# Growth, botanical composition, yield and quality of annual and perennial grass-legume swards under rainfed conditions in Greece.

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## INTRODUCTION

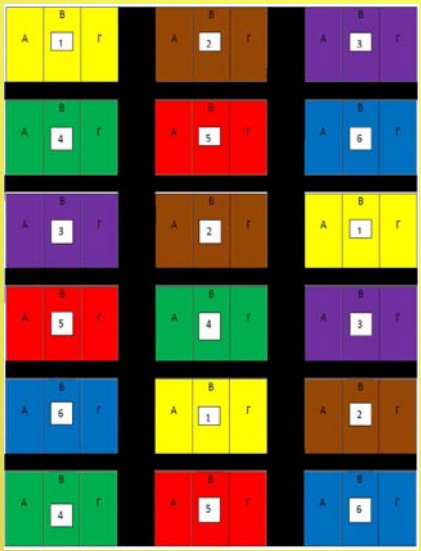
The integration of grass-legume swards is of importance in small ruminant farming systems of Greece, for purposes of cost competitiveness and product quality. However, knowledge of the forage species agronomic characteristics and feeding value is required for a successful grassland based animal farming system.

## MATERIALS AND METHODS

Field, established at 22 October, consisted of 6 treatments (species combinations) × 3 subtreatments (seeding rate) × 3 replicates of 3×1 m each. No agrochemicals (fertilizer and herbicides) and no irrigation were applied. Climatic conditions during study were favourable (Figure 1) therefore herbage was harvested at 6 time points starting on 22 January and at monthly intervals thereafter. Parameters recorded: herbage fresh and dry weight, tiller density (sown and spontaneous plants), fatty acids profile (O'Fallon et al., 2007).

FIELD DESIGN LEGEND

1. Festuca - Lolium - Trifolium (FLT)
   A) 30-30-40, B) 50-20-30, Γ) 30-20-50
2. Lolium - Festuca (LF)
   A) 50-50, B) 70-30, Γ) 30-70
3. Vicia - Hordeum (VH)
   A) 50-50, B) 30-70, Γ) 70-30
4. Pisum - Hordeum (PH)
   A) 50-50, B) 30-70, Γ) 70-30
5. Festuca - Lolium - Dactylis -Trifolium
   A) 25-20-20-35, B) 30-10-10-50, Γ) 30-20-30-20
6. Dactylis - Festuca - Trifolium (DFT)
   A) 60-40, B) 80-20, Γ) 50-50



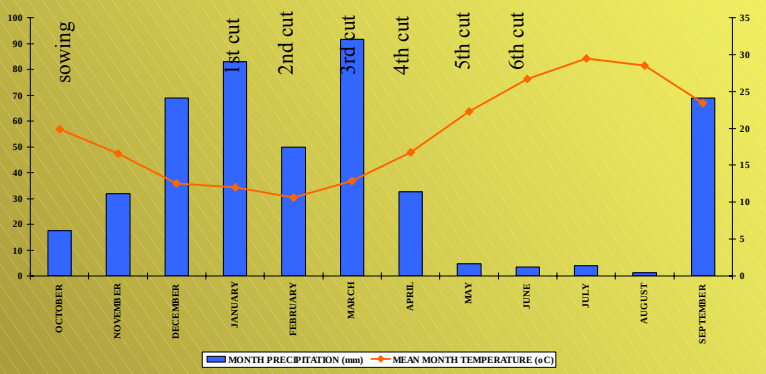
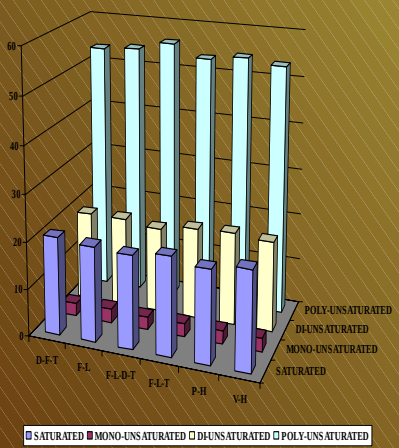



**Figure 1.** Climatic conditions at the site during the experiment.

## RESULTS

Fresh and dry matter productivity was similar between "annual" and "perennial" combinations and ranged between 3 to 7 tons/ha (Figure 2). Spontaneous vegetation contributed around 20 to 30% to the total. Fatty acids composition was dominated by the poly-unsaturated group (>50%), while saturated ones contributed less than 20%. No differences were observed between species combinations or "annual-perennial" categories.



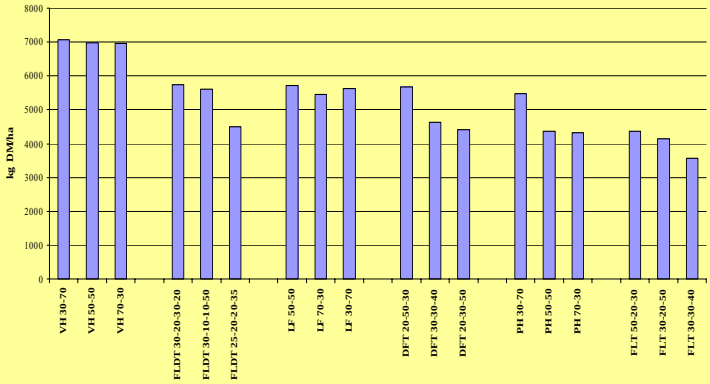




**Figure 2.** Herbage dry matter productivity of the annual and perennial grass-legume swards studied.

## CONCLUSIONS

The comparative study of "annual" and "perennial" forage species, under a low input system, demonstrated no differences in forage productivity and agronomic characteristics between them, nor any clear difference in fatty acids profile. It is concluded that perennial grass-legume swards can successfully be established in Mediterranean environments.