

Edible and Non-Edible Value-Added Products Developed from Sweet Potato

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Abstract—Research data indicates that sweet potato (*Ipomoea batatas*) is a natural health food given its high-energy yield, dietary fiber, and vitamin and mineral content. Sweet potato has many desirable qualities, including high productivity, high proportion of edible biomass, easy propagation, good nutritional value, ease of preparation, palatability, flexibility in use, human experience, storage stability, suitability for soil-less culture, symbiotic requirements and restrictions, and a short growth cycle. Using some of the above-mentioned criteria to select crops appropriate for Controlled Environmental Life Support Systems (CELSS) on manned space missions, NASA selected the sweet potato as one of the crops in the carbohydrate accumulator group. Hydroponically grown sweet potatoes and field grown sweet potatoes possess similar nutritional content and quality. As a result of the diversified characteristics of sweet potatoes, the Center for Food and Environmental Systems for Human Exploration of Space (CRESH) at Tuskegee University has developed edible and non-edible products for utilization and consumption in space and on earth. Sweet potato syrup, drink, waffles, pancakes, muffins, bread rolls, tortillas, pasta, pound cake, biscuit mix, and leaf and root flour used to enhance other foods are among some of the many edible products developed. Paper made from the stem and leaves of the sweet potato has also been developed. Sensory evaluations of the products have been conducted (and are ongoing) by CFESH. Participating consumers from states including Alabama, Florida, Georgia, Tennessee, Washington, Maryland, Virginia, and Texas (Johnson Space Center in Houston) have thus far indicated high acceptability of the products. It is apparent that an increase in the development and production of value-added sweet potato products will boost the economic value and marketability of sweet potatoes both locally and internationally.