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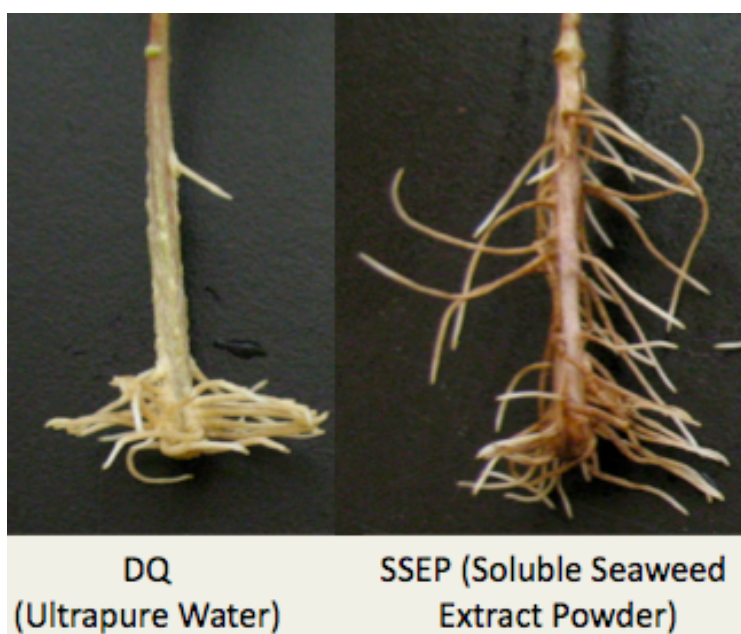
EFFECTS OF SEAWEED EXTRACTS FROM *ASCOPHYLLUM NODOSUM* ON ADVENTITIOUS ROOT FORMATION AND STOMATAL CONDUCTANCE IN *VIGNA RADIATA*

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Seaweed mulch has been used on crops for centuries as a biostimulant and soil conditioner. Since the 1950's seaweeds have been processed into solid or liquid extracts and applied to crop plants to increase yield and improve tolerances to stress. The precise effects and mechanism of action of seaweed extracts on plant performance remains unclear. Acadian Seaplants Ltd (Dartmouth, NS) produces seaweed extracts (eg SSEP) from *Ascophyllum nodosum*. Previous work in this lab has shown that SSEP stimulates root initiation

and elongation in *Vigna radiata* (mung bean) cuttings. The goals of this research were (1) to determine the kinetics of root initiation in mung bean cuttings, (2) to investigate the effects of SSEP on water uptake and stomatal conductance in mung bean cuttings, and (3) to test for biological activity in a high molecular weight (HMW) fraction of SSEP (>13,000 MW) produced by dialysis. SSEP was found to initiate roots only along the portion of the hypocotyl immersed in the test solution. In fully immersed hypocotyls, SSEP increased the number of roots in the top 3cm of the hypocotyl as well as increasing overall root plus hypocotyl mass when compared to water and nutrient controls. One or two day treatment with SSEP had no effect on root initiation. A three day treatment with SSEP was required to initiate roots, with few additional roots produced after the fourth day. A HMW fraction of SSEP produced by dialysis exhibited rooting activity that was somewhat reduced compared to original SSEP. Stomatal conductance was shown to decrease in cuttings treated with both SSEP and the HMW fraction of SSEP. Stomatal conductance however was not reduced in intact, non-stressed plants. These results indicate that the effects of SSEP on rooting activity and stomatal conductance are produced by a HMW fraction and appear unrelated to the presence of auxin or ABA in the extract.



John Daborn graduated from River Hebert District High in River Hebert, Nova Scotia in 2006. John is currently completing his Honors thesis in his fourth year Biology at Acadia. He was awarded an Acadia Excellence Scholarship upon graduating High School and his honors thesis research was partially funded by Acadian Seaplants Ltd. John is currently a Teaching Assistant for cell biology and plans to pursue a masters degree in biology.

