Opportunity Title: Space Crop Production research to enable space exploration
Opportunity Reference Code: 0004-NPP-MAR23-KSC-BioSci

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0004-NPP-MAR23-KSC-BioSci

How to Apply All applications must be submitted in Zintellect

Application Deadline 3/1/2023 6:00:00 PM Eastern Time Zone

Description **Description:**

Space crop production will reduce the risk of astronaut nutritional deficiencies during long duration exploration missions. The International Space Station presents a unique environment to conduct research in space crop production using both the Advanced Plant Habitat and Veggie hardware, and the Ohalo 3 crop production testbed that is in development. Ground testing of new crops, horticultural practices, growth and monitoring technologies, and ecosystem dynamics is ongoing. This postdoctoral position will continue the development of crop production capabilities, which is jointly funded by NASA's Space Biology Program, Human Research Program, and Exploration Capabilities group. Additional testing is needed to optimize crop growth, yield, and nutritional value, both on the ISS and for future space vehicles or habitats. Crop production areas of interest include gravity-independent water delivery and management, nutrient delivery methods, light quality, quantity, intensity, and photoperiod, and atmospheric management and constituents, especially CO2 and volatile contaminants. Plant health monitoring using nondestructive capabilities is also of interest. Furthermore, investigations into food safety, food sanitizing, phytomicrobiomes, and plant probiotics are needed. Recycling and reuse of plant inedible biomass and fertilizer generation from resources *in situ* are areas where additional work is needed. Factors that may be evaluated include plant growth (germination, growth rate, height, area, volume, time to harvest, edible biomass index, fresh mass, dry mass), single leaf or canopy photosynthesis and transpiration, plant / substrate water relations, biomass biochemical attributes including phytonutrients and elemental composition, and when possible, organoleptic attributes. Biological tools, such as genomics and microscopy, will be used to uncover cellular and molecular mechanisms underlying whole crop environmental responses. Crops being considered for fresh consumption include microgreens, herbs, leafy greens such as lettuce, mizuna, Swiss chard, and pak choi, as well as root, seed, and fruit crops such as radish, peas, green beans, dwarf tomato, dwarf pepper, and strawberry. Other species of interest may also be considered.

Candidates should have a Ph.D. in Horticulture, Botany, Plant Science, Plant Physiology, or a related field. Experience in plant physiology and controlled environment plant growth is desirable.

Field of Science: Biological Sciences

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Eligibility is currently open to:

- U.S. Citizens;
- U.S. Lawful Permanent Residents (LPR);
- Foreign Nationals eligible for an Exchange Visitor J-1 visa status; and,
- Applicants for LPR, asylees, or refugees in the U.S. at the time of application with 1) a valid EAD card and 2) I-485 or I-589 forms in pending status

Eligibility Requirements

- **Degree:** Doctoral Degree.