

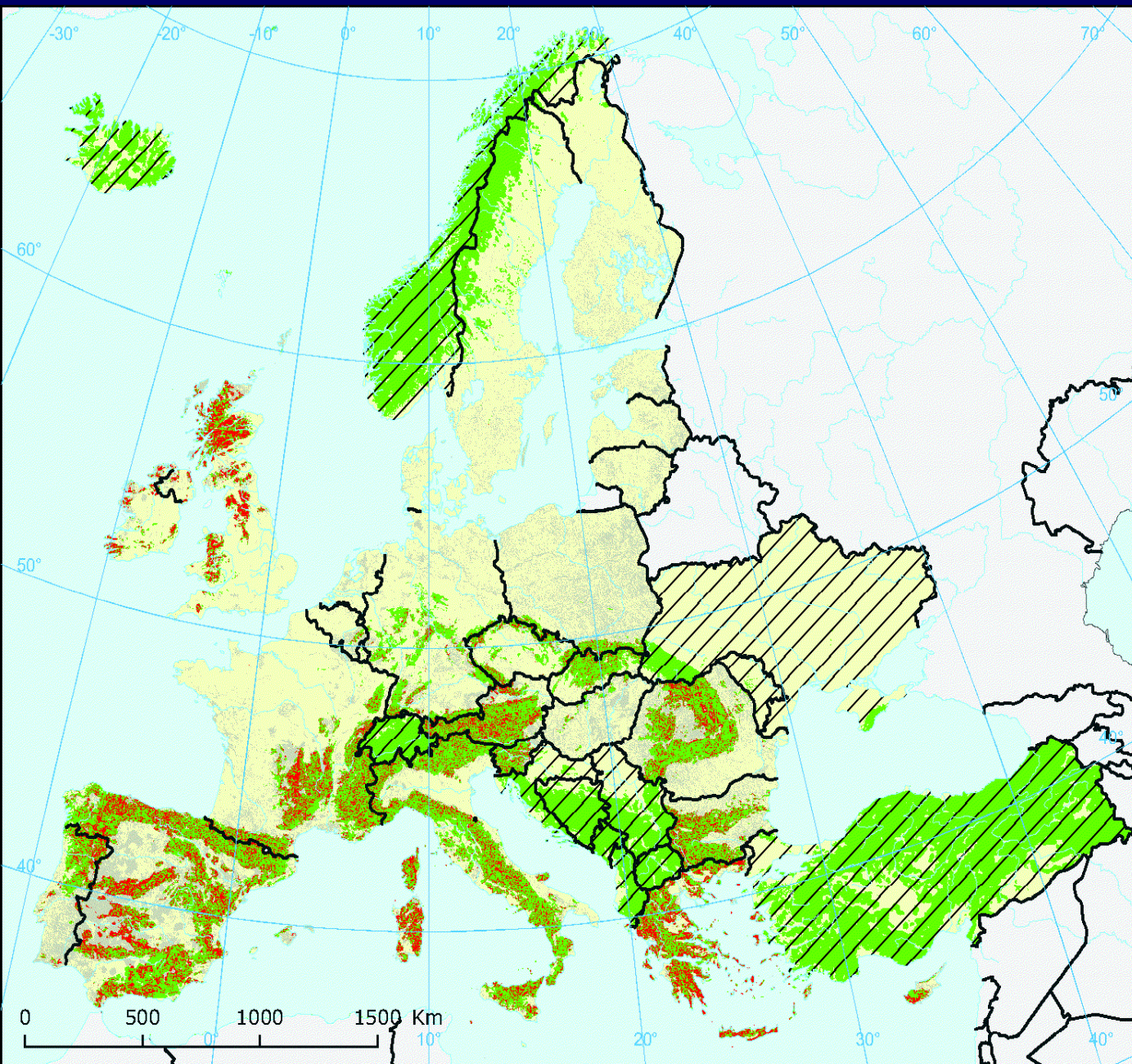
Mountainous farming in Europe

A herd of brown cows is grazing in a lush green mountain meadow. The cows are scattered across the field, some standing and some lying down. The background features rolling green hills and mountains under a clear blue sky. The overall scene is a typical representation of mountainous farming in Europe.






Alan Hopkins,

Key features of Europe's mountain farming 1

- >30% of European land area is in mountainous areas (--» map) .
- Mountain farming represents: 18% of agricultural holdings, 15% of utilised agricultural area and 15% of agricultural workforce.
- Geographical constraints --» high production costs; working productivity typically 40% lower than in lowlands.
- >50% of all HNV farmland is in mountain regions.
- >90% of EU mountain areas designated as LFA.



High Nature Value (HNV) farmland and mountain areas in Europe

-  HNV and mountain
-  Mountain, but not HNV
-  HNV, but not mountain
-  Non-EU countries
-  Outside data coverage

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Key features of Europe's mountain farming 2

- Mountain farming is characterised by extensive low input / low output systems that focus on specific productions for high quality foods.
- Based on livestock grazing permanent pastures in summer, + hay /silage (+ occasionally, permanent crops - orchards, vineyards).
- Semi-subsistence farming dominates in some regions. Pluri-activity is common (off-farm work).
- Farms generally small by national standards (but exceptions, e.g. in UK).

Key features of Europe's mountain farming 3

- Mountain farming is often the basis of local economy; underpins agro-food and tourism industries.
- Frequently linked with environmental benefits: biodiversity, ecosystem services, landscape, hydrology etc. Scale of intensity adapted to local conditions and continuation of cultural practices and inter-generational farming skills.
- Rural development: CAP support in EU through LFA (Art 18 of reg 1257/99) has been widely adopted to support mountain farming (but post 2013 ???).

Issues to consider

- Mountain grassland resources and their utilization.
- Mountain farming produce - market differentiation (origin-based, organic, healthiness/ food quality).
- Mountain farming as provider of biodiversity and ecosystem services
- Challenges and uncertainties affecting mountain farming: climate change; farmland abandonment; market access and socio-economic constraints.

Mountain grassland resources and their utilization

- **Low productivity (0.5 – 2.0 t DM/ha).**
- **Increased yield on nutrient-improved meadows.**
- **Site-specific fertilisation, livestock density matched to forage area.**
- **FYM and N fixation as main sources of N supply.**

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Mountain grassland resources and their utilization

- **Low feed value is often the limiting factor for sustainable livestock production. 'Two-pasture system' for utilization of sub-optimal pastures.**
- **Biodiverse pastures → product value and agro-tourism. Species choice and seed provenance.**
- **Role of transhumance in integration of meadows with high mountain pasturing – vulnerabilities.**

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Mountain farming produce differentiation by quality or niche markets

- Origin-based produce
- Organic mountain produce
- Health and other indicators of food quality linked to mountain produce

Origin-based produce

- Local food linked to local agro-tourism
- PDO or PGI 'product quality recognized as attributable to geographical area including natural and human factors'
- Typicity and terroir: e.g. Abondance and Reblochon cheeses and meat from the Savoie
- Need for marketing and measures to perpetuate the system.
- Further opportunities for future development



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Organic mountain produce

- Low input management of organic systems can comply with organic regulations → additional market value and agr-env payments.
- Positive image of food quality, welfare, environmental benefits (*Steinwider et al 2011*)

Mountain pastures: health attributes and indicators of food quality

- Links between ruminant diet and meat and milk quality (fatty acid profiles etc).
- Forage has effects on human diet, shelf life, cooking and eating quality.
- Effects of altitude of pastures on fatty acids due to composition and maturity
- *(Borreani et al.; Lind and Molmann; Revello-Chion)*

Biodiversity and ecosystem services:
Mountain areas are now among the last
refuges of HNV grassland in Europe





Distribution of NATURA 2000 sites in mountains across Europe

- NATURA 2000 sites
- Mountain massifs
- Alps
- Apennines
- Atlantic islands
- Balkans/
Southeast Europe
- British Isles
- Carpathians
- Central European
middle mountains 1
(BE and DE)
- Central European
middle mountains 2
(CZ, AT and DE)
- Eastern
Mediterranean islands
- French/Swiss middle
mountains
- Iberian mountains
- Nordic mountains
- Pyrenees
- Turkey
- Western
Mediterranean islands

Mountain farming as a provider of biodiversity and ecosystem services.

- Mountain areas are now among the last refuges of HNV grassland in Europe.
- Threats from intensification and other development works on accessible sites and abandonment elsewhere.
- Loss of cultural traditions.
- Issues of seed provenance: mountain grasslands as a provider of seeds for restoration projects are a 'biodiversity output' of farming system.

Challenges and uncertainties affecting mountain farming:

- climate change
- farmland abandonment
- market access and socio-economic constraints.

Conclusions

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- Mountain farming in Europe faces many challenges
- High quality food linked to environment and culture, biodiversity and ecosystem services.....
- But cannot compete economically with lowland farms. Mountain farmers need premium prices, public support or additional off-farm income.
- Mountain forage resources: low forage yield and nutritional needs may not be met.
- Abandonment at spatial and regional scales.

Conclusions

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- Climate change presents uncertainties.
- Socio-economic issues: training needs, access to markets, cooperatives, finance etc.
- Scientific challenges:
- *role of native livestock breeds for food quality and environmental adaptation;*
- *autochthonous species for restoration;*
- *improving cost-effectiveness of production through technology while retaining cultural practices*
- Finally: how do we balance traditional values with long-term competitiveness and the needs of farming families in the 21st century?