Pasture production on dense stands and fire risk

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Introduction

Galicia has one of the highest forest fired rate of Europe due to the high land productivity of the region caused by high precipitations and warm temperatures during the spring followed by an usually dry summer, when understory and forest are burnt.

Objective

Evaluate the effect of two different tree species established at two different densities on understorey biomass production after 15 years of silvopastoral system establishment

Material and Methods

Location

Galicia-
NW Spain (439 m a.s.l.)

Experimental design

-Year 1995

- Soil preparation
- Tree plantation
  - *Pinus radiata* D. Don (Pine)
  - *Betula alba* L. (Birch)
  - → 2,500 trees ha^{-1} (High density) 833 trees ha^{-1} (Low density)
- Pasture stablished
  - *Lolium perenne* L. + clovers
- No fertilization

-Year 2010

- Tree measurements
- Understorey biomass production
  - Pasture production
  - Litterfall
    - Pine needles
    - Birch leaves

Results

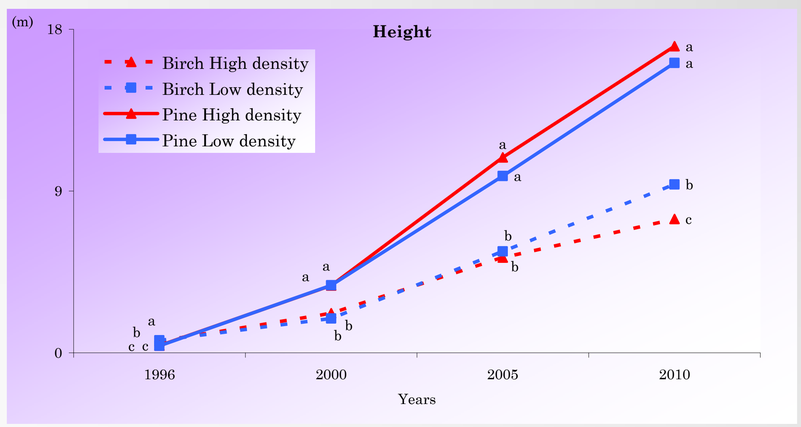

Figure 1. Tree height (m) and diameter (cm) in the systems, for two planting densities: High density: 2,500 trees ha^{-1} and Low density: 833 trees ha^{-1}, two types of tree canopy (Pine and Birch). Different letters indicate significant differences between treatments in the same year.

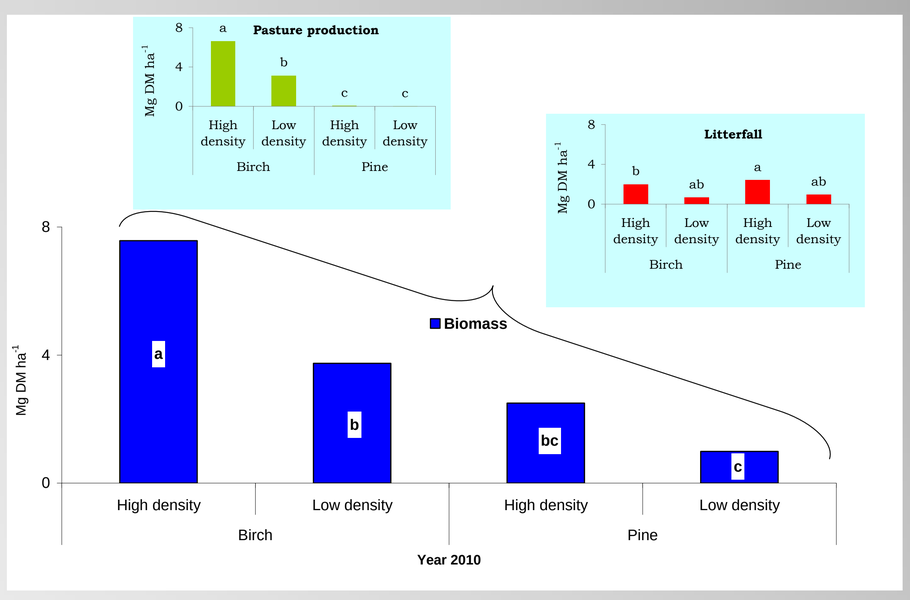

Figure 2. Variation in annual understorey biomass and understorey biomass components (pasture production and litterffall) for two planting densities: High density: 2,500 833 trees ha^{-1} and Low density: 833 trees ha^{-1}, and two types of tree canopy (Pine and Birch) after 10 years of planting. Different letters indicate significant differences between treatments .

Conclusion

From a tree and understory point of view, low densities should be promoted to reach more sustainable systems and allow obtaining better intermediate pasture production and final tree production.