

Environmental Factors that Affect Plant Growth Resource Worksheet - Space Limitations

- Gravity:** None in space
Mars does have gravity
- Soil:** Must be contained (no dust or crumbs) especially while on shuttle
Zeolite is a soil/rock/mineral mix currently being tested
Mars may have a usable soil matrix (Mars loam)
- Water:** Limited but available, best if recycled
- Light:** Natural light vs artificial lights?
4 hours of light then 4 hours of dark, repeatedly while on shuttle
Windows are small and must be protected from flying debris
- Plants:** Must be efficient (low biomass of waste per yield)
Generally shorter than 18 inches
Fast cycles or turnover
Nutritious
- Energy:** The amount of energy needed for different functions and support systems
must be highly efficient; limited energy available to support plant growth
- Gases:** Oxygen and Carbon Dioxide levels are monitored and controlled closely
- Space:** Highly limited, every inch is utilized

Cynthia Haynes
Department of Horticulture
Iowa State University
chaynes@iastate.edu