Terraforming Mars: Can Its Soil Support Plant Life?

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How are we going to provide food when colonization of Mars begins? Before this huge step in exploration can commence, an outline must be in place for growing food. This project asks three questions to determine the best fertilizer to use for terraforming Mars. If the Martian soil simulate can be enriched enough to germinate tomato seeds; if micro-gravity has an effect on the germination of the seeds; and which type of fertilizer would terraform the soil most effectively. Four different types of soil were gathered that have characteristics similar to Martian soil, including a Martian simulate ordered online. X-ray diffraction was used to determine the composition of the soils. Seeds were planted in each type of soil and three different fertilizers were used to provide nutrition for the plants: compost, liquid, and solid fertilizer. Water was used as the control. The Martian soil with the compost added, using seeds from an eight month time period in micro-gravity, had the highest rate of germination and these plants had stronger stems and a darker color. It was exciting to discover that the Martian soil was capable of supporting plant life. In the future, larger amounts of soil may be used to grow the plants to maturity.