

Eros Artur Bohac Francisco, Ph.D.
Curriculum Vitae

Contact Information

960 Pebble Court, Auburn, AL 36830

Email: efrancisco@auburn.edu, erosbohac@gmail.com; Phone: +1 334 844 54540

LinkedIn: Eros Francisco; Twitter: @Eabfranc; Skype: Eros Francisco

Education

Doctor of Philosophy in Agronomy (Soil Science and Plant Nutrition) **Feb 2003 - Aug 2006**
University of São Paulo, “Luiz de Queiroz” College of Agriculture *Piracicaba, SP, Brazil*
Dissertation: “Aluminous phosphates of the crandallite group as an alternative source of phosphorus to rice”

Master of Science in Agronomy (Crop Production) **Feb 2001 - Jan 2003**
University of São Paulo, “Luiz de Queiroz” College of Agriculture *Piracicaba, SP, Brazil*
Thesis: “Anticipation of soybean fertilization to *Eleusine coracana* (L.) Gaertn., under no till system”

Bachelor of Science in Agricultural Engineering **Jan 1994 - Aug 1999**
University of São Paulo, “Luiz de Queiroz” College of Agriculture *Piracicaba, SP, Brazil*

Professional Experience

Efra Ag Consultancy **Apr 2019 – Present**
Director and Owner *Rondonópolis, MT, Brazil*

My consultancy activities are focused on serving farmers on how to adequately manage soil fertility seeking profitability and sustainability in different cropping systems with soybeans, maize, cotton, and forages, as well as helping companies in developing new products. Currently, I am responsible for managing the nutritional program of approx. 45,000 ha of land with soybean and maize production, I act as a private consultant for MT Foundation helping to elaborate research protocols, establish field trials, and write reports, and have underway couple contracts with fertilizer companies serving as a consultant for product development.

International Plant Nutrition Institute – IPNI, Brazil Program **Apr 2012 – March 2019**
Deputy Director for the Midwest region *Rondonópolis, MT, Brazil*

My responsibilities were based on the development of activities focused on the adequate and responsible use of nutrients, mainly in the Midwest region, through partnering with research institutions, speaking at technical events and scientific meetings, writing extension materials and scientific papers, developing web based tools, promoting webinars and participating in round tables and seminars to discuss the challenges related to nutrient use, organizing events for farmers and agronomists, and assisting the member companies with regional information and research activities.

MT Research Foundation **Jun 2008 - Mar 2012**
Research Coordinator for the Soil and Plant Nutrition Program *Rondonópolis, MT, Brazil*

My primary responsibilities included establishing an experimental station with focus on soil and crop management practices, conducting field trials based on a strategic plan, managing a research team of 10 employees and an annual research budget of approx. US\$ 300 thousand, writing reports and papers, giving speeches for farmers and agronomists in technical events, assisting farmers and collecting information on

nutrient use and soil management, interacting with other institutions to develop new partnership activities, and leading an internal cell of applied research involving other areas within the institution. My first responsibility was to establish and structure a new experimental station where currently is located the most important long-term field study focused on crop rotation for soybean, maize, and cotton in the Midwest of Brazil.

Federal University of Mato Grosso

Adjunct Professor

Responsible for teaching the following courses: Soil Fertility and Conservation, Forages and Grassland Management, Rural Constructions, and Statistics Applied to Animal Production.

Mar 2007 - Jun 2008

Rondonópolis, MT, Brazil

Superior Education Center (Private College)

Adjunct Professor

Responsible for teaching the following courses: Soil Science and Horticulture.

May 2007 - Nov 2007

Rondonópolis, MT, Brazil

Superior Education Union (Private College)

Adjunct Professor

Responsible for teaching the following courses: Natural and Renewable Resources, Grain Storage Techniques, Fruticulture, and Forestry.

Feb 2007 - Nov 2007

Rondonópolis, MT, Brazil

Archer Daniels Midland (ADM Brazil)

Field Agronomist

My primary responsibilities included registering bulk blended fertilizer formulas and supervising the quality control program of the bulk blended fertilizer plant and assisting costumers on fertilizer application and correct use.

Aug 1999 - Jan 2001

Catalão, GO, Brazil

International Experience

International Fertilizer Development Center - IFDC

Visiting Graduate Student

Conducting research activities related to my doctorate project and interacting with a leading scientist in the area of study (Dr. Norman Chien). Activities performed: two greenhouse trials, one incubation lab study, lab analysis, and writing a paper.

Oct 2004 - Sep 2005

Muscle Shoals, AL, USA

University of Nebraska - UNL

Exchange Undergraduate Student

Conducting agronomic activities in a research station associated to the Dept. of Biological Systems Engineering. Some of activities performed: helping students to collect field data, participating in field days, attending site specific crop management and irrigation management classes, helping with the station maintenance, scouting and harvesting soybean fields.

Jul 1998 - Dec 1998

Lincoln, NE, USA

Synergistic activities

Co-Chair, IPNI Working Group: Nutrient Decision Support for Soybean Systems. Since 2014, I've been acting as co-chair of an international working group with in the International Plant Nutrition Institute that is focused on increasing the productivity of soybean systems, thereby, providing improved sustainability (economic, social, and environmental) through nutrient stewardship and responsible crop management. This effort involves scientists in the U.S., Argentina, Brazil, India, China, Russia, and Sub-Saharan Africa focusing on closing the yield gap and improving food security. More information available at <http://ipni.net/ipniweb/portal/soybean.nsf>.

Editor of IPNI Brazil Newsletter Informações Agronômicas. Since the beginning of 2018, I've been acting as chief editor of *Informações Agronômicas*, the IPNI Brazil Newsletter that is distributed quarterly nationwide with technical articles on nutrient management strategies for a variety of crops and soil and crop best management practices. The newsletter is a well-recognized publication in Brazil with over a hundred thousand accesses yearly. More information available at: <http://brasil.ipni.net/article/BRS-3191>.

Agronomic online tools. I've developed and trained many agronomists and students on using two online tools: a nutrient budget calculator for various crops and a fertilizer and lime recommendation system for forage grasses in Brazil. Tools are available at <http://brasil.ipni.net>.

Publications

Refereed Journal Articles (15)

Sattolo, T.M.S., L.M. Pereira, R. Otto, **E. Francisco**, A.P. Duarte, C. Kappes, L.I. Prochnow, M.R. Cherubin. 2021. Effects of land use, tillage management, and crop diversification on soil physical quality in Cerrado agricultural systems. *Soil Sci. Soc. Am. J.* 2021;1-15.
<https://doi.org/10.1002/saj2.20306>

Balboa, G.R., S.V. Archontoulis, F. Salvagiotti, F.O. Garcia, W.M. Stewart, **E. Francisco**, P.V. Vara Prasad, I.A. Ciampitti. 2019. A system-level yield gap assessment of maize-soybean rotation under high- and low-management inputs in the Western US Corn Belt using APSIM. *Agric. Sys.*, v174, p.145-154. <https://doi.org/10.1016/j.agry.2019.04.008>.

Duarte, A.P., M.F. Abreu, **E.A.B. Francisco**, D.C. Gitti, G. Barth, C. Kappes. 2019. Reference values of grain nutrient concentration and removal for maize. *Brazilian Journal of Soil Science*, v43:e0180102. <https://doi.org/10.1590/18069657rbcs20180102>

Kappes, C., L. Zancanaro, **E.A.B. Francisco**. 2016. Nitrogen and potassium in narrow-row cotton. *Brazilian Journal of Soil Science*, v40:e0150103. DOI: 10.1590/18069657rbcs20150103

Corguinha, A.P.B., G.A. Souza, V.C. Gonçalves, C.A. Carvalho, W.E.A. Lima, F.A.D. Martins, C.H. Yamanaka, E.A.B. **Francisco**, L.R.G. Guilherme. 2015. Assessing arsenic, cadmium, and lead contents in major crops in Brazil for food safety purposes. *J. Food Compos. Anal.* 37: 143-150.

Corguinha, A.P.B., V.C. Gonçalves, G.A. Souza, W.E.A. Lima, E.S. Penido, C.A.B.P. Pinto, **E.A.B. Francisco**, L.R.G. Guilherme. 2012. Cadmium in potato and soybeans: Do phosphate fertilization and soil management systems play a role? *J. Food Compos. Anal.* 27(1): 32-37.

Veronese, M., **E.A.B. Francisco**, L. Zancanaro, C.A. Rosolem. 2012. Cover crops and liming in no-till systems (*In Portuguese*). *Pesq. Agrop. Bras.* 47(8): 1158-1165.

Francisco, E.A.B.; S.H. Chien, L.I. Prochnow, E.R. Austin, M.C.M. Toledo, R.W. Taylor. 2008. Characterization and greenhouse evaluation of two Brazilian calcined non-apatite phosphate rocks for upland and flooded rice. *Agron. J.* 100(3): 819-829.

Francisco, E.A.B.; L.I. Prochnow, M.C.M. Toledo, J.P. Pereira. 2008. Agronomic Evaluation of Calcined Crandallite from Three Brazilian Phosphate Deposits. *Commun. Soil Sci. Plant Anal.* 39(3-4): 559-573.

Segatelli, C.R., G.M.S. Câmara, L.S. Heiffig, **E.A.B. Francisco**, J.S. Aguila, S.M.D.S. Piedade. 2008. Dry matter yield of finger millet (*Eleusine coracana* (L.) Gaertn.) in a system of anticipated soybean fertilization (*In Spanish*). *Interciencia*. 33(7): 547-548.

Francisco, E.A.B., L.I. Prochnow, M.C.M. Toledo, V.C. Ferrari, S.L. Jesus. 2007. Thermal treatment of aluminous phosphates of the crandallite group and its effect on phosphorus solubility. *Sci. Agric*. 64(3): 269-274.

Francisco, E.A.B., G.M.S. Câmara, C.R. Segatelli. 2007. Nutritional condition and yield of finger millet and soybean grown in succession in a system of anticipated fertilization (*In Portuguese*). *Bragantia*. 66(2): 259-266.

Prochnow, L.I., J.F.S. Quispe, **E.A.B. Francisco**, G. Braga. 2006. Effectiveness of Phosphate Fertilizers of Different Water Solubilities in Relation to Soil Phosphorus Adsorption. *Sci. Agric*. 63(4): 333-340.

Segatelli, C.R., L.S. Heiffig, G.M.S. Câmara, **E.A.B. Francisco**, L.A. Marques, D.B. Pedroso. 2006. Final plant height and stand, bending and green stem incidence on soybean plants in a no-tillage system (*In Portuguese*). *Braz. J. Agricult*. 81(1): 1-9.

Segatelli, C.R., G.M.S. Câmara, L.S. Heiffig, **E.A.B. Francisco**, M.A. Mattos, D.B. Pedroso. 2006. Dry matter yield of *Eleusine coracana* (L.) Gaertn. in response to the anticipated application of soybean fertilization (*In Portuguese*). *Braz. J. Agricult*. 81(2): 233-242.

Extension Publications (20)

Stipp, S.R., **E.A.B. Francisco**. 2018. Global Pecuária – Livestock of the future (*In Portuguese*). *Informações Agronômicas*. 163(Sep): 17-21. Available at: <http://www.ipni.net/publication/ia-brasil.nsf/issue/IA-BRASIL-2018-163>.

Enrico, J.M., F. Garcia, M. Stewart, **E.A.B. Francisco**, G. Balboa, I. Ciampitti, F. Salvagiotti. 2018. Integrating crop and fertilization management strategies for soybean in the Central Pampas. *Better Crops with Plant Food*. 102(2): 6-10. Available at: <http://www.ipni.net/publication/bettercrops.nsf/issue/BC-2018-2>.

Cunha, J.F., **E.A.B. Francisco**, L.I. Prochnow. 2018. Nutrient budget in Brazilian agriculture: 2013-2016 (*In Portuguese*). *Informações Agronômicas*. 162(Jun): 3-14. Available at: <http://www.ipni.net/publication/ia-brasil.nsf/issue/IA-BRASIL-2018-162>.

Barth, G., **E.A.B. Francisco**, J.T. Suyama, F. Garcia. 2018. Nutrient uptake illustrated for modern, high-yielding soybean. *Better Crops with Plant Food*. 102(1): 11-14. Available at: <http://www.ipni.net/publication/bettercrops.nsf/issue/BC-2018-1>.

Francisco, E.A.B. 2018. Forage grass fertilization in Brazil. *Plant Nutrition Today*. 1(6), 2018. Available at: <https://www.ipni.net/publication/pnt-na.nsf/issue/PNT-NA-2018-1>.

Francisco, E.A.B., G.C. Lupatini, R. Heinrichs. 2017. NPK management for forage grasses in Brazil. *Better Crops with Plant Food*. 101(4): 10-12. Available at: <http://www.ipni.net/publication/bettercrops.nsf/issue/BC-2017-4>.

Prochnow, L.I., A.V. Resende, A. Oliveira Junior, **E.A.B. Francisco**, V. Casarin, P.S. Pavinato 2017. Phosphorus placement for annual crops in national agriculture (*In Portuguese*). *Informações Agronômicas*. 158(Jun): 1-5. Available at: <http://www.ipni.net/PUBLICATION/IA-BRASIL.NSF/issue/IA-BRASIL-2017-158>.

- Francisco, E.A.B.**, E.M. Bonfim-Silva, R.A. Teixeira. 2017. Increasing beef productivity through forage fertilization (*In Portuguese*). *Informações Agronômicas*. 158(Jun): 6-12. Available at: <http://www.ipni.net/PUBLICATION/IA-BRASIL.NSF/issue/IA-BRASIL-2017-158>.
- Francisco, E.A.B.** 2017. Ecological intensification when maize is not the primary crop. *Better Crops with Plant Food*. 101(2): 23-25. Available at: <http://www.ipni.net/publication/bettercrops.nsf/issue/BC-2017-2>.
- Balboa, G., M. Stewart, F. Salvagiotti, F. Garcia, **E.A.B. Francisco**, I. Ciampitti. 2017. Intensive soybean management: an integrated systems approach. *Better Crops with Plant Food*. 101(1): 16-19. Available at: <http://www.ipni.net/publication/bettercrops.nsf/issue/BC-2017-1>.
- Francisco, E.A.B. 2017. Fire does not reduce the nutrient value of phosphorus fertilizers. *Research with Impact*. Available at: [http://www.ipni.net/publication/impact.nsf/0/3C821A1A58661132852580BA0053C261/\\$FILE/IPNI-IMPACT-105-BRA-65.pdf](http://www.ipni.net/publication/impact.nsf/0/3C821A1A58661132852580BA0053C261/$FILE/IPNI-IMPACT-105-BRA-65.pdf).
- Francisco, E.A.B.** 2016. Increasing beef production with improved soil nutrient use: Brazil's challenge. *Better Crops with Plant Food*. 100(4): 28-31. Available at: <http://www.ipni.net/publication/bettercrops.nsf/issue/BC-2016-4>.
- Francisco, E.A.B.**, F. Dias, R. Rossetto, Y. Zhao, L.I. Prochnow. 2016. UAN, AN effective for sugarcane in Brazil. *The Fluid Journal*. 24(3), 21-22. Available at: <http://fluidjournal.org/all2016/Su16-A4.pdf>.
- Francisco, E.A.B.**, J.F. Cunha, L.I. Prochnow, V. Casarin. 2015. A look at the nutrient budget for Brazilian agriculture. *Better Crops with Plant Food*. 99(2): 4-6. Available at: <http://www.ipni.net/publication/bettercrops.nsf/issue/BC-2015-2>.
- Francisco, E.A.B.**, G.M.S. Câmara, L.I. Prochnow, V. Carasin. 2014 Increasing soybean yields: Brazil's challenges. *Better Crops with Plant Food*. 98(2): 20-23. Available at: <http://www.ipni.net/publication/bettercrops.nsf/issue/BC-2014-2>.
- Cunha, J.F., **E.A.B. Francisco**, V. Casarin, L.I. Prochnow. 2014. Nutrient budget in Brazilian agriculture: 2009-2012 (*In Portuguese*). *Informações Agronômicas*. 145(Mar): 1-13. Available at: <http://www.ipni.net/PUBLICATION/IA-BRASIL.NSF/issue/IA-BRASIL-2014-145>.
- Francisco, E.A.B.**, H.C. Hoogerheide. 2013. Nutrient management for high yield cotton in Brazil. *Better Crops with Plant Food*. 97(2): 15-17. Available at: <http://www.ipni.net/publication/bettercrops.nsf/issue/BC-2013-2>.
- Francisco, E.A.B.**, G.M.S. Câmara. 2013. Current challenges for soybean yield increase (*In Portuguese*). *Informações Agronômicas*. 143(Sep): 11-16. Available at: <http://www.ipni.net/PUBLICATION/IA-BRASIL.NSF/issue/IA-BRASIL-2013-143>.
- Francisco, E.A.B.** 2013. How important are phosphorus and potassium for soybean production in the Cerrado of Brazil? *Better Crops with Plant Food*. 97(1): 25-26. Available at: <http://www.ipni.net/publication/bettercrops.nsf/issue/BC-2013-1>.
- Francisco, E.A.B.**, H.C. Hoogerheide. 2013. Nutrient management for high-yielding (*In Portuguese*). *Informações Agronômicas*. 141(Mar): 14-18. Available at: <http://www.ipni.net/PUBLICATION/IA-BRASIL.NSF/issue/IA-BRASIL-2013-141>.

Chapters in Extension Books (8)

Francisco, E.A.B. 2016. Manejo 4C na adubação de pastagens. In: Alcides de Moura Torres Junior; Francisco Pedro Woolf de Oliveira Filho; Milena Zigart Marzocchi. (Org.). Encontro dos encontros da Scot Consultoria. 3ed.São Carlos: Suprema Gráfica e Editora, 2016. p. 65-74. (*Chapter related to the 4R Nutrient Stewardship in grassland*)

Francisco, E.A.B., G.C. Lupatini. 2015. Adubação fosfatada em pastagens. In: Alcides de Moura Torres Junior; Francisco Pedro Woolf de Oliveira Filho; Milena Zigart Marzocchi. (Org.). Encontro dos encontros da Scot Consultoria. 2ed.São Carlos: Suprema Gráfica e Editora, 2015. p. 55-64. (*Chapter related to phosphorus fertilization in grassland*)

Francisco, E.A.B. 2014. Boas práticas para uso de fertilizantes (BPUFs) em pastagens. In: Alcides de Moura Torres Junior; Francisco Pedro Woolf de Oliveira Filho. (Org.). Encontro dos encontros da Scot Consultoria. 1ed.São Carlos: Suprema Gráfica e Editora, 2014. p. 84-94. (*Chapter related to the best management practices of fertilizer application in grassland*)

Francisco, E.A.B., C. Kappes. 2012. Intensificação ecológica em sistemas de produção de milho. In: Maria Elisa Ayres Guidetti Zagatto Paterniani, Aildson Pereira Duarte, Alfredo Tsunehiro. (Org.). Diversidade e inovações na cadeia produtiva de milho e sorgo na era dos transgênicos. 1ed.Campinas: Instituto Agrônomo/Associação Brasileira de Milho e Sorgo, 2012. p. 721-732. (*Chapter related to ecological intensification in maize cropping systems*)

Zancanaro, L., **E.A.B. Francisco**, D.M. Carretero. 2010. Fertilização e sistema de produção para o cultivo do adensado. In: Instituto Matogrossense do Algodão (Org.). **O sistema de cultivo do algodoeiro adensado em Mato Grosso**: embasamento e primeiros resultados (Atas do Workshop de Cuiabá). Cuiabá: Defanti Editora, 2010. p. 201-222. (*Chapter related to cotton fertilization under ultra-narrow row cropping system*)

Zancanaro, L., J. Hillesheim, H.C. Hoogerheide, M. Veronese, L. Vilela, **Francisco, E.A.B.** 2009. Manejo do solo, adubação e nutrição da cultura da soja. In: Fundação MT. **Boletim de Pesquisa de Soja**. Central de Texta Carrion & Carracedo: Cuiabá, 2009. p.270-285. (*Chapter related to soybean fertilization for the Cerrado region*)

Hoogerheide, H., **Francisco, E.A.B.** 2009. Manejo da adubação para alta produtividade da soja. In: CÂMARA, G.M.S. (Org.). **Soja & Cia**. Piracicaba: O Coordenador, 2009. p. 321-334. (*Chapter related to soybean fertilization for high yields*)

Hiramoto, D.M., **Francisco, E.A.B.**, L. Zancanaro. 2009. O desafio da máxima produtividade. In: Fundação MT. **Boletim de Pesquisa de Soja**. Central de Texto Carrion & Carracedo: Cuiabá, 2009. (*Chapter related to soybean yield components*)

Abstracts and Presentations in Professional Meetings (43)

Francisco, E.A.B., C. Kappes, G. Barth, L.I. Prochnow. 2018. PK management for high-yielding soybeans in Brazil. In: ASA CSSA CSA International Annual Meetings, November 2018. Baltimore, MD, USA. Oral Presentation.

Francisco, E.A.B., M.W. Padin, L.I. Prochnow. 2018. Adequate nutrient use in pastures could help to mitigate deforestation in Brazil. In: ASA CSSA CSA International Annual Meetings, November 2018. Baltimore, MD, USA. Oral Presentation.

Francisco, E.A.B. 2018. The 4R nutrient stewardship for pastures. In: 1st IPNI Brazil Symposium on Best Management Practices of Fertilizer Use in Intensive Livestock Systems, May 2018. Cuiabá, MT, Brazil. Oral Presentation.

- Francisco, E.A.B.** 2018. Nutrient budget and soybean fertilization in cropping systems. In: 7th Symposium of Soybean Crop, April 2018. Cuiabá, MT, Brazil. Oral Presentation.
- Francisco, E.A.B.** 2018. Nutrient use efficiency. In: 2nd Symposium on Plant Nutrition in the Cerrado, May 2018. Goiânia, GO, Brazil. Oral Presentation.
- Francisco, E.A.B.** 2018. Fertilizer use efficiency. In: 6th Brazilian Symposium on Plant Nutrition Applied to High-yielding Cropping Systems, April 2018. Chapadão do Sul, MS, Brazil. Oral Presentation.
- Soares Junior, J.E.M., Prochnow, L.I., **Francisco, E.A.B.** 2017. Sustainable intensification: A case study based on a farm in Lucas do Rio Verde, Mato Grosso, Brazil. In: ASA CSSA CSA International Annual Meetings, November 2017. Tampa, FL, USA. Oral Presentation.
- Francisco, E.A.B.** 2017. Connecting the 4R Nutrient Stewardship and precision agriculture. In: IPNI Symposium on Best Management Practices of Fertilizer Use in Precision Agriculture, October 2017. Goiânia, GO, Brazil. Oral Presentation.
- Francisco, E.A.B.** 2017. Phosphorus recommendation in soils with high fertility. In: 3rd Workshop of Fertilizers, August 2017. Sinop, MT, Brazil. Oral Presentation.
- Francisco, E.A.B.** 2016. Fertilizer recommendation in soybean-maize cropping systems. In: 14th Agronomic Week (Univ. Federal Jataí), October 2016. Jataí, GO, Brazil. Oral Presentation.
- Francisco, E.A.B.** 2016. Challenges of grain production in tropical systems. In: 32th Soil Fertility and Plant Nutrition Brazilian Meeting, October 2016. Goiânia, GO, Brazil. Oral Presentation.
- Francisco, E.A.B.** 2016. The 4R nutrient stewardship concept for forage grasses. In: 4th Forages Fertilization Meeting, September 2016. Ribeirão Preto, SP, Brazil. Oral Presentation.
- Francisco, E.A.B.** 2016. Fertilizer recommendation for pastures. In: 2nd Symposium on Pastures and Beef Production Systems, April 2016. Dracena, SP, Brazil. Oral Presentation.
- Francisco, E.A.B.** 2015. Fertilizer recommendation for soybean, maize, and cotton: emphasis on PKS. In: 67th Integrated Management Systems for Sustainable Agriculture, November 2015. Sinop, MT, Brazil. Oral Presentation.
- Francisco, E.A.B.** 2015. Nitrogen fertilization for forage grasses in Brazil. In: 3rd Forages Fertilization Meeting, September 2015. Ribeirão Preto, SP, Brazil. Oral Presentation.
- Francisco, E.A.B.**, G.M.S. Câmara, L.I. Prochnow, V. Casarin. 2014. Increasing soybean yields: Brazil's challenges. In: ASA CSSA SSSA International Annual Meetings, November 2014. Long Beach, CA, USA. Oral Presentation.
- Francisco, E.A.B.**, R.C. Coqui, C. Kappes, S.H. Chien, F.R. César, T. Muraoka. 2014. Agronomic performance of phosphate fertilizers varying in solubility to soybean in oxisol of Brazilian Cerrado. In: ASA CSSA SSSA International Annual Meetings, November 2014. Long Beach, CA, USA. Oral Presentation.
- Francisco, E.A.B.** 2014. Fertilizer, Crop Yield, and Food Security. In: 2nd Soil Science Meeting of Western Amazon Region (Braz. Soil Sci. Society), October 2014. Porto Velho, RO, Brazil. Oral Presentation.
- Francisco, E.A.B.** 2014. The 4R nutrient stewardship concept for forage grasses. In: 2nd Forages Fertilization Meeting, October 2014. Ribeirão Preto, SP, Brazil. Oral Presentation.

- Francisco, E.A.B.** 2014. Nutrient dynamics in soil-plant systems for fertilizer best management practices. In: 7th IPNI Symposium on Best Management Practices of Fertilizer Use, August 2014. Araguaína, TO, Brazil. Oral Presentation.
- Francisco, E.A.B.** 2014. Fertilize the Plant or the System? In: 14th National Meeting on No-Tillage Systems, August 2014. Bonito, MS, Brazil. Oral Presentation.
- Francisco, E.A.B.** 2013. Soybean fertilization in different cropping systems. In: 5th Symposium of Soybean Crop, September 2013. Rio Verde, GO, Brazil. Oral Presentation.
- Francisco, E.A.B.** 2013. Nutrient dynamics in soil-plant systems for fertilizer best management practices. In: 5th IPNI Symposium on Best Management Practices of Fertilizer Use, May 2013. Rio Verde, GO, Brazil. Oral Presentation.
- Guilherme, L.R.G., A.P.B. Corguinha, G.A. Souza, V.C. Gonçalves, **E.A.B. Francisco**. 2013. Assessing Arsenic, Cadmium, and Lead Contents in Major Crops in Brazil for Food Security Purposes. In: 12th International Conference on the Biogeochemistry of Trace Elements, 2013. Athens, Greece. Poster.
- Francisco, E.A.B.** 2012. Soil fertility management: a brief overview of the Cerrado. In: 16th Colombian Congress of Soil Science, October 2012. Rihacha, Colombia. Oral Presentation.
- Corguinha, A.P.B., V.C. Gonçalves, G.A. Souza, P.J. Pinho, M.A.P. Pierangeli, G. Marchi, **E.A.B. Francisco**, C. Kappes, L.R.G. Guilherme. 2012. Plant uptake factors of As, Cd, and Pb for corn and soybeans cultivated in Brazilian agricultural areas under high-P fertilization. In: ASA CSSA SSSA International Annual Meetings, October 2012. Cincinnati, OH, USA. Poster.
- Francisco, E.A.B.** 2012. Ecological intensification of maize cropping systems. In: 29th Maize and Sorghum National Congress, 2012. Águas de Lindóia, SP, Brazil. Oral Presentation.
- Francisco, E.A.B.**, C. Kappes, L. Domingues, C.L. Felippi. 2012. Inoculation of maize seeds with *Azospirillum brasilense* and nitrogen broadcast application (*In Portuguese*). In: 29th Maize and Sorghum National Congress, 2012. Águas de Lindóia, SP, Brazil. Poster.
- Fagundes, T.G., V.C. Gonçalves, G.A. Souza, W.E.A. Lima, **E.A.B. Francisco**, C. Kappes, L.R.G. Guilherme. 2012. Arsenic and cadmium levels in soil and soybean seeds grown under high P rates and crop rotation (*In Portuguese*). In: 30th Soil Fertility and Plant Nutrition Brazilian Meeting, 2012. Maceió, RN, Brazil. Poster.
- Francisco, E.A.B.** 2011. Fields of the future: what is still to come regarding cropping systems – research results. In: Biannual Meeting of Agribusiness in Central Brazil, 2011. Goiânia, GO, Brazil. Oral Presentation.
- Francisco, E.A.B.**, J. Zemolin, L. Zancanaro, C.V. Kock. 2011. Indirect quantification of residual nitrogen from soybean to maize 2nd crop (*In Portuguese*). In: 33rd Soil Science Brazilian Congress, 2011. Uberlândia, MG, Brazil. Poster.
- Francisco, E.A.B.**, C. Kappes, L. Zancanaro, G.R. Fujimoto. 2011. Nitrogen application management to maize 2nd crop in succession to soybean and millet (*In Portuguese*). In: 11st National Symposium on Maize 2nd Crop, 2011. Lucas do Rio Verde, MT, Brazil. Poster.
- Duarte, A.P., H. Cantarella, A.G. Silva, A. Costa, **E.A.B. Francisco**, R.C. Piedade, M.V. Arf. 2011. Broadcast application of nitrogen to maize 2nd crop following soybean under no-tillage system (*In Portuguese*). In: 11st National Symposium on Maize 2nd Crop, 2011. Lucas do Rio Verde, MT, Brazil. Poster.

Francisco, E.A.B. 2011. Best management practices of fertilizer use for soybeans. In: 1st IPNI Symposium on Best Management Practices of Fertilizer Use, April 2011. Sorriso, MT, Brazil. Oral Presentation.

Lima, W.E.A., A.P.B. Corguinha, V.C. Gonçalves, G.A. Souza, E. Penido, **E.A.B. Francisco**, L.R.G. Guilherme. 2010. Trace elements in soybean seeds cultivated under crop rotation (*In Portuguese*). In: 29th Soil Fertility and Plant Nutrition Brazilian Meeting, 2010. Guarapari, ES, Brazil. Poster.

Corguinha, A.P.B., V.C. Gonçalves, G.A. Souza, E. Penido, W.E.A. Lima, **E.A.B. Francisco**, L.R.G. Guilherme. 2010. Trace elements in soybean seeds grown in soils with high P and lime rates (*In Portuguese*). In: 29th Soil Fertility and Plant Nutrition Brazilian Meeting, 2010. Guarapari, ES, Brazil. Poster.

Francisco, E.A.B. 2010. The importance of sustainability for the development of regional agriculture. In: 1st Workshop on Biodiversity (Univ. Federal Mato Grosso), 2010. Rondonópolis, MT, Brazil. Oral Presentation.

Ferrari, S., E.R. Andrade Junior, **E.A.B. Francisco**, M.H. Caldeira. 2009. Preliminary results of nutrient management of narrow-row cotton in Mato Grosso (*In Portuguese*). In: 1st Narrow-Row Cotton Workshop, 2009. Cuiabá, MT, Brazil. Poster.

Francisco, E.A.B. 2008. Nutrient management for cropping systems in sustainable agriculture. In: 52th Integrated Management Systems for Sustainable Agriculture, July 2008. Imperatriz, MA, Brazil. Oral Presentation.

Francisco, E.A.B., L.I. Prochnow, M.C.M. Toledo, A. Oliveira Junior. 2007. Agronomic evaluation of aluminous phosphates of the crandallite group for Brachiaria grass (*In Portuguese*). In: 31st Soil Science Brazilian Congress, 2007. Gramado, Brazil. Poster.

Francisco, E.A.B., L.I. Prochnow, S.H. Chien, M.C.M. Toledo, R.W. Taylor. Agronomic evaluation of aluminous phosphates from Juquiá and Sapucaia as related to soil pH and moisture regime. 2006. In: 2nd International Conference on the Valorization of Phosphates and Phosphorus compounds. Marrakech, Morocco. Poster.

Francisco, E.A.B., L.I. Prochnow, M.C.M. Toledo, S.L. Jesus. 2004. Morphological evaluation and mineral phase identification in calcined phosphate samples. In: 3rd Research in Materials Brazilian Society Meeting, 2004. Foz do Iguaçu, PR, Brazil. Oral Presentation.

Francisco, E.A.B., L.I. Prochnow, M.C.M. Toledo. 2004. Agronomic evaluation of aluminous phosphates from Juquiá for upland and flooded rice (*In Portuguese*). In: 26th Soil Fertility and Plant Nutrition Brazilian Meeting, 2004. Lages, SC, Brazil. Poster.

Francisco, E.A.B., A.A.W. Miklos, H.L. Vocurca. Variation of chemical parameters in a toposequence of soils from diabase origin in Piracicaba (*In Portuguese*). 1995. In: 3rd Symposium of Scientific Initiation of the University of São Paulo, 1995. Piracicaba, SP, Brazil. Poster.

Articles in Newspaper and Magazines (3)

Francisco, E.A.B., C. Kappes. 2012. Brazilian Cerrado needs more investments in sustainable management practices (*In Portuguese*). *Visão Agrícola*. 1(Mar): 55-57. Available at: <http://www.esalq.usp.br/visaoagricola/sites/default/files/VA10-visao-setorial04.pdf>.

Zancanaro, L., **E.A.B. Francisco**, C. Kappes. 2011. Do or not to do anticipated fertilization in soybeans? (*In Portuguese*). *Informe Comigo*. 30(Sep): 22-25.

Other Extension Contributions

Francisco, E.A.B. 2018. A comprehensive nutrient budget of Brazilian agriculture. Webinar available at: <https://www.youtube.com/watch?v=Dyip6OvXny8>. Views: 76.

Francisco, E.A.B. 2018. Intensifying livestock systems for better profits and sustainability. Webinar available at: <https://www.youtube.com/watch?v=kR5h4SdqHAY&feature=youtu.be>. Views: 1,345.

Francisco, E.A.B. 2017. Nutrient management for soybeans in the Brazilian Cerrado. Webinar available at: <https://www.youtube.com/watch?v=6YSZUCM0hZg&feature=youtu.be>. Views: 709.

Francisco, E.A.B. 2016. Improving beef productivity via soil nutrient management. Webinar available at: <https://www.youtube.com/watch?v=c2Ky4RDHdck&feature=youtu.be>. Views: 325.

Francisco, E.A.B. 2015. Nutrient budget in Brazilian agriculture. Webinar available at: <https://www.youtube.com/watch?v=5OIRjcnQUhA&feature=youtu.be>. Views: 3,430.

Francisco, E.A.B. 2012. Soil fertility management current situation in the Cerrado. Webinar available at: <https://www.youtube.com/watch?v=grjBq80d0I>. Views: 8,656.

Event Organization

- 1st IPNI Brazil Symposium on Best Management Practices of Fertilizer Use in Intensive Livestock Systems – Global Pecus, 5/30 and 5/31/2018, Cuiabá, MT, Brazil. Attendance: 234. Organized the program and schedule of presentations, coordinating with speakers on their availability and topics, also logistics and sponsorships. More information at <http://brasil.ipni.net/article/globalpecus>.
- 9th IPNI Brazil Regional Symposium on Best Management Practices of Fertilizer Use, 8/30 and 8/31/2016, Paragominas, PA, Brazil. Attendance: 85. Organized the program and schedule of presentations, coordinating with speakers on their availability and topics, also logistics and sponsorships. More information at <http://brasil.ipni.net/article/BRS-3424>.
- Panel on *Best Management Practices of Fertilizer Use for Forage Grasses* with in the “4th Forages Fertilization Meeting”, 9/27/2016, Ribeirão Preto, SP, Brazil. Attendance: 500. Organized the program and schedule of presentations, coordinating with speakers on their availability and topics. More information at <http://brasil.ipni.net/article/BRS-3429>.
- 8th IPNI Brazil Regional Symposium on Best Management Practices of Fertilizer Use, 5/26 and 5/27/2015, Vilhena, RO, Brazil. Attendance: 145. Organized the program and schedule of presentations, coordinating with speakers on their availability and topics, also logistics and sponsorships. More information at <http://brasil.ipni.net/article/BRS-3338>.
- Panel on *Best Management Practices of Fertilizer Use for Forage Grasses* with in the “3rd Forages Fertilization Meeting”, 9/29/2015, Ribeirão Preto, SP, Brazil. Attendance: 500. Organized the program and schedule of presentations, coordinating with speakers on their availability and topics. More information at <http://brasil.ipni.net/article/BRS-3365>.
- 6th IPNI Brazil Regional Symposium on Best Management Practices of Fertilizer Use, 4/15 and 4/16/2014, Dourados, MS, Brazil. Attendance: 180. Organized the program and schedule of presentations, coordinating with speakers on their availability and topics, also logistics and sponsorships. More information at <http://brasil.ipni.net/article/BRS-3277>.

- 5th IPNI Brazil Regional Symposium on Best Management Practices of Fertilizer Use, 5/28 and 5/29/2013, Rio Verge, GO, Brazil. Attendance: 275. Organized the program and schedule of presentations, coordinating with speakers on their availability and topics, also logistics and sponsorships. More information at <http://brasil.ipni.net/article/BRS-3240>.

Teaching Experience

- Guest lecturer for the Certification in Soil Management Course of the University of São Paulo, Esalq, presenting about “Plant Nutrition and Fertilizers” to agronomists in 10/18/2013, 16-h.
- Guest lecturer for the Certification in Soil Management Course of the University of São Paulo, Esalq, presenting about “Plant Nutrition and Fertilizers” to agronomists in 5/15/2015 and 11/27/2015, 16-h.
- Guest lecturer for the Certification in Soil Management Course of the University of São Paulo, Esalq, presenting about “Dynamics of nutrients in the soils” to agronomists in 5/20/2016 and 8/5/2016, 16-h.
- Guest lecturer for the Certification in Soil Management Course of the University of São Paulo, Esalq, presenting about “Dynamics of nutrients in the soils” to agronomists in 3/16/2017 and 12/8/2017, 16-h.
- Guest lecturer for Rehagro, presenting about “Nutrient management in soybean-maize cropping systems” to agronomists in 8/12/2016, 16-h.
- Guest lecturer for the Federal Institute of Education, Science, and Technology of Rondônia State, presenting about “Mineral plant nutrition and nutrient use” and “Soil fertility and nutrient use in coffee, pastures, and soybean” to undergraduate students in 04/11/2015, 4-h.

Student Advising

Major Advisor

- Douglas Coradini. *Student of the Certification Course in Soil Management* of the University of São Paulo, Esalq. Term paper: “Comparative study of soil test results from different laboratories in Mato Grosso” (*In Portuguese*). Advised from Jan 2016 to Jul 2016.
- Rafael Fornari. *Student of the Certification Course in Soil Management* of the University of São Paulo, Esalq. Term paper: “Nitrogen and potassium for cotton in a Hapludox soil of Mato Grosso” (*In Portuguese*). Advised from Jun 2014 to Aug 2014.
- Márcio Veronese. *M.S. in Agronomy*, São Paulo State University. Thesis: “Soil acidity and soybean yield in response to liming and crop rotation” (*In Portuguese*). Co-advised from Jan 2011 to Jul 2011.
- Francisca Nailza Araújo. *B.S. in Agronomy*, Superior Education Union of Rondonópolis. Term paper: “Eggplant response to P sources and liming” (*In Portuguese*). Advised from Aug 2007 to Nov 2007.
- Sylvania Andrade Faria. *B.S. in Agronomy*, Superior Education Union of Rondonópolis. Term paper: “Dry matter yield and nitrogen uptake in green pepper in response to N sources and liming” (*In Portuguese*). Advised from Aug 2007 to Nov 2007.

Graduate committee member

- Alessana Franciele Schlichting (Univ. Federal Mato Grosso). Main advisor: Edna Maria Bonfim-Silva. Degree: Ph.D. in Tropical Agriculture. Graduation: February 2018.
- Marcelo Ribeiro Vilela Prado (Univ. Federal Mato Grosso). Main advisor: Milton Ferreira Moraes. Degree: Ph.D. in Tropical Agriculture. Graduation: August 2018.
- Bruno Moreira Takaki (Univ. São Paulo, Esalq). Degree: Certified in Soil Management. April 2016.
- Douglas Coradini (Univ. São Paulo, Esalq). Degree: Certified in Soil Management. April 2016.
- Érica Teles Delgado (Univ. São Paulo, Esalq). Degree: Certified in Soil Management. April 2016.
- Pedro Henrique Alves Marra (Univ. São Paulo, Esalq). Degree: Certified in Soil Management. April 2016.
- André Garofolo Leão (Univ. São Paulo, Esalq). Degree: Certified in Soil Management. April 2016.
- Ana Paula Branco Corguinha (Univ. Federal Lavras). Main advisor: Luiz Roberto Guimarães Guilherme. Degree: M.S. in Agronomy. Graduation: July 2011.
- Marcos Vinícius Pavoni de Carvalho (Univ. Federal Mato Grosso). Main advisor: Alexandre Lima de Souza. Degree: M.S. in Animal Science. Graduation: June 2011.

- Cassiano Elias Segatto (Univ. Federal Mato Grosso). Main advisor: Alexandre Lima de Souza. Degree: M.S. in Animal Science. Graduation: March 2009.
- Welton Batista Cabral (Univ. Federal Mato Grosso). Main advisor: Alexandre Lima de Souza. Degree: M.S. in Animal Science. Graduation: May 2008.
- Cláudio Roberto Segatelli (Univ. São Paulo, Esalq). Main advisor: Gil Miguel de Sousa Câmara. Degree: Ph.D. in Crop Production. Graduation: June 2008.

Funded Grant Proposals

Francisco, E.A.B., L.I. Prochnow, M.C.M. Toledo. 2004-2006. Calcined aluminum phosphates as source of P to crops in high pH or flooded soils. São Paulo Research Foundation. US\$ 16,500.

Francisco, E.A.B., L. Zancanaro, D.M. Carretero. 2009-2010. Evaluation of soybean varieties in response to plant population, planting date, and fertilizer application. Tropical Breeding & Genetics. US\$ 20,000

Duarte, A.P., **E.A.B. Francisco**. 2010-2011. Agronomic evaluation of Azospirillum in maize 2nd crop. Agricultural Research Support Foundation. US\$ 4,400.

Zancanaro, L., **E.A.B. Francisco**, J. Hillesheim, D.M. Carretero. 2010-2012. Agronomic evaluation of NPK application to narrow row cotton. Mato Grosso State Cotton Institute. US\$ 27,500.

Zancanaro, L., **E.A.B. Francisco**, J. Hillesheim, D.M. Carretero. 2010-2012. Cotton fiber and grain production under crop rotation and no-tillage. Mato Grosso State Cotton Institute. US\$ 55,500.

Prochnow, L.I., V. Casarin, S. Murrell, A.P. Duarte, **E.A.B. Francisco**, A.F. Fonseca, G. Barth. 2010-2012. Ecological intensification of maize cropping systems. International Plant Nutrition Institute. US\$ 18,750.

Prochnow, L.I., V. Casarin, **E.A.B. Francisco**. 2011-2014. Rates and residual effect of K fertilization in some Brazilian soils. International Plant Nutrition Institute. US\$ 49,500.

Francisco, E.A.B., F. Garcia, C. Kappes, G. Barth. 2014-2017. Crop production practices and comprehensive fertilization strategies for soybean systems. International Plant Nutrition Institute. US\$ 40,000.

Membership in Professional Societies

- American Society of Agronomy
- Crop Science Society of Agronomy
- Brazilian Soil Science Society

Leadership and Service to Profession

Manuscript reviewer for Nutrient Cycling in Agroecosystems, *Revista Brasileira de Ciência do Solo* (Brazilian Journal of Soil Science), *Pesquisa Agropecuária Brasileira* (Brazilian Agricultural Research), *Acta Scientiarum*, and Agronomy Journal.

Skills

- Languages: fluent in English, Portuguese, and Spanish.
- Statistical software: SAS, SigmaPlot.
- Graphing software: SigmaPlot, Excel.
- Experience with agricultural research: greenhouse and field trials, planting, conducting, and harvesting small-plot research.

- Experience with lab analysis: soil and plant tissue analysis, x-ray diffraction, scanning electronic microscope, and photosynthesis measurement.

Additional Information

- Field research (over 200 trials)
- Technical support to farmers (15 cropping seasons)
- Professional seminars to agronomists and farmers (over 60 presentations)
- Interviewed *in person* for an Assistant Professor position on cropping systems extension agronomist at Auburn University on January, 2019
- Interviewed *in person* for an Assistant Professor position on soil fertility and nutrient management at University of Florida on May, 2019

Personal Information

44, married, three kids

Professional References

Paul E. Fixen, Ph.D.

Former Senior Vice-President of IPNI and former supervisor
paulfixen@gmail.com, +1 605 690 6458

Tom Bruulsema, Ph.D.

Vice-President of IPNI and current supervisor
tom.bruulsema@ipni.net, +1 519 835 2498, +1 770-825-8076

Luís I. Prochnow, Ph.D.

Director of IPNI Brazil Program, direct manager and Ph.D. advisor
lprochnow@npct.com.br, +55 19 98175 1177, +55 19 3433 3254

Fernando O. Garcia, Ph.D.

Director of IPNI Latin America Southern Cone Program and co-worker
Fgarcia1957@gmail.com, +54 11 4565 8461

Sen H. Chien, Ph.D.

Former IFDC researcher and Ph.D. co-adviser
nchien@comcast.net

Ignacio A. Ciampitti, Ph.D.

Extension cropping systems specialist at Kansas State University
Partner in research projects
ciampitti@ksu.edu