The Effect of an Extract from *Durvillaea potatorum* and *Ascophyllum nodosum* on Seedling Establishment of Broccoli on Contrasting Soil Types

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**1: Introduction**

Broccoli production requires high rates of nitrogen (N) fertilisers (75—220 kg N/ha) at transplanting to stimulate early growth of seedlings and high yields. These inputs make broccoli systems prone to N losses through leaching and volatilisation, and can have detrimental impacts on the environment. These factors are driving the consideration of alternative methods for stimulating early growth in broccoli.

**2: Methods**

We conducted two field trials to test the hypothesis that an extract from *Durvillaea potatorum* and *Ascophyllum nodosum* (Seasol) stimulates broccoli establishment above standard fertiliser practices. The trials were conducted on contrasting soil types in southern Victoria: a clay-loam Sodosol (Werribee) and a sandy Podsol (Boneo) (Fig. 1). The extract was applied as a plant drench (1:200 dilution), three times through plant establishment, at rates of 2.5 L/ha and 25 L/ha. Plant growth parameters and the incidence of white blister (caused by the fungal pathogen *Albugo candida*) were measured through seedling development.

**3: Results**

- In the Sodosol, the extract significantly increased the leaf number, stem diameter (Fig. 2a) and leaf area (Fig. 2b) of broccoli seedlings by 6%, 10% and 9%, respectively, irrespective of application rate.
- In the Podsol, the effect of the extract was less pronounced. The extract only significantly increased the leaf area of broccoli (by 11%) when applied at the highest rate.
- The extract significantly reduced the incidence of white blister by 23% at the Sodosol site (Fig. 3).

**4: Conclusion**

The Seasol extract made from *D. potatorum* and *A. nodosum* has the capacity to increase the establishment and health of broccoli seedlings in the field. We hypothesise that differences in cation exchange capacity, organic matter and/or leaching properties contribute to variation in the response of broccoli to the extract in different soil types.