Identification of limiting information on grazing sheep and goat-vegetation relationships: Survey of European researchers

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Identification of limiting information on grazing sheep and goat/vegetation relationships: Survey of European researchers

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SUMMARY – At the first meeting of the Nutrition Sub-Group on Animal/Vegetation Relationships at Clermont-Ferrand, September 1995, it was decided to identify research needs, as perceived by European researchers. Responses from 23 researchers from seven countries, Belgium, Germany, Greece, Ireland, Italy, Scotland and Spain, carried out by postal survey, are summarised. The overall aim is to understand animal/vegetation relationships, to improve methods for productive and protective use of grazing land resources and to protect the environment and rural socio-economic fabric. Responses are assembled under eight classes based on research emphasis, animal, vegetation, landscape ecology, sylvopastoral systems, socio-economic, supplementation at grazing, farm management, methodology and farming decision making aids. Effects on the evolution of rural socio-economic patterns and on regional planning of changed husbandry systems, of sheep and goat grazing especially on marginal lands and the estimation of the grazing period which controls optimal yearly profit in Mediterranean scrub (maquis) were emphasised. For the eight classes above the respective number of researchers involved + number of subclass research areas were: 19 + 14, 8 + 12, 6 + 5, 6 + 5, 6 + 6, 5 + 2, 5 + 3 and 3 + 3. The survey showed that ongoing and perceived future research requirements met the broad challenges of efficient and ecologically prudent use of animal and grazing land resources to meet market requirements for acceptable quality food products. Researchers are aware of the role of research as a basis for local and regional land use planning. Collaborative research involving a pooling of skills may be the way forward in many of the areas indicated.

Key words: Future research, researchers perceptions, resource use.

RESUME – "Identification de l'information limitante sur les relations entre le mouton ou la chèvre au pâturage et la végétation : Enquête de chercheurs européens". Lors de la première réunion du Sous-groupe Relations herbe/animal du Groupe Nutrition à Clermont-Ferrand en septembre 1995, il avait été décidé d'identifier les besoins en matière de recherche perçus par les chercheurs européens. Le rapport résume les réponses fournies par 23 chercheurs de sept pays (Belgique, Allemagne, Grèce, Irlande, Italie, Ecosse, Espagne) à une enquête par courrier. L'objectif global est de mieux comprendre les relations herbe/animal, d'améliorer les modalités de gestion des espaces herbagers du double point de vue de leur production et de leur protection, et de préserver l'environnement ainsi que le tissu socio-économique. Les réponses ont été regroupées en huit catégories, en fonction du thème prioritaire animal végétation écologie du paysage systèmes sylvopastoraux, socio-économie, complémentation au pâturage, gestion de l'exploitation agricole, méthodologie, et aide à la décision des agriculteurs. Deux points ont été particulièrement soulignés : (i) les effets, sur l'évolution des configurations socio-économiques rurales et sur l'aménagement du territoire, de la transformation des systèmes d'élevage, notamment des systèmes caprins et ovins utilisant des espaces marginaux ; et (ii) la définition de la période de pâturage qui détermine l'élaboration de profits annuels optimaux en zone de maquis et garrigue méditerranéens. Pour les huit catégories mentionnées, le nombre de chercheurs participants + le nombre de thèmes de recherche ont été respectivement de 19 + 14, 8 + 12, 6 + 5, 6 + 5, 6 + 6, 5 + 2, 5 + 3 et 5 + 3. L'enquête a montré que les besoins exprimés pour les recherches en cours et les besoins perçus en matière de recherche future répondent aux enjeux d'une utilisation efficace et écologiquement raisonnée des animaux et des ressources fourragères afin d'obtenir des produits de qualité qui soient acceptables par le marché. Les chercheurs ont conscience que la recherche a un rôle essentiel à jouer dans l'aménagement du terroir à l'échelle locale et régionale. Une recherche pluridisciplinaire permettant d'associer des compétences diversifiées pourra faire avancer les connaissances dans un certain nombre de domaines cités plus haut.

Mots-clés : Recherche future, perception des recherches, utilisation des ressources.

Introduction

At a previous network meeting it was decided that I should co-ordinate the "Grazing Component" of the Nutrition Sub-network. At the first meeting on animal/vegetation relationships at Clermont-Ferrand, September 1995, and after seeking the views of several scientists working in relevant areas, it was concluded that it would be worthwhile to illicit the perceptions of scientists from different countries and a range of climatic zones on the present day information and

research areas in need of attention as a basis for future development of sheep and goat farming under grazing conditions. The overall aim is to understand animal/vegetation relationships as a basis to improve methods for productive and protective use of grazing land resources and to sustain the rural socio-economic fabric associated with these enterprises. The production of acceptable quality outputs from sheep and goat farming and its connection to the primary production process is of primary importance. It was intended that the exercise might lead to a broader understanding between the different component researchers involved and possibly the identification of areas where a collaborative research approach strategy might be more appropriate.

Methods

A postal survey was carried out which resulted in responses from Belgium, France, Germany, Greece, Ireland, Italy and Spain. It consisted of circulating a simple questionnaire which requested answers to the following four questions: (i) state main research area; (ii) give titles of present projects; (iii) state objectives of present projects; and (iv) list briefly what is considered to be the main information which is limiting our understanding of animal/vegetation relationships for sheep and goats.

The research needs indicated were firstly classified into 8 main research areas based on the number of scientists suggesting them with the titles allocated to represent what was understood to be the main objective of the different topics listed. Each of these areas was divided into subclasses representing individual specific research components using the same criteria to those for main sections. In some instances it was difficult to allocate, for example, the effects of diet on goat milk quality for cheese making is included as a subclass of the animal based classification.

Results and discussion

Responses were obtained from a total of 23 scientists with some of these, which represented summaries of research projects and perceived future needs of whole research departments, counted as one response. With 16 respondents from the drier Mediterranean basin and 9 from the Northern cooler temperate countries both climatic zones were represented. I regret that, due to a misunderstanding, the views of the Nordic countries were not included. The main areas of research and the number of researchers which nominated each of them in Table 1 shows the relatively wide range of research areas from which responses were obtained.

Table 1. Main areas of sheep (S) and goat (G) research and the
number of researchers which nominated each of them

Main area of research	Number of researchers
Animal/plant relationships	4
Ecology and improvements of rangelands	3
Mixed animal spp. grazing	3
S and G nutrition and behaviour	2
Intake and diet composition	2
S and G grazing systems	2
Production systems in the tropics	2
Dairy sheep breeding and milk quality	1
Management of animal and range resources	1
Energy requirements of grazing S and G	1
Compatibility – S grazing and conservation	1
Milk S feeding and nutrition	1

The responses were classified into the following 8 main research area classes with class 1 representing an interpretation of the overall objective: (1) overall objective; (2) animal based; (3) vegetation based; (4) landscape ecology; (5) sylvopastoral systems; (6) socio-economic; (7)

supplementation at grazing; and (8) aids to farming decision making and landscape/regional planning. The classes and subclasses are given in Table 2.

Table 2. Classes and subclasses of areas considered in need of research as perceived by 23 responding researchers from Mediterranean and Northern European countries

Classes	Subclasses
1. Overall objective	Develop improved grazing ecosystems systems to produce quality food products and protect the environment
2. Animal based	Production; behaviour relative to vegetation characteristics and mixes of animal types; intake and its measurement methods; diet composition and intake of browsing goats; use of vegetation and space including heterogeneity; effects of pasture floristic composition; effects of mixtures of animal types and complementary and competitive aspects; supplementation and types of supplement; social patterns; health; energy balance and cost of grazing; quality of product; animal requirements in different seasons relative to vegetation food supply; effects of shelter and water availabilities
3. Vegetation based	Responses to different grazing interventions; effects of heterogeneity (spp., patch effects); degradation/rejuvenation scenarios; effects of animal grazing selection; defoliation and regrowth patterns; prediction of effects of reduced grazing intensity; biodiversity; seasonal grazing and vegetation responses; resistance to drought including plant avoidance/resistance strategies; new spp. for winter forage; evolution of rejected plants and/or areas; effects of brown hares
4. Landscape ecology	Effects of different grazing interventions; develop adequate indicators of animal impact on landscape ecology especially marginal grazing lands; matching productive with protective objectives; setting a sound basis for planning; role of burning/grazing managements in vegetation evolution
5. Sylvopastoral systems	Evaluate fast growing shrubs and trees; plant secondary compounds and animal avoidance; succession ratios and grazing; identification correct animal type mix for balanced use; methods to evaluate use of shrubs
6. Socio-economic	Effect of changed husbandry systems on the following: regional socio-economic situation; interaction with rural development; heritage and landscape protection policy decisions; estimation of the grazing period which controls optimal yearly profit in Mediterranean scrub (maquis); evolution of local rural socio-economic patterns and regional planning interactions
7. Supplementation at grazing	Animal/vegetation/landscape (feed sites) responses; agro byproducts as supplements
8. Aids to farming decision making	Yardstick measures as aids to users; develop improved whole systems and detailed management practices for them; develop reliable models for decision making at farm, local and regional levels

Conclusions

It was not the intention that I should attempt to discuss the results but it appears useful to make the following comments which prime further discussion. It is clear from the survey that ongoing and perceived future research requirements meet the broad challenges of efficient and ecologically prudent use of animal and grazing land resources to meet market requirements for acceptable quality food products. Researchers are aware of the role of research as a basis for local, regional and regional land use planning. Perhaps the great challenge is to secure more integration within and between the different research disciplines and biological areas involved. It is not clear as to how food product quality, in terms of its intrinsic nutritional value, can be connected to production procedures, but this linkage is required to make the required adjustments in the overall production process.

Ultimately, the aim must be to integrate the various components into improved whole systems which might usefully follow the approach of first creating models and subsequently testing them. Where this strategy outputs decision making tools and sound predictions, research can progress to newer levels in the knowledge that support would be more forthcoming. Collaborative research involving a pooling of skills may be the way forward in many of the areas indicated.