Radiologic Mutations of Brassica rapa Seeds

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Deep space exploration requires that food will need to be grown/ harvested on board the spacecraft. Storage space is minimal and would not accommodate the amount of food required for the duration of travel. Continual exposure to radiation could affect seeds life cycle resulting in poor plant health, reproduction, and/or death. Do seeds exposed to radiation produce different traits than seeds not exposed to radiation? Seeds were exposed to radiation by placing them on a Borealis, near space, launch. One hundred eighty six Brassica rapa seeds were distributed evenly in clear Ziploc bags and attached to the outside of the payload, inside the payload, and control on earth. The seeds were removed from the payload. Three plant traits were measured, in soil and hydroponics media, for height, number of buds, and number of flowers. Seeds from outside the payload grew the tallest and had the most buds. However, the control group developed the most flowers. A one-way ANOVA analysis was conducted to compare differences. There was a significant difference between plant height grown in the soil at <.05. There were no significant differences on the other measured traits in either media.

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