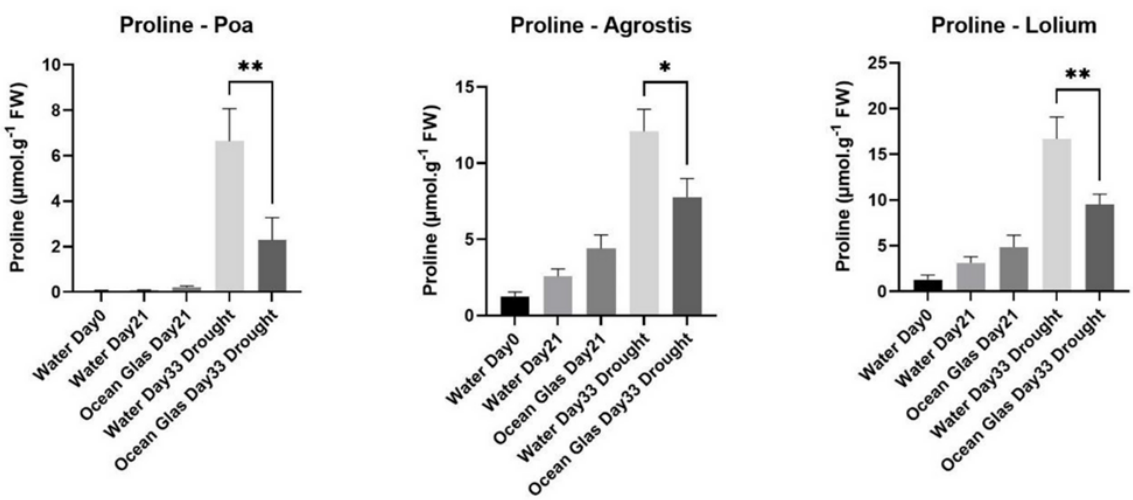
OceanGlas treatment had a significant impact on proline accumulation in the leaves of plants experiencing drought

Methodology

Fresh soil cores were collected from a local well –established Poa annua, Agrostis capillaris, and Lolium perenne L. Dominant swards and completely homogenised separately by hand. These were mixed at a 1:9 ratio with sand. The pots were watered to approximately 60% field capacity and sown with Poa annua, Agrostis capillaris & Lolium perenne L. Respectively at a rate of approximately 7,5, & 2 seeds per cm2. A light sand topdressing (approximately 1mm) was applied polythene was placed over pots for 7 days before removal to encourage even germination. Pots were grown under natural light between 14°C and 16°C throughout the experiment. Pots were maintained thereafter at ~25% FC. Turf was watered as standard and trimmed once per week.

Treatments started 32 days post-sowing on 23rd September 2022 in the early evening out of direct sunlight. Table 1 describes the product & application rates assessed in this project. Treatments were applied every 7 days for 3 applications. Proline (as per Carillo & Gibbon, 2011; n = 4) was measured from grass clippings taken at time of treatments.



Results

Since Proline accumulation in plants is a well-documented 'stress' biomarker (e.g. Jazi et al., 2019), it is unsurprising to find that upon introducing drought, Proline concentration increased in all turf types. In all turf types, proline concentration was highest in untreated ('un-primed') plants which would strongly suggest those plants were under greater pressure from reduced water availability compared to those which had been 'primed' & treated with OceanGlas. Plants which had been treated with Ocean Glas showed an increase in Proline concentration compared to levels on Day21 suggesting that they too were responding to the reduced water availability, however the increase was not as high as the untreated plants.

Interestingly, across all three turf types, a small increase in Proline concentration was observed under well-watered conditions in response to three applications Ocean Glas treatment.