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## Multifunctionality & Ecosystem Services

provided by

## Grassland Farming

within a field of different conflict areas



### Grassland development in Europe

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- **EU:** 230 mio. ha of grassland area
- **EU-27:** 57 mio. ha grassland (~ 33% of AA)
  - **ploughing up** of 4 mio. ha grassland (mostly in favoured regions) during the last 20 years for reasons of energy- and biofuel production
  - **sealing** – buildings, infrastructure (roads, recreation ...)
  - **intensification** of grassland driven by increasing requirements for higher forage quality (digestibility, energy concentration)
    - also evident in unfavourable areas
    - also concerning extensively used grassland
  - **land abandonment** – set aside land

## **Landuse scenarios in Europe** (source: EEA, 2007)

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- **„Great Escape Scenario“** – focus is put on market- and profit oriented agriculture
  - ⇒ reduction of grassland of up to 1/3 until 2035 (compared with the reference year 2005)
- **„Big Crisis Scenario“** – series of environmental disasters
  - ⇒ strong coordination and solidarity of European countries
  - ⇒ little changes of the actual landuse concerning grassland, arable land as well as HNVF



## **Importance and functions of grassland in Austria**

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- **W** Grassland - dominant & essential element of the cultural landscape – high diversity of grassland types
- **W** Grassland - habitat of a highly diverse flora and fauna
- **P** Grassland - filter and storage of water
- **P** Grassland - protection against soil erosion
- **R** Grassland - basis of leisure/recreation/tourism/hunting
- **I** Production of milk, meat and energy
- **I** Income basis for many grassland- and dairy farms



## High diversity of grassland types in Austria

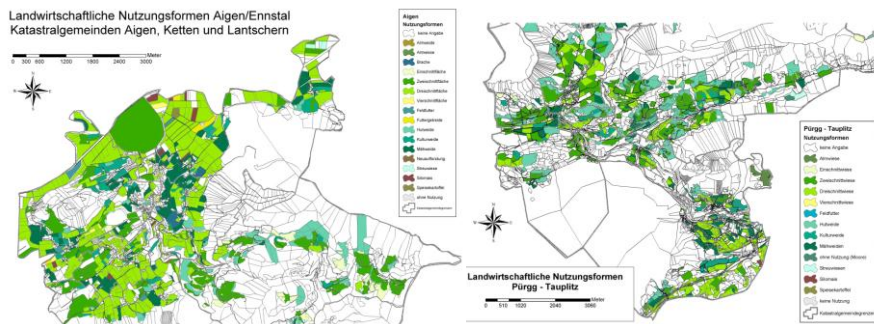
- **Pastures**
  - \*extensive pastures
  - \*alpine pastures
  - intensive pastures
  - mowing pastures
- **Meadows**
  - \*litter meadows
  - \*alpine meadows
  - \*one- and two-cut meadows
  - three-cut meadows
  - intensive mowing pastures (> 3 cuts)
  - temporary grassland
  - ley farming

\*high proportion of **HNVF** \* resp. **HNVG** – important agri-environmental indicator for the evaluation of RDP's



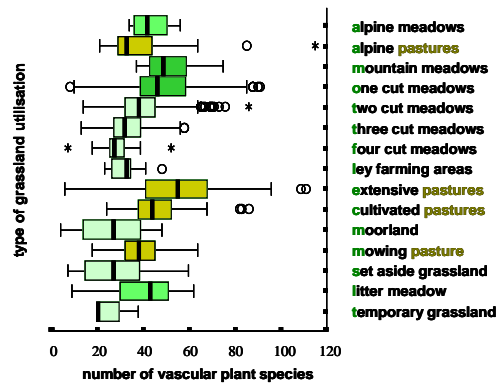
## Mosaic of utilization and habitats – cultural landscape

- visual diversity (small scaled vegetation- and flowering structure)
- spatial distribution & linkage of various habitats
- aesthetical, attracting and diversified cultural landscape



## Biodiversity – grassland as habitat & source of flora & fauna

- high floristic  $\alpha$ - und  $\beta$ -diversity on extensively used grassland
- various, ruminant-adapted forage with grasses, legumes and herbs



## Best water quality under grassland management

- fertilization & utilization are not inconsistent with water quality
- avoidance/reduction of external (yield increasing) materials + environmentally friendly use of farm manure (LIFS)
- site-adapted, sustainable management with balanced nutrient cycles

kg N/ha test area	n	Ø	s	min.	max.
Ennstal	78	+7,2	23,4	-47,6	+84,3
Pongau	25	+6,9	13,0	-23,7	+43,7
Kitzbühel	29	+6,0	17,7	-29,1	+37,8
Oberkärnten	19	-7,4	20,0	-51,4	+41,7
Hallein	16	+9,6	26,3	-21,0	+80,5
management-system	n	Ø	s	min.	max.
conventional	86	+9,3	25,3	-51,4	+84,3
organic	81	+1,6	15,7	-47,6	+43,7

source: PÖTSCH und RESCH, 2005



## Protection against erosion by sustainable grassland management

- very high proportion of permanent grassland with a stable vegetation cover all the year long & high storage and filter capacity for water
- mainly minimal invasive grassland renovation with site-adapted seed mixtures of grasses and clover (up to 12 different species)
- good soil aggregate stability with a strong and resistant root system

rootmass (dt DM/ha) at different grassland use-systems after 5 years of experiment

soil depth in cm	suckler cows	sheep	succession
0 - 10	16	17	13
10 - 25	3	1	2

source: BOHNER, 2007



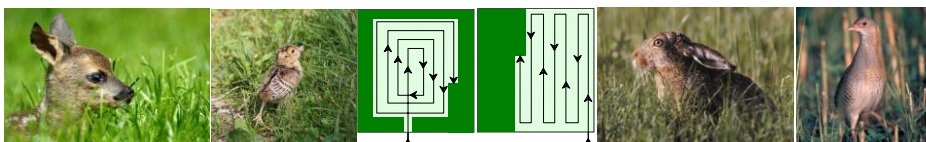
## Recreation area for leisure time and sport

- manifold use for different summer- and winter activities
- high attractivity of grassland dominated, well structured and open landscapes for tourism – „eye catcher“



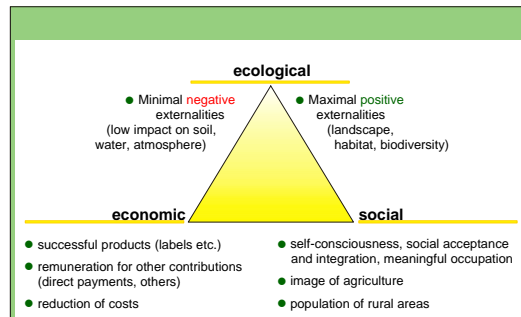
## Living space and source of foodstuff for wildlife

- habitat and forage for different wildlife
- great importance for hunting activities
- measures to reduce mortality by machines (adapted times of cutting and special cutting regimes)



## Production of high-quality food

- linkage of ecological, socio-economical und economical aspects
- warrenty/readiness of production
- independency of global markets and speculations
- „From stable to table“ - without GMO!



## Summary and Conclusions

- high level of multifunctionality of mountainous grassland farming is evident!
- numerous positive environmental benefits are provided by sustainable management
- high proportion of „non-marketable functions“ - both, offer and request are existing but there is no market price
- high appreciation of ecological, site-adapted management, ⇒ renouncement of production maximisation
- loss of essential functions and environmental benefits in case of land and farm abandonment!
- need for alliances and mutual understanding between different stakeholders and groups of interest (farmers, consumers, hunters, nature conservationists, tourism, water economy, agrarian policy, common policy, environmental policy, science, advisory services ....)



