

## Low input techniques for firebreak covering: agronomic aspects

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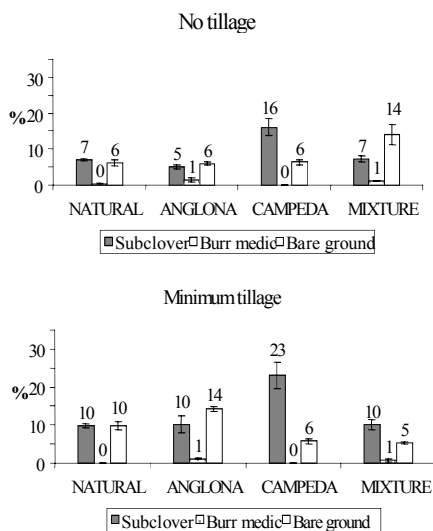
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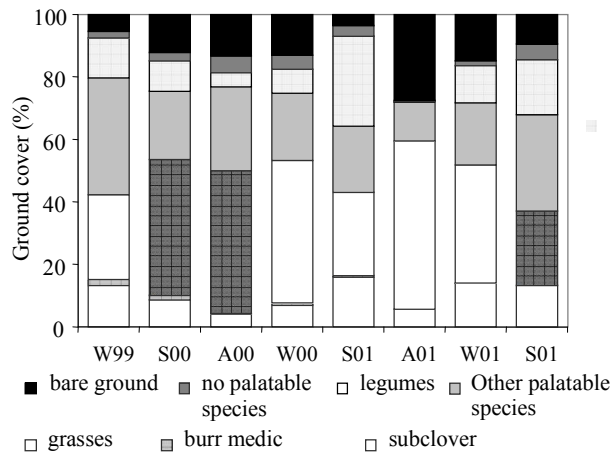
**Introduction** In Sardinia, wild fire prevention is traditionally “passive”, based on mechanical removal of vegetation and upper soil layers. This has a dramatic negative effect on plant diversity and soil erosion. This experiment concerns “active” prevention of wildfires, based on green covering and grazing of firebreaks. The objective was the establishment of a persistent green cover, to be grazed by animals to reduce fuel accumulation.

**Materials and methods** In the protected woodland of Pabarile, S.Lussurgiu (OR), Sardinia, a 3-year experiment was carried out on a firebreak at 840 m a.s.l., with sub-acid soil on basaltic rock. This was a bare ground cover firebreak that had been degraded after repeated removal of cover. Two sowing techniques (minimum tillage vs. no-tillage) and four ‘cover crops’ - ANGLONA (*Medicago polymorpha* ‘Anglona’), CAMPEDA (*Trifolium subterraneum* ‘Campeda’), MIXTURE (mixture of 2/3 ‘Anglona’ + 1/3 ‘Campeda’) and NATURAL (natural canopy as a control) were compared, using a completely randomised block design with three replicates. The seed rate was 20 kg/ha and all plots were fertilised with 40 kg N and 80 kg P<sub>2</sub>O<sub>5</sub>/ha. The floristic composition and soil cover rate dynamics were observed for three years using transects.

**Results** All the cover crop treatments reduced the bare ground percentage (20÷40%) compared with traditionally managed firebreaks (Caredda *et al.*, 2002). Minimum tillage didn’t improve significantly the establishment of introduced species (Figure 1). Low input green covering led to a light but significant increase in subclover (P≤0.05, LSD = 8%). There was an interaction between ground cover and tillage method; lack of tillage increased significantly the bare ground in the MIXTURE treatment. Green covering, combined with grazing, led to a strong reduction of unpalatable species, generally the highly combustible species (*Cistus spp.*, *Inula viscosa*, *Rubus spp.*, etc.), and to a soil cover close to 80-90% (Figure 2).



**Figure 1** Botanical composition and bare ground in spring



**Figure 2** Dynamics of vegetation in the over-sown firebreak (W, winter; S, spring; A, autumn)

**Conclusions** A low-input technique involving no-tillage and a low seed rate allowed the establishment of an adequate herbage cover and lowered environmental risks through wildfires (reducing fuel accumulation by grazing) and soil erosion (reducing the naked soil) whilst providing green biomass for grazing.

### Reference

Caredda S., A. Franca & G. Seddaiu, (2002). Firebreaks over-sowing: an alternative tool for the wildfire risk reduction in Sardinia. *Grassland Science in Europe*, 7, 908-909.