

Microgreens Food Safety Evaluation

M.E. Hummerick¹, A.B. Curry¹, L.E. Spencer¹, M.W. Romeyn²

¹Amentum, Kennedy Space Center, FL USA, ²NASA, Kennedy Space Center, FL USA

Microgreens have been recently identified as a new type of pick and eat salad crop that can be utilized in space crop production systems. The majority of traditionally grown leafy green crops can be grown as microgreens, in addition to crops such as legumes (e.g. pea shoots), sunflower, buckwheat, most herbs, and corn, presenting hundreds of microgreen crop options. With a wide variety of flavors, exceptional nutritional density, short growth cycles (7-14 days), and unmatched volume optimization potential, microgreens present as an interesting option for sustainable production of nutritious and flavorful crops in space. The food safety aspects of microgreens have been investigated by USDA in recent years, however, an assessment for crew consumption purposes has not yet been conducted to capture the variety of microgreen cultivar types grown in spaceflight relevant environmental conditions and hardware that could be a part of the astronaut diet.

Seed sanitation methods will be developed for each microgreen cultivar to sanitize the seed coat and ensure viable germination and plant growth. Food safety analysis will be performed on 24 different fast-growing cultivars of microgreens by performing aerobic plate counts (APC), fungal counts, and select pathogen screening of edible plant tissue before and after treatment with ProSan sanitizing produce wash. Additional avenues of investigation into microgreens food safety will be undertaken to understand impacts of plant height at time of harvest (able to be manipulated by light spectrum), seed density at time of planting, and role of blue light in food safety metrics of microgreens (n=6-12 microgreen cultivars tested, depending on variable). These findings will be included in the Space Crop Production Hazard Analysis Critical Control Point (HACCP) plan.

This new work is currently postponed due to Covid-19.