Green assets of equines in Europe

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October 2020

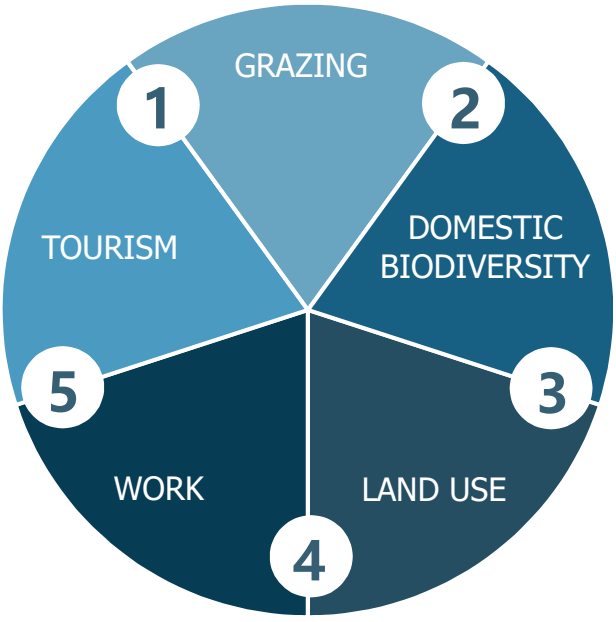
ENVIRONMENTAL ASSETS OF EQUINES IN EUROPE

Equines are actors of the sustainable development

Today's ecological wake up calls and the importance of sustainable development encourage stakeholders to promote the environmental assets of the agricultural sector. The equine industry is part of the agricultural sector, but it differs from standard breeding through the multiplicity of activities involved. Equines are involved through the multiplicity of activities involved: from conservation grazing to agricultural traction and production, to racing, equestrian competition or outdoor tourism. These equine uses participate in the maintenance of societal and economic heritages, but they also have unique environmental impacts.

How do the nature of equines, their geographical distribution and their uses impact the environment?
Five main environmental assets of the equine industry have been indentified, named "green assets": **1. Grazing and 2. Domestic biodiversity** (linked to the inherent nature of equines), **3. Land use** (linked to their geographical distribution), **4. Tourism** and **5. Work** (linked to particular equine uses).

They are presented in the following factsheets.



THE FIVE GREEN ASSETS OF EQUINES:

European Horse Network and Ifce
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GRAZING:
IMPACTS ON BIODIVERSITY, GREENHOUSE GAS EMISSIONS AND LANDSCAPES

A. Rzekęć

A grassland is a pasture area (made of grasses and legumes mainly) aimed to be a food source for animals, through grazing or mowing.

- After forests, they are the second largest **carbon sink** (60-70 tons of carbon per hectare).
- They are used as natural **habitats**, nesting or food areas for local fauna.
- **Legumes** fix nitrogen and enrich the soil with this molecule, which is vital for all plants.

KEY FIGURES:

The area required to produce the yearly feed for a horse varies between **0.5 hectare** in favourable areas to almost **2.5 hectares per horse** and year in less favourable areas

EU Equus 2001

Regardless of the species, grazing has an impact on grassland and its composition. The more an animal is selective, the better the creation of ecological niches is. This occurs because grazing modifies the environment, making it advantageous for some species and disadvantageous for others.

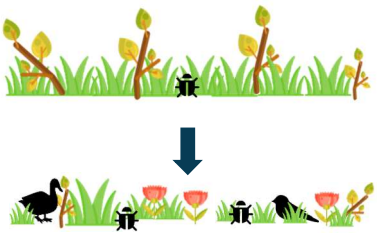
EQUINE GRAZING PRESENTS CERTAIN ADVANTAGES:

- **Morphology**: Double row of incisive allow the animal to graze at ground level and intake easily digestible proteins of young seedlings.
- **Physiology**: absence of rumen limits methane emissions, as compared to bovines.
- **Intake capacity:** as a consequence of the absence of rumen, the intake volume is not limited by the time of rumination nor the size of the rumen. Equines can swallow more than cattle and be less impacted by the nutritional quality of the food.
- **Different food preferences:** equines seem to prefer young grass. Moreover, equines move more easily towards less palatable species than cattle, in case of food shortage.

Grasslands grazed by equines present a **heterogeneous structure**, leading to the creation of **ecological niches** and promoting competition between species.

Equine heterogeneous grazing may lead to the presence of **shaved areas**, which may become overgrazed if they are badly managed and to the creation of **refusal areas** which may lead to shrub invasion. **Alternative grazing management** (rotational, mixed or late grazing) can be considered to limit these risks.

Equine and bovine morphology, physiology and grazing behaviour are different. Plant species they consume are different. Bovines do not have incisors so they are not able to graze on short grass, while equines can enhance short grass zones. **Mixed grazing** is a tool for better pasture management. It can **decrease the workload** of the farmer, help **control shrubs** and improve the **nutritional value** of the grasslands.



DOMESTIC BREEDS:
IMPACTS ON BIODIVERSITY

WHAT'S A BREED AND WHAT ARE BREEDS USED FOR ?

A species is a group of individuals that can mate and produce fertile offspring. The horse, Equus caballus, is a species, whilst the donkey, Equus asinus, is another one. A breed is a subclass within a species. Individuals from a breed show the same tangible characteristics. Two individuals from the same species and from different breeds can successfully mate.

KEY FIGURES:

Among **180 local equine and donkey breeds** are registered in FAO database in Europe and Caucasus, 2% of breeds are not at risk, 48% are at risk, 35% has an unknown status and 15% are extinct

500 wild horses live in Latvia, covering a total area of more than 400 hectares
InnoEquine EU, 2012

Selection pressures that shaped individuals over generations define tangible characteristics for a breed. Those pressures can be natural, such as a rough climate or poor vegetation, or artificial, generated by human beings for utilitarian purposes. Thus, humankind has selected, and still selects, individuals that show characteristics fitting a required use such as draught power, meat quality, speed or docility.

GENETICS AND INBREEDING

Some characteristics are more popular than others. Several breeds are used to improve sport performance, such as the Pure-Bred Arabian horse. Meanwhile, semen from all around the world is easier to access due to technological breakthroughs

Inbreeding is a threat to equine populations when the same reproducers are frequently used. Indeed, when individuals are too genetically close, some deleterious characters may emerge from their mating. Thus, selecting few traits and ignoring inbreeding risks may lead to a revealing of harmful characteristics

LOCAL BREEDS AND ECOLOGICAL SERVICES

Genetic homogenisation of populations, breed specialisation to maintain competitiveness and, sometimes, a commercial lack of interest cause the decline of both versatile breeds and breeds that are less competitive. Yet, the larger the genetic diversity within a species is, the better its **resilience** is in coping with environmental changes. There has already been a decline in breeds which are locally adapted to habitats with rough or specific constraints. *See "Land use" factsheet*.

It would be interesting to identify **alternative uses** for threatened breeds, such as the development of equestrian tourism *(See "Tourism" factsheet)*, draught power *(See "Equine Work" factsheet),* or meat farming in extensive grazing *(See "Grazing" factsheet).*

For instance, in France a breed is considered as threatened when it counts less than 10 000 breeding females. **Conservation programs** for threatened breeds reduce the risk of disappearance of those breeds. Thus, both equine diversity and environmental services would be preserved.

LAND USE:
IMPACTS ON LANDSCAPES AND BIODIVERSITY

J. Machek

The equine industry uses land, not only through grazing and forage crops, but also through equestrian facilities such as racecourses, studs, farms, riding schools or trails. At least **2.6 million hectares across 10 Member States are cultivated for equine purposes**, with a wide range of jobs and businesses supported both directly and indirectly by the equine sector (Removing the Blinkers 2015). Unlike other animal industries, equines are spread all around the territory, in suburban, rural and environmentally sensitive areas.

KEY FIGURES:

At least **2.6 million hectares** across 10 Member States are cultivated for equine purposes, with a wide range of jobs and businesses supported both directly and indirectly by the equine sector
World Horse Welfare 2015

Eastern Europe: **800,000 equines in agriculture**
Western Europe- **6 Millions equines for leisure and sport**
Filière équine Wallonie 2017

EQUINES IN SUBURBAN AREAS: SPATIAL AND FUNCTIONAL LINK BETWEEN URBAN AND AGRICULTURAL AREAS

In suburban areas, facilities holding equines are mainly riding schools and livery yards. Equine grazing enhances transitional areas that are **abandoned by agriculture** and not yet subsumed by urbanisation. Thus, equines maintain a form of agriculture in those areas, seen as a tool for **"soft urbanisation"** and acting as a spatial and **functional link** between residential areas and agriculture.

However, equines are involved **in land conflicts** with other agricultural productions, which makes grazing difficult in some areas. The high density of horses in some places leads to overgrazing and excessive concentrations of manure. This manure can however be used as **a renewable energy** through methanisation, for example.

EQUINES IN RURAL AREAS: PRESERVE ABANDONED AREAS

Equines use **1.5 to 6% of French rural areas**. The main facilities are horse breeding farms. These areas produce horse feed (cereals, hay) and by-products (straw), whilst being integrated in the rural mosaic with other crop productions. Areas that are abandoned by other productions can be maintained by equine grazing, even in intensive agricultural areas. These landscape mosaics contribute to the preservation of biodiversity.

EQUINES IN ENVIRONMENTALLY SENSITIVE AREAS: ENHANCE NON-ARABLE LANDS

A sensitive area is a territory that is subject to **natural constraints for agriculture**. Mountains, wetlands and swamps are considered as sensitive areas.

Equines can **enhance non-arable areas** that are difficult to maintain through mechanisation, as well as sensitive territories that might be subject to shrub invasion. Thus, equine grazing optimizes pasture management, and contributes to the reduction of land abandonment in sensitive areas. Moreover, **mixed grazing** assists in optimizing the grazing management of other herbivores. *See "Grazing" factsheet*.

Equines also conserve biodiversity in two different ways. Firstly, grazing contributes to the **openness of the landscape**. *See "Grazing" factsheet*. Secondly, **local and/or hardy breeds** seem to fit the environmental conditions of the habitat they come from and are often used to preserve them. This use of local breeds as land managers is a way to maintain their population and to promote their conservation. *See "Biodiversity" factsheet.*

Equines are present in areas that are **abandoned** by other herbivors, such as the Mediterranean littoral, moors or suburban areas. They enhance the land through different contributions, such as grazing, food production, work or tourism. *See "Grazing", "Equine work" and "Tourism" factsheets*.

WORKING EQUINES:
IMPACTS ON GREENHOUSE GAS EMISSIONS AND SOIL QUALITY

A working equine is an equine that is intended for work and provides energy that can be substituted by other sources of energy, other machines or types of travel. Equines work in several sectors: agriculture (field crops, vineyards, market gardening), forestry (skidding), tourist transport and in public services (school transport, garbage collection).

Worldwide there are ten times more animals used as a source of draught power than tractors. In developed countries, **26% of land** is managed thanks to animal traction (**52%** in developing countries), especially in sensitive areas.

KEY FIGURES:

Number of Working Equines: between **2,000 – 5,000 in Sweden** (estimation, 2019), **8,398 in France** *SFET, 2019*

There are a reported **600,000 - 800,000 equidae** present in Romania, around 80% of which are used for working activities, such as transportation of goods and people, and for agricultural and forestry work
World Horse Welfare 2015

24 funded projects to promote the use of working equines in 39 townships, in 2019, in Wallonia (Belgium)
Belgian Horse Confederation 2020

WORKING EQUINES, GREEN ENERGY

The energy needed to feed a working equine is up to **60% renewable** because they eat plants, growing thanks to photosynthesis (9% if using a tractor powered by oil).

Manure produced by equines directly **fertilizes soils**, avoiding the use of chemical fertilizers and, consequently, reducing the emission of N_2O in the atmosphere and in run-off. Moreover, equine grazing maintains grasslands, being carbon sinks. *See "Grazing" factsheet.*

Working equines can graze on **non-arable zones**, avoiding competition with lands intended for human food production. This is not the case of biofuels. This solution not only presents economic advantages, but also supports local breed conservation, as local breeds are well adapted to local environmental conditions. *See "Domestic Biodiversity" factsheet.*

The use of equine traction allows farmers to gain **food and energy autonomy**.

EQUINE TRACTION IN ARABLE AREAS

Soil compaction is the most severe form of degradation in conventional agriculture. A motorized machine creates a continuous path and leads to deep soil compaction, while an equine creates an **intermittent path and causes superficial compaction**. The use of equines is adapted to small areas.

According to a Life-Cycle Assessment model that examined a 1-kilometer-long drive, **for the emission of 1 kg eqCO2, a machine carried 80 kg of wood whereas an equine carried 311 kg.**

EQUINE TRACTION IN FORESTS

In forest areas, the use of equines provides better **drivability** on a rugged or narrow field. Without counting the trail development costs, when compared to motorized machines, the use of an equine is **more profitable up to 50 m**. When taking into account trail development costs, the use of an equine is **more profitable up to 200 m**.

According to a Life-Cycle Assessment model that examined a 1-kilometer-long drive, **for the emission of 1 kg eqCO2, a machine carried 80 kg of wood whereas an equine carried 311 kg.**

OTHER KINDS OF WORK

- In a **greenhouse**, the driveability of equines allows a precise work.
- In **vineyards**, equines are used in narrow rows, on terraced or steep sloped fields.
- In **natural areas**, equines degrade soil less than machines and frighten less fauna.
- In **cities**, the use of equines allows a decrease of carbon footprint for some public services. Moreover, they are seen as 'city pacification' agents.

TOURISM:
IMPACTS ON SOIL QUALITY AND LANDSCAPES

R. Manaud

Equestrian tourism concerns all outdoor activities with equine, outside of the residential area. In fact, equine tourism has a larger definition than equestrian tourism :

"*A movement in free time that takes place outside the temporality and spatiality of everyday life, whose activities are related to* ***equestrian practice*** *(mounted, harnessed or supported by a pack equine) or an* ***activity surrounding an equine*** *through visits or events. The equine and horse riding can be the main motivation or a secondary activity of the visit*." (Pickiel-Chevalier, 2015)

France has the third highest number of riders of any European Country, behind the United Kingdom and Germany, but it is considered to be the leader of equestrian tourism due to of a full and diverse range of activities (equestrian trails, lodges, etc).

KEY FIGURES:

2,700 km of equestrian routes in Sweden (2006), **21,676 km** in France (2019), **3,699 km** in Poland (2016)

18,246 horse races in France in 2018

968 International FEI competition days in 2016 in Europe (291 in US/Canada, 124 in Asia, 80 in Oceania)
Filière équine Wallonie 2017

Between 10,000 – 14,000 visitors attend the World's Championships for Icelandic horses each year
FEIF, 2020

EQUESTRIAN TOURISM IS A SUSTAINABLE FORM OF LEISURE THAT ALSO HELPS THE ENVIRONMENT

Horseback tourism has similar but sometimes more severe environmental impacts to other users of trails, such as hikers or bikers, regarding soil erosion, loss of organic litter and loss of vegetation. However, it differs from these in two ways:

- Equine manure leads to nitrification of soils and rivers but also to **enrichment of nutrient-poor soils**.
- Spread of seeds through fur, manure or equipment (of the horse or the rider) **enriches poor soils in plant diversity**, but may lead to the spreading of invasive species in protected areas.

Equestrian tourism **creates and maintains trails** that are useful to other users. It also contributes to the preservation of some sensitive areas.

The public demand for typical local outdoor activities offered by equestrian tourism provides a role for **local breeds** and thus their sustainability. *See "Biodiversity" factsheet.*

EQUINE TOURISM: A WIDE DIVERSITY OF IMPACTS

Diverse stakeholders are involved in equine tourism: from riding schools to event sites, from local shopkeepers to riders; from visitors to trainers, etc. Their impact on the environment is thus **difficult to quantify.**

Quality labels are being developed, such as the EquuRES label (which rewards environmental and animal welfare guarantees, for stables and equestrian competitions).

The socio-economic and environmental impacts of equestrian events are hot topics. Studies have been conducted, and publications about the subject are already available. **However, the numerous impacts of equine tourism on equestrian holdings and surroundings can be hard to quantify**

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