**CURRICULUM VITAE**

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**September 20, 2023**

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**1. Education**

Ph.D., 1988. Crop Production and Physiology, Iowa State University,

M.S., 1981. Soil Fertility, and Crop Production and Physiology; Iowa State University.

B.S., 1975. Agronomy and Animal Science, University of Uruguay.

**2. Employment**

2003-present. Professor, Soil Fertility. Agronomy Dep., Iowa State University.

1998-2002. Associate Professor, Soil Fertility. Agronomy Dep., Iowa State University.

1993-1997. Assistant Professor, Soil Fertility. Agronomy Dep., Iowa State University.

1991-1992. Assistant Scientist II (1992), Soil Fertility. Agronomy Dep., Iowa State University.

1989-1990. Postdoctoral Research Associate, Soil Fertility. Agronomy Dep., Iowa State Univ.

1981-1988. Associate Professor, Soil Fertility. Dep. of Soils, University of Uruguay.

1976-1980. Assistant Professor, Soil Fertility. Dep. of Soils, University of Uruguay.

1974-1975. Instructor (½ time), Soils. Dep. of Soils, Univ. of Uruguay.

**3. Responsibilities at Iowa State University**

Indicated percent dedications approximately reflect activities during the last ten years.

 **3.1. Resident teaching (0%)**

 **3.2. Research (50% dedication)**

The research program focuses on developing cost-effective and environmentally sound nutrient management practices for cropping systems in Iowa and the North Central region with emphasis on P, K, micronutrients, lime, manure P management, and management practices impacts on P loss with erosions, surface runoff, and subsurface tile drainage. The work has included field correlation and calibration of soil and tissue tests methods, evaluation of fertilizer and manure placement methods, assessing amounts and forms of P loss from fields through various pathways, development of tools to assess the risk of P loss from fields, and use of precision agriculture technologies for nutrient management. The program integrates conventional field plot and laboratory research with innovative on-farm research and demonstrations utilizing precision agriculture technologies or watershed research methods, and it is developed in cooperation with producers, agribusiness, and extension agronomists. From 1994 through present I had 51 graduate students, 17 PhD (16 graduated) and 34 MS (32 graduated).

 **3.3. Extension (40% dedication)**

Extension activities focus on issue related to crop production and environmental nutrient management mainly for areas emphasized by the applied research program and on supporting state-wide or regional extension programs. The effort involves outreach to producers and agribusiness, training of field extension agronomists, co-responsibility for establishing nutrient management guidelines, teaching continuing education courses. The activities include presentations in a variety of field days, conferences, and workshops in Iowa or in conferences of the North Central Region targeted to producers or agribusiness, on-farm demonstrations, preparing extension publications and newsletter articles, co-teaching of an annual continuing education soil fertility short-course (with Dr. John Sawyer), maintaining the ISU Extension Soil Fertility website (with Dr. John Sawyer), and organizing the North Central Region Soil and Plant Analyst’s Workshop that is held in Iowa every two years.

 **3.4. Service (5% dedication)**

Current significant service to ISU and the State of Iowa have been developed mainly in the following areas: Co-responsibility for ISU Extension nutrient management guidelines for crops and P water quality conservation, member of the multi-agency Science Team of the Iowa Nutrient Reduction Strategy, represent the Iowa Experiment Station since 1995 (Chair in two occasions) to the NIFA regional committee NCERA-13 (North-Central Extension-Research Committee for Soil Testing and Plant Analysis) and since 2000 to the NIFA national committee SERA-17/IEG (Minimizing Phosphorus Losses from Agriculture), and advise as required the Iowa Natural resources Conservation Service and the Iowa Department of Natural Resources in relation to agronomic and environmental nutrient management practices. In the past, major service activities included being chair and then member of the supervisory committee for the ISU Soil and Plant Analysis Laboratory until 2015, member of the multi-agency team that prepared the Iowa P Index for Iowa NRCS, and service to the profession included below in the section Professional Activities and Memberships.

 **3.5. International (5% dedication)**

Activities have been suspended since February 2020 due to the COVID-19 pandemic. Until 2019, the effort involved collaborative outreach projects and advising to research project development with various research and education institutions and other organizations mainly in in Argentina and Uruguay. The activities related to use of soil testing and plant analysis, improving soil fertility management for conservation tillage, use of precision agriculture technologies for nutrient management, and management practices impacts on P loss from fields. Serve as honorary member of the Graduate College of the University of Uruguay, and currently I am member of the PhD POS committee of two students who develop research for issues directly related to some of programs at ISU (one focuses on phosphorus management and water quality and the other on potassium dynamics and cycling in soils. These activities have resulted since 1995 in significant recognition for ISU in southern South America, the organization and development of a completed 5-year cooperation agreement between CALS and the Institute of Soils of Argentina, recruitment of numerous talented graduate students, and hosting several visiting scholars over the years.

**4. Professional Activities and Memberships**

- Chair, NIFA regional committee NCERA-13 (soil testing and plant analysis) in 2016/2017 and in 1997/1998; chair or co-chair of the outreach subcommittee and member since 1994.

- Representative of the SSSA to the Oversight Committee for the North American Soil Testing Proficiency Testing Program (NAPT, S890), 2012-2015.

- Representative to the NIFA national committee SERA-17 (minimizing phosphorus loss from agriculture), organizer of the 2015 meeting and open conference, and member since 2009.

- Chair, Soil Fertility Division (S4), SSSSA, 2012.

- Honorary Member, Graduate Faculty, College of Agriculture, University of Uruguay since 2012.

- Member, Soil Science Society of America Applied Research Award Committee. 2011.

- Member, Werner L. Nelson Award Committee (A439) of the ASA. 2007.

- Associate Editor, SSSA Journal. 1999-2004.

- Associate Editor, Agronomy Journal. 2000-2005.

- Certified Professional Soil Scientist (SSSA, ARCPACS) since 1998.

- Member, Soil Science Society of Uruguay since 2000.

- Member, ASA since 1980.

- Member, SSSA since 1980.

- Member, CSSA since 1980.

- Gamma Sigma Delta Honor Society for Agriculture.

- Phi Kappa Phi Honor Society for Science.

- Sigma Xi Honor Society for Scientific Research.

**5. Awards and Recognitions**

- College of Agriculture (ISU) Outstanding Achievement Extension and Outreach Award. 2021.

- Extension ANR Virtual Field Day Series During A Pandemic Team Award (19 recipients). 2020.

- Extension ANR Derecho Windstorm Response Team Award (30 recipients). 2020.

- Invitation (declined) to give the 2020 Leo Walsh Soil Fertility Lecture at the SSSA annual meeting.

- Invitation (declined) to give the 2019 Leo Walsh Soil Fertility Lecture at SSSA annual meeting.

- Invitation (declined) to give the 2020 Leo Walsh Soil Fertility Lecture at SSSA annual meeting.

- Researcher of the Year Award, Fluid Fertilizer Foundation. 2018.

- Invitation (declined) to give the 2018 the Leo Walsh Soil Fertility Lecture at SSSA annual meeting.

- Invitation (declined) from Agronomy Awards Committee to apply to the Morrill Professor Award. 2018

- Outstanding Achievement in International Agriculture Award. College of Ag, Iowa State Univ. 2015.

- College of Agriculture (ISU) Dean's Citation for Extraordinary Contributions. 2013.

- Lee R. Kolmer Award for Excellence in Applied Research. Iowa State University. 2010.

- Fellow, Soil Science Society of America. 2007.

- Soil Science Society of America Applied Research Award. 2007.

- Fluid Fertilizer Foundation Werner L. Nelson Award. 2005.

- Fellow, American Society of Agronomy. 2005.

- Raymond Baker Award (ISU) for contributions to study of P environmental issues. 2004.

- USDA/ARS Secretary Group Award (for contributions to technology transfer). 2004.

- Certificate of Appreciation, Iowa State University Extension. 2003.

- USDA/ARS Secretary Group Award (for contributions to P index development). 2003.

- W. L. Nelson Award for Diagnosis of Yield-Limiting Factors, ASA. 2003.

- Extension Award, Iowa State University - Cooperative Extension Service. 1999.

- Award for Excellence in Graduate Research, Iowa State University. 1988.

- C. R. Weber Award for Excellence in Plant Science, Iowa State University. 1987.

- International Scholar Fellow, World Food Institute, Iowa State University. 1986.

**6. Publications**

 **6.1. Peer-reviewed journal articles, book chapters, and position papers**

*[Asterisks identify Mallarino graduate students, postdocs, or research associates]*

**a. *Refereed journal articles (95)***

da Silva, R.C., F. Degryse, R. Baird, A.P. Mallarino, and M.J. McLaughlin. 2021. Screening fertilizers for their phosphorus runoff risk using laboratory methods. J. Environ. Qual. 50:955-966.

Dougherty, B.W. C.H Pederson, A.P. Mallarino, D.S. Andersen, M.L. Soupir, R.S. Kanwar, and M.J. Helmers. 2020. Midwestern cropping system effects on drainage water quality and crop yields. J. J. Environ. Qual. 49:38-49.

Ferrando, M.G.\*, M.M Barbazán, F.O. García, A.P Mallarino. 2020. Comparison of the ammonium acetate, Mehlich10 3, and sodium tetraphenylboron extractants to evaluate crop available potassium. Communications in Soil Science and Plant Analysis, 51(8):997-1005.

Poffenbarger, H.J., D.C. Olk, C. Cambardella, J. Kersey, M. Liebman, A.P. Mallarino, J. Six, M.J. Castellano. 2020. Whole-profile soil organic matter content, composition, and stability under cropping systems that differ in belowground inputs. Agric. Ecosyst. Environ. 291:106810.

Wade, J., S.W. Culman, J.A.R. Logan, H. Poffenbarger, M.S. Demyan, J.H. Grove, A.P. Mallarino, J.M. McGrath, M. Ruark, and J.R. West. 2020. Improved soil biological health increases corn grain yield in N fertilized systems across the Corn Belt. Scientific Reports 10:3917.

Groenenboom, S.J.\*, and A.P. Mallarino. 2018. Potassium, sulfur, and liming value of ash co-product from corn stover processing for ethanol production. Agron. J. 110:115-126.

Jones, J.D.\*, and A.P. Mallarino. 2018. Influence of source and particle size on agricultural limestone efficiency at increasing soil pH. Soil Sci. Soc. Am. J. 82:271-282.

Stammer, A.J.\*, and A.P. Mallarino. 2018. Plant tissue analysis to assess phosphorus and potassium nutritional status of corn and soybean. Soil Sci. Soc. Am. J. 82:260-270.

Baffaut, C., N.O. Nelson, J.A. Lory, G.M.M.M.A. Senaviratne, A.B. Bhandari, R.P. Udawatta, D.W. Sweeney, M.J. Helmers, M.W. Van Liew, A.P. Mallarino, and C.S. Wortmann. 2017. Multisite evaluation of APEX for water quality: I. Best professional judgement parameterization. J. Environ. Qual. 46:1323-1331.

Nelson, N.O., C. Baffaut, J.A. Lory, G.M.M.M.A. Senaviratne, A.B. Bhandari, R.P. Udawatta, D.W. Sweeney, M.J. Helmers, M.W. Van Liew, A.P. Mallarino, and C.S. Wortmann. 2017. Multisite evaluation of APEX for water quality: II. Regional parameterization. J. Environ. Qual. 46:1349-1356.

Walker, Z.T., J.A. Coulter, M.P. Russelle, R.T. Venterea, A.P. Mallarino, J.G. Lauer, and M.A. Yost. 2017. Do soil tests help forecast nitrogen response in first-year corn following alfalfa on fine-textured soils? Soil Sci. Soc. Am. J. 81:1640-1651.

Enderson, J.T.\*, A.P. Mallarino, and M.U. Haq\*. 2015. Soybean yield response to foliar-applied micronutrients and relationships among soil and tissue tests. Agron. J. 107:2143-2161.

Woli, K.P., D.A. Ruiz-Diaz, D.E. Kaiser\*, A.P. Mallarino, and J.E. Sawyer. 2015. Field-scale evaluation of poultry manure as a combined nutrient resource for corn production. Agron. J. 107:1789-1800.

Pagani, A.\*, and A.P. Mallarino. 2015. On-farm evaluation of corn and soybean grain yield and soil pH responses to liming. Agron. J. 107:71-82.

Oltmans, R.R.\*, and A.P. Mallarino. 2015. Potassium uptake by corn and soybean, recycling to soil, and impact on soil test potassium. Soil Sci. Soc. Am. J. 79:314-327.

Dagna, N.E.\*, and A.P. Mallarino. 2014. Beef cattle manure survey and assessment of crop availability of phosphorus by soil testing. Soil Sci. Soc. Am. J. 78:1035-1050.

Arnall, D.B., A.P. Mallarino, M.D. Ruark, G.E. Varvel, J.B. Solie, M.L. Stone, J.L. Mullock, R.K. Taylor, and W.R. Raun. 2013. Relationship between grain crop yield potential and nitrogen response. Agron. J. 105:1335-1344.

Barbagelata, P.A.\*, and A.P. Mallarino. 2013. Field correlation of potassium soil test methods based on dried and field-moist soil samples for corn and soybean. Soil Sci. Soc. Am. J. 77:318-327.

Clover, M.W.\*, and A.P. Mallarino. 2013. Corn and soybean tissue potassium content responses to potassium fertilization and relationships with grain yield. Soil Sci. Soc. Am. J. 77:630-642.

Krueger, K., A.S. Goggi, A.P. Mallarino, and R.E. Mullen. 2013. Phosphorus and potassium fertilization effects on soybean seed quality and composition. Crop Sci. 53:602-610.

Al-Kaisi, M.H., R.W. Elmore, J.G. Guzman, H.M. Hanna, C.E. Hart, M.J. Helmers, E.W. Hodgson, A.W. Lenssen, A.P. Mallarino, A.E. Robertson, and J.E. Sawyer. 2013. Drought impact on crop production and the soil environment: 2012 experiences from Iowa. J. Soil Water Cons. 68:19A-24A.

Allen, B.L.\*, A.P. Mallarino, J.F. Lore, J.L. Baker, and M.U. Haq. 2012. Phosphorus lateral movement through subsoil to subsurface tile drains. Soil Sci. Soc. Am. J. 76:710-717.

Beltrán, M, E. Rivero, G. Cruzate, T. Bosco, and A.P. Mallarino. 2012. Effect of phosphorus level on the availability of some micronutrients in Vertic Argiudoll soil under no-tillage system in Argentina. J. Env. Sci. Eng. 1(2A):202-208.

Krueger, K., A.S. Goggi, R.E. Mullen, and A.P. Mallarino. 2012. Phosphorus and potassium fertilization do not affect soybean storability. Agron. J. 104:405-414.

Pagani, A.\*, and A.P. Mallarino. 2012. Soil pH and crop grain yield as affected by the source and rate of lime. Soil Sci. Soc. Am. J. 76:1877-1886.

Pagani, A.\*, and A.P. Mallarino. 2012. Comparison of methods to determine crop lime requirement under field conditions. Soil Sci. Soc. Am. J. 76:1855-1866.

Rivero, E., G. Cruzate, M. Beltran, S. Russo, and A.P. Mallarino. 2012. Spatial variability of phosphorus and its relationship with some properties of soils in Argentina Republic. J. Env. Sci. Eng. 1(6A):797-801.

Mallarino, A.P., N. Bergmann\*, and D.E. Kaiser\*. 2011. Corn responses to in-furrow phosphorus and potassium starter fertilizer applications. Agron. J. 103:685-694.

Ruiz Diaz, D.A., J.E. Sawyer, and A.P. Mallarino. 2011. On-farm evaluation of poultry manure as a nitrogen source for corn. Sci. Soc. Am. J. 75:729-737.

Kaiser, D.E.\*, A.P. Mallarino, and J. E. Sawyer. 2010. Utilization of poultry manure phosphorus for corn production. Soil Sci. Soc. Am. J.74: 2211-2222.

Mallarino, A.P., and D.J. Wittry\*. 2010. Crop yield and soil phosphorus as affected by liquid swine manure phosphorus application using variable-rate technology. Soil Sci. Soc. Am. J. 74:2230-2238.

Pedersen, P., G.L. Tylka, A.P. Mallarino, A.E. MacGuidwin, N.C. Koval, and C.R. Grau. 2010. Correlation between soil pH, Heterodera glycines population densities, and soybean yield. Crop Sci. 50:1458-1464.

Ruiz Diaz, D.A., J.E. Sawyer, D.W. Barker and A.P. Mallarino. 2010. Runoff nitrogen loss with simulated rainfall immediately following poultry manure application for corn production. Soil Sci. Soc. Am. J. 74:221-230.

Bakhsh, A., R.S. Kanwar, J.L. Baker, J. Sawyer, and A.P. Mallarino. 2009. Annual swine manure applications to soybean under corn-soybean rotation. Trans. Am. Soc. Agric. Biol. Eng. 52 (3): 751-757.

Barbazán, M.M.\*, A. P. Mallarino, and J. E. Sawyer. 2009. Liquid swine manure phosphorus utilization for corn and soybean production. Soil Sci. Soc. Am. J. 73:654-662.

Kaiser, D.E.\*, A.P. Mallarino, M.U. Haq\*, and B.L. Allen\*. 2009. Runoff phosphorus loss immediately after poultry manure application as influenced by the application rate and tillage. J. Environ. Qual. 38:299-308.

Mallarino, A.P., and S.L. Higashi. 2009. Assessment of potassium supply for corn by analysis of plant parts. Soil Sci. Soc. Am. J. 73:2177-2183.

Mallarino, A.P., S.R. Barcos\*, J.R. Prater\*, and D.J. Wittry\*. 2009. Timing of broadcast phosphorus fertilization for no-till corn and soybean. Soil Sci. Soc. Am. J. 73:2143-2150.

Allen, B.L.\*, and A.P. Mallarino. 2008. Effect of liquid swine manure rate, incorporation, and timing of rainfall on phosphorus loss with surface runoff. J. Environ. Qual. 37:125-137.

Ruiz Diaz, D.A., J.E. Sawyer, and A.P. Mallarino. 2008. Poultry manure supply of potentially available nitrogen with soil incubation. Agron. J. 100:1310-1317.

Sawchik, J.\*, and A.P. Mallarino. 2008. Variability of soil properties, early phosphorus and potassium uptake, and incidence of pests and weeds in relation to soybean grain yield. Agron. J. 100:1450-1462.

Bermudez, M.\*, and A.P. Mallarino. 2007. Impacts of variable-rate phosphorus fertilization based on dense grid soil sampling on soil-test phosphorus and grain yield of corn and soybean. Agron. J. 99:822-832.

Rogovska, N.P.\*, A.M. Blackmer, and A.P. Mallarino. 2007. Relationships between soybean yield, soil pH, and soil carbonate concentration. Soil Sci. Soc. Am. J. 71:1251-1256.

Sawchik, J.\*, and A.P. Mallarino. 2007. Evaluation of zone soil sampling approaches for phosphorus and potassium based on corn and soybean response to fertilization. Agron. J. 99:1564-1578.

Allen, B.L.\*, and A.P. Mallarino. 2006. Relationships between extractable soil phosphorus and phosphorus saturation after long-term fertilizer or manure application. Soil Sci. Soc. Am. J. 70:454-463.

Allen, B.L.\*, A.P. Mallarino, J.G. Klatt\*, J.L. Baker, and M. Camara. 2006. Soil and surface runoff phosphorus relationships for five typical USA Midwest soils. J. Env. Qual. 35:599-610.

Karlen, D.L., E.G. Hurley, S.S. Andrews, C.A. Cambardella, D.W. Meek, M.D. Duffy, and A.P. Mallarino. 2006. Crop rotation effects on soil quality at three northern corn/soybean belt locations. Agron. J. 98: 484-495.

Mallarino, A.P., and R. Borges\*. 2006. Phosphorus and potassium distribution in soil following long-term deep-band fertilization in different tillage systems. Soil Sci. Soc. Am. J. 70:702-707.

Russell, A.E., D.A. Laird, and A. P. Mallarino. 2006. Nitrogen fertilization and cropping system impacts on soil quality in Midwestern Mollisols. Soil Sci. Soc. Am. J. 70:249-255.

Dodd, J.R.\*, and A.P. Mallarino. 2005. Soil-test phosphorus and crop grain yield responses to long-term phosphorus fertilization strategies for corn-soybean rotations. Soil Sci. Soc. Am. J. 69:1118-1128.

Haq, M.U.\*, and A.P. Mallarino. 2005. Soybean grain oil and protein concentrations response to foliar and soil fertilization. Agron. J. 97:910-918.

Kaiser, D.E.\*, A.P. Mallarino, and M. Bermudez\*. 2005. Corn grain yield, early growth, and early nutrient uptake as affected by broadcast and in-furrow starter fertilization. Agron. J. 97:620-626.

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Russell, A.E., D.A. Laird, T.B. Parkin, and A.P. Mallarino. 2005. Impact of nitrogen fertilization and cropping system on carbon sequestration in Midwestern Mollisols. Soil Sci. Soc. Am. J. 69:413-422.

Bermudez, M.\*, and A.P. Mallarino. 2004. Corn response to starter fertilizer and tillage across and within fields having no-till management histories. Agron. J. 96:776-785.

Hansen, D.J., A.M. Blackmer, A.P. Mallarino, and M.A. Wuebker. 2004. Performance-based evaluations of guidelines for nitrogen fertilizer application after animal manure. Agron. J. 96:34-41.

Mallarino, A.P., and D.J. Wittry\*. 2004. Efficacy of grid and zone soil sampling approaches for site-specific assessment of phosphorus, potassium, pH, and organic matter. Precision Agric. 5:131-144.

Wittry, D.J.\*, and A.P. Mallarino. 2004. Comparison of uniform- and variable-rate phosphorus fertilization for corn-soybean rotations. Agron. J. 96:26-33.

Balkcom, K.S., A.M. Blackmer, D.J. Hansen, T.F. Morris, and A.P. Mallarino. 2003. Testing soils and cornstalks to evaluate nitrogen management on the watershed scale. J. Env. Qual. 32:1015-1024.

Borges, R.\*, and A.P. Mallarino. 2003. Broadcast and deep-band placement of phosphorus and potassium for soybean managed with ridge tillage. Soil Sci. Soc. Am. J. 67:1920-1927.

Klatt, J.G.\*, A.P. Mallarino, J.A. Downing, J.A. Kopaska, and D.J. Wittry\*. 2003. Soil phosphorus, management practices, and their relationship to phosphorus delivery in the Iowa Clear Lake agricultural watershed. J. Env. Qual. 32: 2140-2149.

Mallarino, A.P. 2003. Field calibration for corn of the Mehlich-3 soil phosphorus test with colorimetric and inductively-coupled plasma emission spectroscopy determination methods. Soil Sci. Soc. Am. J. 67:1928-1934.

Atia, A.M.\*, and A.P. Mallarino. 2002. Agronomic and environmental phosphorus testing for soils receiving swine manure. Soil Sci. Soc. Am. J. 66:1696-1705.

Bermudez, M.\*, and A.P. Mallarino. 2002. Yield and early growth responses to starter fertilizer in no-till corn. Agron. J. 94:1024-1033.

Bianchini, A.A.\*, and A.P. Mallarino. 2002. Soil sampling alternatives and variable-rate liming for a soybean-corn rotation. Agron. J. 94:1355-1366.

Mallarino, A.P., B.M. Stewart, J.L. Baker, J.A. Downing, and J.E. Sawyer. 2002. Phosphorus indexing for cropland: Overview and basic concepts of the Iowa phosphorus index. J. Soil Water Conserv. 57:440-447.

Borges, R.\*, and A.P. Mallarino. 2001. Deep banding phosphorus and potassium fertilizers for corn produced under ridge tillage. Soil Sci. Soc. Am. J. 65:376-384.

Mallarino, A.P., M. U. Haq\*, D.J. Wittry\*, and M. Bermudez\*. 2001. Variation in soybean response to early-season foliar fertilization among and within fields. Agron. J. 93:1220-1226.

Borges, R.\*, and A.P. Mallarino. 2000. Grain yield, early growth, and nutrient uptake of no-till soybean as affected by the phosphorus and potassium placement. Agron. J. 92:380-388.

Haq, M.U.\*, and A.P. Mallarino. 2000. Soybean yield and nutrient composition as affected by early season foliar fertilization. Agron. J. 92:16-24.

Mallarino, A.P., J.M. Bordoli\*, and R. Borges\*. 1999. Phosphorus and potassium placement effects on early growth and nutrient uptake of no-till corn and relationships with grain yield. Agron. J. 91:37-45.

Mallarino, A.P., E.S. Oyarzabal, and P.N. Hinz. 1999. Interpreting within-field relationships between crop yields and soil and plant variables using factor analysis. Precision Agric. 1:15-26.

Bordoli, J.M.\*, and A.P. Mallarino. 1998. Deep and shallow banding of phosphorus and potassium as alternatives to broadcast fertilization for no-till corn. Agron. J. 90:27-33.

Borges, R.\*, and A.P. Mallarino. 1998. Significance of spatially variable soil phosphorus and potassium for early growth and nutrient content of no-till corn and soybean. Communic. Soil Sci. Plant Anal. 29:2589-2605.

Haq, M.U.\*, and A.P. Mallarino. 1998. Foliar fertilization of soybean at early vegetative stages. Agron. J. 90:763-769.

Borges, R.\*, and A.P. Mallarino. 1997. Field-scale variability of phosphorus and potassium uptake by corn and soybean. Soil Sci. Soc. Am. J. 61:846-853.

Mallarino, A.P. 1997. Interpretation of soil phosphorus tests for corn in soils with varying pH and calcium carbonate content. J. Prod. Agric. 10:163-167.

Mallarino, A.P. and M.U. Haq\*. 1997. Topsoil and subsoil potassium as affected by long-term potassium fertilization of corn-soybean rotations. Communic. Soil Sci. Plant Anal. 28:1537-1547.

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Mallarino, A.P., and A.M. Blackmer. 1994. Profit-maximizing critical values of soil-test potassium for corn. J. Prod. Agric. 7:261-268.

Mallarino, A.P, and A.M. Blackmer. 1992. Comparison of methods for determining critical concentrations of soil test phosphorus for corn. Agron. J. 84:850-856.

Webb, J.R., A.P. Mallarino, and A.M. Blackmer. 1992. Effects of residual and annually applied phosphorus on soil test values and yields of corn and soybean. J. Prod. Agric. 5:148-152.

Farnham, D.E., A.P. Mallarino, W.F. Wedin, and I.T. Carlson. 1991. Comparison of dinitrogen fixation and nitrogen transfer potentials of four red clover cultivars. J. Iowa Academ. Sci. 98:162-166.

Mallarino, A.P., J.R. Webb, and A.M. Blackmer. 1991. Corn and soybean yields during 11 years of phosphorus and potassium fertilization on a high-testing soil. J. Prod. Agric. 4:312-317.

Mallarino, A.P., J.R. Webb, and A.M. Blackmer. 1991. Soil test values and grain yields during 14 years of potassium fertilization of corn and soybean. J. Prod. Agric. 4:560-566.

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***b. Articles in extension publications or extension conference proceedings (200)***

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