Renovating horse pastures

The flora in pastures evolves constantly depending on farming practices, soil and climatic conditions. When the plant cover deteriorates, renovation techniques can be considered, once having taken into account the causes of the deterioration and the upkeep measures necessary to obtain the required productivity.

by **Pauline DOLIGEZ** | 16.07.2018 |

Technical level

Mares at pasture © M. dhollande

Why renovate a pasture ?

When does a pasture deteriorate ?

A pasture is said to be deteriorated when bare patches of soil, or areas of unwanted plants (weeds which animals do not eat) develop. A pasture can also be said to be deteriorated when the yield and/or the nutritional quality of the plant cover no longer meets requirements ;

Deteriorated field with weeds
© A.C. Grison

Pasture plant identification, also called flora identification, is a botanical reading of a pasture where the different plant species present are identified, quantified, and qualified as desirable or undesirable for grazing and /or forage. Based on this analysis, the factors leading to pasture deterioration can also be identified.

Why does a pasture deteriorate ?

Under-grazing, late grazing or mowing for forage, over-grazing, trampling, lack of fertiliser, lack of pasture maintenance and subsequent weed development, can all be causes of pasture deterioration.

How to take action prior to deterioration ?

Good pasture management is essential through several practices :

- Rotational grazing with a high grazing load when grass growth is at its utmost in Spring
- Early grazing to restricrt the development of certain weeds and rough areas
- Mowing, or other grazing animals (cattle) to limit the appearance of roughs
- Alternating grazing and mowing
- Rest the pasture in winter, and restrict grazing in wet weather conditions.
- Fertilising taking into account exports due to mowing.
- Adopt pasture maintenance techniques in Spring and Autumn

Behavioural aspects of grazing horses, and pasture deterioration

Bare area near a drinking trough © P. Doligez

Horses maintain areas of short grass where they graze frequently. These areas become over-grazed when horses are left to roam freely on a plot for a continuous period of time. Over-grazing induces deterioration of the plant's reserves, located at the base of the plant, and the plant's growth is then slowed down. Grazing on shoots of less than 3cm in height, causes bare patches to appear, and weeds to take over.

This type of grazing progressively selects plants with fewer grass species, and more rosette type plants and weeds.

The horse also leaves areas called roughs, where droppings accumulate. The vegetation in these areas hardens over time, and becomes less and less palatable. Also, when the grass cover is kept high, it overshadows young shoots, and slows down their growth. These areas then become favourable to the growth of unpalatable nitrophilous grass (which thrives on nitrogen), and where legumes disappear.

On areas used to distribute hay, or paths, the appearance of bare patches caused by trampling also increase deterioration of the plant cover.

Renovation techniques

Over-seeding, or total renovation with ploughing followed by re-seeding are costly processes which require carrying out a pasture plant identification, so as to choose the most appropriate means of renovation with regard to the situation. A diagnosis of the soil to determine whether ploughing is feasible (appearnce of stones, unfertile soil) should also be considered.

Results of a pasture plant identification

Niveaux de dégradation des prairies et possibilités d'amélioration (d'après Leconte et al., 1998)

Unwanted plants and holes	Percentage of good grass + herbaceous legumes		
	>70%	From 30 to 70%	<30%
<15%	Excellent pasture	Reseeding, adapt the grazing load	Over-seeding
From 15 to 30%	Good pasture	Reseeding, adapt the grazing load	Reseeding without ploughing
>30%		Reseeding, adapt the grazing load	Complete renovation with or without ploughing

Note

Drinking trough areas, hay feeding areas, paths and presence through the winter, and exercise paddocks are constantly trampled areas. Renovation can be costly, and will have no lasting effect because these areas will be deteriorated again by use.

Levelling and encasement (stabilising these areas with stones or clay) may seem more appropriate.

Seeding, and overseeding

We use the term seeding when the purpose is to replant a plant cover on a totally bare soil. On the other hand overseeding is used with a purpose of refurbishing bare areas in a pasture, without destroying the plant cover already present.

Conditions in order to succeed

- The **time of year** : Seeding at the end of summer or the beginning of autumn is easier than seeding in the spring. Weed competition is lower during the winter.
- **Identifiable bare areas** :
  - + 10% of bare soil for overseeding
  - + 30% of undesirable plants
  - < 30% of good grass species and leguminous grasses (for seeding see the chart below)
- The **remaining grass cover** should be short
- The soil should neither be too wet, nor too dry

Equipment

For seeding, following destruction of the existing plant cover (either chemically or mechanically)

- With a rotovator (no more than 8cm deep) or a tool with teeth like a vibrashank cultivator or a harrow to obtain a fine grained soil on the surface.
- A level packed down soil should be obtained by using a roller before seeding
- Just after seeding, the seeds should be surface covered (<3cm depth)

For overseeding and seeding

- Broadcast seeding with a disc, air or packer seeder.
- Favour good contact between seed and soil, by rolling (seeding), or trampling by the animals (overseeding)

Density of seeding

The dose of seeds is determined by the number of seeds per gram. This number is variable depending on the type of grass used. The aim is to obtain **500 plants per square meter**. The recommended quantity of seed for a bare surface varies between 10 to 25 kg/ ha for the main types of grass and pasture legumes (Gnis reference). Do not exceed 25 to 30kg/ha in the case of a mix.

=> Refer to the supplier for information

To maintain a pasture by overseeding with grass species, we recommend an almost complete dose (20kg/ha of grass species + 3kg/ha of white clover or 6 kg/ha of red clover).

Note

Agrostis stolonifera has an anti-germination effect on other grass species. It is therefore important to eliminate through harrowing before seeding.

What species should be chosen for seeding or overseeding ?

There are no particular species of grass or legume to favour for horses pastures or forage production areas compared to other herbivores. The aim is to maintain a permanently turf like surface and a productive plant cover based on grass species. The presence of legumes such as clover is beneficial because of its protein content, but should not exceed 20 % of the plant cover.

The choice of grass species therefore depends more on soil and climatic conditions, and on the use, be it for grazing and /or fodder production.

To obtain a satisfactory result through overseeding, it is best to choose species which will establish quickly, and species which are said to be aggressive like tetraploid rye-grass (less resistant to trampling), or a hybrid rye-grass, and white clover mix.

For pasture use for horses, it is best to choose turf type species, resistant to trampling (diploid species) and late heading species.

Suggested mix for seeding pastures in Pays de la Loire

By F. Hubert 1998

Dominant species : These are the species which will ensure the major part of the production of grass or hay.

Accompanying species : These species do not necessarily produce much yield, but they offer a good ground cover, which prevents the development of weeds.

Main use	Pasture (dominant)				Mowing or cutting (hay dominant)			
Soil	Dominant species (1)		Accompanying species (2)		Dominant species (1)		Accompanying species (2)	
Droughty clay soil	late orchardgrass	5	Kentucky bluegrass	3	Alfalfa (or sainfoin)	1	Trefoil	2
	Bird's foot trefoil	4	Diploid ryegrass	3	late orchardgrass	5		
	Tall fescue *(late heading, with supple leaves)*	5	White clover (agressive)	2	Tall fescue (late heading)	3		
Droughty acidic	Orchardgrass (or tall fescue)	10	White clover (agressive)	3	tall fescue) (or Orchard grass)	1	Purple clover	3
	Kentucky bluegrass	3	Bromegrass (if sandy)		Bird's foot trefoil	2		
	trefoil	5			Trefoil	4		
Deep healthy soil	English ryegrass	15-20	Kentucky bluegrass	2	tall fescue	10	Alfalfa	4

Main use	Pasture (dominant)				Mowing or cutting (hay dominant)			
	White clover	3 - 5	meadow fescue	2	Timothy grass	5	Purple clover	2
							Diploid ryegrass	3
Hydromrphic soils	English ryegrass	6	Timothy grass	3	tall fescue	10	meadow fescue	3
	meadow fescue	5	Kentucky bluegrass	3	Timothy grass	3	Bird’s foot trefoil	3
	White clover (depending on English ryegrass)	3			Hybrid clover	3		
Soils which present marked hydric alternating episodes (wet in winter and dry in summer)	tall fescue	6	Kentucky bluegrass	3	tall fescue	10	Diploid ryegrass	3
	English ryegrass	5			Bird’s foot trefoil	4		
	Trefoil	3			Hybrid clover	3		
	White clover	3						

Bibliography

- **DELEAU D., DEVILLE A., LAMY M. et TISSERAND J.**, 2012. Entretien des prairies, Halte aux idées préconçues. Elevage allaitant - Bâtir une dynamite gagnante - 19/10/2012- Arvalis - Saint Hilaire en Woëvre.
- **HIBERT F.**, 1999. La Prairie multi-espèces, groupe prairie Pays de Loire, juin 1999.
- **LEMASSON C., PIERRE P. et OSSON B.**, 2008. Rénovation des prairies et sursemis. Comprendre, raisonner et choisir la méthode. Fourrages, n°195, pages 313-330.
- **LECONTE D., LUXEN P. et BOURCIER J.F.**, 1998. Raisonner l'entretien des prairies et le choix des techniques de rénovation. Fourrages, n°153, pages 15-29.
- **LECONTE D.**, gnis-pédagogie, Interpréter les critères de la fiche diagnostic

About our writers

Pauline DOLIGEZ Engineer IFCE