Intersection of Digital Agriculture and Dairy Farm Production: 
*Needs, Opportunities, and Potential Impacts* 

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Tuesday September 18, 2018  
Room 122, Gates Hall, Ithaca, NY

4:00 to 4:30pm - Networking Refreshments/Lunch  
Will Be Served  
4:30 to 5:15pm - Presentation  
5:15 to 5:30pm - Q&A

**Abstract:** Digital Agriculture (DA) is poised to revolutionize agricultural systems and dairy provides an excellent starting point; milk and milk products (e.g. cheese, yogurt) are nutrient dense, a gateway protein for those entering the middle class (viewed as a key to feeding the world), and one of the most efficient proteins to produce. While dairy-based proteins are valuable food sources, the long-term sustainability of current dairy production systems has been questioned. Food retailers are responding to consumer pressure on the environmental impact, from production at the farm level to post-consumer disposal of packaging goods, of foods they stock on their store shelves by requiring quantification across the whole product value chain of a food’s environmental footprint. Dairy farms, where a large and complex number of systems interact, need an integrated and data-driven process to measure and evaluate their sustainability from economic, environmental, and social perspectives. For this to occur, new discoveries are needed and thus many research questions and needs exist. The goals of this seminar are to provide an overview of the envisioned whole-farm evaluation process, provide some
example research possibilities, and promote discussion and sharing of the possibilities this creates for DA.

**Bio:** Gooch has 35 years of practical and professional experience that includes owning and operating his own businesses, production farm experience, engineering training, capital project execution – from conception to completion, system engineering, project management, applied research, development and delivery of educational programs and program materials, and industry leadership. This aggregated experience provides insight into sustainable dairy food production and how digital agriculture is a key to achieving a sustainable food plate.

In 1998, Gooch joined the Cornell PRO-DAIRY program to develop programing in dairy housing/farmstead systems and cow comfort/well-being. His program quickly broadened to include manure/environmental management in the early 2000’s with the onset of the need for farm/industry response to newly developed Concentrated Animal Feeding Operation (CAFO) regulations. Gooch and the Dairy Environmental Systems team conduct applied research with results used as the basis for extension/outreach programing; the overall goal is to further the understanding of dairy housing and co-product handling/management/treatment systems and their effects on dairy animals, the environment, and farm profitability – all of which are key components of dairy industry sustainability. Program target audiences include industry stakeholders, government officials, NGOs, and increasingly more so the general public.

Gooch has a Master of Science degree in biological resources engineering and Bachelor of Science degree in agricultural engineering, both from the University of Maryland. Gooch became a licensed professional engineer in 1996.

**Background on the Cornell Digital Agriculture Initiative:** An interdisciplinary group of Cornell University faculty began meeting in early 2017 to formulate a Digital Agriculture (DA) initiative, believing that Cornell is uniquely equipped to lead in this emerging arena that will benefit the public for generations. We define DA to mean the application of computational and information technologies coupled with nanotechnology, biology, systems engineering and economics to both the research and operational sides of agriculture and food production. With approximately 70 faculty from 5 Cornell colleges participating, we are in the formative stages of this initiative, collaborating internally on defining a research agenda for DA that will build a pipeline of discovery and innovations for the next 10+ years. For further information, please contact Dr. Jim Ballingall, Executive Director at jmb436@cornell.edu.