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VOLATILE ETHANOL AFFECTS GERMINATION AND GROWTH OF LETTUCE, RADISH, SOYBEAN AND WHEAT SEEDS

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Ethanol (EtOH) from biogenic and anthropogenic sources can contaminate atmospheres in closed environments such as spacecraft, growth chambers, and greenhouses. An EtOH exposure limit of 1000 ppm has been established by NASA, OSHA, and ACGIH to protect human health. Similar limits have not been established for plants. Seeds of six radish cultivars (*Raphanus sativus* L. cv. Cherriette, Cherry Bomb, Reggae, Sora, Sparkler White, and White Globe) were exposed to 0, 50, 100, 250 and 500 ppm EtOH for 5 days and germination, shoot length measured, and threshold limits (T₁₀, T₅₀, and T₉₀) determined. Threshold values were also established for *Lactuca sativa* L. cv. Red Romaine; *Glycine max* (L.) Merr cv. Hoyt, and *Triticum aestivum* L. cv. USU Apogee. Threshold analysis indicated that radish was the most sensitive crop, and soybean the most tolerant. However, germination was completely inhibited at 500 ppm EtOH (1/2 regulatory limit) in all seeds tested. These results highlight the need to develop specific VOC guidelines for plant growth facilities.