



University of Kentucky  
UKnowledge

---

International Grassland Congress Proceedings

21st International Grassland Congress / 8th  
International Rangeland Congress

---

## Effect of Sowing and Oversowing on Species Abundance in Mountain Pastures of Central Italy

Andrea Pardini

*University of Florence-Piazzale Cascine, Italy*

F. Natali

*University of Florence-Piazzale Cascine, Italy*

Follow this and additional works at: <https://uknowledge.uky.edu/igc>



Part of the [Plant Sciences Commons](#), and the [Soil Science Commons](#)

This document is available at <https://uknowledge.uky.edu/igc/21/1-3/13>

The 21st International Grassland Congress / 8th International Rangeland Congress took place in Hohhot, China from June 29 through July 5, 2008.

Proceedings edited by Organizing Committee of 2008 IGC/IRC Conference

Published by Guangdong People's Publishing House

---

This Event is brought to you for free and open access by the Plant and Soil Sciences at UKnowledge. It has been accepted for inclusion in International Grassland Congress Proceedings by an authorized administrator of UKnowledge. For more information, please contact [UKnowledge@lsv.uky.edu](mailto:UKnowledge@lsv.uky.edu).

## Effect of sowing and oversowing on species abundance in mountain pastures of central Italy

A . Pardini , F . Natali

University of Florence-Piazzale Cascine , 18-50144 Firenze , (I) . E-mail : andrea .pardini@unifi .it

**Key words :** agro-tourism , biodiversity

**Introduction** Large parts of Central Italy are mountainous and marginal due to climate constraints , shallow soils , steeped slopes and distance from main roads . Pasture productivity is low nonetheless of the agronomic advances , and farmers increase their incomes by offering tourist services . Agro-tourism is favoured by conservation of biodiversity (Uncini Manganelli et al . , 2002) . Under this point of view , farmers seek low input techniques for pasture management that sustain the productivity and at the same time conserve plant diversity (Pardini , 2002) . A trial was done to control what is the effect of sowing and oversowing on productivity and abundance of pasture species . This research has been fund by ARSIA of the Regional Government of Tuscany .

**Materials and methods** The trial took place from 2004 to 2007 in a mountain pasture (830 m asl , 40% slope) . We compared 3 treatments :

1 .Native pasture (control test , not changed) .

2 .Sown pasture (sown in April 2004 after ploughing at 20 cm depth and then disk harrowing . Sowing mixture *Lolium perenne* (25%) , *Poa pratensis* (25%) , *Trifolium repens* (25%) , *Onobrychis viciifolia* (15%) , *Lotus corniculatus* (10%) , the total seed quantity was 50 kg/ha) .

3 .Oversown pasture (seeded in April 2004 after light disk harrowing . We seeded the same pasture mixture) .

Measurements carried out were the following .

1 .Botanical composition (linear analysis , plus a list of rare species found out of the lines) .

2 .Forage yield (monthly cuts inside cages during the growing period April-October) .

**Results and discussion** The number of plant species in oversown plots (49) was not significantly higher than in native pasture (52) , but it was lower in sown plots (41) , the species missing are mainly short (*Crocus albiflorus* , *Taraxacum officinalis*) , most of them have biological importance and they are known as medicinal plants .

The biomass of the sown plots doubled in 2004 in comparison to the native (Table 1) , it was high also in oversown plots . The positive effect terminated after 3 years in the sown plots and after 2 in the oversown plots .

**Table 1** Biomass in native , sown and oversown pasture .

	2004	2005	2006	2007	Average
Sown	6 .0 a	5 .7 a	4 .5 a	3 .4 a	4 .9 a
Oversown	5 .0 b	3 .7 b	3 .4 b	3 .2 a	3 .8 b
Native	3 .1 c	3 .0 b	3 .3 b	3 .1 a	3 .1 b

Values that share same letters in columns are not significantly different at  $P=0 .05$  .

**Conclusions** We conclude that the repetition of sowing practices can reduce the number of species ; on the other hand biomass is increased for 2-3 years maximum . Oversowing did not increase the biomass enough . The good management of native pasture will be cheap and will favour the conservation of plant diversity and , in turn , support the development of the industry of rural tourism . Sowing should be limited only to flat areas where there is only little soil erosion and there is deeper soil , in these areas would be reasonable to repeat the sowing at 4-5 years of distance and to change always sowing mixture introducing several grasses and legumes in order to help maintaining the diversity of plants .

### References

- Pardini A . , (2002) . Mediterranean pastoral systems and the threat of globalization . Invited Paper , *FAO-CIHEAM XI Meeting Mediterranean Pastures Network* , Djerba (Tunisia) .
- Uncini Manganelli R .E . , Camangi F . , & Tomei P .E . , (2002) . Indagini farmaco-botaniche in Garfagnana : il versante Aprano . In : *ARSIA Ed . L'uso delle erbe nella tradizione rurale della Toscana* . 3 , 49-78 .