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establishment and spread of *A. saligna* in South Africa is necessary for effective management strategies, in particular biological control. We identified the sub-species present in South Africa using ten informative microsatellite markers. We genotyped 90 individuals from three populations and compared this with the reference material from Western Australia. We also compared the amount of genetic diversity harbored within and among the native and introduced populations of *A. saligna*.

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Plant diversity parameters in the Hantam-Tanqua-Roggeveld

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The species richness of the Succulent Karoo and Fynbos flora is exceptional in terms of established hotspots, but especially in comparison with similar arid and Mediterranean environments. This rich flora prompted a study in the Hantam-Tanqua-Roggeveld subregion of the Succulent Karoo to document its plant diversity. In 2005 forty Whittaker plots were surveyed to gather plant diversity data. Species richness, evenness, Shannon's index and Simpson's index of diversity were calculated for each broad vegetation group. These broad vegetation groups are used for convenience and are named the Mountain Renosterveld, Winter Rainfall Karoo and Tanqua Karoo vegetation groups. Species richness ranged from nine to 100 species per 1000 m^2 (0.1 ha) with species richness for the Mountain Renosterveld being significantly higher than for the Winter Rainfall Karoo, which in turn was significantly higher than for the Tanqua Karoo. Species evenness, Shannon and Simpson indices were found not to differ significantly between the Mountain Renosterveld and Winter Rainfall Karoo however, these values were significantly higher than for the Tanqua Karoo. Two plots in each of the broad vegetation groups are used to illustrate the difference between each of them.

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Novel insights into the inhibition of symbiotic nitrogen fixation by dark chilling in soybean root nodules

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Symbiotic nitrogen fixation (SNF) is sensitive to dark chilling (7-15 °C)-induced inhibition in soybean. To characterise the mechanisms that cause the stress-induced loss of nodule function we examined nodule structure, carbon/nitrogen interactions and respiration in two soybean genotypes that differ in chilling-sensitivity: PAN809 (PAN), which is chilling-sensitive and Highveld Top (HT), which is more chilling-tolerant. Nodule numbers were unaffected by dark chilling, as was the abundance of the nitrogenase and leghemoglobin proteins. However, dark chilling decreased nodule respiration rates, nitrogenase activity and NifH and NifK mRNAs and increased nodule sucrose content in both genotypes. Ureide content decreased only in PAN nodules. While the chilling-induced decreases in nodule respiration persisted in PAN even after return to optimal temperatures, respiration started to recover in HT by the end of the chilling period. The area of the intercellular spaces in the nodule cortex and infected zone was greatly decreased in HT after 3 nights of chilling, an acclimatory response that were absent from PAN. These data show that HT nodules are able to regulate both respiration and the area of the intercellular spaces during chilling and in this way control the oxygen diffusion barrier, which is a key component of the nodule stress response. It is concluded that chilling-induced loss of SNF in PAN is caused by the inhibition of respiration coupled to the failure to regulate the oxygen diffusion barrier effectively. The resultant limitations on nitrogen availability contribute to the development of a characteristic chlorotic shoot phenotype in PAN.

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