

with CFR soil, and supplied with low [P] (0.1 μM P) for 22 weeks. Results showed that the low-P group had significantly ($P < 0.001$) higher nodule fresh weight (43 mg plant⁻¹), nodule size (8 mg nodule⁻¹) and total fresh biomass (918 mg plant⁻¹) than the high-P, the P-generalist or the unclassified group. Although the amount of N in the shoot of plants from low-P soil was 74% higher than those from high-P, tissue concentration of N was significantly ($P < 0.05$) lower in low-P plants compared to those from the high-P soils probably due to the dilution effect. From the species tested, *Aspalathus linearis*, a low-P plant, demonstrated the greatest capacity to nodulate and fix N₂ at low [P] supply. We conclude that legumes species from low P areas of the CFR are adapted to fix N₂ at low soil [P] conditions.

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Comparison of ultrastructure, histochemistry and Ni distribution in leaves of Ni-hyperaccumulating and non-hyperaccumulating genotypes of *Senecio coronatus*

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Senecio coronatus, a widespread South African plant, also occurs on ultramafic outcrops where two genotypes have been identified: one hyperaccumulating Ni and the other lacking this ability. The aim of the present study was to compare leaf ultrastructure and histochemistry of the genotypes and to ascertain whether any differences could be related to their differential uptake of Ni. Light and transmission electron microscopy as well as X-ray microanalysis by means of a nuclear microprobe, were used. Ultrastructural differences were found in mesophyll tissues of the genotypes. In the Ni-hyperaccumulator, palisade mesophyll cells were less elongated, had fewer chloroplasts (often with highly-developed granal stacks), and many plastoglobuli. A large spherical body occurred in mesophyll cell vacuoles. In contrast, palisade mesophyll cells in the non-hyperaccumulator were more elongated, had many chloroplasts with grana not as highly stacked, a more extensive stroma, and fewer plastoglobuli. A relatively small spherical body occurred in mesophyll cell vacuoles. Histochemical tests indicated that the spherical bodies in both genotypes were composed of lipids and probably also of alkaloids. Ni, detected histochemically, was highly concentrated in epidermal cell vacuoles of the Ni-hyperaccumulator but sparsely-distributed within epidermal cell vacuoles of the non-hyperaccumulator. Nuclear microprobe studies confirmed that the highest Ni enrichment was in the epidermis of the hyperaccumulator with lower Ni concentrations in other leaf tissues and considerably less Ni present in the leaf epidermis

and other leaf tissues of the non-hyperaccumulator. The significance of the ultrastructural differences and histochemical findings are discussed in relation to the differential uptake of Ni by the genotypes.

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Is *Solanum mauritianum* a preferential food resource for native frugivores in the Cape Floristic Region?

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Identification of keystone plants as food-resources for birds is important for biodiversity conservation since birds promote long distance dispersal of their seeds. Surprisingly, those species that possess the potential for being keystone species are either aliens or share characteristics with typical aliens. *Solanum mauritianum* with its exceptionally high reproductive output is potentially a keystone food-resource for native frugivorous bird species in the Cape Floristic Region (CFR). This alien species' advanced fruit presentation strategies potentially threaten native species seed dispersal by out-competing them for seed dispersal agents. This proposal was tested by measuring the annual frequency and amounts of fleshy fruits produced by the alien shrub *Solanum mauritianum* (Bugweed) and the indigenous shrub *Chrysanthemoides monilifera* (Bietou) at four diverse locations within the CFR where these species co-occur. At the same time, the frequency and duration of visitations and foraging activity by frugivorous birds on the fleshy-fruited alien and indigenous shrubs were recorded with the aid of a digital camcorder and faecal samples collected for assay of viability of avian ingested seeds. Provisional results indicate a wider variety of different bird species, especially nomadic types such as the African Olive-Pigeon *Columba arquatrix* forage fruits of the alien *S. mauritianum* than the indigene *C. monilifera* which supports its proposed keystone status.

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Antimicrobial, anti-inflammatory and genotoxicity activity of *Alepedia amatymbica* and *Alepedia natalensis*

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