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## Linear Analysis Method to Calculate the Specific Forage Ingestion by Livestock

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## Linear analysis method to calculate the specific forage ingestion by livestock

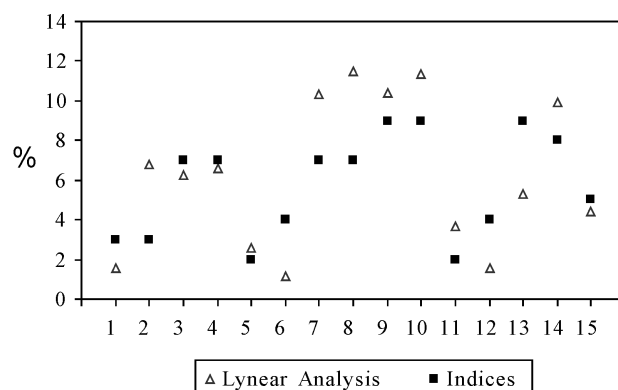
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**Key words :** pasture species , traceability , palatability indices

**Introduction** Native pastures include normally tens of species most of which are good forages . Measurements of massive biomass grazed are easy , whilst the calculation of specific ingestion is very difficult , nonetheless to know how much of each species is grazed by livestock can be useful to improve calculations of pasture carrying capacity and it is useful to research on traceability , in fact some pasture plants contain traceable components but they are not grazed and consequently the compounds are not found in the final produce , be it meat , milk or cheese . Several methods are used ( Hodgson et al , 1981 ) but all are not precise : observations of livestock at grazing are done at distance from plants , animals fistulas change very much the grazing behaviour of livestock , twin sample areas and separate weighing take too long time and need many repetitions . We propose a simple method based on measurement of the massive biomass ingested and calculation of the percentual specific ingestion by the number of bites along lines of botanical analysis .

**Materials and methods** We chose 3 pastures of different complexity ( 39 species in flat land , 65 in mountain , 78 in hill ) . The biomass was measured in each pasture in sample areas of 1 m<sup>2</sup> . After 5 days grazing we identified the species that had bitten leaves within 5 cm of distance from analysis points set at distance of 20 cm along lines of 20 m ( Daget and Poissonet , 1971 ) . The quantity of bites received per species was pondered with the frequency of the species , this data was used to calculate the percentage of specific ingestion , finally the specific ingestion was multiplied by the total biomass to calculate the quantity of biomass ingested per species . This trails considered only the 15 most frequent species ( 5 per pasture ) . The results we got by this method have been compared with specific indices of forage quality calculated con previous researches and known from literature ( Pardini et al . , 2007 ) and indicative of the probable ingestion rate .



**Figure 1** Grazing percentage and forage quality indices .

**Results and discussion** The specific ingestions calculated are very similar to the theoretical ingestion derived by palatability indices ( Figure . 1 ) . The proposed method has distinguished species normally not much ingested like *Bromus erectus* ( 1 ) , *Holcus lanatus* ( 5 ) and *Plantago lanceolata* ( 11 ) because of little palatability , from those more palatable and normally more ingested like *Dactylis glomerata* ( 3 ) , *Festuca pratensis* ( 4 ) , *Lolium multiflorum* ( 7 ) , *L .perenne* ( 8 ) , *Medicago sativa* ( 9 ) , *Phleum pratense* ( 10 ) , *Trifolium repens* ( 13 ) , *Vicia sativa* ( 14 ) .

**Conclusions** There good similarity between the ingestion rates and the quality indices , consequently we consider the proposed method sufficiently reliable for quick analysis especially also because easy and rapid . However it should be further controlled in different seasons and environmental conditions , especially because the appreciation and ingestion of a species is related to the rest of the botanic composition of the pasture .

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