



## Zafeiris Abas (1966 - 2013)

Zafeiris Abas was associate professor, Head of the Laboratory of Animal Science, Democritus University of Thrace, Greece.

When he learned that the 15th International Meeting of the FAO-CIHEAM Subnetwork on Mediterranean Forages and Fodder Crops will be held in Greece, he encouraged us to organize it in Orestiada. Working hard for the success of this meeting in Orestiada was the least we could do for his loving memory. Zafeiris, who passed away on 28 December 2013, is still inspiring us on our research activities. He was a superior animal scientist, a warm hearted person and a good friend.

# 15<sup>th</sup>

International Meeting  
of the FAO-CIHEAM  
Subnetwork on Mediterranean Forages  
and Fodder Crops

## Ecosystem services and socio-economic benefits of Mediterranean grasslands

Orestiada, Greece, 12-14 April 2016



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## Organising Committee

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Ali Noutfia, INRAM (Morocco)  
Aziza Zoghalmi, INRAT (Tunisia)  
Eleni Abraham, Aristotle University of Thessaloniki (Greece)  
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Regional unit of Evros

## Background and Objectives of the meeting

**M**editerranean grasslands (including rangelands, pastures, meadows, fodder crops) are important resources with an area covering up to 48 per cent of the whole Mediterranean region.

Although these ecosystems have traditionally played an important role in the evolution of human societies, and are still the key element in the production of high quality animal products, they have been considered merely as a source for providing feed for domestic ruminants.

Grasslands are essentially providing a range of ecosystem services besides forage production, such as biodiversity conservation, habitat for wildlife, carbon fixation, prevention of erosion and nutrient storage. Despite their ecological, economic and social importance they receive limited scientific and media attention on their conservation merits. This is mainly because they are widely perceived as degraded land.

A major shift in grassland science has to occur, from considering their main function as poor land destined only for extensive livestock keeping, to a much broader concept of managing them towards benefiting all ecosystem services. Sustainable management should be about striking a balance among environmental conservation, livestock production and socioeconomic development.

The FAO-CIHEAM Inter-regional Cooperative Research and Development Sub-Network on Mediterranean Forage Resources, together with the Democritus University of Thrace - DUTH (Greece), the Aristotle University of Thessaloniki – AUTH (Greece) and the Hellenic Range and Pasture Society - HERPAS and the Mediterranean Agronomic Institute of Zaragoza - IAMZ/CIHEAM (Spain), organises its 15th Meeting titled “Ecosystem services and socioeconomic benefits of Mediterranean grasslands”. The Meeting will bring together scientists and specialists from countries of the Mediterranean regions, to present studies and to discuss research strategies and experiences allowing to face current challenges in grassland management.



## Day 1 12 April 2016

08:30 - 09:00	Registration	
09:00 - 09:30	Opening ceremony	
09:30 - 10:45	<b>Introductory Session</b>	<b>Chairperson:</b> Alain Peeters, Coordinator FAO-CIHEAM Network on Pastures and Fodder Crops, BELGIUM
09:30 - 10:00	Greece's grazing/ forage resources for livestock production	T.G. Papachristou, Forest Research Institute, Greece
10:00 - 10:15	Overview on grassland and farming systems in Evros regional unit	A.P. Kyriazopoulos, Democritus University of Thrace, Greece
10:15 - 10:45	Ecosystem services and socio-economic benefits of Mediterranean grasslands	E. Varela, CREDA, Spain
10:45 - 11:15	<b>Coffee break</b>	
11:15 - 13:30	<b>Session 1. Managing ecosystem services and livestock production in the Mediterranean region</b>	<b>Chairperson:</b> Carlos Ovalle, Instituto de investigaciones Agropecuaria, CRI-La Cruz, La Cruz, CHILE
11:15 - 11:45	Methods and approaches used for assessing ecosystem services provided by grazing systems	<b>Guest speaker:</b> P. D'Ottavio, Università Politecnica delle Marche, Italy
	<u>Short oral presentations</u>	
11:45 - 12:00	The use of cattle grazing as a management tool for sustainable Mediterranean woodlands	I. Schoenbaum, Hebrew University of Jerusalem (Israel)
12:00 - 12:15	Functional classification by NIRS of plant parts selected by sheep on a shrubby rangeland	M. Jouven, Montpellier SupAgro (France)
12:15 - 12:30	Historical development and future perspective of conservation agriculture practices in crop-pasture rotation systems in the Mediterranean region of South Africa	P.A. Swanepoel, Stellenbosch University (South Africa)
12:30 - 12:45	Diet selection of grazing goats in an oak silvopastoral system in Northern Greece using a Markov Chain Monte Carlo simulation	T. Manousidis, Democritus University of Thrace (Greece)
12:45 - 13:00	The rates of desirable grazing plant species in rangelands: the effect of different animal species and grazing pressures	F. Uzun, Ondokuz Mayıs University (Turkey)
13:00 - 13:30	Session 1. Discussion and synthesis	
13:30 - 15:00	<b>Lunch</b>	
15:00 - 18:00	<b>Session 2. Improvement of range, pasture and forage species including alternative uses</b>	<b>Chairperson:</b> Eleni M. Abraham, Aristotle University of Thessaloniki, GREECE
15:00 - 15:30	Improvement of pasture and forage legumes and grasses for Mediterranean climate zones	<b>Guest speaker:</b> P. Nichols, Western Australia Dep. of Agriculture and Food, Australia
	<u>Short oral presentations</u>	
15:30 - 15:45	Effects of plant development phases on some morphological, agronomical and chemical traits of <i>Bituminaria bituminosa</i> genotypes	Z. Acar, Ondokuz Mayıs University (Turkey)
15:45 - 16:00	Annual clovers performance in a dairy cows grazing system compared to perennial ryegrass	A. Botana, Instituto da Calidade Agroalimentaria (Spain)
16:00 - 16:30	<b>Coffee break</b>	
16:30 - 16:45	Study of productivity pattern over 3 years of some annual grass and legume fodders carried as pure and as mixture in rainfed cereal based system in Algerian semiarid area	K. Abbas, INRAA (Algeria)
16:45 - 17:00	Antioxidant compounds and nutritional quality of eight Tunisian populations of echinus medic ( <i>Medicago ciliaris</i> L.)	A. Zoghalmi Khélil, INRAT (Tunisia)
17:00 - 17:15	Forage potential of <i>Piptatherum miliaceum</i> (L.) Coss (smilo grass)	C. Porqueddu, ISPAAM-CNR (Italy)
17:15 - 17:30	Productivity of alfalfa cultivars in dryland Mediterranean environments of central Chile	C. Ovalle, Instituto de investigaciones Agropecuaria (Chile)
17:30 - 18:00	Session 2. Discussion and synthesis	
18:00 - 19:30	<b>A Thracian evening (taste of wine, local cheese and Kavourmas - cured meat)</b>	

## Day 2 13 April 2016

**08:00 - 18:00** Mid-Meeting technical tour, to visit three contrasted areas in the Evros region:  
i) the Dadia-Lefkimi-Soufli Forest National Park, one of the most important Greek protected areas at national and international scale in terms of floristic and faunistic biodiversity. The landscape mosaic is formed by pine and oak forests, grasslands and fields and is the ideal habitat for birds of prey;

ii) the semimountainous area of Megalo Dereio, with traditional livestock farming systems (goats mainly) based on grazing at grasslands and woodlands; and (iii) an artificial pasture grazed by sheep.

## Day 3 14 April 2016

09:00 - 11:00	<b>Session 3. Socio-economic benefits of sustainable grassland management</b>	<b>Chairperson:</b> Magali Jouven, Montpellier SupAgro, FRANCE
09:00 - 09:30	Overlooked benefits and services of grasslands to support policy reform	<b>Guest speaker:</b> M. Louhaichi, ICARDA, Jordan
	<u>Short oral presentations</u>	
09:30 - 09:45	Investigation of socio-economic factors affecting sustainable rangeland use	C. Cevher, Field Crops Central Research Institute (Turkey)
09:45 - 10:00	Mapping the diachronic changes of stocking rates in a Mediterranean rural area of North Greece	D. Chouvardas, Aristotle University of Thessaloniki (Greece)
10:00 - 10:15	Characteristics of lowland grasslands used in transhumant sheep systems of Marche region (Central Italy)	K. Budimir, Università Politecnica delle Marche (Italy)
10:15 - 10:30	The multifunctional pastoral systems in the Mediterranean EU and impact on the workforce	A. Ragkos, Alexander Technological Educational Institute of Thessaloniki (Greece)
10:30 - 11:00	Session 3. Discussion and synthesis	
11:00 - 11:30	<b>Coffee break</b>	
11:30 - 13:30	<b>Session 4. Rehabilitation of Mediterranean grasslands</b>	<b>Chairperson:</b> Pieter Swanepoel, Stellenbosch University, SOUTH AFRICA
11:30 - 12:00	Rehabilitation of Mediterranean grasslands	<b>Guest speaker:</b> Z. Henkin, Agricultural Research Organization, ISRAEL
	<u>Short oral presentations</u>	
12:00 - 12:15	Effect of microtopography on the early plant community dynamics following overseeding for the rehabilitation of a Mediterranean silvopastoral system	A. Franca, ISPAAM-CNR (Italy)
12:15 - 12:30	The effect of grazing exclusion on vegetation characteristics and plant community structure in arid lowland pastures	S. Hassan, ICARDA (Jordan)
12:30 - 12:45	Rangeland rehabilitation using rainwater harvesting and rosemary ( <i>Rosmarinus officinalis</i> L.) transplantation in the Southeast of Morocco	A. Homrani Bakali, National Institute for Agricultural Research (Morocco)
12:45 - 13:00	Floristic diversity of the understory in <i>Pinus brutia</i> plantations as affected by elevation and grazing intensity	K.A. Margioulas, Aristotle University of Thessaloniki (Greece)
13:00 - 13:30	Session 4. Discussion and synthesis	
13:30 - 15:00	<b>Lunch</b>	
15:00 - 17:30	<b>Round Table – Connecting research, policy and stakeholders challenges for the sustainability of grasslands</b>	<b>Chairperson:</b> Antonio Lopez-Francos, CIHEAM, SPAIN
	Panellists:	
	S. Ates, ICARDA, Jordan	
	D. Bakaloudis, Dadia-Lefkimi-Soufli Forest National Park, Greece	
	I. Hadjigeorgiou, Agricultural University Athens, Greece	
	Y. Kazakova, European Forum on Nature Conservation and Pastoralism, Bulgaria	
	C. Paraschoudis, Sheep and goat farmer union of Evros, Greece	
	C. Roukos, Ministry of Rural Development and Food, Regional Department of Epirus, Greece	
	D. Skartsi, WWF, Greece	
16:00 - 16:30	<b>Coffee break</b>	
16:30 - 17:30	Round table discussion	
17:30 - 18:30	<b>Business meeting of the Subnetwork and poster awards</b>	<b>Chairperson:</b> Claudio Porqueddu, CNR-ISPAAM, Coordinator of the FAO-CIHEAM Sub-Network on Mediterranean Forage Resources, ITALY
18:30	Close of the meeting	
21:00	<b>Official Dinner</b>	



## Session 1 Poster

- S1-1 *Atriplex halimus*: halophyte plant as potential forage for ruminants in arid area South-East Algeria  
H. Arab, S. Mehennaoui and M.L Haddi
- S1-2 Effect of stocking rate on the pasture and sheep production in winter and spring lambing systems  
G. Ozcan, S. Ates, M. Kirbas, H. Cicek and S. Isik
- S1-3 Vegetation cover and species composition under different grazing intensity in mountainous grasslands of Northern Greece  
E. Avramidou, E. Abraham, K. Mantzanas, A. Sidiropoulou and A. Chatzipaschali
- S1-4 Does transhumant sheep system provide ecosystem services for climate change adaptation in Mediterranean environment?  
M. Francioni, M. Toderi, R. Lai, L. Trozzo, L. Foresi, F. Sciarra, P. Avanzolini, E. Sedić, K Budimir, R. Santilocchi and P. D'Ottavio
- S1-5 Steppic ecosystem in the area of M'Sila, Algeria: state and perspective of rehabilitation  
I. Hadbaoui and A. Senoussi
- S1-6 Multiple-benefits of Mediterranean grasslands: livestock and honeybee foraging values and pasture qualities  
Z. Henkin, A. Perevolotsky, S. Landau, E.D. Ungar, M. Sternberg, T. Shapira, A. Dag, A. Kaminer and Y. Mandelik
- S1-7 Effects of grazing intensity on some morphological parameters of *Carpinus orientalis*  
A. Lempesi, A. Eleftheriadou, I. Kalkanas, A. Papadimitriou, A. Psyllidou, E.M. Abraham, G. Korakis and A.P. Kyriazopoulos
- S1-8 Effect of drinking salt water on live weight change and grazing behavior of Barbarine sheep during pregnancy and lactation periods  
W.G. Mehdi, H. Ben Salem and S. Abidi
- S1-9 Plant cover, floristic diversity and similarity of wet meadows grazed by free-ranging cattle in Axios Delta, Greece  
P. Papaporfyriou, D. Chouvardas, I. Tsiripidis and E.M. Abraham
- S1-10 Multipurpose plants in the Northern Libya rangeland area of Syrt  
A. Pardini, M. Battaglia and R. Giunta
- S1-11 Impact of different grazing intensities on rangelands soil characteristics in central Greece  
D. Rapti, A.G. Papaioannou, Z.M. Parissi and M. Karatassiou
- S1-12 Comparison of quadrat and transect survey methods to evaluate pastoral value (PV) in SE Sardinian rangelands  
G. Vacca, I. Camarda, G. Brundu, F. Sanna, S. Caredda and G.A. Re
- S1-13 Livestock farming in Algerian semi-arid forests: the case of Boutaleb forest  
H. Sahraoui, T. Madani and F. Kermouche
- S1-14 Habitat use by free grazing water buffaloes at the Kerkini Lake  
I. Karmiris, P. Platis, S. Kazantzidis and T.G. Papachristou
- S1-15 The impact of transhumance abandonment on land use changes in Mount Pindos (Greece)  
E. Takola, A. Sidiropoulou and M. Karatassiou
- S1-16 Grazing effects on mountain rangeland diversity in northeastern Tunisia  
W. Jaouadi, K. Mechergui and M.L. Khouja
- S1-17 Carcass traits and meat quality of lambs from two grassland ecosystems in the Middle Atlas area  
A. Boughalmi, A. Araba, S. Chatibi and M. Yessef

## Session 2 Poster

- S2-1 Morphological variability in some persian clover (*Trifolium resupinatum* L.) populations from Ordu province (Turkey)  
O. Onal Asci, Y. Kasko Arici, F. Nalbanto, M. Deveci and Z. Acar
- S2-2 Biomass production and chemical characteristics of four grass species for bioenergy  
A. Megalogiannis, G. Tripis, A. Papaioannou, Z. Parissi, A. Kyriazopoulos and E. Abraham
- S2-3 Is It Possible to Develop Dormancy Groups for *Bituminaria bituminosa* L.?  
Z. Acar, F. Kumbasar, I. Ayan, M. Can, E. Tuzen, S. Zeybek and G. Kaymak
- S2-4 Performances of the First Registered Forage Cowpea Cultivar of Turkey: Ulkem  
I. Ayan, Z. Acar, M. O. Tongel, M. Can and C. Bayram
- S2-5 Agronomic performance of the selected Turkish grass pea (*Lathyrus sativus* L.) landraces  
U. Basaran, M. Copur Dogrusoz, E. Gulumser and H. Mut
- S2-6 Nutritional and anti-nutritional characterization of six Tunisian local forage legumes species  
S. Benyoussef, S. Abidi, G. Khalfallah, M.S. Zehani, A. Zoghalmi-Khelil and H. Ben Salem
- S2-7 Yield production of two *Trifolium* species at different habitats of a Mediterranean island  
A. Farfaras, I. Hadjigeorgiou, E.M. Abraham and Z.M. Parissi
- S2-8 Production potential of annual meadows in Moroccan coastal region  
R. Kallida, N. Shaimi and A. Souihka
- S2-9 The impact of structure and pattern of landscape on grassland ecosystems: the case of Mygdonia basin  
D. Kapsalis, M. Karatassiou and I. Ispikoudis
- S2-10 Cereals attract wild avian herbivores in wet grasslands - Implications for range management  
I. Karmiris, P. Platis, S. Kazantzidis and T.G. Papachristou
- S2-11 Flowering legumes as pollen and nectar-rich habitats for bees: preference of bee pollinators to different forage species  
A. Kirilov, I. Nikolova, N. Georgieva and R. Mladenova
- S2-12 Water deficit effect on physiological responses of *Lotus corniculatus* plants of different origin  
P. Kostopoulou, M. Karatassiou, A. Lazaridou and M. Lazaridou
- S2-13 Phosphorus use efficiency of *Trifolium subterraneum* as affected by seeding rate under rainfed conditions  
P. Stefanou, A.P. Kyriazopoulos, E.M. Abraham, D. Katsinikas, Z.M. Parissi, T. Manousidis, S. Koutroubas and M. Orfanoudakis
- S2-14 Effects of Different Nitrogen Rates on Hay Yield and Some Quality Traits of Sudan Grass and SorghumxSudan Grass Hybrid Varieties  
D.D. Gulumser and H. Mut
- S2-15 Hay yield and quality of oat (*Avena sativa* L.) genotypes of worldwide origin  
Z. Mut, H. Akay and O.D. Erbas
- S2-16 Improving seed production reliability of summer-dormant, drought-tolerant hispanica cocksfoot  
M.R. Norton and P.G.H. Nichols
- S2-17 Effect of grazing intensity on rangeland productivity in Northern Libyan area of Syrt.  
A. Pardini, M. Battaglia and E. Mugnai
- S2-18 Irrigated forage productivity in the area of Syrt (Northern Libya)  
A. Pardini, M. Battaglia and D. Valente
- S2-19 The role of tannins in forage legumes  
G. Piluzza, S. Bullitta, G.A. Re and L. Sulas
- S2-20 Sustainable management of intercropped vineyards on sandy acid soils  
M. Cabras, D. Dettori, L. Mercenaro, G. Nieddu and C. Porqueddu
- S2-21 Chemical composition, fatty acid content and phenolics (bioactive) compound on linseed (*Linum usitatissimum* L.) harvested at six phenological stages of growth  
G. A. Re, M. Sassu, L. Sulas, G. Piluzza
- S2-22 Quantification of N<sub>2</sub>-fixation from *Medicago polymorpha* L. grown as cover crop in vineyard  
L. Sulas, G. Campesi, L. Mercenaro
- S2-23 *Tetragonolobus purpureus* Moench: a legume species to be exploited as a forage and other uses  
M. Vargiu, E. Spanu
- S2-24 Sustainable control of gastro intestinal nematodes; use of Mediterranean bioactive plants  
S. Sotiraki, A. Stefanakis, K. Saratsi, N. Voutzourakis, I. Hadjigeorgiou, H. Hoste
- S2-25 The use of in vitro techniques in routine ruminant feed evaluation  
H. Ammar, K. Dhaoudi, R. Hajri, H. Bel Haj Ltaief, M. Ben Younes and S. Lopez

## Session 3 Poster

- S3-1 Grazing land management and sheep farm viability in semi-arid areas: evidence from Western Lesvos, Greece  
*G. Psyllos, T. Kizos, I. Hadjigeorgiou and P.G. Dimitrakopoulos*
- S3-2 The legislative framework of environmental impact assessments for establishment of ski resorts in mountainous areas  
*A. Douka and A. Stergiadou*
- S3-3 Pastures valorisation: Tools and Effects  
*D. Gaki, I. Faraslis and I. Hadjigeorgiou*
- S3-4 Internet promotion of agroforestry networks within regional development planning  
*Z. Andreopoulou and A. Kalfagianni*
- S3-5 The livestock production system of the Muslim minority in Northern Evros, Greece  
*A. Ragkos, S. Koutsou, T. Tsivara and T. Manousidis*
- S3-6 A traditional route of transhumant flocks in Northern Greece: Cultural aspects and economic implications  
*A. Ragkos, M. Karatassiou, Z. Georgousis, Z. Parissi and V. Lagka*
- S3-7 The mountainous pastoral livestock farming in Tzoumerka, Epirus: The economic dimension of activity and the sustainable management of pastures  
*Ch. Roukos, A. Kontogeorgos, F. Chatzitheodoridis and S. Kandreli*
- S3-8 Buffalo farming in Greece: Present and future  
*D. Roustemis, A. Ragkos, D. Patousis, A. Theodoridis and S. Savvidou*
- S3-9 Utilization of grazing in different small ruminant management systems on Crete island, Greece  
*N. Voutzourakis, N. Tzanidakis, G. Butler, C. Leifert, S. Soritaki and A. Stefanakis*
- S3-1 Rangeland management in Tunisia: Inventory and perspectives under a climate change context  
*I. Touhami*

## Session 4 Poster

- S4-1 Effects of over-seeding and fertilization on yield and quality of pasture  
*D. Algan, B. Pak, R.P. Süzer, I. Aydin and M. Olfaz*
- S4-2 Landscape evaluation of the “Sheikh Sou” suburban park created in an old Mediterranean rangeland  
*D. Chouvardas, A. Sidiropoulou, M. Atskakani, M. Papadimitriou, P. Sklavou and M. Karatassiou*
- S4-3 Floristic composition and plant cover in Yozgat rangelands, central Turkey  
*M. Copur Dogrusoz, H. Mut, U. Basaran, E. Gulumser and E. Katlan*
- S4-4 Rangeland rehabilitation in the southern part of the Mediterranean basin  
*M. Louhaichi, F. Ziadat, S. Ates and C. Zucca*
- S4-5 Plant diversity in suburban Mediterranean ecosystems: The case of “Sheikh Sou” Thessaloniki Greece  
*M. Papadimitriou, P. Sklavou, M.E. Atskakani, A. Sidiropoulou, D. Chouvardas, M. Karatassiou and I. Ispikoudis*
- S4-6 The use of native pasture species in the rehabilitation of a limestone quarry  
*F. Sanna, M. Cuccureddu, D. Nieddu, G.L., Mozzi and C. Porqueddu*
- S4-7 Peroxidase responses of two contrasting *Medicago ciliaris* populations to cold stress in aerial and root systems  
*N. Yahia, A. Bouira, C. Cheriet and F.Z. Fyad-Lameche*

## Map of Orestiada

