

A NEW METHOD TO CULTURE SWEETPOTATO IN SPACE FARMING

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Sweetpotato production in space has many advantages over that of other crops; the plant has a higher growth rate and a higher yield with less fertilizer and less water, and functions as an efficient CO₂/O₂ converter. In a limited space in space farming, however, it is not favorable that sweetpotato shoots develop vigorously while the roots have not enlarged yet, because the sweetpotato organ of interest is not the shoot but the tuberous root. Cuttings of sweetpotato (*Ipomoea batatas* Lam. "Beniazuma") were used in this study. Each cutting was cut off from the 2nd - 10th nodes from the apices of mother branches and consisted of one expanded leaf, one node and five cm long stem. The cuttings were cultured suboptimally on a mixed soil (peat-moss:vermiculite=1:1 in volume) in a greenhouse under sunlight. Growth characteristics of the cuttings removed axillary buds were compared with cuttings with axillary buds in the first experiment. The cuttings without axillary buds started tuberous root bulking about 30 days after the onset of the experiment. The harvest index (tuberous root dry mass/total dry mass) was 0.5 after 70 days. Whereas, the control plant with an axillary bud developed a lateral shoot and formed no tuberous root during 70 days in the experiment. It was necessary to remove the axillary buds in order to form the tuberous roots in this method. To evaluate the effect of light intensity on tuberous root formation, cuttings without axillary buds were shaded with cheesecloth having 43% of light transmittance in the second experiment. The tuberous root formation was retarded 50 days in shaded cuttings compared with control cuttings. The tuberous roots were quickly formed and the large harvest index was ensured in this method with cuttings without axillary buds. Therefore the method is expected to be advantageous to culture sweetpotato at a high density with rapid turn over in a limited culture space in space farming.