

## Use of water-stress tolerant *Lotus creticus* and *Cynodon dactylon* in soil revegetation on different slopes in a Mediterranean climate

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### Abstract

The performance of the legume *Lotus creticus* growing in mixture with the grass *Cynodon dactylon* was compared with a *L. creticus* pure stand in field conditions on 0°, 19° and 32° slopes in Barcelona, Spain. Two harvests were carried out, the first in early summer and the second in mid-autumn. From winter to spring, *Lotus creticus* growing in mixture contributed a greater biomass than the grass. Total shoot biomass of pure stand and mixture differed among slopes. On the same slope shoot biomass in the mixture and pure stands was not significantly different. The vegetation cover of the mixture was approximately 100%, 90% and 86% on the 19°, 0° and 32° slopes, respectively. The vegetation cover in the pure stand on the three former slopes was approximately 100%. During summer the water deficit was important on the 32° slope and *L. creticus* plants mortality in the mixture and pure stands was recorded. In autumn, legume biomass in mixture was lower than grass. The vegetation cover in the mixture and pure stands was nearly 100% on the 0° and 19° slopes, and 60% on the 32° slope. During the experiment changes in photosynthesis, water use efficiency and water potential in both species were recorded. *Lotus creticus* plants growing in mixture were not affected in their physiological variables as compared with those in the pure stand. On a same slope, the mixture and pure stands did not differ in total shoot biomass. In mixture the lowest biomass production in one species was compensated by an increase in the other.