

## Relative forage yield of intercropped lucerne (*Medicago sativa* L.) and winter forage cereals

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**Introduction** In tropical regions of the world intercropping is mainly associated with the production of maize for grain, while in temperate areas it is associated with the efficient production of forage. There is increasing interest in the development of cereal - legume intercropping in some temperate regions (reviewed by Mason & Pritchard, 1987). The aim of this study was to compare the relative forage yield of intercropped lucerne and cereal.

**Materials and methods** Lucerne pasture and forage cereals were grown as monocultures and as eight intercropped treatments comprising three sowing dates - Early (Ea), intermediate (In) and late (La) - with different species and cultivars of cereal sown with lucerne - : oat short cycle (O shc), oat long cycle (O lc), triticale (Tr) and barley (Ba). Relative Forage Yield (RFY) of the mixtures was determined, according to the method of Trenbath (1976), which calculates  $RFY = \frac{1}{2} (A_i/A_p + B_i/B_p)$ , where  $A_i$  and  $B_i$  are the yields of each component A and B in the intercrop and  $A_p$  and  $B_p$  are yields of the components in monoculture., respectively. Values for RFY greater than 0.5 indicate that the intercropped system is a better use of the area than growing the two components in monoculture. . A split-plot experimental design in randomised blocks was used. The results were analysed by ANOVA.

**Results** The RFYs differed significantly ( $p < 0.05$ ) between intercropped treatments (Table 1). Those involving early and intermediate sowing did not differ significantly ( $p \geq 0.05$ ), while RFYs of late-sown treatments were significantly higher than those with intermediate sowing date, having the highest relative yield values of 0.82 and 0.83.

**Table 1** Relative forage yield of eight intercropped lucerne-winter cereal treatments

Intercrop	RFY
1. Lucerne + O shc-Ea	0.78 <sup>ba</sup>
2. Lucerne + Ba-Ea	0.78 <sup>ba</sup>
3. Lucerne + O shc-In	0.73 <sup>b</sup>
4. Lucerne + Ba-In	0.74 <sup>b</sup>
5. Lucerne + Tr-In	0.71 <sup>b</sup>
6. Lucerne + O lc-In	0.72 <sup>b</sup>
7. Lucerne + Tr-La	0.83 <sup>a</sup>
8. Lucerne + O lc-La	0.82 <sup>a</sup>
C.V. (%)	5.57
Probability	0.04

Means with no common superscripts are statistically significant ( $p < 0.05$ )

**Conclusions** Our preliminary results suggest that intercropping lucerne with forage cereals is a feasible alternative to monocultures for forage production, allowing efficient use of the area for animal production. The values obtained show that it is possible to obtain between 70% and 82% of the forage produced in a given area compared with the combined yields from the two components grown on twice the area.

### References

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