource Science (50:50),
University of Guelph, Guelph, ON, Canada
1978-80 Research Associate, Crop Science Department, University of Guelph

Honors and Awards:

- * Carl Sprengel Agronomic Research Award, American Society of Agronomy, 2015
- * 2014 Researcher of the Year Award, Fluid Fertilizer Foundation, 2015
- * Outstanding Presentation Award, 1st National Strip Tillage Conference, 2014
- * Fellow, Crop Science Society of America, 2013
- * Outstanding Graduate Student Mentor Award, Agronomy Department, Purdue University, 2013
- * Werner L. Nelson Award, Fluid Fertilizer Foundation, 2011
- * Fellow, Organization for Economic Cooperation and Development (OECD) for a research project in Western Australia during sabbatical leave in 2005
- * Fellow, American Society of Agronomy (ASA), 2003
- * Scientific Society Invited Presentations: **Ten invited symposium presentations to the Annual Meetings of ASA.** [Note: the lead ASA division in each individual multiple-division symposium are as follows: S-3 in 1993, C-2 in 2000, A-9 and S-4 in 2002,

both C-3 and S-4 in 2007, A-5 in 2009, C-3 in 2010, and ASA Climatology/Modeling in 2014]

- * Three invited lectures to NC Regional ASA Meetings in 2001, 2004, and 2007.
- * Three invited presentations to the American Seed Trade Association Conference held in Chicago, IL, (2001, 2009 – co-authored with former graduate students - and 2010)
- * Invited Speaker to agricultural conferences in 18 U.S. states, 5 Canadian provinces, and several countries overseas (Argentina, Australia, Brazil, China (3 trips), France, Hungary, Italy, South Africa, The Netherlands).

Membership in Honorary Academic Societies:

Sigma Xi, Gamma Sigma Delta

Membership in Professional Societies:

American Society of Agronomy (ASA) (1979-present), Fellow (2003)

Crop Science Society of America, Fellow (2013)

Soil Science Society of America

International Soil Tillage Research Organization (1979-present)

Purdue Cooperative Extension Specialists Association (1998 to present)

Special Appointments to Scientific Advisory Councils:

Pioneer-DuPont Drought Research Advisory Council - Expert Panel (2011-present)

Scientific Advisory Group for Fieldprint Calculator N₂O Revision for a Fertilizer Industry 4R

Nutrient Stewardship effort in the Field to Market program (2014-present)

Expert Panel for Agricultural Model Inter-comparison Project (AgMIP) on Maize Model Improvement (2012-2016)

Service to Science and Professional Societies:

1. Associate Editor for *Frontiers in Plant Science* (Agroecology and Land Use Systems) 2017-2018
2. Sprengel Research Award Selection Committee for ASA (2016 to present)
3. Crop Science Research Awards Committee, CSSA (01/2018 to 12/2019)
4. Crop Science Fellows Selection Committee, CSSA (01/2018 to 12/2019)
5. Associate Editor for *Soil & Tillage Research Journal* (1989-1994, 2006- 2014)
6. Senior Associate Editor (2008-2011) and Associate Editor (2007-2008) for *Agronomy Journal*
7. Associate Editor of *Crop Science* (2002-2005)
8. External Review Team for *Agronomy Journal* (2006-2007)
9. Co-Chair (2003 to present, except for 10-month sabbatical in 2005-2006 and 5-month sabbatical in 2017) of the Joint Purdue-CCA Planning Committee for the 2-day annual crops conference held in Indianapolis (attended by between 670 and 800 crop advisors from Indiana and surrounding states).
10. North-Central American Society of Agronomy Executive Board (Secretary-Treasurer 2006-2007; Vice-President 2007-2008; President 2008-2009; Past-President 2009-2010).
11. Member, Board of Directors (ASA representative) for Council of Agricultural Science and Technology (2008-2010)
12. Occasional Reviewer (1987 to present) of peer-reviewed manuscripts submitted to PNAS, PLoS ONE, *Global Change Biology*, *Nature*, *Environmental Research Letters*, *Agriculture*,

Ecosystems and Environment, BioScience, Journal of Food and Agricultural Chemistry, Frontiers in Plant Science, Agriculture Ecosystems and Environment, Agronomy Journal, Crop Science, Soil Science Society of America Journal, Journal of Soil and Water Conservation, Canadian Journal of Plant Science, Weed Technology, Field Crops Research, and Crop Management.

13. Research Proposal Review Panels like USDA-AFRI-NIFA Fellowships (2016 for Graduate Student and Post-doctoral Fellowships), NASA (2004), and National Sciences and Engineering Research Council (Canada).
14. External Reviewer for Tenure and Promotion applications by faculty at other land-grant universities (University of Nebraska-Lincoln, Mississippi State University, University of Missouri, etc.).
15. Expert Committees for research or proposal reviews in crop physiology, soil fertility and cropping systems in United States and Canada.
16. Faculty/laboratory host to over 20 Visiting Scholars (with stays ranging from 1 to 12 months) from Argentina, Brazil, China, France, Hungary, South Korea, and Spain.
17. Ph.D. proposal reviewer and Ph.D. thesis reviewer for graduate students at the University of Wageningen (2017) and the University of Queensland (2016), respectively.

Service to Agronomy Department at Purdue University:

1. Chair, Department of Agronomy Department Head Review Committee at Purdue University (February to May, 2016)
2. Chair, Faculty Mentoring Committee for Dr. Shaun Casteel, recently promoted to Associate Professor at Purdue University (2009 – present).
3. Chair for Department of Agronomy Search Committees for Soybean/Small Grain Extension (2008-2009) and Crop Physiology Faculty (2013-2014). Member on other faculty search committees in Agronomy and Agricultural and Biological Engineering.
4. Agronomy Department Representative to Purdue University Cooperative Extension Service Association (2000-2002).
5. Member, Agronomy Research/Education Center Advisory Committee (2001 to present).
6. Member, Department of Agronomy Graduate Committee (01/2017 to present).

Service to College of Agriculture at Purdue University:

1. Member, Dean's Search Committee (December 2017 to present)
2. Member, Dean's A/P Staff Advancement Committee, College of Agriculture (2018-2020).
3. Member, Purdue University Faculty/Student Appeals Committee.
4. Member, Dean's Advisory Committee for College of Agriculture (2002-2004?)
5. Reviewer for USDA Hatch project proposals at Purdue University by faculty in Agronomy, Botany and Plant Pathology, and Agricultural Economics.
6. Interdisciplinary Faculty Member, Ecological Sciences and Engineering.

Sabbatical Leaves:

1. August, 2005 to May 30, 2006. OECD Fellow for precision agriculture project involving RTK nutrient placements in Western Australia wheat production. I was hosted by Dr. Paul Blackwell, Western Australia Department of Agriculture in Geraldton, WA, and I received additional in-kind funding from fertilizer companies there. From February to May, 2006, I was hosted by Drs. Ken Cassman and Achim Dobermann in the Horticulture and Crop Science Department, University of Nebraska in Lincoln, NE. While there I studied

sustainable ecological intensification systems for corn production and wrote papers and proposals to fund graduate student research.

2. January 2, 2017 to May 31, 2017. I studied with Drs. Ken Giller (Plant Production Systems Chair Group) and Paul Struik (Cropping Systems Chair Group) in the Plant Science Department at the University of Wageningen, The Netherlands. I presented and attended group seminars, started new collaborative research on corn nutrient efficiency in Africa, and wrote papers and proposals to fund graduate student research.

Graduate Student and Professional Training:

- **Overall Graduate Student Mentoring:**

Dr. Vyn appreciates those who mentored him as a student, and enjoys motivating the next generations of agronomic scientists. Tony has served as the primary advisor for 37 graduate students (9 at the Ph.D. level), and he is currently mentoring 5 Ph.D. students (four of them women) and 1 MS student. He is grateful for the overall diversity of his graduate students since 1987 which have included students who originated from Argentina (7), Brazil (1), Canada (10), China (3), Ghana (2), Hungary (2), Nigeria (1), Serbia/Czechoslovakia (2) as well as the United States (14). The year of graduation and the last known employment of these students is provided in the table below. Several of his former students are assistant/associate professors at universities or serve as principal scientists in the private sector. He has also hosted > 20 Visiting Scholars (about equally split between male and female; mostly for periods of 6-12 months) from Argentina, Brazil, China, France, Hungary, Ireland, Spain, and South Korea.

- **Graduate Student Mentoring History:**

Graduate Student Name	Degree / Degree Sought	Last Known or Current Employment
Nick Thompson	MS	Current student
Sarah M. Mueller**	PhD	Current student (Indiana Corn Marketing Council Graduate Scholar)
Monica Olson	PhD	Part-time student. Biologist/Insect Management, Dow AgroSciences, IN
Heather Pasley	PhD	Current student (Co-advisor = Dr. Camberato; Monsanto STEM scholar)
Lia Olmedo Pico	PhD	Current student (Fulbright Fellow)
Quincey Tuttle	PhD	Part-time student. Senior Research Associate, DowDupont, IN
Keru Chen	PhD, 2016	Researcher, CiBO Technologies, Boston, MA area
Amanda de Oliveira Silva*	MS, 2015	PhD student, Kansas State University
Martha Winters	MS, 2015	Farming & part-time Purdue Research Assist. Napoleon, OH
Péter Kovács	PhD, 2013	Assistant Professor, South Dakota State University
Jason A. Roth*	MS, 2013	Regional Agronomist with Winfield Solutions, Lansing, MI
Yanbing Xia	PhD, 2012	Self-employed, New York
Ignacio A. Ciampitti**	PhD, 2012	Associate Professor, Cropping Systems Extension Specialist, Kansas State University, KS
Juan P. Burzaco*	MS, 2012	Agronomy Regulatory Scientist, J.R. Simplot Co., ID
Chris R. Boomsma** xx	PhD, 2009	Education Manager, American Society of Agronomy, WI
Yanbing Xia*	MS, 2009	Future PhD student, Purdue University
Jared Alsdorf	MS, 2008	Res. Agronomist, ABG Ag Services, IN (Co-Advisor)
Jason Brewer	MS, 2006	USDA-ARS Technician Corn Breeding, NC (Co-Advisor)
Matias Cánepa	MS, 2007	Production Section Head, Nutrisun, Advanta, Argentina

Martin Gonzalo**	PhD, 2006	Wheat Breeder, Limagrain AR, Mar del Plata, Argentina
Ignacio Conti*	MS, 2005	Oilseeds Marketing Specialist, Dow AgroSciences, IN
Anita Gál	MS, 2005	Research Scientist, Univ. of Szent Istvan, Hungary
Ann M. Kline*	MS, 2005	Scientific & Regulatory Consultants, Columbia City, IN
Brian J. Ball	MS, 2002	Plant and QA Manager, Treehouse California Almonds, LLC
Mercedes Murua*	MS, 2002	Corn Trait Introgression, Syngenta Seeds, Stanton, MN
Scott M. McCoy	MS, 2002	Seed Research Associate, USDA-ARS, Univ. of Illinois
Xinhua Yin	PhD, 2001	Associate Professor, University of Tennessee, TN
Missy J. Arends (Bauer)	MS, 2001	B & M Crop Consulting, Inc., Coldwater, MI
Students at University of Guelph (Ontario, Canada):		
Dave C. Hooker	PhD, 2000	Associate Professor, University of Guelph, ON, Canada
Dragan Galic	MS, 2000	Agricultural Technician, Plant Science, Univ. of Guelph
Dave C. Hooker	M.Sc., 1991	Future Ph.D. Student
George Opoku	Ph.D., 1996	Dep. Exec. Direct. CSSVD, Ghana Cocoa Board, Ghana
Zlatko Ziza	M.Sc., 1995	Dekalb Corn Breeding, London, ON, Canada
John G. Faber	M.Sc., 1995	Soil Nutrient Consultant, London, ON, Canada
Lynn Rowan (Van Maanen)	M.Sc., 1995	Instructor/Executive Assistant, Univ. of Guelph, Canada
Deneen B. Sebastian	M.Sc., 1994	Director, North American Marketing, BASF, SK, Canada
Beverly S. Green	M.Sc., 1992	Animal Health, Durham, ON, Canada
Harrison K. Dapaah	M.Sc., 1992	Principal Res. Scientist, Crops Research Institute, Ghana
Charlie E. Roland	M.Sc., 1992	Ag Environmental Officer, Ministry of Environment, ON
Allan B. Kwabiah	M.Sc., 1991	Research Scientist, Agriculture & Agri-Food Canada, NF
Ken J. Janovicek	M.Sc., 1991	Research Agronomist, Univ. of Guelph, ON, Canada
Greg A. Stewart	M.Sc., 1989	Maizex Corn Agronomy Specialist, Guelph, ON, Canada
Jack Moes	M.Sc., 1986	Vice-President Academic, Assiniboine College, MB, Canada
**Winner of an annual award for "Outstanding Ph.D. Graduate Student in Research" in the Agronomy Department at Purdue University.		
*Winner of an annual award for "Outstanding M.S. Graduate Student in Research" in the Agronomy Department at Purdue University.		
xx Winner of an annual award for "Outstanding Graduate Student in Extension" in the Agronomy Department at Purdue University.		

- **Associated Mentoring History:**

Dr. Vyn has served as advisory committee member to other graduate students in multiple departments including Agricultural Economics, Botany and Plant Pathology, and Earth and Atmospheric Sciences; I currently serve on 5 Advisory Committees for other graduate students at Purdue. He mentored 3 postdoctoral students (originally from Argentina, China and Nigeria), 5 visiting Ph.D. scientists or faculty on Fellowship Leaves from universities in China (2012, 2013-2014, 2016-2017), and South Korea (2006), and sponsored ~20 Visiting Scholars between 2004 and 2017 from Argentina, Brazil, China, France, Hungary, Ireland, and Spain. He also supervised Adilson da Silva, a "Sandwich PhD student" from University of Sao Paulo, Brazil from 2013-2015. He graduated from Brazil but most of his thesis research originated from a Visiting Scholar stay in my program from 2013-2014.

- **Women Graduate Student Mentoring:**

Dr. Vyn is currently mentoring four women at the Ph.D. level, and he has mentored 11 women who have completed their degrees. All names of the female graduates, their thesis titles and the awards won by the Purdue women graduate students are provided below. One of the unique characteristics of his mentoring is that he encourages women to complete a PhD degree rather than stopping at the MS level. Three of the four women he is currently

mentoring are proceeding directly to a PhD degree from a BS degree. He has also mentored one woman (Yanbing Xia) for both a MS and a PhD degree and another of his female PhD students (Keru Chen) gained a second MS in Applied Statistics while she was a PhD student at Purdue University. If everyone that is currently enrolled finishes successfully, Dr. Vyn will have mentored six female PhD graduates by the end of 2019.

• **Current Female Graduate Students (Name, Degree, Tentative Thesis Title, Awards):**

1. Sarah M. Mueller, Ph.D., Late-season N fertilizer impacts on plant physiology and N efficiency dynamics in modern and older maize hybrids.

Awards		
Indiana Corn Marketing Council	Ph.D. Graduate Student Assistantship	2015-2017
Purdue Agronomy	Outstanding Research- Ph.D. Student	Apr. 2017
International Plant and Nutrition Institute	IPNI Scholar Award	Nov. 2016
North Central Soil Fertility Conference	Graduate Student Award	Nov. 2016
Purdue Agronomy	Marvin and Barbara Phillips Scholarship in Agronomy	Apr. 2016
Dow AgroSciences	Graduate Student Scholarship	Mar. 2016
Purdue Agronomy	M.O. Pence Graduate Student Scholarship	Apr. 2015
Purdue Agronomy	Stanley A. Barber Memorial Scholarship in Soil Fertility and Plant Nutrition	Apr. 2015
Indiana Seed Industry	Graduate Study Award	Feb. 2015

2. Monica Olson, Ph.D., Feasibility of remote sensing for imaging of actual nitrogen use efficiency differences in maize hybrids.

Employment: Monica works full-time at DowDuPont in Indianapolis; she is a part-time Ph.D. student.

3. Lia Olmedo Pico, Ph.D., Nitrogen Management Effects on Potential Kernel Weight Determination in Maize: Underlying Mechanisms of Yield Responses

Awards		
Purdue Agronomy	Fullbright Graduate Fellowship	2016-2018

4. Heather Pasley, Ph.D., Genotype and Soil Factor Constraints in Tropical Maize Responses to Nitrogen in Kenya and Zimbabwe

Awards		
Soil Science Society of America	First Place, S4 Graduate Oral Presentation Competition	Oct. 2017
Purdue Agronomy	Dow AgroSciences Graduate Scholarship	Apr. 2017
Monsanto Company	Monsanto Minority in STEM Fellowship (\$50,000)	Aug. 2016
Purdue Agronomy	Stanley A. Barber Memorial Scholarship in Soil Fertility and Plant Nutrition	May 2016

Purdue College of Agriculture	Graduate Ag Research Spotlight https://ag.purdue.edu/arp/Pages/Graduate-Student-Spotlight.aspx#	Apr. 2016
University of California Davis	First Place, UC Davis Plant Breeding Symposium Poster Competition: <i>Breeding for Stress Resilience</i>	Apr. 2016
Purdue University	People's Choice Award, Purdue University 3 Minute Thesis Competition	Apr. 2016
Purdue Ecological Science and Engineering	First Place for Purdue University Ecological Science and Engineering 3 Minute Thesis Competition	Mar. 2016
Purdue University	D. Woods Thomas Memorial Fund	May 2015
U.S. Borlaug Fellows in Global Food Security	Graduate research grant (\$17,700)	Jan. 2013

- **Past Female Graduate Students (Year, Name, Degree, Thesis Title):**

1. 2016, Keru Chen, Ph.D., Physiological Aspects of Relative Changes in Nitrogen and Plant Density Stress Tolerances Over A 38-Year Period of US Maize Hybrid Introductions
2. 2015, Martha R. Winters, M.S., Optimization of Nitrogen and Phosphorus Fertilizer Timing and Placement in Coulter-Based Strip-Till Corn Systems
3. 2015, Amanda De Oliveira Silva, M.S., Evaluation of Nitrogen Use Efficiency (NUE) in Maize Genotypes Using In-Season Soil Applications of Isotopic Nitrogen in Field Plots
4. 2012, Yanbing Xia, Ph.D., Photosynthesis-Related Physiological Responses of Field-Grown Maize to Plant Density and Nitrogen Stress During Vegetative and Reproductive Growth Stages
5. 2009, Yanbing Xia, M.S., Soybean Plant Responses to Glyphosate and Manganese in Glyphosate-Resistant Production Systems
6. 2005, Anita Gál, M.S., Depth Dependency of Soil Carbon and Nitrogen Changes with Long-term Tillage Systems.
7. 2005, Ann M. Kline, M.S., Corn Responses to Deep Placement of Phosphorus and Potassium in High Yield Production Systems
8. 2002, Mercedes Murua, M.S., Polymer Seed Coating Effects on Feasibility of Early Planting in Corn
9. 2001, Melissa J. Arends, M.S., Feasibility of Fall Strip Tillage for Corn Production in Indiana
10. 1995, Lynn E. Rowan, M.S., Cropping Sequence Effects on Soil Hydraulic and Physical Properties
11. 1994, Deneen B. Sebastian, M.S., Red Clover Management Options and Their Effect on Corn Performance and Soil Structural Properties
12. 1992, Beverly S. Green, M.S., The Effects of Long-Term Crop Rotation and Tillage on Corn Growth and Selected Soil Properties

- **Graduate Classes Taught:**

Purdue University

AGRY 598C

Cropping Systems Research (3 credits, first taught in 2008, repeated in 2010, 2012, 2014, 2016 and 2018). Most recent Student Evaluation Rating of the overall instructor question is 4.5/5.0, and the overall course question is 4.8/5.0.

AGRY 696

Graduate Seminar (1 credit seminar, 2009)

University of Guelph

29-623

Colloquium in Crop Physiology and Management (annually from 1989-1997)

Undergraduate Teaching Experience at the University of Guelph (1978 to 1998):

Taught over 800 students at the diploma, undergraduate, and graduate levels. Student evaluations averaged for this 20-year period ranked the professor as 4.3 out of a possible 5.0.

Undergraduate Course Teaching	Credits	Years
29-422 Cropping Systems	4	1986-1998
29-423 Cropping Systems II	4	1984
290434 Selected Topics in Crop Science	2	1985-1994
01-103 The Agriculture and Food System	2	1978-1984, Tutorial Leader

Cumulative Research Funding:

Research funding to my program estimated to total over \$7.0 million since 1985 from international sources (e.g. CIMMYT), national and regional government levels (e.g. USDA-NIFA), corn and soybean crop commodity boards in both Indiana and Ontario, seed companies (Dupont-Pioneer, Dow AgroSciences, Monsanto/Climate Corporation), farm equipment companies (John Deere, Case IH, Environmental Tillage Systems), Soil & Water Conservation Districts in multiple states, and numerous agricultural foundations, agricultural corporations and industry associations. **The formal grants don't indicate the total support since it doesn't include gift income and in-kind contributions to my program. I have received over \$1.5 million in unrestricted gift support for Cropping Systems research since joining Purdue in 1998.**

In terms of for profit corporate support in the United States, I have received grant or gift research funding from Pioneer Hi-Bred Int'l., Inc., Monsanto Company, Georgia Pacific, Dow AgroSciences, John Deere, Case-New Holland, Landec Corporation, Potash Corporation, The Mosaic Company, Valent BioSciences, Yara Int'l. Ltd., Environmental Tillage Systems, and others.

Not-for Profit support has been received from CIMMYT, Soil and Water Conservation Districts, Howard G. Buffett Foundation, International Plant Nutrition Institute, 4R Nutrient Stewardship Fund, Fluid Fertilizer Foundation, Foundation for Agronomic Research, and others.

My cropping systems program has also benefited from frequent in-kind donations from various corporations. Examples are John Deere (gift of 1780 6/11 row-crop planter, annual use of a RTK precision-guided Deere 8245R series tractor (> 200 HP) and 2510H NH₃ applicator, Pioneer Hi-Bred (approximately \$10,000 retail value in free corn and soybean seed annually), Dow AgroSciences (gifts of corn seed and nitrification inhibitors), Monsanto (commercial and era hybrid corn seed) and strip tillage equipment from Remlinger Manufacturing (OH), John Deere, Case-DMI, and Environmental Tillage Systems.

Extension Responsibilities:

On an annual basis, I typically speak directly to over 2500 conference or workshop participants (certified crop advisors, farmers, academics, etc.). I normally am an invited speaker at agricultural conferences in over four Corn Belt states each year. I am interviewed regularly by print, radio and

TV media from numerous states on topical tillage, environmental, nutrient management, and crop management issues that relate to both environmental and economic sustainability in field crop agriculture systems. I write Extension articles and conference proceedings (both refereed and non-refereed) as time permits. See examples of recent Extension publications at the end of this CV.

My largest single undertaking in Extension has been leading the organization of the annual Crop Advisor Conference. In 2003, I lead the Purdue efforts to jointly sponsor this 2-day educational conference with the Indiana CCA Board. Our attendance at this mid-December conference has grown from approximately 300 to over 700 each year between 2012 and 2017. My partner from the IN CCA Board (Dr. Kim Polizotto) and I act as co-chairs of this highly successful conference with almost 40 invited speakers addressing the theme areas for which Continuing Education Units (CEU) are required (including Soil and Water Management, Nutrient Management, Crop Management and Pest Management). I edited the conference proceedings until 2009, but these are no longer required.

- **National and International Media Contacts:**

I have been quoted by reporters for national newspapers related to questions concerning greenhouse gas emissions arising from nitrogen application to corn, the consequences of genetic and crop management improvements on nitrogen efficiencies over time, corn response to drought stress, the science of plant competition in corn fields, and other agronomy topics for which our research is relevant. National newspapers and media sources that have featured our group's research at Purdue University include Reuters, Washington Post, Wall Street Journal, USA Today, Time Magazine, and Los Angeles Times.

- **Local and Farm Magazine Reporters:** I interact with local news agencies and provide content to farm magazines including Indiana Agri-News, Farm Journal, No-Till Farmer, Corn and Soybean Digest, Successful Farming, Farm Progress, Prairie Farmer, etc.

International Collaborations:

Since 1976, I have presented research papers at internationally sponsored scientific conferences in Argentina, Australia, Brazil, Canada, Denmark, France, England, Germany, Hungary, Italy, Scotland, The Netherlands, and United States. I have participated in research collaboration visits with academic institutions in Argentina, Brazil, China, Hungary, Kenya and The Netherlands. My wife and I lived in Western Australia for 5 months in 2005, and in Wageningen, The Netherlands, during my recent sabbatical (Jan. 2 – May 31, 2017). In 2011, 2015, 2016, and 2017 I gave invited talks about my maize research to the Chinese Academy of Agricultural Sciences and China Agricultural University in Beijing, to provincial Academies of Agricultural Sciences and to Shandong Agricultural University. In 2012 -2017, I gave invited talks about my tillage, maize physiology and nutrient placement research to land grant universities in Alabama, Georgia, Illinois, Iowa, Michigan, Nebraska, Tennessee, and Ohio, as well as to the University of Guelph in Ontario, Canada. Approximately half of the graduate students I have mentored are from home countries outside of North America.

Examples of invited research lectures – Presentations to educational/research institutions in China in 2011, 2015 and 2016:

1. Vyn, T.J. (March 17, 2016). *Prospects for achieving higher nutrient efficiency as yields increase in cereal production systems*. **Keynote Presentation** to International Symposium on Nutrient Use Efficiency (Beijing, China)

2. Vyn, T.J. (August 12-21, 2015). ***Tillage and cropping systems approaches to improving nitrogen efficiencies in U.S. maize production.*** Invited talks to China Agricultural University (Beijing), Jilin Academy of Agricultural Sciences (Changchun), Shandong Agricultural University (Taian, China)
3. Vyn, T.J. (June 21, 2011). ***Research experiences with management influences on nitrous oxides in high yield maize systems.*** Invited talk to National Chinese Academy of Agricultural Sciences. Beijing, China.
4. Vyn, T.J. (June 20 - 26, 2011). ***Recent perspectives on phenotyping for NUE and yield in maize at multiple plant densities.*** Invited talks to National Chinese Academy of Agricultural Sciences. Beijing, to the Jilin Province Chinese Academy of Agricultural Sciences, Chungchun, and to Heilongjuan Province Chinese Academy of Agricultural Sciences, Harbin, China.
5. Vyn, T.J. (June 27, 2011). ***Perspectives on maize plant competition dynamics in high density and nitrogen stress conditions.*** Invited talk to China Agricultural University, Beijing, China.

- **International Visitors to our Research Program:**

From 2011 to 2017, our research group has hosted over 25 short-stay visits (e.g. 1 day) to our research program from touring groups of agronomists, farmers, agricultural business executives, and agricultural universities. The countries represented have included Argentina, Brazil, Chile Italy, and Spain. Some groups have been partially sponsored by seed companies like Dow AgroSciences, DuPont-Pioneer and Syngenta, but others represent no-till and corn producer associations, etc. My graduate students and Visiting Scholars from Argentina and Brazil are essential to providing translation services when I (and other Purdue faculty) make presentations to these groups from South America.

Professional Publications:

Author or co-author of 112 refereed manuscripts and over 250 abstracts and conference proceedings in the general areas of conservation tillage, maize hybrid/plant density/nitrogen interactions, greenhouse gas emissions, soil quality (including carbon and nitrogen sequestration), nutrient management (placement, rate, timing, source), crop rotation systems, crop physiology, and pest management interactions with tillage systems. The journals are normally in the top tier of those available for the subject area of the research. Three more papers are currently under review.

Total Citations to my refereed journal articles are > 4,200 according to Google Scholar Citations (March, 2018). Citations are often, but not always, most frequent for the 7 review papers on aspects of corn physiology and cropping system research (data synthesis) that my group has published in the last 10 years. These special review papers are highlighted in yellow in the publication list below.

Book Chapter:

Vyn, T.J., K. Janovicek and M.R. Carter. 1994. Tillage requirements for annual crop production in Eastern Canada. P. 48-73 in M.R. Carter (ed.) Conservation Tillage in Temperate Agroecosystems, CRC Press, Boca Raton, Florida.

Refereed Publications:

Notes:

- **An underlined first author name with asterisk refers to graduate student advisee; an underlined first author without asterisk refers to post-doc or research associate, and an asterisk alone refers to corresponding author(s).**
 - **Other and more current publications with appropriate links to the manuscript PDF or abstract-link in the individual publications can generally be found on my home page.**
1. Tollenaar, M., K. Dzotsi, S. Kumudini, K. Chen, J. Hatfield, J.W. Jones, J. I. Lizaso, R.L. Nielsen, P. Thomison, D.J. Timlin, O. Valentenuz, T. J. Vyn and H. Yang. 2018. Modeling the effects of genotypic and environmental variation on maize phenology: The phenology subroutine of the AgMaize crop model. Chapter 1 in Agronomy Monograph 60. J. Hatfield et al. editors, American Society of Agronomy. [View the Publication](#)
 2. Mueller, S.M.*, H.R. Pasley, L. Olmedo Pico, S.D. Armstrong, R. Sripada and T.J. Vyn. 2018. Re-evaluation of soil N sampling strategy effects on statistical power. Commun. Soil Sci. & Plant Anal. Published July 9, 2018. [View the Publication](#)
 3. Mueller, S.M., and T.J. Vyn*. 2018. Can late-split nitrogen application increase ear nitrogen accumulation rate during the critical period in maize? Crop Science 58:1-12. doi:10.2135/cropsci2017.0200118 [Open Access](#)
 4. Mueller, S.M.*, J. Camberato, C. Messina, J. Shanahan, H. Zhang and T.J. Vyn*. 2017. Late-split N applications increased maize plant N recovery but not yield under moderate to high N rates. Agron. J. 109: 2689-2699 doi:10.2134/agronj2017.05.0282 [View the Publication](#)
 5. Chen, Keru*, and Tony J. Vyn*. 2017. Post-silking factor consequences for N efficiency changes over 38 years of commercial maize hybrids. Frontiers in Plant Science 8:1737 1-18 <https://goo.gl/9ync3K> *Journal impact factor = 4.298. ~700 views to date.*
 6. Omonode, R.A., A. D. Halvorson, B. Gagnon, and T.J. Vyn*. 2017. Achieving lower nitrogen balance and higher nitrogen recovery efficiency reduces nitrous oxide emissions in North America's maize cropping systems. Frontiers in Plant Science 8:1080. doi: 10.3389/fpls.2017.01080 <https://goo.gl/XiAtMf> *Journal impact factor = 4.298 and >1680 views since posting on June 23.*
 7. Li, G., B. Zhao, S., Dong, J. Zhang, P. Liu and T.J. Vyn. 2017. Impact of controlled release on urea on maize yield and nitrogen use efficiency under different water conditions. PLoS ONE 12 (7): doi.org/10.1371/journal.pone.0181774
 8. Chen, K.*, J.J. Camberato, and T. J. Vyn*. 2017. Maize grain yield and kernel component relationships to morphophysiological hybrids separated by four decades. Crop Science 57 (3): 1-17. DOI: 10.2135/cropsci2016.06.0540 Open Access: <https://goo.gl/VT2H8m>
 9. de Oliveira Silva, A.*, J.J. Camberato, T. Coram, T. Filley, and T.J. Vyn*. 2017. Applicability of a "multi-stage pulse labeling" ¹⁵N approach to phenotype N dynamics in maize plant components during the growing season. Front. Plant Sci. 8: 1-17. <https://goo.gl/uiYHx8>

Refereed Publications (continued)

10. Kovacs, P., and T.J. Vyn*. 2017. Relationships between ear-leaf nutrient concentrations at silking and corn biomass and grain yields at maturity. *Agron. J.* 109:2898-2906.
<https://goo.gl/X42q5W>
11. Chen, K.*, J. J. Camberato, M. R. Tuinstra, S. V. Kumudini, M. Tollenaar, and T. J. Vyn*. 2016. Genetic improvement in density and nitrogen stress tolerance traits over 38 years of commercial maize hybrid release. *Field Crops Res.* 196: 438-451. doi: 10.1016/j.fcr.2016.07.025.
12. Mueller, S.M.* and T.J. Vyn*. 2016. Maize plant resilience to N stress and post-silking N capacity changes over time: A review. *Frontiers in Plant Science* 7:53 1-14.
<https://goo.gl/wq7ojP> ***This paper had ~5,000 views and downloads since Feb. 9, 2016. Journal impact factor = 4.298***
13. Chen, K.*, S.V. Kumudini, M. Tollenaar, and T.J. Vyn*. 2015. Plant biomass and nitrogen partitioning changes between silking and maturity in newer versus older maize hybrids. *Field Crops Research* 183: 315-328. Retrieved from: <https://goo.gl/xuh2RC>
14. Kovács, P.*, G.E. Van Scoyoc, T. A. Doerge, J.J. Camberato, and T.J. Vyn*. 2015. Anhydrous ammonia timing and rate effects on maize N use efficiencies. *Agronomy Journal* 107: 1205-1214. doi:10.2134/agronj14.0350; Retrieved from: <https://goo.gl/YCMiJF>
15. Omonode, R. A.*, Kovács, P., & Vyn, T. J.* 2015. Tillage and nitrogen rate effects on area- and yield-scaled nitrous oxide emissions from pre-plant anhydrous ammonia. *Agronomy Journal* 107: 605-614, doi:10.2134/agronj14.0440 Retrieved from <https://goo.gl/GhZfi7>
16. Ciampitti, I. A.* & Vyn, T. J.* (2014). Understanding global and historical nutrient use efficiencies for closing maize yield gaps. *Agronomy Journal*, 106: 634-644. Retrieved from <https://goo.gl/qv6kSx> . This article has been downloaded ~2900 times.
17. Kovács, P.* & Vyn, T. J.* (2014). Full-season retrospectives on causes of plant-to-plant variability in maize grain yield response to nitrogen and tillage. *Agronomy Journal*, 106(5): 1746-1757. Retrieved from: <https://goo.gl/w2gxSr>
18. Kovács, P.*, Doerge, T. A., Van Scoyoc, G. E., Camberato, J. J., & Vyn, T. J.* (2014). Pre-plant anhydrous ammonia placement consequences on no-till versus conventional maize growth and nitrogen responses. *Agronomy Journal*, 106: 634-644. Retrieved from: <https://goo.gl/jYsXHL>
19. Kumudini, S.*, Andrade, F. H., Edmeades, G. O., Nielsen, R. L., Thomison, P. R., Vyn, T. J. and other authors, Tollenaar, M.* (2014). Predicting maize phenology: Intercomparison of functions for developmental response to temperature. *Agronomy Journal*, 106: 2087-2097. Retrieved from: <https://goo.gl/yFFuQi>

Refereed Publications (continued)

20. Ciampitti, I. A.*, & Vyn, T. J.* (2014). Nutrient sufficiency concepts for modern corn hybrids: Impacts of management practices and yield levels. *Crop Management*, 13(1), 1-7. Retrieved from: <https://goo.gl/PGhyE8>
21. Burzaco, J. P. *, I. A. Ciampitti, and T. J. Vyn*. 2014. Nitrapyrin impacts on maize yield and nitrogen use efficiency with spring-applied nitrogen: Field studies vs. meta-analysis comparison. *Agronomy Journal* 106:753-760. doi:10.2134/agronj2013.0043
<https://www.agronomy.org/publications/aj/abstracts/106/2/753>
22. Kovacs*, P., G.E. Van Scoyoc, T. A. Doerge, J.J. Camberato, and T.J. Vyn*. 2014. Pre-plant anhydrous ammonia placement consequences on no-till versus conventional maize growth and nitrogen responses. *Agronomy Journal* 106:634-644. doi:10.2134/agronj2013.0356
Open Access <https://dl.sciencesocieties.org/publications/aj/abstracts/106/2/634>
23. Boyer, J.S., P. B. Byrne, K.G. Cassman, M. Cooper, D. Delmer, T. Greene, F. Gruis, J. Habben, N. Hausmann, N. Kenny, R. Lafitte, S. Paszkiewicz, D. Porter, A. Schlegel, J. Schussler, T. Setter, J. Shanahan, R.E. Sharp, T.J. Vyn, D. Warner, and J. Gaffney*. 2013. The U.S. drought of 2012 in perspective: A call to action. *Global Food Security* 2:139-143. <http://dx.doi.org/10.1016/j.gfs.2013.08.002>
24. Burzaco, J. P., D.R. Smith, and T.J. Vyn*. 2013. Nitrous oxide emissions in Midwest US maize production vary widely with band-injected N fertilizer rates, timing and nitrapyrin presence. *Environmental Research Letters* 8 (3): 1-11. doi:10.1088/1748-9326/8/3/035031
Open Access <http://iopscience.iop.org/1748-9326/8/3/035031/>
25. Ciampitti*, I. A., and T. J. Vyn*. 2013. Grain nitrogen sources over time in maize: A review. *Crop Science* 53(2): 366-377. doi:10.2135/cropsci2012.07.0439 Downloaded >2800 times.
Open Access <https://dl.sciencesocieties.org/publications/cs/abstracts/53/2/366>.
26. Ciampitti*, I. A., J. J. Camberato, S. T. Murrell, and T. J. Vyn*. 2013. Maize nutrient accumulation and partitioning in response to plant density and nitrogen rate: 1. Macronutrients. *Agronomy Journal* 105(3): 783-795. doi:10.2134/agronj2012.0467
Open Access <https://dl.sciencesocieties.org/publications/aj/abstracts/105/3/783>
27. Ciampitti*, I. A., and T. J. Vyn*. 2013. Maize nutrient accumulation and partitioning in response to plant density and nitrogen rate: II Calcium, magnesium, and micronutrients. *Agronomy Journal* 105(6): 1645-1657. doi:10.2134/agronj2013.0126
<https://www.agronomy.org/publications/aj/abstracts/105/6/1645>
28. Ciampitti*, I. A., S. T. Murrell, J. J. Camberato, M. Tuinstra, Y. Xia, P. Friedemann, and T. J. Vyn*. 2013. Physiological dynamics of maize nitrogen uptake and partitioning in response to plant density and nitrogen stress factors: I. Vegetative phase. *Crop Science*,

53(6): 2588-2602. doi:10.2135/cropsci2013.01.0040
<https://dl.sciencesocieties.org/publications/cs/abstracts/53/5/2105>

Refereed Publications (continued)

29. Ciampitti*, I. A., S. T. Murrell, J. J. Camberato, M. Tuinstra, Y. Xia, P. Friedemann, and T. J. Vyn*. 2013. Physiological dynamics of maize nitrogen uptake and partitioning in response to plant density and nitrogen stress factors: II. Reproductive phase. *Crop Science*, 53(6): 2588-2602. doi:10.2135/cropsci2013.01.0041
<https://dl.sciencesocieties.org/publications/cs/abstracts/53/6/2588>
30. Omonode, R.A., and T.J. Vyn*. 2013. Nitrification kinetics and nitrous oxide emissions when nitrapyrin is coapplied with urea–ammonium nitrate. *Agron. J.* 105:1475–1486. doi:10.2134/agronj2013.0184
<https://dl.sciencesocieties.org/publications/aj/abstracts/105/6/1475>
31. Roth, J. A., I. A. Ciampitti, and T. J. Vyn*. 2013. Physiological evaluations of recent drought-tolerant maize hybrids at varying stress levels. *Agronomy Journal*, 105, 1129-1141. doi:10.2134/agronj2013.0066
<https://dl.sciencesocieties.org/publications/aj/abstracts/105/4/1129>
32. Seo, J.* , T.J. Vyn, A. Gál, and D.R. Smith. 2012. Soil greenhouse gas emissions from three decades long-term experimental field of corn-soybean rotation and tillage treatments. *Korean J. Crop Sci.* 57 (1): 89-97.
33. Ciampitti, I. A.*, H. Hao, P. Friedemann, and T.J. Vyn*. 2012. Potential physiological frameworks for mid-season field phenotyping of final plant N uptake, N use efficiency and grain yield in maize. *Crop Science* 52:2728-2742. doi:10.2135/cropsci2012.05.0305
34. Robles, M., I.A. Ciampitti, and T.J. Vyn*. 2012. Responses of maize hybrids to twin-row spatial arrangement at multiple plant densities. *Agron. J.* 104:1747-1756. doi:10.2134/agronj2012.0231
35. Ciampitti, I.A.*, and T.J. Vyn*. 2012. Physiological perspectives of changes over time in maize yield dependency on nitrogen uptake and associated nitrogen efficiencies: A review. *Field Crops Res.* 133: 48-67.
<http://www.sciencedirect.com/science/article/pii/S0378429012001013>
This article, with >150 citations to date, was #6 on the list of the 25 most cited manuscripts since 2012 in Field Crops Research, an int'l. journal with an Impact Factor of 3.05 (began publication in 1978).
36. Ciampitti, Ignacio A.*, and Tony J. Vyn*. 2011. A comprehensive study of plant density consequences on nitrogen uptake dynamics of maize plants from vegetative to reproductive stages. *Field Crops Res.* 121: 2-8.

Refereed Publications (continued)

37. Omonode, R.A., A. Gál, D.R. Smith and T.J. Vyn*. 2010. Nitrous oxide fluxes in corn following three decades of tillage and rotation treatments. *Soil Sci. Soc. Am. J.* 75:.
<https://www.soils.org/files/publications/sssaj/abstracts/75-1/s09-0147-4-12-7-2010.pdf>
38. Griffin, T.W.; Dobbins, C.L.; Florax, R.J.G.M.; Lowenberg-DeBoer, J.M.; Vyn, T.J. 2010. [Spatial Analysis of Precision Agriculture Data: Role for Extension](#). *J. National Assoc. Agric. Agents* (on-line).
39. Boomsma, C.R.*, J.B. Santini, T.D. West, J.C. Brewer*, L.M. McIntyre, and T. J. Vyn.*, 2010. Maize grain yield responses to plant height variability resulting from crop rotation and tillage system in a long-term experiment. *Soil Tillage Res.*
<http://dx.doi.org/10.1016/j.still.2009.12.006>
40. Gonzalo, M.*, J.B. Holland, T.J. Vyn and L.M. McIntyre. 2009. Direct mapping of density response in a population of B73 Mo17 recombinant inbred lines of maize (*Zea Mays* L.) *Heredity* 140. doi: 10.1038/hdy.2009.140
<http://www.nature.com/hdy/journal/vaop/ncurrent/abs/hdy2009140a.html>
41. Boomsma, C.R.*, J.B. Santini, M. Tollenaar, and T.J. Vyn*. 2009. Maize morpho-physiological responses to intense crowding and low nitrogen availability: An analysis and review. *Agron. J.* 101: 1426-1452
Open Access <https://dl.sciencesocieties.org/publications/aj/abstracts/101/6/1426?search-result=1> Over 2700 downloads and 138 citations to date.
42. Westphal, A.* , L.J. Xing, R. Pillsbury and T.J. Vyn. 2009. Effect of tillage intensity on population densities of *Heterodera glycines* in intensive soybean production systems. *Field Crops Research*. <http://dx.doi.org/10.1016/j.fcr.2009.05.009>
43. Griffin, T.W., C.L. Dobbins, T.J. Vyn, R.J.G.M. Florax, and J.M. Lowenberg-DeBoer. 2008. Spatial analysis of yield monitor data: case studies of on-farm trials and farm management decision making. *Precision Agriculture* DOI 10.1007/s11119-008-9072-2.
44. Boomsma, C.R.*, and T.J. Vyn*. 2008. Maize drought tolerance: Potential improvements through arbuscular mycorrhizal symbiosis? *Field Crops Research* 108: 14-31. >100 citations to date.
45. Creech, J. E., A. Westphal, V. R. Ferris, J. Faghihi, T. J. Vyn, J. B. Santini, and W. G. Johnson*. 2008. Influence of winter annual weed management and crop rotation on soybean cyst nematode (*Heterodera glycines*) and winter annual weeds. *Weed Sci.* 56:103-111. (ARP manuscript no. 2007-18154).
46. Gonzalo, M.*, T. J. Vyn, J. B. Holland & L. M. McIntyre. 2007. Mapping reciprocal effects and interactions with plant density stress in *Zea mays* L. *Heredity* 2007 99:14-30; advance online publication, May 2, 2007; 10.1038/sj.hdy.6800955.

Refereed Publications (continued)

47. Gál, A.*, T.J. Vyn*, E. Michéli, E.J. Kladvko, and W.W. McFee. 2007. Soil carbon and nitrogen accumulation with long-term no-till versus moldboard plowing overestimated with tilled-zone sampling depths. *Soil Tillage Research*. 96:42-51. Most cited paper from my program.
48. Omonode, R.A., T.J. Vyn*, D.R. Smith, P. Hegymegi, and A. Gál. 2007. Soil carbon dioxide and methane fluxes from long-term tillage systems in continuous corn and corn-soybean rotations. *Soil and Tillage Research*. 95:182-195.
49. Janovicek, K. J.*, W. Deen, and T. J. Vyn. 2006. Soybean response to zone tillage, twin-row planting, and row spacing. *Agron. J.* 98:800:807.
50. Omonode, Rex. A., and Tony J. Vyn*. 2006. Vertical distribution of soil organic carbon and nitrogen under warm season native grasses relative to croplands. *Agric., Ecosystems & Envir.* Vol. 17 (issues 2-3):159-170.
51. Gonzalo, M.*, J. Holland, T. Vyn and L. McIntyre. 2006. Mapping density response in maize: a direct approach for testing genotype and treatment interactions. *Genetics* 173:331-348.
52. Omonode, R.A., A. Gál*, D.E. Stott, T.S. Abney and T.J. Vyn*. 2006. Short-term versus continuous chisel and no-till effects on soil carbon and nitrogen. *Soil Sci. Soc. Am. J.* 70:419-425.
53. Omonode, R.A., and T.J. Vyn*. 2006. Spatial dependence and relationships of electrical conductivity to soil organic matter, phosphorus and potassium, *Soil Science* 171(3):223-238.
54. Yin, Xinhua and T.J. Vyn*. 2005. Relationships of isoflavone, oil, and protein in seed with yield of soybean. *Agron. J.* 97:1314-1321.
55. Yin, Xinhua and T.J. Vyn*. 2004. Critical leaf potassium concentrations for yield and seed quality of conservation-till soybean. *Soil Sci. Soc. Am. J.* 68:1626-1634.
56. Yin, X.* and T.J. Vyn*. 2004. Residual effects of potassium placement in conservation-till corn on subsequent no-till soybean. *Soil and Tillage Research* 75:151-159.
57. Yin, X.*, and T. J. Vyn*. 2003. Previous corn row effects on potassium nutrition and yield of subsequent no-till soybean. *J. Plant Nutrition* 26 (7):1383-1402.
58. Drury, C.F., C.S. Tan, W.D. Reynolds, T.W. Welacky, S.E. Weaver, A.S. Hammill, and T.J. Vyn. 2003. Impacts of zone tillage and red clover on corn performance and soil physical quality. *Agron. J.* 67:867-877.
59. Yin, X.H.*, and T.J. Vyn*. 2003. Potassium placement effects on yield and seed composition of no-till soybean seeded in alternate row widths. *Agron. J.* 95:126-132.

Refereed Publications (continued)

60. Vyn, T.J.*, and D.C. Hooker. 2002. Assessment of multiple- and single-factor stress impacts on corn. *Field Crops Res.* 75:123-137.
61. Vyn, T.J.*, X. Yin*, T.W. Bruulsema, C.C Jackson, I. Rajcan, and S.M. Brouder. 2002. Potassium fertilization effects on isoflavone concentrations in soybean [*Glycine max* (L.) Merr.]. *J. Agric. Food Chem.* 50:3501-3506.
62. Yin, X.*, and T.J. Vyn*. 2002. Residual effects of potassium placement and tillage systems for corn on subsequent no-till soybean. *Agron. J.* 94:112-1119.
63. Garcia-Garca, J.A., S. Neumann, T.J. Vyn and G.J. Boland. 2002. Influence of crop rotation and tillage on production of apothecia by *Sclerotinia sclerotiorum*. *Can. J. Plant Pathology*, Volume 24(2): 137-143.
64. Yin, X.*, and T. J. Vyn*. 2002. Soybean responses to potassium placement and tillage alternatives following long-term no-till. *Agron. J.* 94:1367-74.
65. Vyn, T.J*., D.M. Galic and K.J. Janovicek. 2002. Corn response to potassium placement in conservation tillage. *Soil Tillage Res.* 67(2):159-169.
66. Vyn, T.J.*, and K.J. Janovicek*. 2001. Potassium placement and tillage system effects on corn response following long-term no-till. *Agron. J.* 93:487-495.
67. Vyn*, T.J., J.G. Faber*, K.J. Janovicek*, and E.G. Beauchamp. 2000. Cover crop management effects on nitrogen availability to corn following wheat. *Agron. J.* 92:915-924.
68. Yiridoe, E.K., T.J. Vyn, A. Weersink, D.C. Hooker*, and C. Swanton. 2000. Farm-level profitability analysis of alternative tillage systems on clay soils. *Can. J. Plant Sci.* 80 (1): 65-73.
69. Yiridoe, E.K., A. Weersink, D.C. Hooker*, T.J. Vyn, and C. Swanton. 2000. Income risk analysis of alternative corn and soybean production on clay soils. *Can. J. Agric. Econ.* 48(2):161-174.
70. Swanton, C.J., T.J. Vyn, K. Chandler, and A. Shresthra. 1999. Alternative weed control strategies for no-till soybean (*Glycine max*) grown on clay soils. *Weed Technology* 12:660-669.
71. Vyn, T.J., K.J. Janovicek*, M.H. Miller, and E.G. Beauchamp. 1999. Soil nitrate accumulation and corn response to preceding small grain N fertilization and cover crops. *Agron. J.* 91:17-24.
72. Wanniarachi, S.D., R.P. Voroney, T.J. Vyn, R.P. Beyaert, and A.F. MacKenzie. 1999. Tillage effects on the dynamics of soil total and corn-derived organic matter in two southern Ontario soils. *Can. J. Soil Sci.* 79:473-480.

Refereed Publications (continued)

73. Vyn, T.J., and M. Tollenaar. 1998. Physical and chemical parameters of corn grain associated with three decades of maize yield improvement. *Field Crop Research* 59:135-140.
74. Vyn, T.J., G. Opoku* and C.J. Swanton. 1998. Residue management and minimum tillage systems for soybeans following wheat. *Agron. J.* 90:131-138.
75. Hooker, D.C.*, T.J. Vyn* and C.J. Swanton. 1998. Alternative weed strategies in conservation tillage systems for white beans (*Phaseolus vulgaris* L.). *Can. J. Plant Sci.* 78:363-370.
76. Ding, W., D.J. Hume, T.J. Vyn and E.G. Beauchamp. 1998. N credit of soybean to a following corn crop in central Ontario. *Can. J. Plant Sci.* 78:29-33.
77. Dapaah, H.K.*, and T.J. Vyn. 1998. Nitrogen fertilization and cover crop effects on soil structural stability and corn performance. *Comm. Soil Sci. & Plant Anal.* 29: 2557-2569.
78. Opoku, G.*, and T.J. Vyn. 1997. Wheat residue management options for no-till corn. *Can. J. Plant Sci.* 77:207-213.
79. Opoku, G.*, T.J. Vyn* and C.J. Swanton. 1997. Modified no-till systems for corn following wheat on clay soils. *Agron. J.* 89:549-556.
80. Hooker, D.C.*, T.J. Vyn and C.J. Swanton. 1997. Effectiveness of soil-applied herbicides with mechanical weed control for conservation tillage systems in soybean. *Agron. J.* 89:579-587.
81. Janovicek, K.J.*, T.J. Vyn and R.P. Voroney. 1997. No-till corn response to crop rotation and in-row residue placement. *Agron. J.* 89:588-596.
82. Janovicek, K.J.*, T.J. Vyn, R.P. Voroney and O.B. Allen. 1997. Early corn seedling growth response to acetic, propionic and butyric acids. *Can. J. Plant Sci.* 77: 333-337.
83. Janovicek, K.J.*, T.J. Vyn, R.P. Voroney and O.B. Allen. 1997. Early corn seedling growth response to phenolic acids. *Can. J. Plant Sci.* 77: 391-393.
84. Opoku, G.*, T.J. Vyn and R.P. Voroney. 1997. Wheat straw placement effects on total phenolic compounds in soil and corn seedling growth. *Can. J. Plant Sci.* 77:301-305.
85. Aflakpui, G.K.S., T.J. Vyn, G.W. Anderson, D.R. Clements, M.R. Hall and C.J. Swanton. 1994. Crop management systems for corn following established alfalfa (*Medicago sativa* L.). *Can. J. Plant Sci.* 74:255-259.
86. Stewart, G.A.*, and T.J. Vyn*. 1994. Influence of high axle loads and tillage systems on soil properties and grain corn yield. *Soil Tillage Research* 129:229-235.

Refereed Publications (continued)

87. Vyn, T.J., and B.A. Raimbault. 1993. Long-term impact of five tillage systems on corn response and soil structure. *Agron. J.* 85:1074-1079.
88. Tollenaar, M., M. Mihajlovic and T.J. Vyn. 1993. Corn growth following cover crops: Influence of cereal cultivar, cereal removal, and nitrogen rate. *Agron. J.* 85:251-255.
89. Aflakpui, G.K.S., T.J. Vyn, M.R. Hall, G.W. Anderson and C.J. Swanton. 1993. Effect of tillage on nitrogen response in corn (*Zea mays* L.) after established alfalfa (*Medicago sativa* L.). *Can. J. Plant Sci.* 73:73-81.
90. Tollenaar, M., M. Mihajlovic and T.J. Vyn. 1992. Annual phytomass production of a rye-corn double cropping system in Ontario. *Agron. J.* 84:963-967
91. Clarke, N.D., M.D. McLeish and T.J. Vyn. 1992. Using certainty factors and possibility theory methods in a tillage selection expert system. *Expert Systems Appl.* 4:53-62.
92. Vyn, T.J. and B.A. Raimbault. 1992. Evaluation of strip tillage systems for corn production in Ontario. *Soil Tillage Research* 19:163-176.
93. Vyn, T.J., J.C. Sutton and B.A. Raimbault. 1991. Crop sequence and tillage effects on winter wheat development and yield. *Can. J. Plant Sci.* 71:669-676.
94. Raimbault, B.A., T.J. Vyn and M. Tollenaar. 1991. Corn response to rye cover crop, tillage methods and planter options. *Agron. J.* 83:207-217.
95. Raimbault, B.A. and T.J. Vyn. 1991. Crop rotation and tillage effects on corn growth and soil structural stability. *Agron. J.* 83:979-985.
96. Farquharson, B.J., R.P. Voroney, E.G. Beauchamp and T.J. Vyn. 1990. The use of calcium nitrate to reduce the accumulation of phytotoxins produced during residue decomposition. *Can. J. Soil Sci.* 70:723-726.
97. Vyn T.J., J.A. Stone and B.A. Raimbault. 1990. Corn development and crop yield response to ridge planting systems on a poorly drained soil in Southwestern Ontario. *Soil Till. Research* 18:207-217.
98. Stone, J.A., T.J. Vyn and N.D. Clarke. 1990. Ridge tillage for corn and soybean production on clay and clay-loam soils in southwestern Ontario - a review. *Soil Tillage Research* 18:219-230.
99. Sutton, J.C. and T.J. Vyn. 1990. Crop sequences and tillage practices in relation to diseases of winter wheat in Ontario. *Can. J. Plant Pathology* 12:358-368.
100. Raimbault, B.A., T.J. Vyn and M. Tollenaar. 1990. Corn response to rye cover crop management and spring tillage systems in Southern Ontario. *Agron. J.* 82:1088-1093.

Refereed Publications (continued)

101. Clarke, N.A., J.A. Stone and T.J. Vyn. 1990. Conservation tillage expert system for Southwestern Ontario: Multiple experts and decision techniques. *J. Artificial Intelligence* 4(2):78-84.
102. Stone, J.A., T.J. Vyn, H.D. Martin and P.H. Groenvelt. 1989. Ridge tillage and early season soil moisture and temperature on a poorly drained soil. *Can. J. Soil Sci.*69:181-186.
103. Moes, J. * and T.J. Vyn. 1988. Management effects on kernel breakage susceptibility of early maturing corn hybrids. *Agron. J.* 80:699-704.
104. Vyn, T.J. and J. Moes*. 1988. Breakage susceptibility of corn kernels in relation to crop management under long growing season condition. *Agron. J.* 80:915-920.
105. Gaynor, J.D., J.A. Stone and T.J. Vyn. 1987. Tillage systems and atrazine and alachlor residues in a poorly drained soil. *Can. J. Soil Sci.* 67:959-963.

Examples of Published Abstracts:

Most of these are associated with the American Society of Agronomy Annual Meetings (Six in 2016, seven in 2015, nine in 2014, five in 2013, nine in 2012, and seven in 2011):

1. Mueller, S.M., J.J. Camberato, C. Messina, H. Zhang and T.J. Vyn. 2017. Late-Season Split N Applications Increase Nitrogen Recovery but not Yield in Maize. Oral Presentation at ASA/CSSA/SSSA Annual Meeting. October 2017, Tampa, FL.
2. Mueller, S.M., and T.J. Vyn. 2017. Physiological strategies for yield preservation despite delayed N availability in modern maize hybrids. Poster presentation at ASA/CSSA/SSSA Annual Meeting. October 2017, Tampa, F
3. Pasley, H., Cairns, J., Olsen, M., Camberato, J, Vyn, T. J. 2017. *Soil Macro- and Micro-Nutrient Pools' Role in Yield and Nitrogen Use Efficiency Responses of Maize Hybrids to N in Africa*. Oral Presentation at ASA/CSSA/SSSA Annual Meeting. October 2017, Tampa, FL.
4. Pasley, H., Cairns, J., Olsen, M., Camberato, J, Vyn, T. 2017. *Maize Composition in Africa*. Poster and 5 Minute Rapid Oral Presentation at ASA/CSSA/SSSA Annual Meeting. October 2017, Tampa, FL.
5. Pasley, Heather, Jill Cairns, James Camberato, Tony Vyn. 2017. *Impact of Maize Hybrids with Enhanced Nitrogen Use Efficiency on Soil Nitrogen Depletion in Sub-Saharan Africa*. Soil and Water Conservation Society Meeting. July 2017, Madison, WI.
6. Pasley, H., Cairns, J., Zaman-Allah, M., Olsen, M., Camberato, J, Vyn, T. 2017. *The Price of Soil Nitrogen Depletion in Kenya and Zimbabwe: a cost-benefit analysis*. Poster presented at CONSOWA. June 2017, Lleida, Spain.

7. Chen, K., T. J. Vyn, J. J. Camberato, M. R. Tuinstra, M. Tollenaar and S. Kumudini. 2016. Maize Genetic Improvement in Density and Nitrogen Stress Tolerance Traits from 1967 to 2005. Oral Division. Annual Meetings Nov. 6-9, Phoenix, AZ.

Published Abstracts (continued)

8. Mueller, S.M., J.J. Camberato, J.F. Shanahan, T.J. Vyn. 2016. Organ-specific N dynamics for maize plants at varying N stress in the critical period. ASA Meetings Abstract #94-8. Oral Division C02. Annual Meetings Nov. 6-9, Phoenix, AZ.
<https://scisoc.confex.com/scisoc/2016am/webprogram/Paper100402.html>
9. Mueller, S.M., T.D. West, T.J. Vyn. 2016. Stability of corn yield response to crop rotation: a 40-year retrospective. ASA Meetings Abstract #334-1109. Poster Division C03. Annual Meetings Nov. 6-9, Phoenix, AZ.
<https://scisoc.confex.com/scisoc/2016am/webprogram/Paper100410.html>
10. Omonode Rex A., and Tony J. Vyn. 2016. Effects of ecological intensification and late-split N timing on the relationship between nitrous oxide emission and nitrogen recovery efficiency in corn. Abstract 47-19; ASA-SSSA-CSSA International Annual Meeting, Phoenix, AZ. Nov 6-9, 2016. <https://scisoc.confex.com/crops/2016am/webprogram/Paper101816.html>
11. Pasley, H., Olsen, M., Das, B. Camberato, J., and Vyn, T. *Quantifying Net N Balance and Soil N Pools following Maize Hybrids with High N Use Efficiency in Sub-Saharan Africa*. Oral presentation at ASA/CSSA/SSSA Annual Meeting. November 2016, Phoenix, AZ.
12. Vyn, Tony and Rex Omonode. 2016. Relationship between nitrous oxide emission and nitrogen uptake and use efficiency in corn cropping systems. Presentation at the International Plant Nutrient Institute and Fertilizers Canada's North American 4R Nutrient Stewardship Researchers Meeting, Remington Room, Hyatt Regency, Phoenix, AZ. November 6, 2016.
13. Chen, K., and T. J. Vyn. 2015. Hybrid Era and Management Impacts on Morpho-Physiological Traits Related to Grain Yield Components in Maize. Oral Presentation. Annual Meetings, American Society of Agronomy. Nov. 15-18, Minneapolis, MN.
14. Chen, K., T. J. Vyn, M. Tollenaar, S. Kumudini, J.J. Camberato and M. R. Tuinstra. 2015. Plant Population Influences on Post-Silking N Uptake Vary with Hybrid Eras and N Rates. Poster Presentation. American Society of Agronomy. Nov. 15-18, Minneapolis, MN.
15. Brooks, S.M. and T.J. Vyn. 2015. Changes in post-silking N accumulation and allocation in maize over time: A review. ASA Meetings Abstract #55-8. Oral Division C03. Annual Meetings Nov. 15-18, Minneapolis, MN.
<https://scisoc.confex.com/scisoc/2015am/webprogram/Paper94329.html>
16. Brooks, S.M., J.J. Camberato, J. F. Shanahan, and T.J. Vyn. 2015. Earshoot N dynamics during the critical period for maize. ASA Meetings Abstract #139-13. Poster Division C02. Annual Meetings Nov. 15-18, Minneapolis, MN.
<https://scisoc.confex.com/scisoc/2015am/webprogram/Paper93305.html>

Published Abstracts (continued)

17. Brooks, S.M., J.J. Camberato, J. F. Shanahan, and T.J. Vyn. 2015. Earshoot N dynamics during the critical period for maize. ASTA Meetings Poster #16. ASTA Annual Meeting Dec. 7-11, Chicago, IL. <http://www.amseed.org/events/asta-css-seed-expo/seed-the-future-poster-presentations/>
18. Omonode, Rex A., and Tony J. Vyn. 2015. Integrated nitrogen rate and nitrification inhibitor application effects on nitrogen use efficiency and nitrous oxide emission in rainfed corn. Abstract 183-3; ASA-SSSA-CSSA International Annual Meeting, Minneapolis, MN. Nov 15-19, 2015. <https://scisoc.confex.com/scisoc/2015am/webprogram/Paper93932.html>
19. Omonode, Rex A., Douglas Smith, and Tony J. Vyn. 2015. Trace gas fluxes, global warming potential and greenhouse gas intensity related to tillage and nitrogen application with and without nitrapyrin in rainfed corn. Abstract 79-1; ASA-SSSA-CSSA International Annual Meeting, Minneapolis, MN. Nov 15-19, 2015. <https://scisoc.confex.com/scisoc/2015am/webprogram/Paper94328.html>
20. Pasley, H., Cairns, J., Zaman-Allah, M., Das, B., Olsen, M., Camberato, J., and Vyn, T. *Soil N Depletion by Maize Hybrids Differing in N Use Efficiency in Sub-Saharan Africa*. Poster presented at ASA/CSSA/SSSA Annual Meeting. November 2015, Minneapolis, MN.
21. Brooks, S.M. and T.J. Vyn. 2014. Genotype, environment and management factors controlling corn response to late season N application. ASA Meetings Abstract #164-6. Poster Division S-4. Annual Meetings Nov. 2- 5, Long Beach, CA. <https://scisoc.confex.com/scisoc/2014am/webprogram/Paper86843.html>
22. Vyn, T. J., 2014. New frontiers in integrated nitrogen and crop management systems for reduced N₂O emissions. **ASA Abstract for invited oral talk: # 70-7**. ASA, CSSA, and SSSA Annual Meetings, Nov. 2-5. Long Beach, CA. <https://scisoc.confex.com/scisoc/2014am/webprogram/Paper86712.html>
23. Chen, K. , J.J. Camberato, S.V. Kumudini, M. Tollenaar, and T.J. Vyn. 2014. Impact of older versus newer hybrids at multiple plant densities on post-flowering N uptake. ASA Abstract # 114-9. ASA, CSSA, and SSSA Annual Meetings, Nov. 2-5, Long Beach, CA. <https://scisoc.confex.com/scisoc/2014am/webprogram/Paper86309.html>
24. Chen, K., J.J. Camberato, S.V. Kumudini, M. Tollenaar and T.J. Vyn. 2014. Plant biomass and nitrogen partitioning changes between flowering and maturity in older versus newer maize hybrids. ASA Abstract # 279-1. ASA, CSSA, and SSSA Annual Meetings, Nov. 2-5, Long Beach, CA. <https://scisoc.confex.com/scisoc/2014am/webprogram/Paper86305.html>

25. Omonode, R.A., Cliff Johnston, and Tony J. Vyn. 2014. Nitrification kinetics and nitrous oxide emissions in long-term tillage systems following co-application of urea-ammonium-nitrate and Nitrapyrin. ASA Abstract # 257-6: ASA, CSSA, SSSA Annual Meetings. Long Beach, CA. Nov. 2-5 2014.
<https://scisoc.confex.com/scisoc/2014am/webprogram/Paper89190.html>

Published Abstracts (continued)

26. de Oliveira Silva, A., J.J. Camberato, T. Coram, T. Filley, and T.J. Vyn. 2014. “*Nitrogen uptake and partitioning lessons learned from pulse-labeled N applications to field-grown corn*” Abstract # 159-3 Div. SS4, ASA Meetings, (Long Beach-CA, USA, November 2-5, 2014). <https://scisoc.confex.com/scisoc/2014am/webprogram/Paper86049.html>
27. de Oliveira Silva, A., J.J. Camberato, T. Coram, and T.J. Vyn. 2014. “*Partitioning of biomass versus nitrogen to leaf, stem and ear components during corn development*” Abstract # 114-12. Div. C03, ASA, CSSA, & SSSA International Annual Meetings. Long Beach-CA, USA. (November 2-5, 2014).
<https://scisoc.confex.com/scisoc/2014am/webprogram/Paper86045.html>
28. Kovacs, P., M.R. Winters and T.J. Vyn. 2014. Revisiting relationships between mid-season ear-leaf nutrient concentrations and corn grain yields. ASA Meetings Abstract #441-7. Annual Meetings Nov. 2-5. Long Beach, CA.
<https://scisoc.confex.com/scisoc/2014am/webprogram/Paper87217.html>
29. Winters, M.R., and T. J. Vyn. 2014. Optimization of Nitrogen and Phosphorus Fertilizer Timing and Placement in Coulter-based Strip-till Corn Systems. ASA Abstract # 442-1. S-4 Poster session presented at: Grand Challenges, Great Solutions. ASA, CSSA, and SSSA International Annual Meetings. 2014 Nov. 2-5; Long Beach, CA.
<https://scisoc.confex.com/scisoc/2014am/webprogram/Paper86841.html>
30. Brooks, S., and T.J. Vyn. 2014. Genotype, environment and management factors controlling corn response to late season N application. ASA Meetings Abstract #164-6. Poster Session S-4. Annual Meetings Nov. 2-5, Long Beach, CA.
<https://scisoc.confex.com/scisoc/2014am/webprogram/Paper86843.html>
31. Chen, K., T.J. Vyn, M. Tollenaar, and S.V. Kumudini, 2013. Characterization of maize genetic improvement in response to plant density and nitrogen stress. Div. C02, ASA-CSSA-CSSA International Annual Meetings, Tampa. FL (November 1-5, 2013). Abstract # 234-16.
<https://scisoc.confex.com/crops/2013am/webprogram/Paper79764.html>
32. Ciampitti, I.A., and T.J. Vyn. 2013. Nutrient use efficiency contribution to corn productivity: A global and historical overview. Div. C03, ASA-CSSA-CSSA International Annual Meetings, Tampa. FL (November 1-5, 2013). Abstract # 103-10.
<https://scisoc.confex.com/crops/2013am/webprogram/Paper81675.html>
33. de Oliveira Silva, A., J.A. Roth, J.J. Camberato and T.J. Vyn. Do higher plant populations increase or decrease nitrogen use efficiency in corn production? Div. C03, ASA-CSSA-

CSSA International Annual Meetings, Tampa. FL (November 1-5, 2013). Abstract # 104-26. Div. C03, ASA-CSSA-CSSA International Annual Meetings, Tampa. FL (November 1-5, 2013). <https://scisoc.confex.com/crops/2013am/webprogram/Paper79953.html>

Published Abstracts (continued)

34. Kovacs, Peter, and Tony Vyn. 2013. Origins of Plant-to-Plant Yield Variability in Corn. Div. C03, ASA-CSSA-CSSA International Annual Meetings, Tampa. FL (November 1-5, 2013). Abstract # 104-24.
<https://dl.sciencesocieties.org/publications/meetings/2013am/11740/79776>
35. Kovacs, Peter, G.E. Van Scoyoc, and T.J. Vyn. 2013. Consequences of shallow pre-plant anhydrous ammonia placement on corn production. Div. S04, ASA-CSSA-CSSA International Annual Meetings, Tampa. FL (November 1-5, 2013). Abstract # 279-8
<https://scisoc.confex.com/crops/2013am/webprogram/Paper79764.html>
36. Burzaco, J.P., D.R. Smith and T.J. Vyn. 2012. Effects of Nitrapyrin, N Rates and N Timing On N₂O Emissions in Maize Fertilized with UAN. American Society of Agronomy Annual Meetings (C02 Division), Cincinnati, OH. (October 21-24, 2012). Abstract # 291-8.
<http://scisoc.confex.com/scisoc/2012am/webprogram/Paper72698.html>
37. Burzaco, J.P., D.R. Smith and T.J. Vyn*. 2012. Effects of Nitrapyrin, N Rates and N Timing On NUE in Maize Fertilized with UAN. American Society of Agronomy Annual Meetings (C02 Division), Cincinnati, OH. (October 21-24, 2012). Abstract # 291.9 * Oral Presenter.
<http://scisoc.confex.com/scisoc/2012am/webprogram/Paper72737.html>
38. Ciampitti, I.A., and T.J. Vyn*. 2012. Physiological Perspectives of Changes Over Time in Maize Yield Dependency on N Uptake and Associated Efficiencies: I. General Overview of Changes. American Society of Agronomy Annual Meetings (C02 Division), Cincinnati, OH. (October 21-24, 2012). Abstract # 243-1.* Oral Presenter
<http://scisoc.confex.com/scisoc/2012am/webprogram/Session9837.html>
39. Ciampitti, I.A., and T.J. Vyn. 2012. Physiological Perspectives of Changes Over Time in Maize Yield Dependency on N Uptake and Associated Efficiencies: II. Physiological Basis of Changes. American Society of Agronomy Annual Meetings (C02 Division), Cincinnati, OH. (October 21-24, 2012). Abstract # 243-2.
<http://scisoc.confex.com/scisoc/2012am/webprogram/Paper72730.html>
40. Kovacs, Peter, Thomas Doerge, James J. Camberato, George Van Scoyoc and Tony Vyn 2012. Consequences of Shallow NH₃ Placement and Timing on N Use Efficiencies in Corn Production. ASA-CSSA-CSSA International Annual Meeting, Cincinnati, OH. (October 21-24, 2012). Abstract # 100-15.
<http://scisoc.confex.com/scisoc/2012am/webprogram/Paper71858.html>
41. Kovacs, Peter, Thomas Doerge, George Van Scoyoc and Tony Vyn. 2012. Within-Row Variability Resulting From Diagonal versus Parallel Pre-Plant NH₃ Applications. ASA-

CSSA-CSSA International Annual Meeting, Cincinnati, OH. (October 21-24, 2012). Abstract # 152-2. <http://scisoc.confex.com/scisoc/2012am/webprogram/Paper73190.html>

Published Abstracts (continued)

42. Roth, J., and T.J. Vyn. 2012. Impacts of varied nitrogen rates and plant densities on phenotype responses and yield optimization in recent drought-tolerant maize hybrids. ASA-CSSA-CSSA International Annual Meeting, Cincinnati, OH. (October 21-24, 2012). Abstract # 363-23. <http://scisoc.confex.com/scisoc/2012am/webprogram/Paper73350.html>
43. Xia, X. and T. J. Vyn. 2012. Photosynthetically Related Physiological Responses in Maize to Multiple Plant Densities and Nitrogen Rates. American Society of Agronomy Annual Meetings (C02 Division), Cincinnati, OH. (October 21-24, 2012). Abstract # 243-6. <http://scisoc.confex.com/scisoc/2012am/webprogram/Paper73011.html>
44. Xia, X. and T. J. Vyn. 2012. Xia, X. and T. J. Vyn. 2012. Success Factors in Obtaining Meaningful Leaf Photosynthetic Measurement in Field-Grown Maize. American Society of Agronomy Annual Meetings (C02 Division), Cincinnati, OH. (October 21-24, 2012). Abstract # 99-12. <http://scisoc.confex.com/scisoc/2012am/webprogram/Paper73102.html>
45. Burzaco J.P., and T.J. Vyn. 2011. Nitrapyrin Effects on Maize N Uptake Following Pre-Plant and Side-Dress UAN (Poster Presentation). American Society of Agronomy Annual Meetings (Oct. 16-19, 2011), San Antonio, TX. Abstract 96-25 <http://a-c-s.confex.com/crops/2011am/webprogram/Paper65833.html>
46. Burzaco J.P., D.R. Smith and T.J. Vyn. 2011. Nitrapyrin Impacts on Nitrous Oxide Emissions with Alternate UAN Rates in Indiana Maize Production (Oral Presentation). American Society of Agronomy Annual Meetings (Oct. 16-19, 2011), San Antonio, TX. Abstract 253-9. <http://a-c-s.confex.com/crops/2011am/webprogram/Paper66448.html>
47. Ciampitti, I.A., and T.J. Vyn. 2011. Physiological processes affected by plant density and nitrogen stress tolerance in maize hybrids: Association between maize grain yield and N Uptake. Oral Presentation. ASA-CSSA-SSSAJ International Annual Meetings. Oct. 16-19, San Antonio, Texas. <http://a-c-s.confex.com/crops/2011am/webprogram/Paper66719.html>
48. Ciampitti, I.A., and T.J. Vyn. 2011. Plant Density and N Rate Impacts On Maize Plant N Uptake Dynamics During Vegetative and Reproductive Stages. Poster Presentation. ASA-CSSA-SSSAJ International Annual Meetings. Oct. 16-19, San Antonio, TX. <http://a-c-s.confex.com/crops/2011am/webprogram/Paper66684.html>
49. Omonode, R.A., T. Vyn, R. Grant, C. Johnston, and D.R. Smith. 2011. Integrated tillage and nitrogen management effects on nitrous oxide emission reduction from corn fields. American Society of Agronomy Annual Meetings (Oct. 16-19, 2011), San Antonio, TX. Abstract 257-4. <http://a-c-s.confex.com/crops/2011am/webprogram/Paper68562.html>

50. Omonode, R., and T.J. Vyn. 2011. Re-evaluating nitrification inhibitors and nitrogen management effects on nitrous oxide emissions in corn. American Society of Agronomy Annual Meetings (Oct. 16-19, 2011), San Antonio, TX. Abstract 288-3.
<http://a-c-s.confex.com/crops/2011am/webprogram/Paper68490.html>

Published Abstracts (continued)

51. Shoaf, S., H. Ohm, L. Snyder, T. Vyn, and D. Buckmaster. 2011. Winter wheat and row crop combinations for grain, silage and biomass production. American Society of Agronomy Annual Meetings (Oct. 16-19, 2011), San Antonio, TX. Abstract 96-21.
<http://a-c-s.confex.com/crops/2011am/webprogram/Paper65574.html>

Examples of Non-refereed Conference Proceedings in 2009-2017:

1. Vyn, T.J., and K. Chen. Maize gains in nitrogen efficiencies over four decades of hybrid improvement are dependent on post-silking traits. *Proceedings of the XVIII International Plant Nutrition Colloquium*. (Ed. by A. Carstensen, K.H. Laursen, J.K. Schjørring), pp. 633-634. Copenhagen, Denmark. <http://www.ipnc2017.org/the-proceedings-book>
2. Mueller, S.M. and T.J. Vyn. 2017. Maize plant nitrogen dynamics during the critical period. In: *Proceedings of the XVIII International Plant Nutrition Colloquium*. (Ed. by A. Carstensen, K.H. Laursen, J.K. Schjørring), pp. 273-274. Copenhagen, Denmark. <http://www.ipnc2017.org/the-proceedings-book>
3. Pasley, H., Cairns, J., Olsen, M., Camberato, J, and Vyn, T. 2017. Closing the Yield Gap and Improving Soil Fertility with fertilizer and HNUE hybrids in Sub-Saharan Africa.
4. *Proceedings of the XVIII International Plant Nutrition Colloquium*. (Ed. by A. Carstensen, K.H. Laursen, J.K. Schjørring), pp. 855-856. Copenhagen, Denmark. <http://www.ipnc2017.org/the-proceedings-book>
5. Hodde, W., J. Sesmero, B. Gramig, T.J. Vyn and O. Doerring. 2016. Climate change and the economics of conservation tillage. 2016 Annual Meeting of Agricultural and Applied Economics Association. July 31 to Aug. 2, Boston, MA. Issue 236090. Pages 1-52. <http://ageconsearch.umn.edu/bitstream/236090/2/Climate%20change%20and%20the%20economics%20of%20conservation%20tillage.pdf>
6. Mueller, S.M., and T.J. Vyn. 2016. Comparative N and dry matter dynamics in corn ears, stems, and leaves during the critical period after early and late-split sidedress N. Proceedings of North Central Extension-Industry Soil Fertility Conference, Des Moines, IA, Volume 32: 171-177. Retrieved from: <http://extension.agron.iastate.edu/nce/ncepdfs/2016/ncsfc%202016%20mueller%20pg171.pdf>
7. de Silva, A., Camberato, J. J., Filley, T. R., Coram, T., & Vyn, T. J. (2014). Nitrogen uptake and plant-component allocation following ¹⁵N application at multiple growth stages in field-grown corn. Proceedings of North Central Extension-Industry Soil Fertility Conference,

Volume 30: 188-193. Retrieved from:

<http://extension.agron.iastate.edu/nce/ncepdfs/2014/ncsfc%202014%20silva%20pg188.pdf>

Non-refereed Conference Publications (Continued):

8. Kovacs, P., G.E. Van Scoyoc, T.A. Doerge, J.J. Camberato, and T.J. Vyn. 2012. *Consequences of shallow NH₃ placement and timing on N use efficiencies in corn production*. Proceedings, 42nd North Central Extension-Industry Soil Fertility Conference, Des Moines, Iowa. November 14-15, 2012. Pages 183-189.
<http://extension.agron.iastate.edu/nce/ncepdfs/2012/ncsfc%202012%20kovacs%20p183.pdf>
9. Kovacs, P., and T.J. Vyn. 2011. *Corn plant uniformity following shallow NH₃ placement in precision-guided, pre-plant nitrogen applications*. Proceedings, 41st North Central Extension-Industry Soil Fertility Conference, Des Moines, Iowa. Nov. 16-17, 2011. Pages 181-187.
<http://extension.agron.iastate.edu/nce/ncepdfs/2011/ncsfc%202011%20kovacs%20p181.pdf>
10. Ciampitti, I.A., Y. Xia, J. Camberato, and T.J. Vyn. 2010. Plant density consequences on nitrogen uptake dynamics of maize plants from vegetative to reproductive stages. Proceedings, 41st North Central Extension-Industry Soil Fertility Conference, Des Moines, Iowa. Nov. 17-18, 2010. Pages 163-173.
<http://extension.agron.iastate.edu/nce/ncepdfs/2010/nc2010%20ciampitti%20p163.pdf>
11. Boomsma, C. and T.J. Vyn. 2009. Per-plant eco-physiological responses of maize to varied nitrogen availability at low and high plant densities. *Proceedings of the XVI International Plant Nutrition Colloquium (University of California, Davis) Paper 1233*.
<http://repositories.cdlib.org/ipnc/xvi/1233>

Examples of Recent Extension Publications Relevant to Environmental Sustainability:

1. Mueller, S.M. and T.J. Vyn. 2017. The effects of late-season nitrogen applications in corn. [Purdue Extension AY-364-W](#)
2. Vyn, T.J., A. Halvorson and R.A. Omonode. 2016. Relationships of nitrous oxide emissions to fertilizer nitrogen recovery efficiencies in rainfed and irrigated corn production systems: Data review. Final Report to International Plant Nutrition Institute 4RN-27 1605. Pages 1-40. <http://research.ipni.net/page/RNAP-6582>
3. Winters, M.R. and T.J. Vyn. Tips for environmentally friendly phosphorus applications in Indiana. Purdue University Publication. Indiana Soil and Water AY-386-W. Pages 1-7. https://www.edustore.purdue.edu/item.asp?Item_Number=AY-386-W#.VzmaF_krLrc

Purdue News Release: <http://www.purdue.edu/newsroom/releases/2015/Q4/new-purdue-extension-publication-offers-tips-on-phosphorus-application.htm>

4. Vyn, T.J., and T.D. West. 2015. No-till and strip-till corn exceed expectations in 2015. Purdue Pest and Crop Newsletter (October 30, 2015).
<https://extension.entm.purdue.edu/pestcrop/2015/Issue26/>

5. McClellan Maaz, T., R. A. Omonode, and T.J. Vyn. 2018. Can lower nitrogen balances and greater recovery by corn reduce N₂O emissions? Better Crops 102 (2): 27-30.
<https://doi.org/10.24047/BC102227>
[http://www.ipni.net/publication/bettercrops.nsf/0/CF6411233FE28EF2852582800050DE72/\\$FILE/BC-2018-2%20p27.pdf](http://www.ipni.net/publication/bettercrops.nsf/0/CF6411233FE28EF2852582800050DE72/$FILE/BC-2018-2%20p27.pdf)