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school of environmental sciences

SEMINAR TITLE: Nitrogen fertility in horticultural systems: post-harvest strategies

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ABSTRACT:

Within vegetable and low-acreage cropping systems, Dr. Van Eerd's research focuses on nitrogen dynamics in a systems-based approach. Vegetables are important horticultural commodities with high farm gate values and nutritional quality. The processes governing N cycling are a complex of biological, physical, and chemical factors, which are impacted by management practices, climatic conditions and soil properties. Moreover, optimizing N inputs in vegetable crops within environmentally sustainable constrains is challenging for various reasons including 1) vegetable crops are most often grown on light soils prone to leaching losses to ground and surface waters; 2) the very high cost ratio of crop yield to N fertilizer favors high application rates; 3) marketable crop quality may or may not be impacted by N fertility depending on the crop; and 4) many crops are harvested before physiological maturity thus the quantity and quality of N remaining in the field at harvest is often greater than grain crops. In addition to in-season N management strategies of improving nitrogen use efficiency in vegetable crop production, this talk will focus primarily on post-harvest strategies of applying high carbon organic amendments, removing crop residues, and planting a cover crop to immobilize N the non-cropping season and ideally time mineralization during the subsequent growing season. The use of 15N tracer field studies and long-term trials provide insight into the complexity of the system and opportunities for meaningful strategies to improve N management in horticultural systems.