

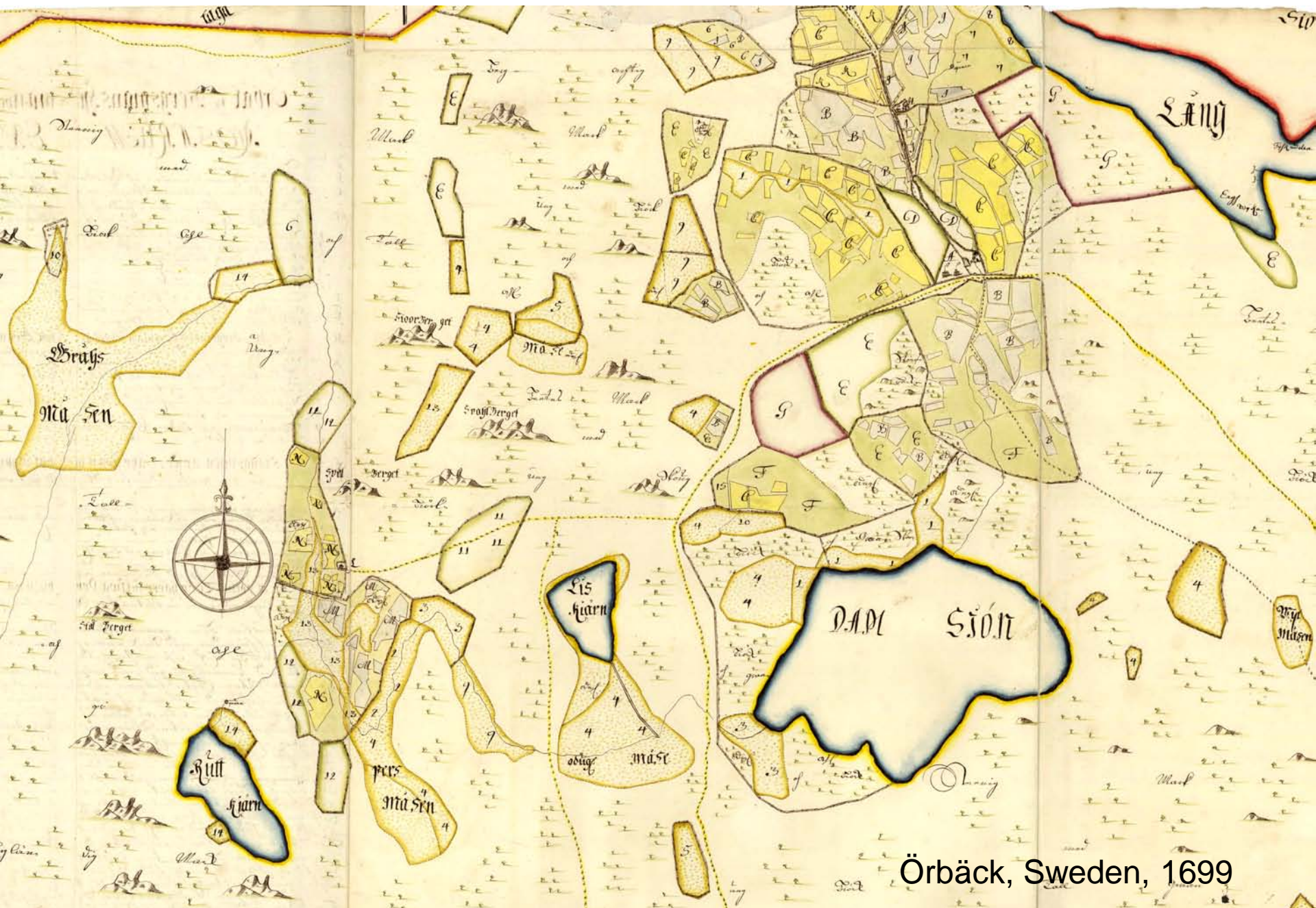
The background of the slide is a photograph of a diverse grassland. In the foreground, there are several tall, purple thistle-like flowers with spiky heads. Interspersed among them are numerous bright yellow flowers, likely Asteraceae. The ground is covered with green grass and some dry, brown stalks, suggesting a natural, unmanaged or semi-managed grassland environment.

**Sustainable grassland management**

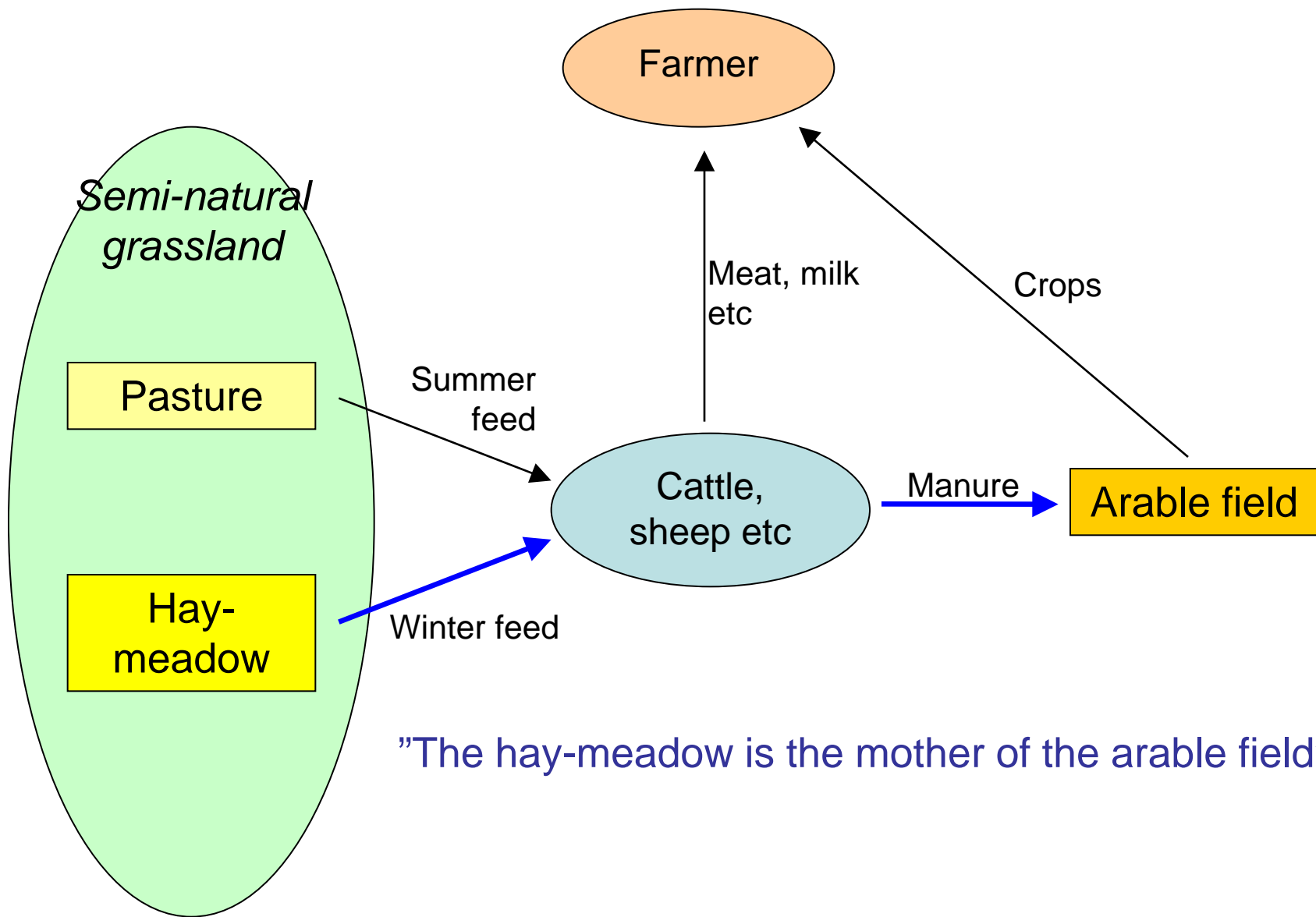
Tommy Lennartsson



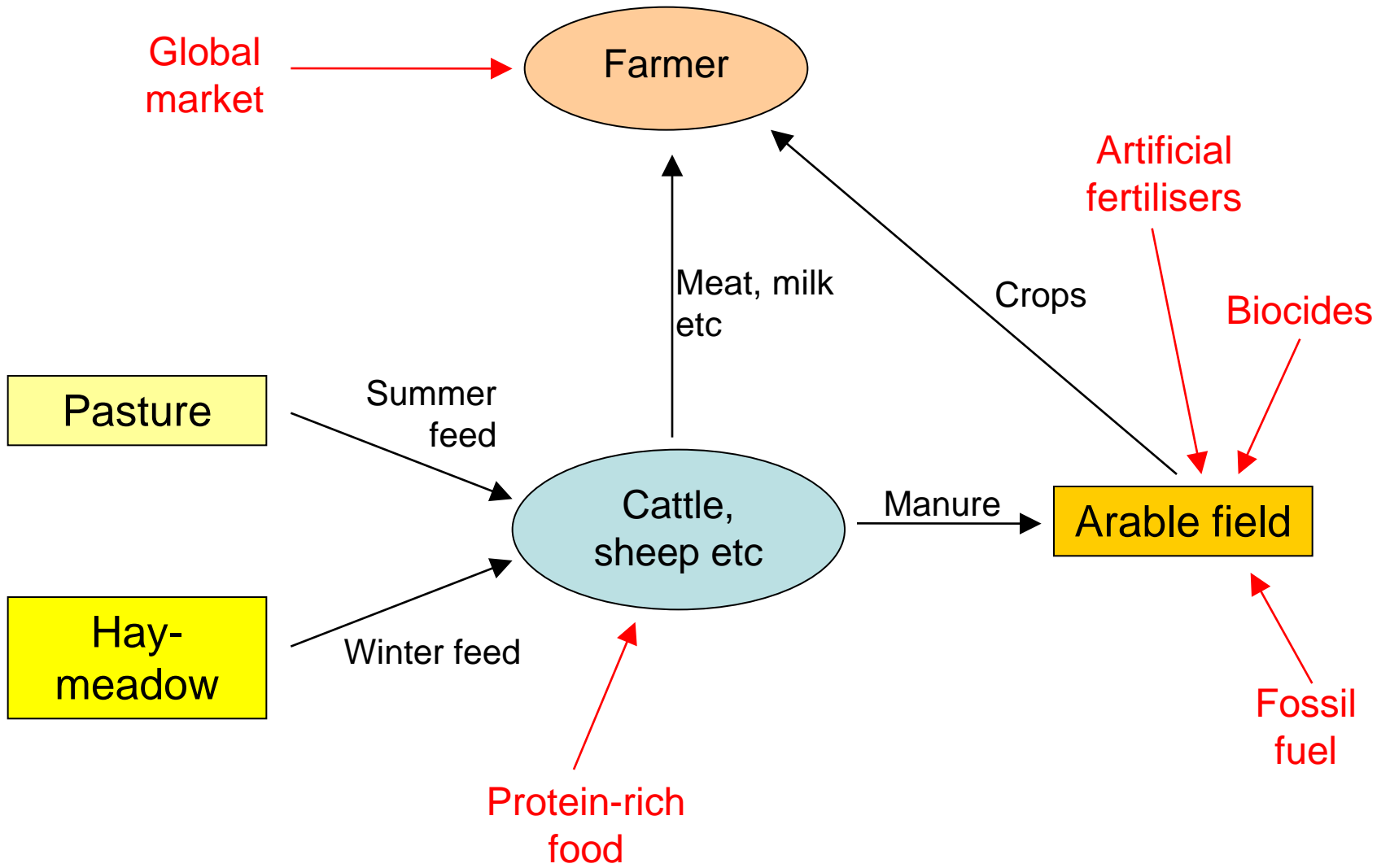
# Grassland – historical background

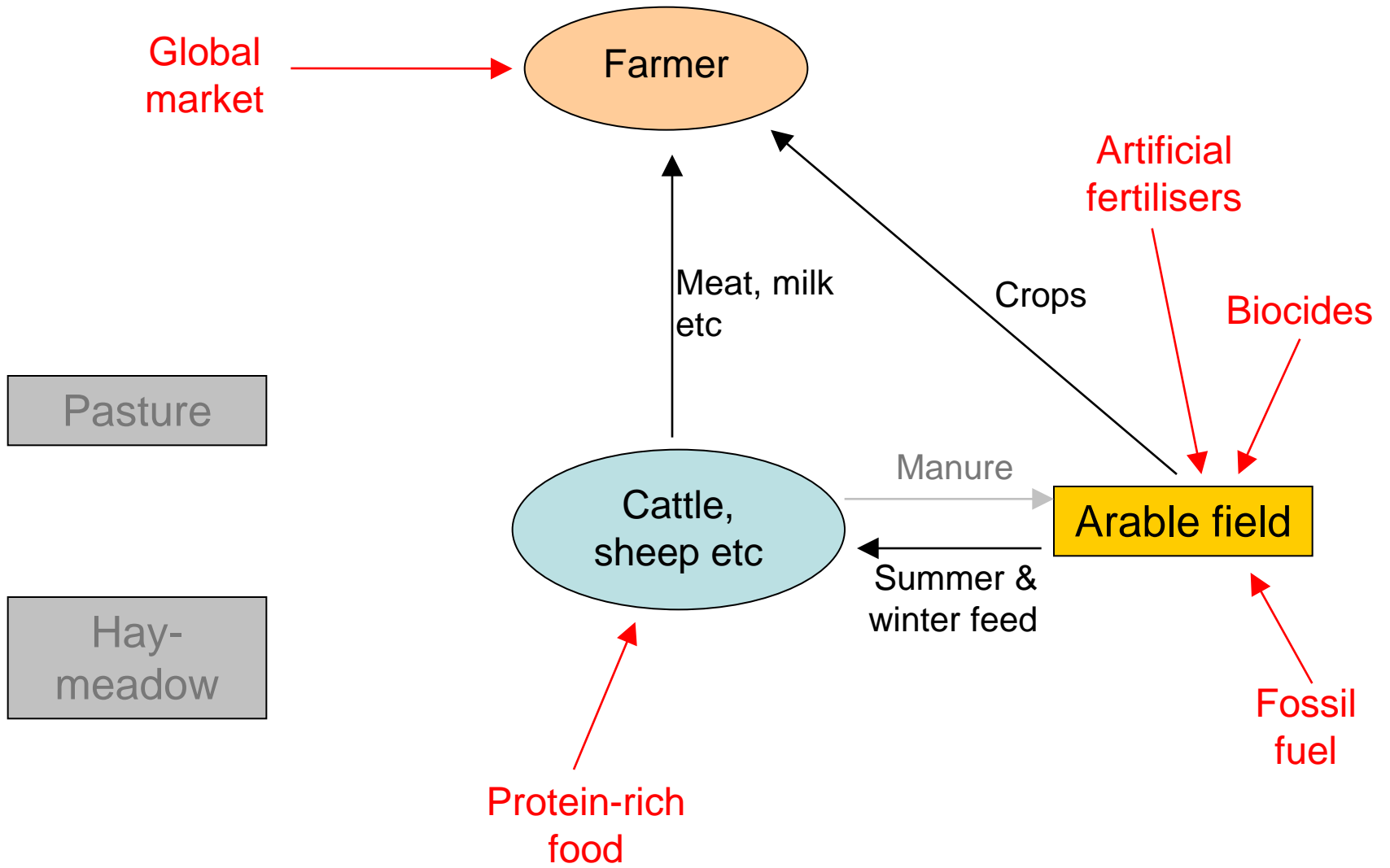


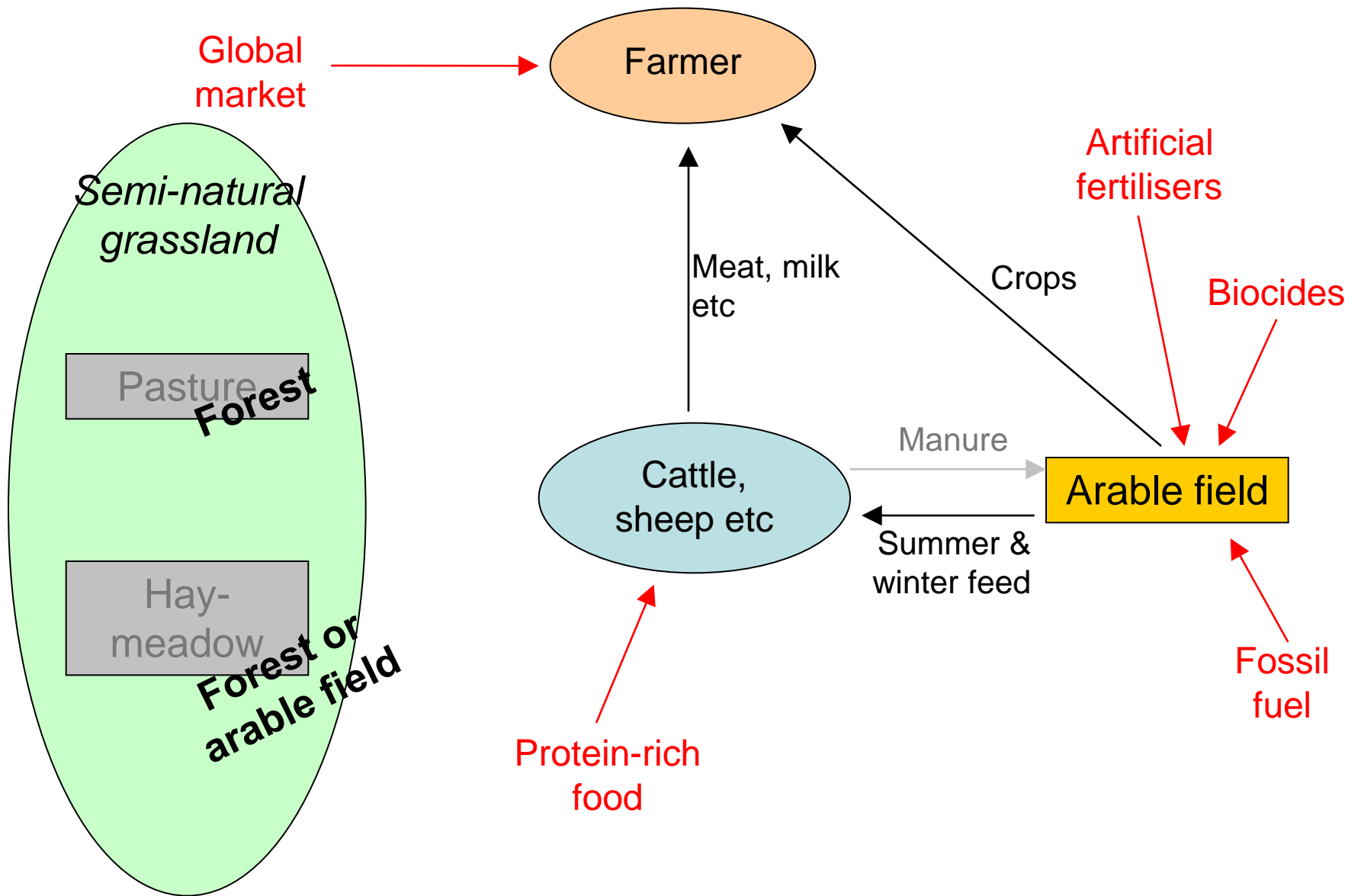
Örback, Sweden, 1699

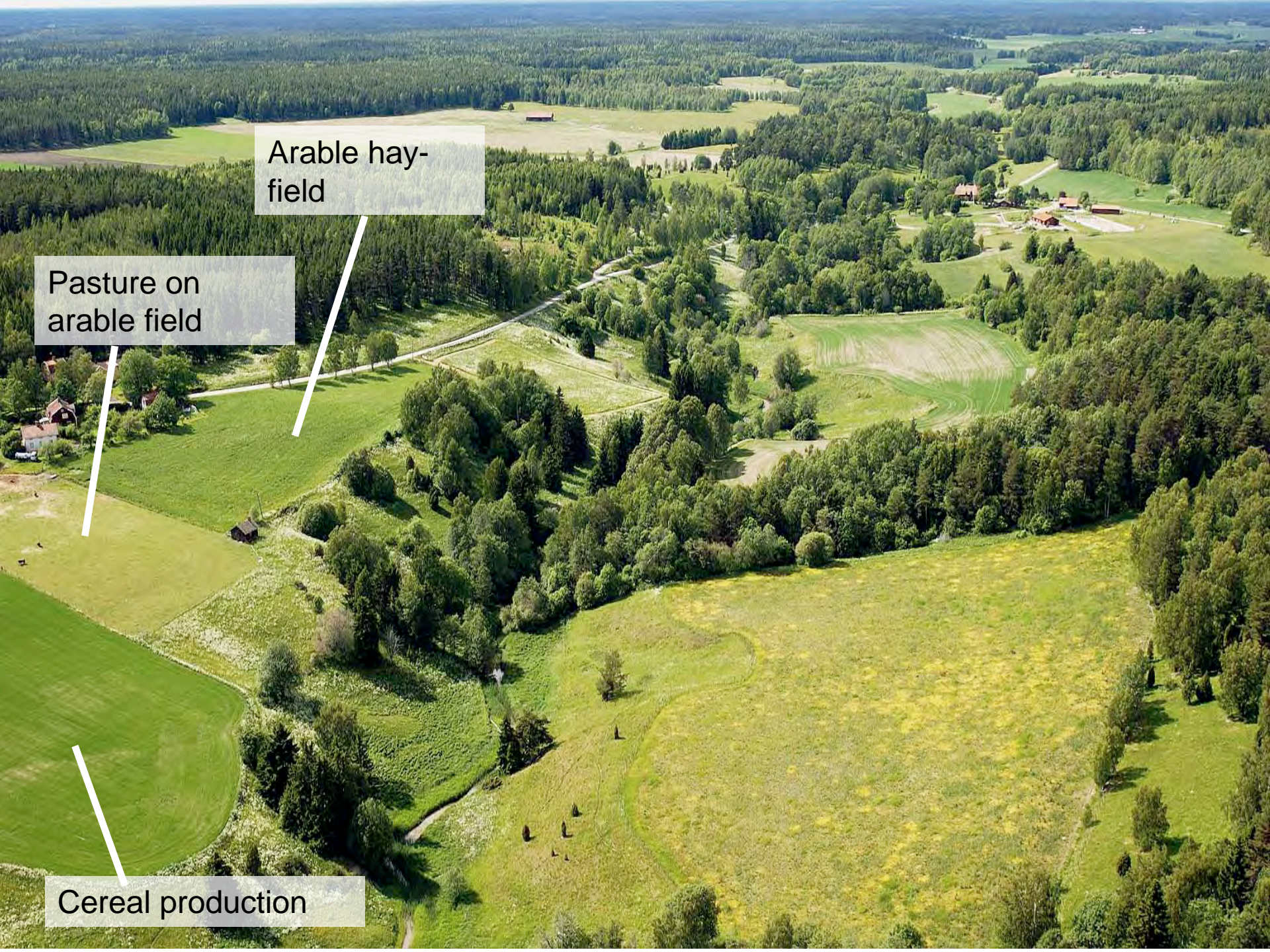


"The hay-meadow is the mother of the arable field"









Arable hay-field

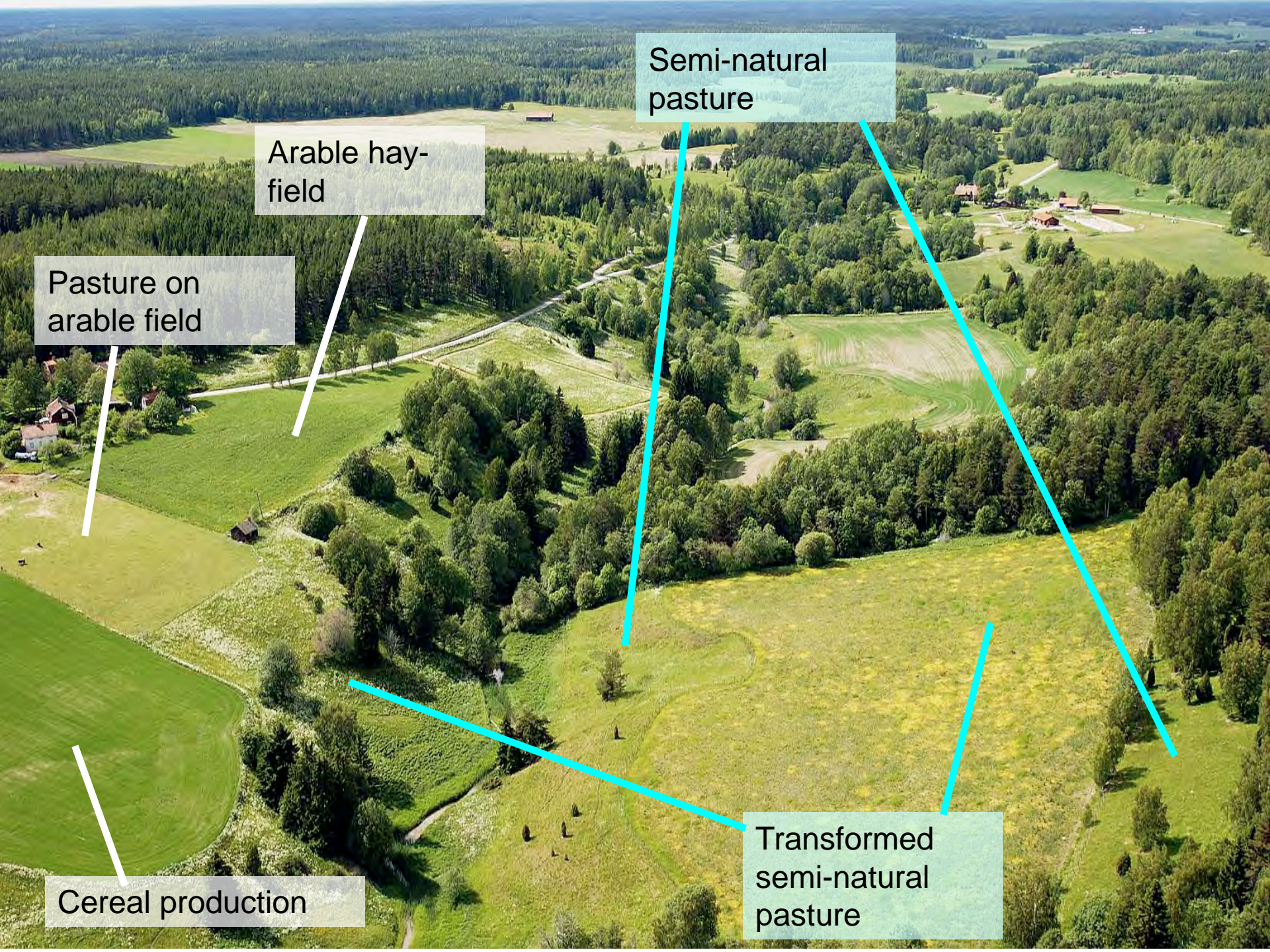
Pasture on arable field

Cereal production



C. 1850





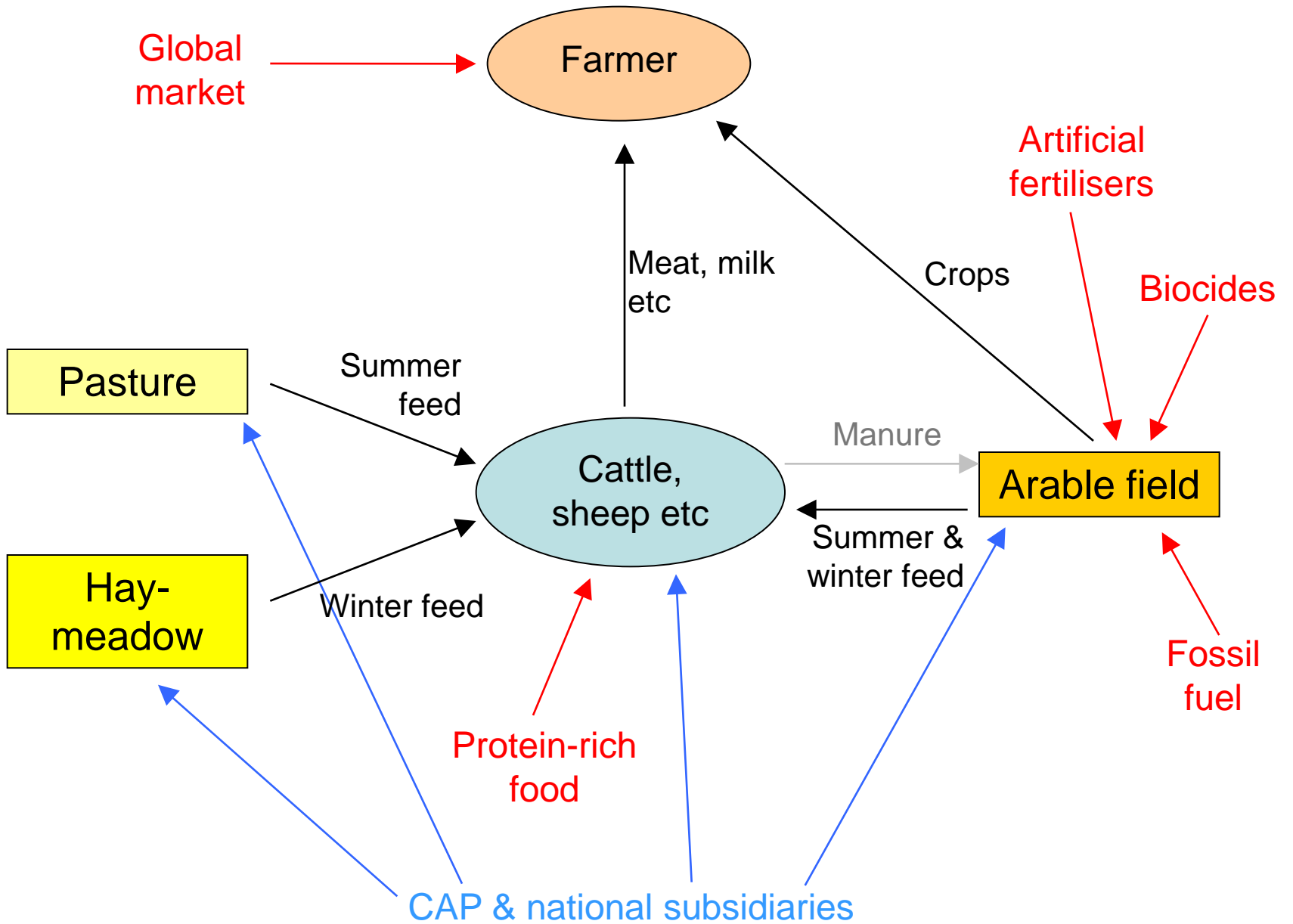
Semi-natural  
pasture

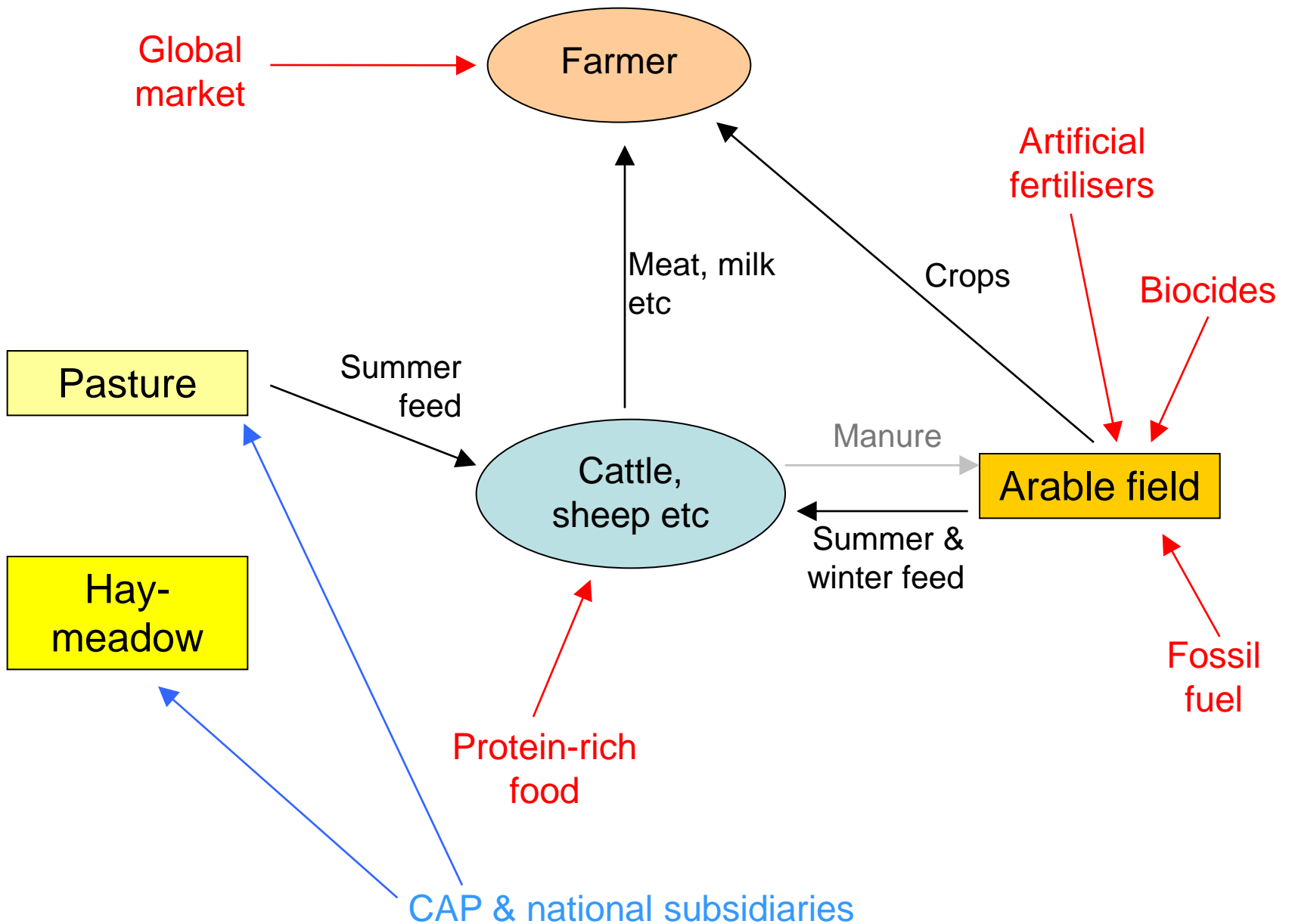
Arable hay-  
field

Pasture on  
arable field

Cereal production

Transformed  
semi-natural  
pasture





# Alluvial mead

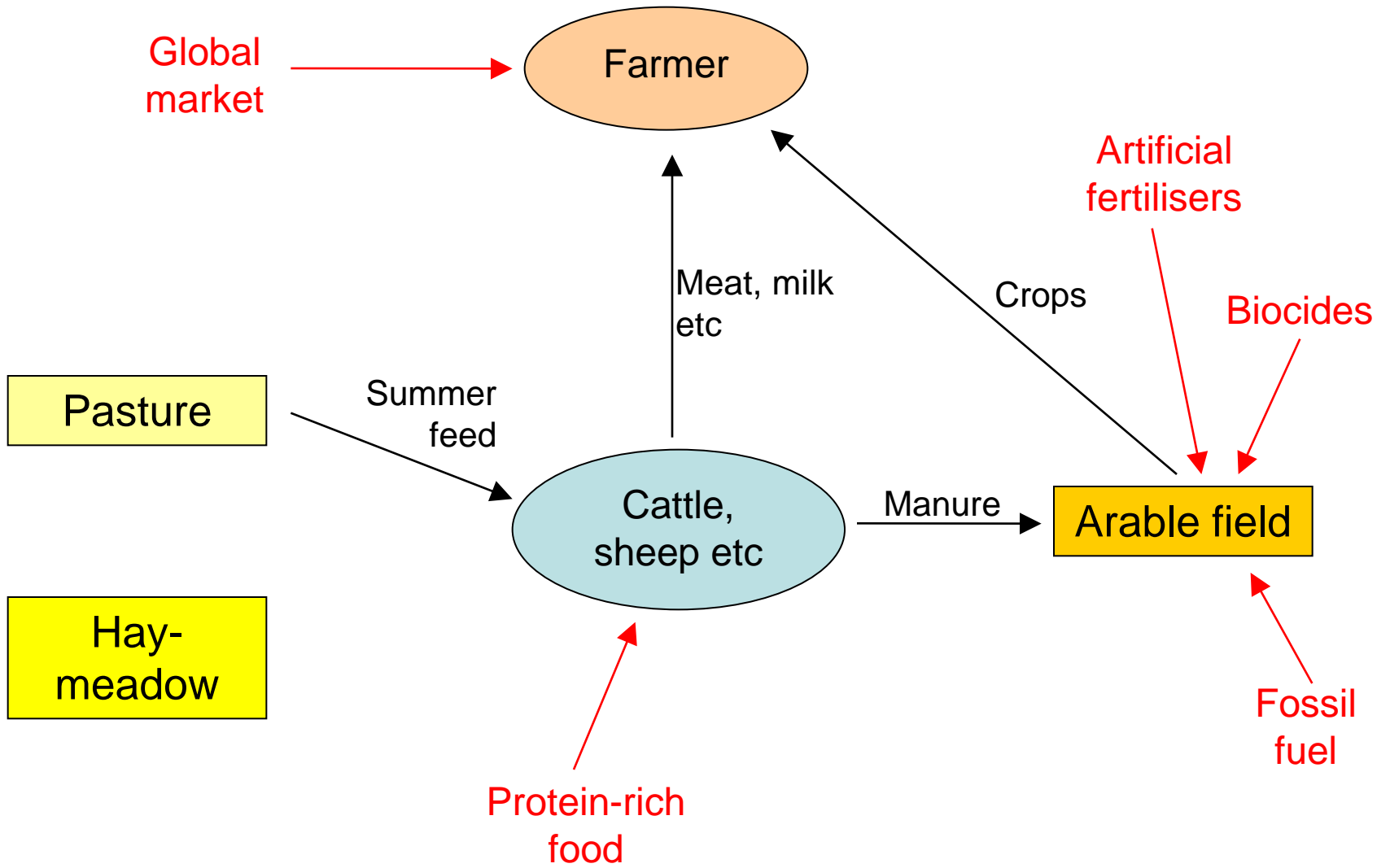


# Wooded coppice/pollard hay-meadow



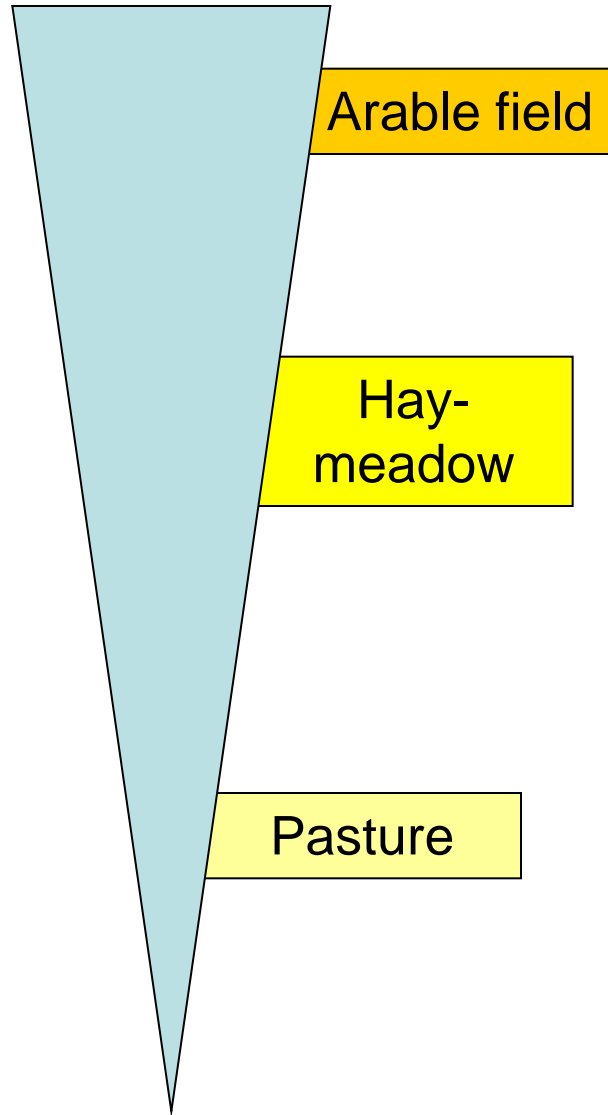
# Wooded pollard hay-meadow







# Productivity



# Nordic alvar steppe



# Nordic sand steppe



# Sandy esker pasture





**Baltic land uplift salt marsh**

# Freshwater marsh



# Sub-alpine birchwood pasture



# Pasture on coarse till





# Atlantic rocky heathland



# Mixed forest pasture

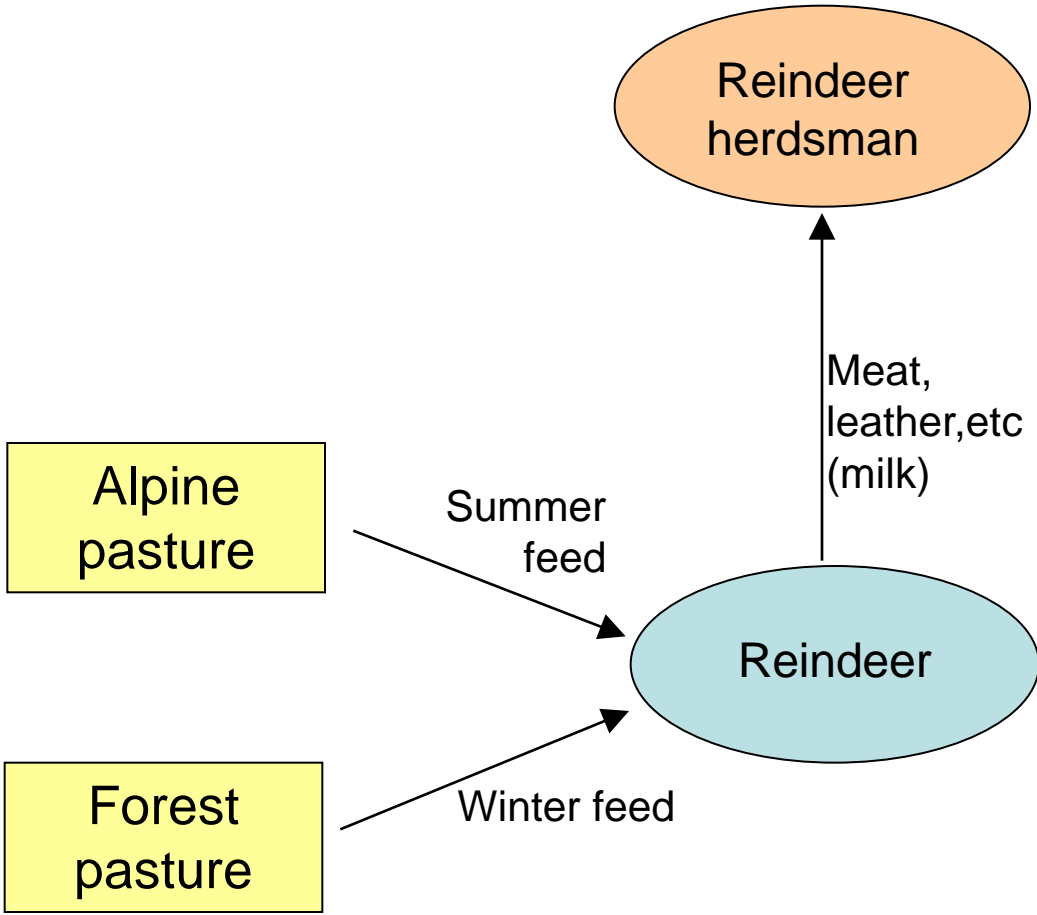


# Mixed/coniferous forest pasture

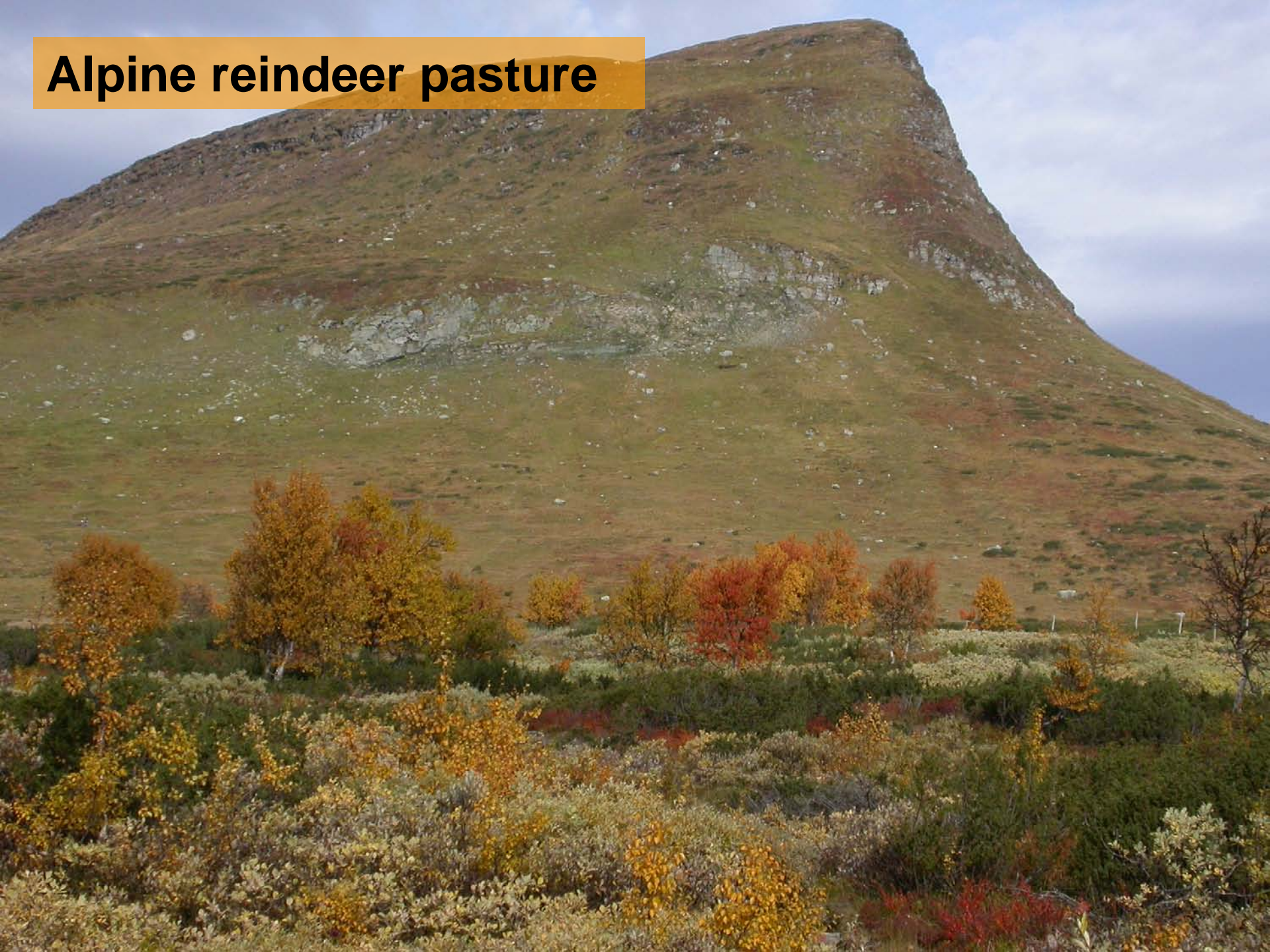


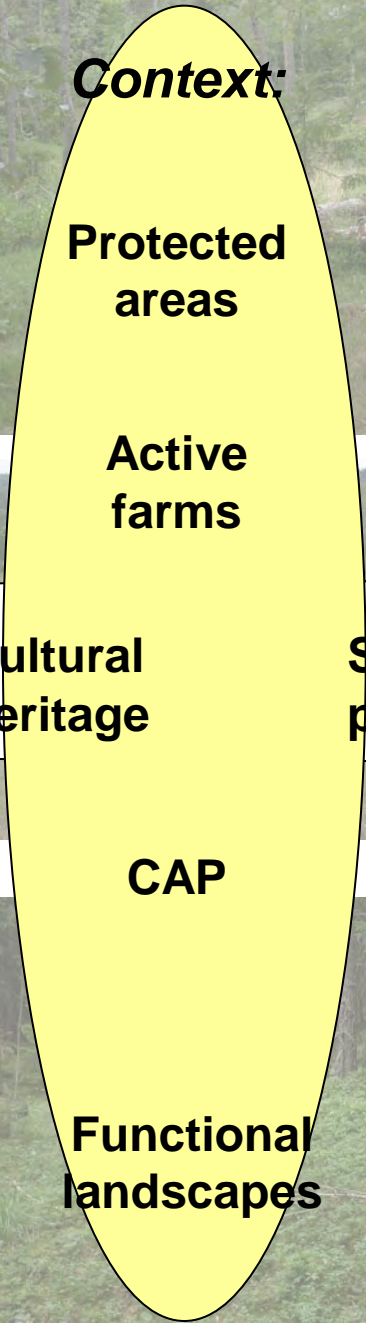
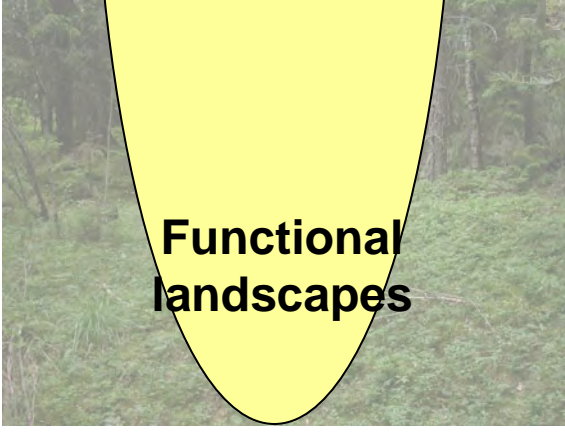
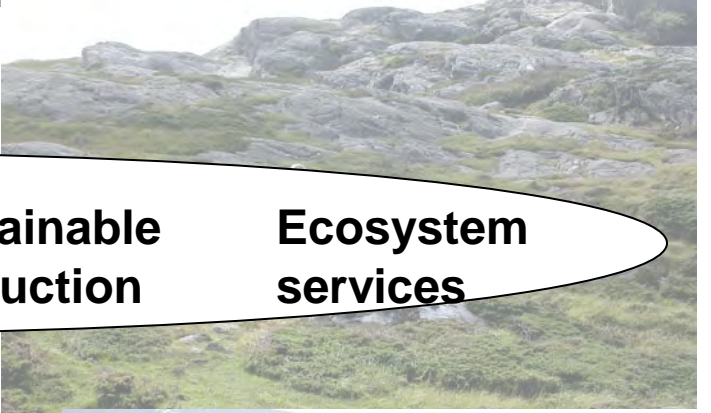
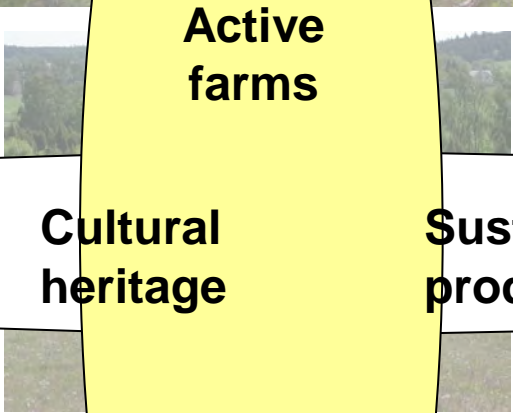
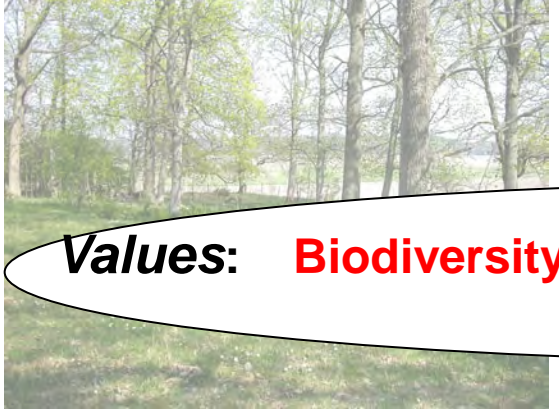
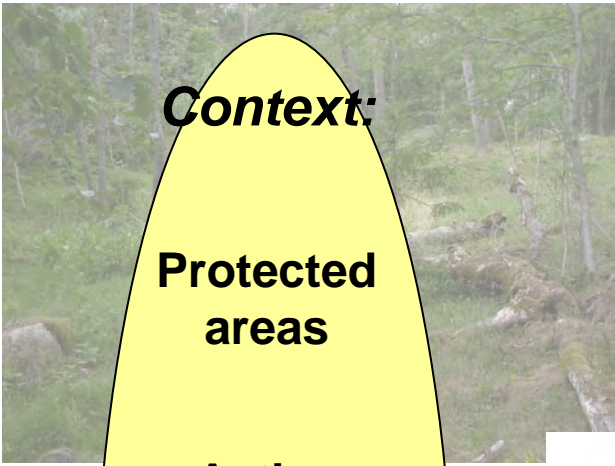
# Deciduous forest pasture





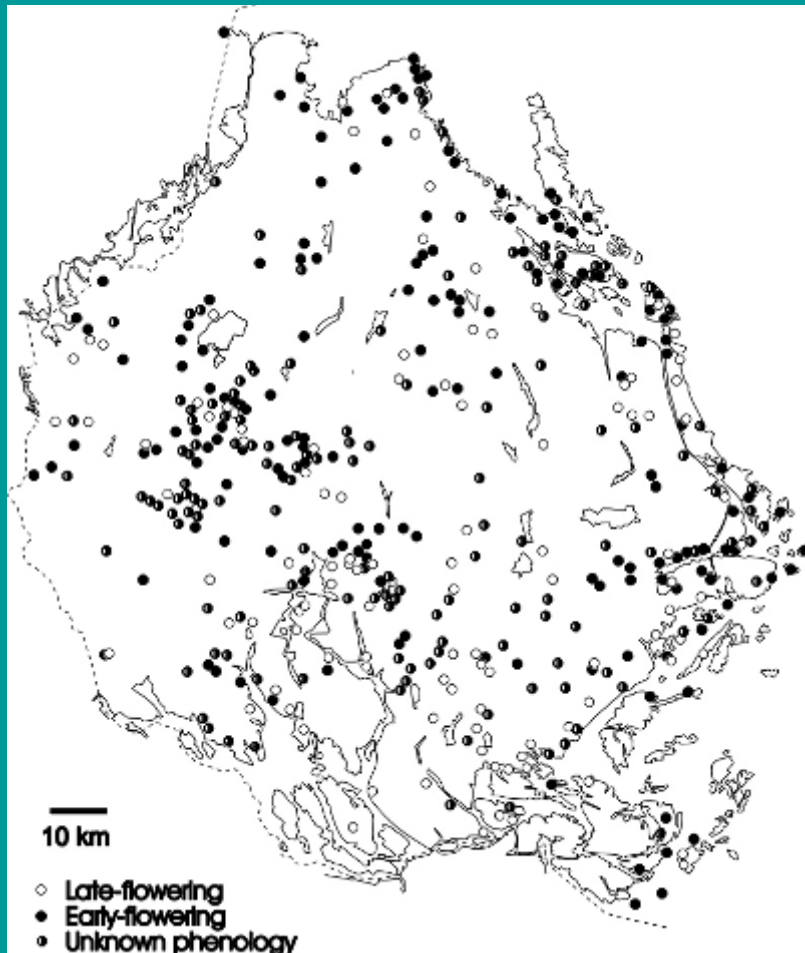
# Alpine reindeer pasture



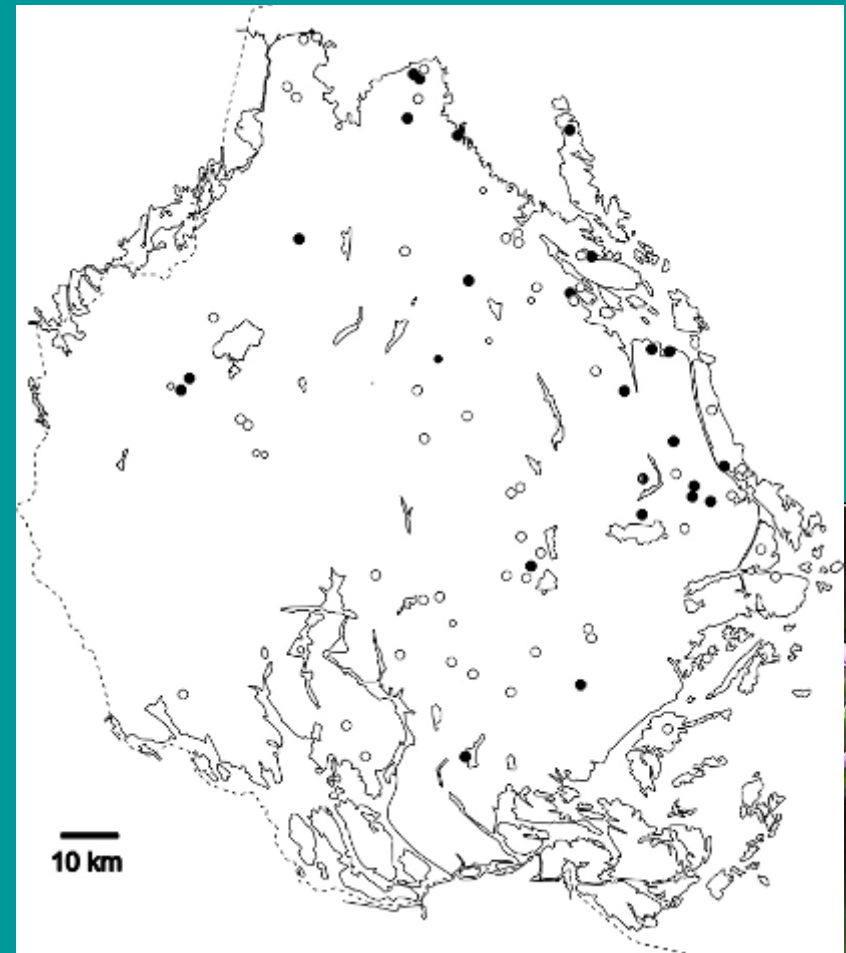


# *Gentianella campestris* in the province of Uppland

c. 1945



1994





**1945-1994:**

*Habitat loss explains c. 85% of the extinctions*

**1994-2002:**

*Habitat loss explains c.25% of the extinctions*

*Instead: Suboptimal management*



Of 63 threatened species

38 species  
threatened by  
intense grazing

29 species  
threatened by  
succession after  
ceased grazing



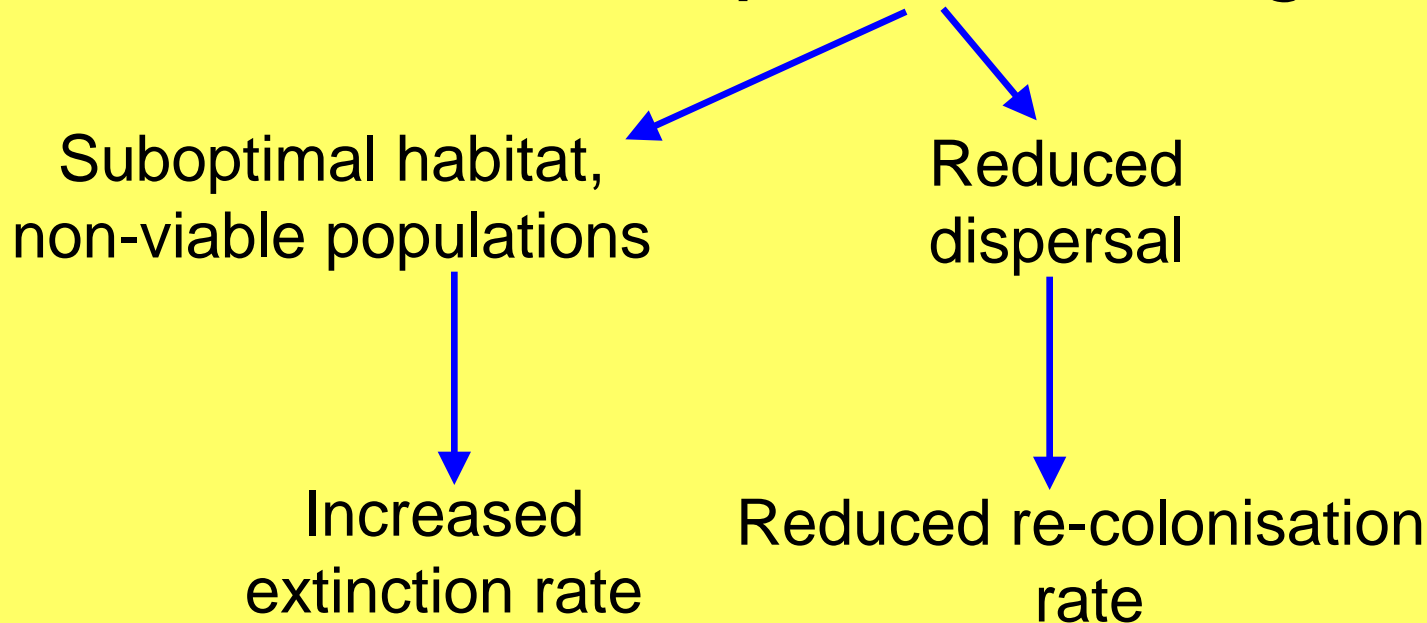
**No grazing since 20 years**  
*20 red-listed grassland species*

**Grazed according to CAP rules**  
*0 red-listed grassland species*

**1994-2002:**

*Habitat loss explains c.25% of the extinctions*

*Instead: Suboptimal management*



Of scientific/biological concern

# *Suboptimal management*

Suboptimal habitat,  
non-viable populations

Increased  
extinction rate

Reduced  
dispersal

Reduced re-colonisation  
rate



Ecology and management (how management affects/creates the habitat)

## *Suboptimal management*

Suboptimal habitat,  
non-viable populations

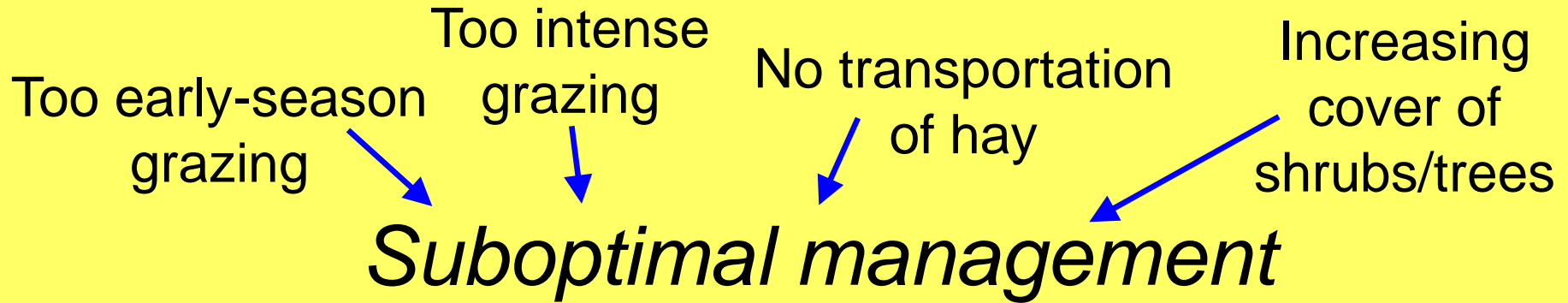
Increased  
extinction rate

Reduced  
dispersal

Reduced re-colonisation  
rate



Traditional manag. (mowing, large pastures) replaced by modern management



Suboptimal habitat, non-viable populations



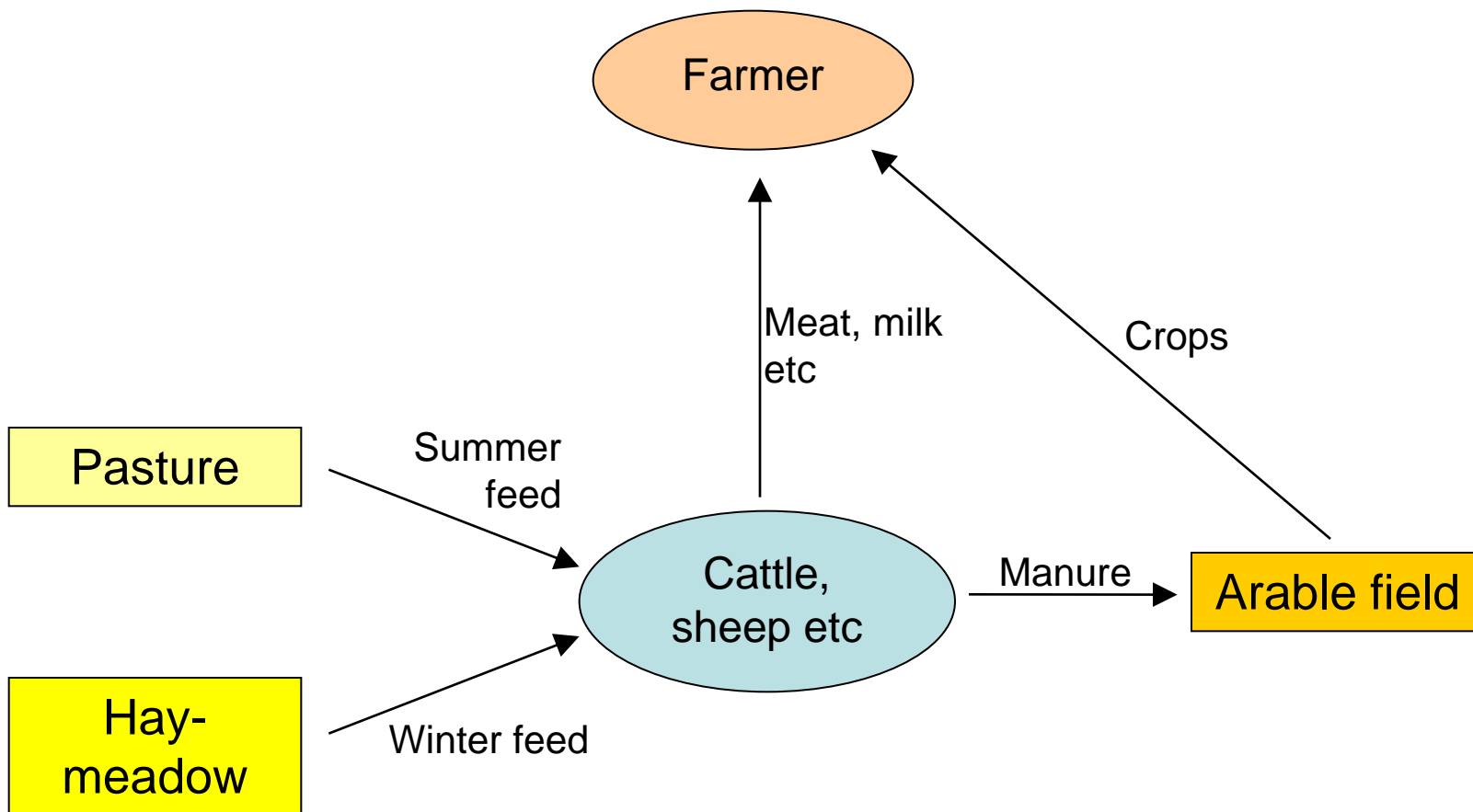
Increased extinction rate

Reduced dispersal



Reduced re-colonisation rate







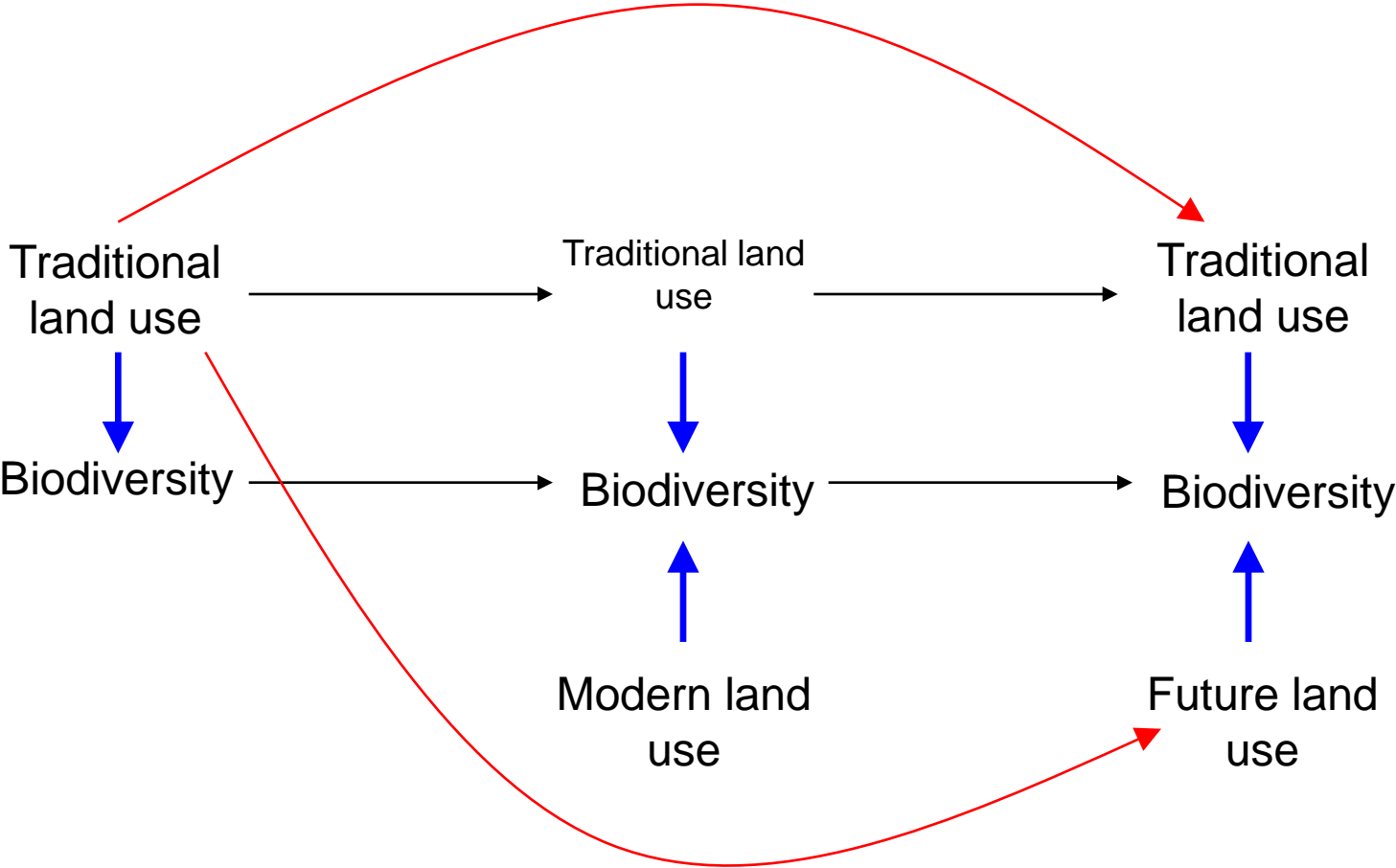
An aerial photograph of a terraced hillside. The terraces are visible as a series of parallel lines following the contours of the slope. In the upper right, a small village with several buildings is visible. The overall scene is lush and green.

Knowledge about  
traditional  
management

Ecol. knowledge  
about habitats and  
species

Relationship between  
land use and  
species/habitats/landscapes

*Grassland  
biodiversity*



*Historically*

*Today*

*Future*

# Maramures, Romania



## **Traditionally**

Mowing

Slow mowing during long time

Late mean grazing date

Multi-purpose grassland use

Small cattle

## **Today**

Grazing

Fast, early mowing

Early mean grazing date

Grazing only

Large cattle & additional feed

# What is grazing?



*Etc.*

*Reduce litter*

*Seed dispersal*

*Remove  
biomass/nutrients*

*Enable flowering &  
fruiting*

*Trampling*

*Reduce vegetation  
height/competition*

*Dung*

# How to apply good grazing?

A photograph of a herd of brown and white cows grazing in a green field. A wire fence with wooden posts runs across the middle ground. The background shows more cows and a line of trees under a bright sky.

*Timing of grazing*

*Intensity of grazing*

*Etc.*

*Type of grazer*

*Variation/dynamics of grazing*