

Fertilization effect on pasture production and tree growth after 10 years establishment

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Introduction

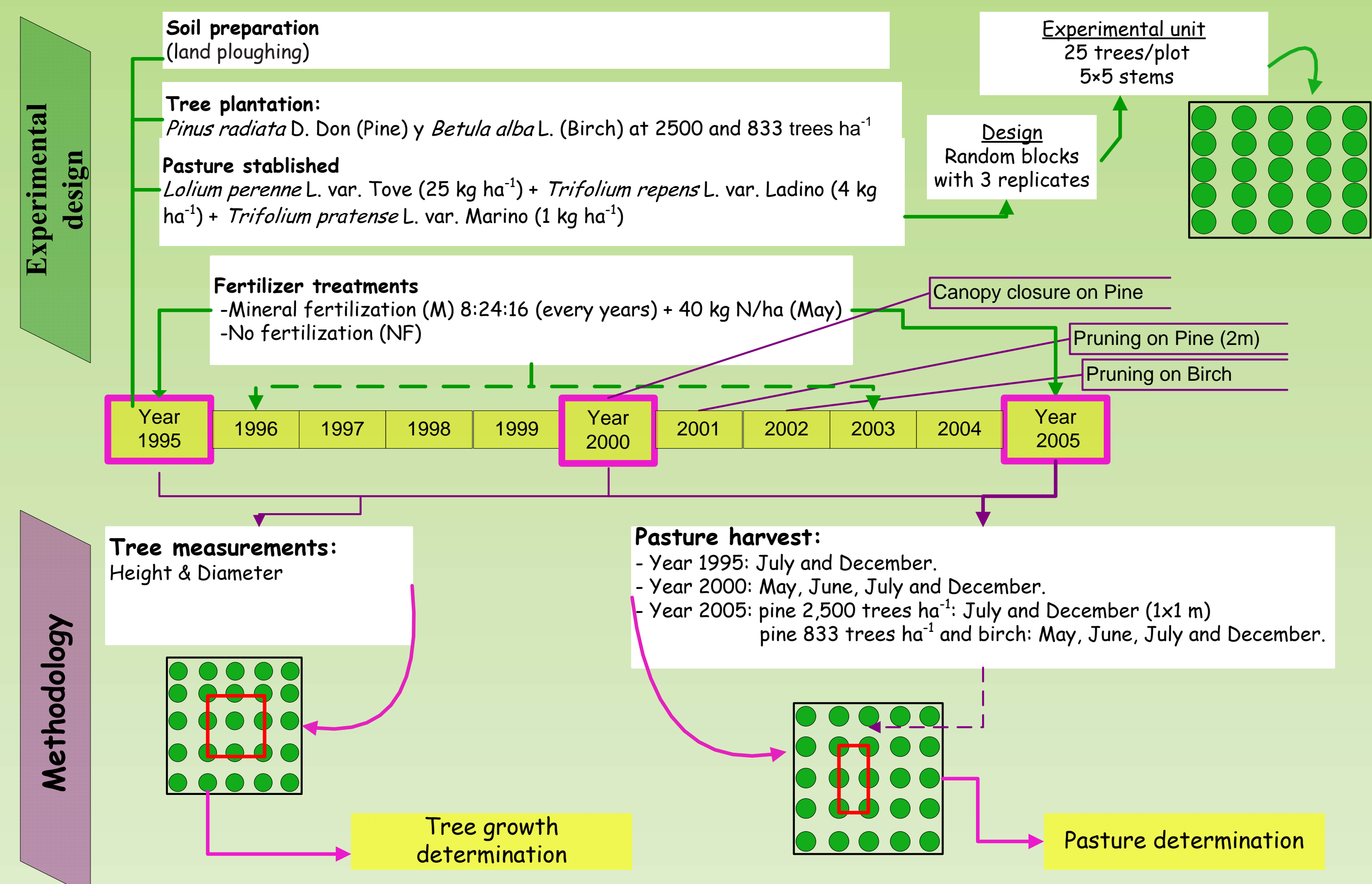
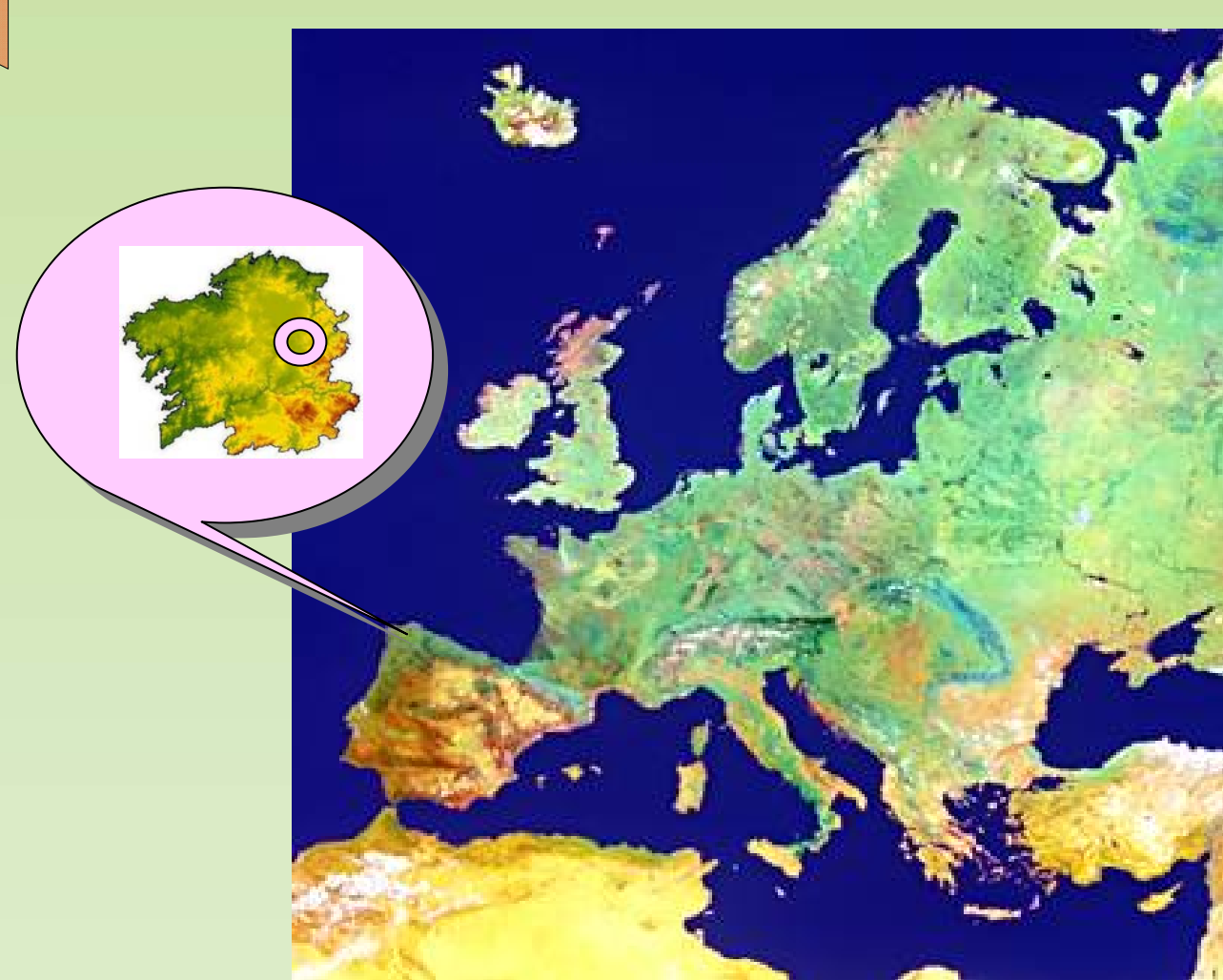
The combination of tree and pasture production has been recently promoted by the EU. Pasture production under trees produces annual farm outputs which promote long term rural population stabilisation compared with exclusively forest systems. At the same time, the presence of a tree increases the long term value of the land.

Objective

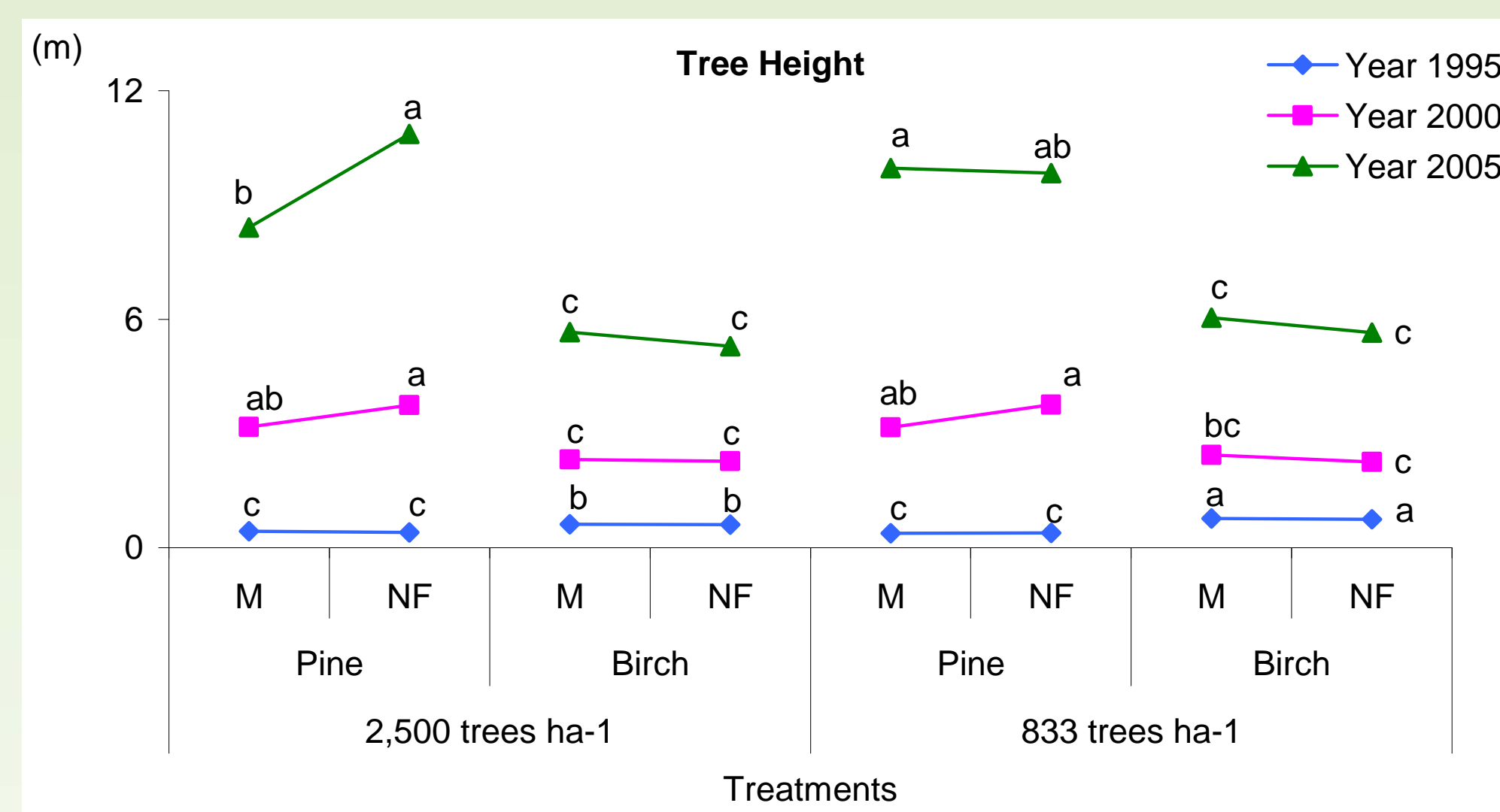
Evaluate the effect of two different tree densities and species, and fertilization on annual meadow production after 10

Material and Methods

Characteristics of the study site
 Lugo (NW Spain)
 Latitude: 43.01 N; Longitude: 7.40W; Altitude: 439 m a.s.l.
 Annual precipitation: 1300 mm; Annual average temperature: 12.2 °C



Results



♣ Pine height and diameter were higher than those of birch after eleven years of establishment (Fig. 1).

♣ Pine height (2,500 trees ha⁻¹) was significantly decreased by fertilization in the

♣ Pine diameter was negatively affect by fertilization in the first year (Fig. 1).

♣ No effects of fertilization were found on birch growth (Fig. 1).

♣ Pine fertilizer plots growth had significantly increases at low density (833 trees ha⁻¹) (Fig. 1).

♣ Significant effect of fertilization, and tree species type and density on meadow production. (Fig. 2)

♣ Fertilization had a major effect at the start of the experiment in terms of modifying annual meadow production (Fig. 2)

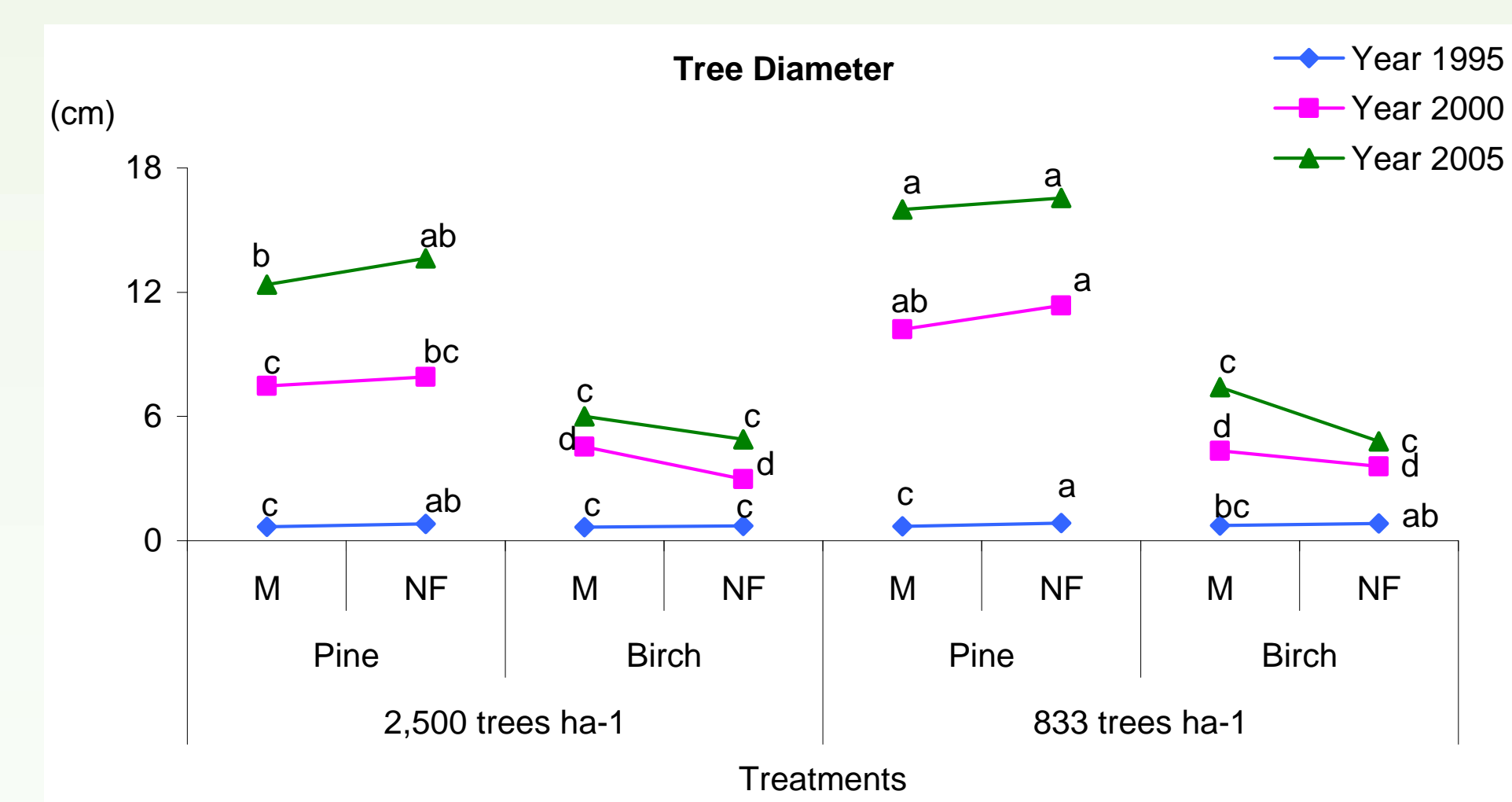


Figure 1. Tree height (m) and diameter (cm) in the systems over the three periods of the study (1995, 2000 and 2005), for two planting densities (2,500 and 833 trees ha⁻¹), two types of tree canopy (Pine and Birch) and two different fertilisation management (M: mineral fertilisation, NF: no fertilisation). Different letters indicate significant differences between treatments in the same year (p<0.001).

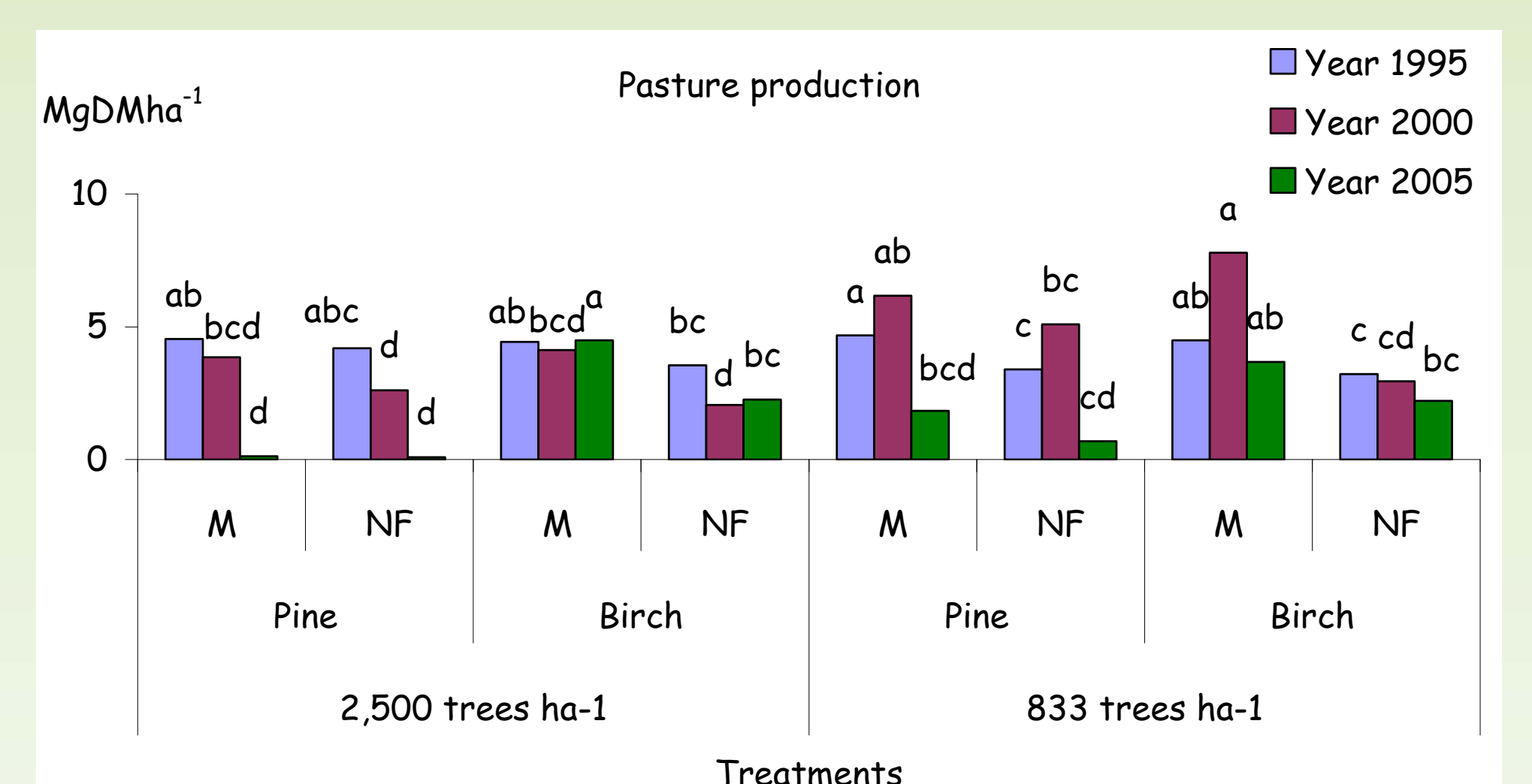


Figure 2. Pasture production (Mg DM ha⁻¹) in the systems for two planting densities (2,500 and 833 trees ha⁻¹), two types of tree canopy (Pine and Birch) and two different fertilisation management (M: mineral fertilisation, NF: no fertilisation). Different letters indicate significant differences between treatments in the same year (p<0.01).

Conclusion

Meadow production was not reduced over time in spite of tree canopy development under birch, but indeed it was diminished under both *Pinus radiata* densities very soon, which makes birch more suitable for combining tree and meadow production when compared with pine.