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***Impacts of Environmental and Management Factors on the Nutritional Quality of Mint, Spinach, Tomatoes, Basil and Pak Choi and Correlation with the Functional Quality of Chinese Medicinal Herbs***

A major problem facing the Traditional Chinese Medicine (TCM) system is the need for a balance between cultivation methods in a large-scale setting to keep natural environments in tact and a high quality herbal product. Quality is dependent on the amount of secondary metabolite chemicals that vary with agroecological management. As TCM becomes more popular, the need for high-quality herbal products also increases. I am working with Dr. Ahmed of the MSU Food and Health Lab to examine how changes in environmental and agroecological management impact the functional quality of TCM herbs. Specifically, I have carried out five manipulative greenhouse experiments of mint, spinach, tomatoes, pak choi and basil using food waste compost treatments to modify soil quality in the Plant Growth Center on the MSU campus. My hypothesis for this study is that plant samples which are put under higher levels of ecological stress will have higher levels of secondary metabolite concentrations, and thus a higher functional quality. I am measuring various parameters of botanical quality including plant vitality, biomass, and secondary metabolite concentrations. Statistical analysis will involve determining if there are significant differences between levels of antioxidants, total phenolic concentrations, biomass, and plant vitality measures between treatment groups. Findings will be applied to provide guidelines for a validated procedure for future studies on functional quality and design a management program for medicinal herb farmers. There is still a large need for research in the study of the correlation between plant stress and functional quality.