My name is Monica Ozores-Hampton. I work for University of Florida/IFAS at the Southwest Florida Research and Education Center in Immokalee. Florida ranks second nationally in fresh-market vegetable production with 197,800 acres planted, representing a farm value of $1.5 billion. We have the second largest fresh-market tomato acreage in the US with 26,500 acres with a value of $455 million in the 2013 season. Despite the historical success of the industry, Florida's tomato producers are facing a changing global economy, competition from non-traditional vegetable production areas, regulatory loss of methyl bromide as a soil fumigant, new pests, a struggling societal image of agriculture, and increasingly stringent regulations [Kyoto protocol, Federal Clean Water Act - Best Management Practices (BMPs), Good Agricultural Practices (GAPs), and Good Handling Practices (GHPs)].
In order to remain competitive, tomato growers need to adopt improved nutrient and irrigation management; use high-yielding, multiple-resistant varieties; and implement sustainable cultural practices that increase yields, minimize crop losses, optimize inputs, reduce production costs, and protect the environment. For example, Yellow Leaf Curl Virus (TYLCV) and Fusarium Crown Rot (FCR) are among the most devastating tomato diseases in Florida, both causing significant yield reductions. Insecticide resistance is creating an urgent need for alternative management tools such as TYLCV-resistant varieties. Similarly, chemical control by fumigation has limited efficacy and in some instances is not effective against FRC. Also, labor costs associated with transplanting, staking, pruning, tying, and manually harvesting may be as high as 55% of the total tomato production cost, which is estimated at $14,000/acre in southwest Florida. Thus, a potential alternative to reduce tomato production costs may be the use of compact growth habit tomatoes (CGH). These tomatoes do not require staking, tying, or pruning. Furthermore, CGH varieties with jointless (calyx and stem remain attached to the plant and not to the fruit) characteristic can potentially be mechanically harvested, eliminating the required, expensive hand-harvest labor.

Most of my program is a farm research of which BMP demonstrations represent 23,200 acres (80%) of the staked tomato production in Florida and 30 to 40 acres have been annually dedicated to BMP research and extension programs. In 2004, common nitrogen (N) and potassium (K2O) rates used by the tomato industry were near 300 and 650 lb/acre, respectively. However, in 2014 a nutrient rate survey on N and K use, which represented 19,440 acres (67.0%) of the tomato industry in Florida, showed a reduction of N and K2O fertilizer rates up to 55 and 112 lb/acre, respectively. For the growers, this represents N and K savings of approximately $45-$80/acre at current fertilizer prices and translates to between $874,800 and $1,555,200 for the industry. For the environment, this represents a reduction of approximately 716,375 and 1,458,800 pounds of N and K2O applied fertilizer, respectively, not applied annually. It is a win-win situation.

Therefore the focus of my research is to develop science-based and practical solutions for the tomato producers in Florida in the areas of fertilizer management and nutrient use efficiency, vegetable varieties and new germplasm evaluation, and development of non-chemical, sustainable production methods for vegetable crop production. More information about my program goes to http://www.imok.ufl.edu/programs/veg-hort/ Also, I organized, edited and produced the "Processing of the Tomato Institute" which is the largest tomato conference in Florida. This annual meeting delivers cutting edge research to growers by University of Florida/IFAS faculties in tomato production (http://www.imok.ufl.edu/programs/veg-hort/tomatoInstitute.php).

Since 2009, 23 ready-to-use and custom-made mixes from four major controlled release fertilizers (CRP) manufactures were tested in tomato production. Growers can use CRP as a pre-plant application eliminating the need of multiple applications of soluble N fertilizer following leaching rain events resulting in reduced production costs of $100/acre. However, the technology transfer to tomato production is complex due to interactions of season, material sources, coating, rates, and release pattern of N in south Florida growing conditions. To
overcome this complexity, I have been working with three major tomato producers—not in replacing soluble fertilizers with CRFs—but on incorporating CRFs into soluble fertilizer programs in large-scale demonstration projects.

Another aspect of my research program focuses on evaluating disease-resistant varieties and new germplasm or grafting as the main strategies for controlling prevailing diseases, managing pest resistance, and improving yields and quality of tomatoes produced in Florida. Seed companies and growers surveyed indicated that the expansion in the adoption of TYLCV-resistant varieties was regional with approximately 60% (8,400 acres) and 32% (3,800 acres) in Manatee and Collier counties, respectively, as compared to 500 acres planted in both counties combined in 2007. However, the lack of consistent fruit quality continues to be a major factor impeding adoption of TYLCV-resistant varieties by the Florida tomato industry. Based on the same survey in 2014, the new and improved FCR-resistant varieties have been 100% adopted in affected areas such as Collier County, providing another valuable option for tomato producers. A 2014 survey of vegetable growers attending the series of grafting workshops indicated that the high cost of grafted tomato plants can only be used for niche markets, such as heirloom tomatoes, and for resistant varieties which are not available in the market.

Finally, through-out our research efforts the tomato industry has started to use compost in commercial fields in south Florida. I have witnessed a change in mentalities among vegetable growers. Growers realize that improving soil quality parameters is profitable for their business. For example, a large vegetable producer in Florida has adopted compost application to 15,000 acres as part of their production system. This change has allowed them to produce similar yields with less water (35% reduction) and fertilizer application (up to 20% reduction). Counties, cities, and private waste disposal companies have made waste materials available to the agricultural community that otherwise would go to local landfills and cost tax payers millions of dollars. Urban and agricultural communities can benefits from these programs closing the loops in “real organic recycling”. For example, in the Immokalee, FL area, since 2000 a local compost supplier has brought yard waste from Collier County to vegetable and citrus growers. In the last 5 years, this composting enterprise diverted 300,000 tons of yard waste from the local landfill and produced approximately 120,000 tons of compost, of which 66% was used by local vegetable growers on approximately 20,000 acres.