



Chapter 6: Pasture and Exercise Yards

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Factsheets related to Chapter 6. Pasture and Exercise Yards:

- [Pasture](#)
- [Exercise yard](#)

1. Grazing methods

Grazing management for dairy cows can adopt any one of three main grazing patterns:

1. Continuous Grazing

In continuous grazing, cattle have unrestricted access to a large pasture area during a period of time (grazing season). Cattle graze freely without being moved to different sections of pasture. While it is a simple, less labour-intensive and economical way to provide pasture access, there's a potential for selective grazing in certain preferred areas, possibly leading to uneven and inefficient pasture use.

2. Rotational Grazing

Rotational grazing involves dividing the pasture into smaller sections or paddocks. Cattle are systematically moved from one paddock to another in a planned rotation, allowing each section a rest and regrowth period. With proper forage management, this method promotes even grazing, optimal pasture utilization and improved forage quality.

3. Strip Grazing (intensive grazing)

Strip grazing involves subdividing a pasture into narrow strips, allowing access to one strip at a time based on forage growth and utilization. Typically, lactating cows receive one to two plots per day. As the cattle graze each area, they are systematically moved to the next strip.

This method offers distinct advantages over both continuous and less intensive rotational grazing, including:

- Longer resting time between grazings
- Higher yield potential
- Improved forage quality
- Better grass utilization
- More uniform soil fertility

A comprehensive overview of the three main grazing methods, including their advantages and disadvantages, can be found in the following guide (in French only): [Guide pratique pour l'éleveur biologique : Produire du lait au pâturage \(PDF\)](#)

The system described in this section/chapter is based on strip grazing, which is widely adopted as the primary method for managing dairy cows in the pasture.

2. Pasture management – Forages

In terms of soil management, pastures need to be managed like any other forage crop to achieve yields equivalent to mechanically harvested forages. It is important to ensure that soils are well drained, have an optimum pH and are fertilized as required. Manure from grazing cows should not be underestimated.

As far as plant selection is concerned, a mixture containing several legumes and grasses is essential to ensure stable yields and high-quality feed. The inclusion of legumes will improve the nitrogen balance of the soil through the symbiotic nitrogen they provide.

For a plant to be suitable for grazing, it must meet four criteria: tolerance to trampling, tolerance to grazing, provide good summer regrowth and be palatable. Plants that don't meet these four criteria can still be used in less intensive pasture management (e.g., hybrid pasture-grassland management, where the first cut is made mechanically, and the rest of the season is grazed).

The table below shows the main plants best suited to intensive and long-term (5 years or more) grazing. Other species can be used for shorter grazing periods (2-3 years), but the production costs are higher.

Table 1. Indicates the main plant species best suited to intensive grazing.

	Alfalfa	Ladino white clover	Red clover	Birdsfoot trefoil	Timothy	Smooth brome	Meadow brome	Orchardgrass	Meadow fescue	Reed canary	Tall fescue ¹
Trampling tolerance	x	✓	x	✓	x	x	✓	✓	✓	✓	✓
Grazing tolerance	x	✓	x	✓	x	x	✓	✓	✓	x	✓
Regrowth in the summer	✓	✓	✓	✓	x	✓	✓	✓	✓	✓	✓
Palatability	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x

Source: adapted from Turcotte, 2021

1. The low palatability of tall fescue has been observed for older cultivars of this plant. However, the new “soft-leaf” cultivars will likely be more palatable. Experience and research over the next few years will provide more information on this subject.

For more details on how to create a grazing mix with compatible plants that are well adapted to pasture: [Click Here](#)

3. Outdoor rearing systems considerations

a. Surface per cow

A rule of thumb often used to determine the area to be devoted to pasture is to supply 1 acre (0.4 ha) per cow. This approach is very imprecise and needs to be refined. Since the area offered to cows depends in part on the forage yield of the fields used for grazing, it is more accurate to use the mechanically harvested forage yields from these plots to estimate the acreage to be provided for grazing.

The other variable to consider is the amount of dry matter in the cow's daily ration that will be filled with grass. Once that value has been defined, multiply it by the number of cows in the herd and the number of days on pasture to find out the total needs of the herd during the grazing season.

Consider Lactanet's Mobile Application [HappyGrass](#) (In French only; [HappyGrass: A new application for pasture management - Lactanet](#)). This is a decision support tool for pasture management. It is an application based on a grazing calendar that allows you to:

- Assess grass yields
- Plan the use of plots
- Assess rest periods
- Establish a grazing plan

b. Infrastructure

Fencing

To manage grazing animals effectively and safely, two types of electric fencing are required:

1. Permanent fencing around the perimeter of plots that will be grazed. Galvanized steel or aluminum wiring is suitable for this type of fencing.
2. Portable fencing to divide large plots into strips used for 12 or 24 hours. They are made up of braided wire, reels and removable posts.

Water source

Since animals are constantly moving around in different plots, it is very practical to set up a watering system that allows small waterers to be connected near the animals. The closer the waterer is to the animals, the smaller it can be as the animals can drink from it one at a time without leaving the herd and the grass.

Mobile waterers should be located no further than 200 metres from the cows. Moving waterers frequently will avoid creating a muddy area around them. To achieve these objectives, a network of pipes should be set up to supply water to the entire pasture with valves located at critical points.

Access paths

Access to pastures must be possible throughout the season, regardless of weather conditions. If access paths are muddy, cows will not be able to reach certain paddocks. In addition, wet conditions are detrimental to hoof health, leading to the development of infectious hoof lesions. Adequate solutions must therefore be applied to maintain paths well-drained and secure throughout the season.

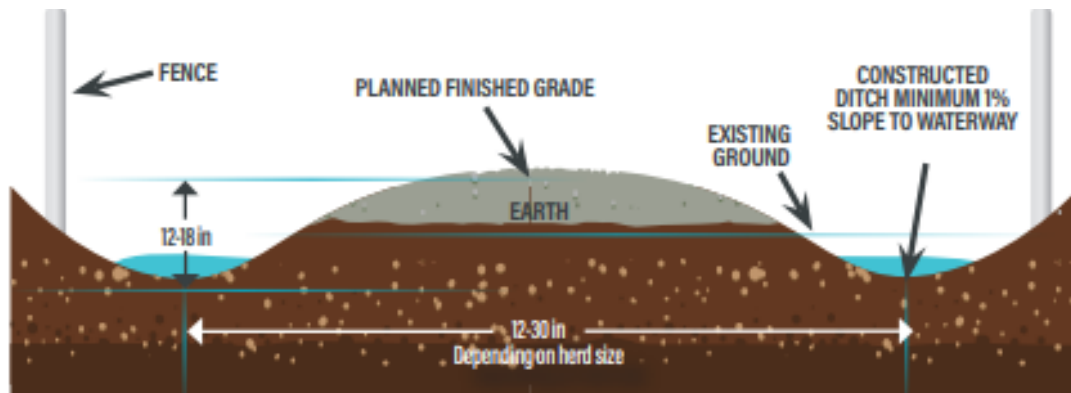


Figure 1. Illustrates the least expensive option to create an access path for cows to go out to pasture every day, while keeping them dry and clean by using drainage slopes. *Source: adapted from Daigle et al., 2009.*

Depending on the type of soil, this could be a path with drainage slopes, the addition of sand or, in more difficult circumstances, a geotextile covered with gravel and a thin topcoat to avoid hoof injuries. For large herds, in the most heavily used parts of the path, concrete could be poured to prevent the path from turning into a muddy trench.

4. Feeding dairy cattle at pasture

Pasture intake

To obtain good grass intake on pasture, it's important that cows spend a certain amount of time there, but the most important factor is the length of grass offered to the animals. For a good quality/quantity ratio, lactating cows receive grass 20 to 25 cm (8 to 10 inches) high in each paddock. With rising-plate meter measurements, we look for heights of 10-12 cm. For both evaluation methods, we aim for an exit height of 5-6 cm. In this case, a mixture of grasses and legumes contains, on average, 20% crude protein and 1.50 Mcal/kg net lactation energy. Strip grazing every 12 hours will stimulate cows to go out to pasture after each milking. What is fed in the barn must be as palatable, if not more so, than the grass on pasture.

Supplementary feed

Depending on production targets, lactating cows will need to be supplemented in the barn. With a surplus of degradable proteins and a lack of effective fibre, it will be useful to supply energy concentrates and fibre to supplement grass. Bear in mind that every kg of forage fed in the barn will reduce grass intake on pasture by the same amount, whereas the substitution rate for concentrates is 1:0.5.

Milk composition

Three main factors influence milk composition on pasture: genetics, grass intake and heat stress. Heat stress is discussed in the following section.

a. Genetics

Herds that have selectively bred on fat and protein levels for years have as good levels on pasture as herds in barns.

b. Grass intake

As described above, grass intake is maximized when grass height is optimal. If the grass is too long or too short, intake is reduced. The composition of the grass consumed by cows during the summer grazing period can also have an impact on milk composition.

The table below illustrates the very high nutritional values of pastures according to their composition and season.

Table 2. Average nutritional value of pastures based on season and composition

Average analyses of cool-climate grasses and legumes				
Nutrient	Grasses		Grasses with legumes	
	Spring	Summer	Spring	Summer
CP (% DM)	21-25	18-22	22-26	20-24
ADF (% DM)	24-28	28-34	21-35	25-30
NDF (% DM)	40-45	48-55	30-36	35-45
NE, Mcal/kg (% DM)	1.58-1.72	1.45-1.58	1.62-1.76	1.54-1.63

Source: adapted from Rayburn et al., 2008

5. Heat stress

Heat stress can negatively impact milk composition as it reduces grass intake. When the humidity index is high, it is important to provide shade and ventilation to cows. There are several ways to prevent heat stress on pasture. The easiest is to take the cows out at night, right after the evening milking. This way, they can enjoy the grass and exercise without suffering from the heat of the day. They can return to the barn in the early morning and enjoy the shade and ventilation provided by the building. For producers who use day pasture as well, cows can be set out in the morning only or all day if shade can be provided (e.g. from windbreak hedges).

6. Milking robots and grazing

By locating the robot appropriately in the barn or using automated selection gates, it is possible to combine the use of milking robots with grazing. By adopting intensive pasture management, which can be as much as 3 paddocks of pasture per day, cows can be trained to visit the robot almost as often as in a total confinement system.

7. Pasture management tools

Several tools are available to help growers manage their pastures:

a. **Profilab**

Based on milk analyses, this tool compares a herd's component and fatty acid data with the provincial average for herds during the grazing season.

b. **Herbometer**

A pasture plate meter is equipped with a mobile plate that lifts according to grass length and density. The unit's electronic counter records and averages the height of the flattened grass. The measurements provide a quantity of kilograms of dry matter per hectare (kg/MS/ha). The device was calibrated for Quebec pastures during an innovation project led by Lactanet.

c. **HappyGrass**

HappyGrass is a mobile application designed as a decision-making tool for pasture management, featuring a grazing calendar. This tool allows users to:

1. Evaluate grass yields
2. Plan paddock use
3. Evaluate rest periods
4. Establish your grazing plan

For more information reference: [Guide pratique pour l'éleveur biologique : Produire du lait au pâturage \(PDF\)](#) (French only).

For a quick look at pasture considerations and recommendations, see the following factsheet: [Pasture](#)

8. Exercise yards

An exercise yard, also known as an outdoor pack or area, is usually an unroofed, soil-, bedded- or deep-bedded- floored, enclosed area with access to and from the dairy barn. These areas offer cows outdoor access and ample movement opportunities, contributing to their well-being, natural behaviour and improved hoof health, regardless of the housing system.

A recommended surface area of 6.5 m² (70 sq. ft.) per cow is advised. It is important that the pen is well drained and that the floor contains material that improves load-bearing capacity (e.g. sand, fine gravel, wood shavings, coarse lime, etc.). This material must be fine enough to prevent hoof lesions and hoof/leg injuries to the cows.

Typically, the exercise yard allows access to the herd for 30 minutes to 1 hour per day, depending on weather conditions. It can be used by lactating cows on a daily basis without feeding or watering, to avoid excessive manure buildup. Effective year-round use involves adapting management practices to weather conditions.

For tie-stall barns in winter, ensure that the aisles and stalls provide good traction for snow-covered hooves to avoid injury to animals returning to the barn. For all housing systems, avoid

clearing snow from outside pens to improve grip. If it becomes too slippery, dividing the exercise yard into smaller areas allows snow accumulation where there are no animals, and sand can be spread over the slippery areas. A windbreak is also necessary to protect the animals from prevailing winds.

Since the exercise area has a slight slope, runoff is directed to the vegetative filter strip, which is "an effective means of protecting surface and ground water from manure contamination" (**Figure 2**). The vegetative filter strip is a permanent vegetative cover located downstream of the wintering pen designed to capture the vast majority of the fertilisers contained in the runoff from the pen. This strip must have a maximum slope of 5% and must have a surface area of at least 20 m² (215 ft²) per cow. This vegetative strip can be grazed but must not be mowed or grazed after the end of the growing season (which, for Québec, is August 15) to maintain a dense vegetation cover during winter (**Figure 2**).

The creation of an exercise yard must [adhere to MDDELCC regulations on exercise yards at all times](#) in Québec. Regulations concerning exercise yards for provinces/territories outside Québec may be different; always check provincial regulations prior to exercise yard construction. In some cases, there are no clearly stated regulations, so it is recommended to refer to the [Code of Practice for the Care and Handling of Dairy Cattle \(2023\)](#) and the [Organic Dairy Cattle Standards for guidance](#).

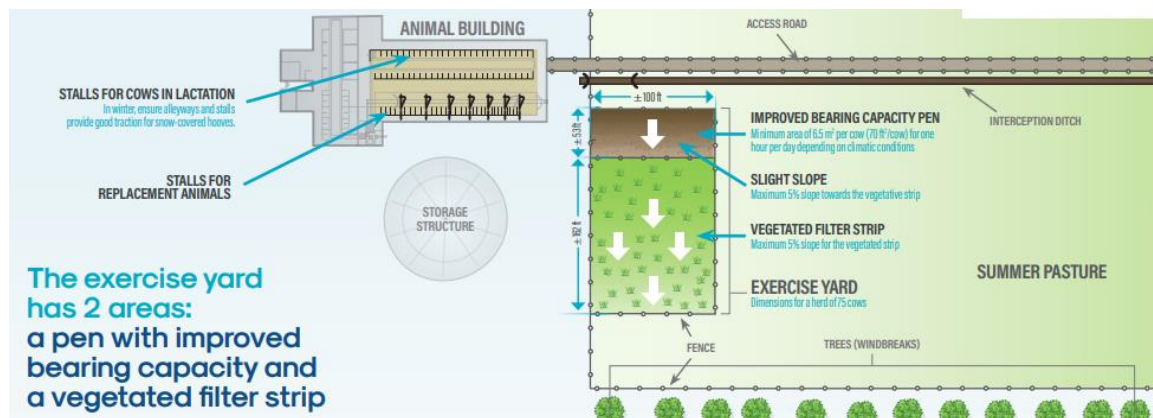


Figure 2. Illustration of an exercise yard design. *Source: adapted from [here](#)*

For a quick look at exercise yard considerations and recommendations, see the following factsheet: [Exercise yard](#)



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