



Extension of the grazing period in summer in integrated arable crop—livestock systems

This leaflet on the extension of the grazing period in systems combining arable crops and livestock is a part of a set of three leaflets, the first dealing with possible techniques in the spring, the second those of the summer and the third those of autumn. Each leaflet can be read separately.

1 General context

Milk price has fluctuated a lot in recent years with, in addition, a downward trend. Beef meat price is also changing negatively. Therefore, reducing production costs becomes imperative to ensure the profitability of livestock systems. Grazed grass is the most 'natural' feed for domestic herbivores, and it is also the cheapest feed. Extending the grazing season is therefore an effective strategy for reducing production costs.

A well-managed and prolonged grazing in late winter-early spring and autumn also saves labour because the time spent on feeding animals and cleaning buildings is reduced. The saved time can be spent on leisure activities or on income-generating activities such as processing and marketing of products.

The climate crisis and its increasing summer droughts complicate the achievement of these objectives because they reduce grass production at this time of the year, especially that of permanent grasslands. It should therefore be possible to use new, more drought resistant mixtures, to ensure the continuity of grazing at this time of the year.

Grass-based dairy and meat products stand out from those produced on the basis of green maize and human foods (soybean, cereals). They have better nutritional qualities (lower levels of saturated fatty acids, better omega3/omega6 ratio, higher content of conjugated linoleic acid) and benefit from a more favourable image in the public.

Producing more grass-based milk and meat on mixed farms, combining arable crops and livestock farming, requires a combination of the following measures: a good grassland management, a complementarity between permanent grasslands and temporary grasslands, and an animal breed able to effectively transform grass into milk and meat.



Grazing chicory (left) and chicory sward (right).

Credit: Kévin Morel

Authors:

Alain Peeters¹,
Kevin Morel²

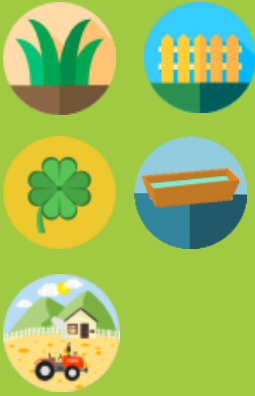
¹RHEA- natural Resources Human Environment & Agronomy

²Viande à l'Herbe



LA VIANDE A L'HERBE





Technical leaflet

2 Description of the innovation

In mixed farms, it is possible to integrate temporary grasslands into the rotation of annual crops. These grasslands are usually sown for periods of one to three years, for example with a mixture of grasses and legumes.

These may be alfalfa/grass(es), red clover/grass(es) or more complex mixtures of several legumes and grasses.

Examples of mixtures:

- Alfalfa (20 kg/ha) – Cocksfoot (15 kg/ha) or cocksfoot (10 kg/ha) and tall fescue (5 kg/ha). Duration: 2 to 3 years or more.
- Diploid red clover (8 kg/ha) – Cocksfoot (15 kg/ha) or cocksfoot (10 kg/ha) and tall fescue (5 kg/ha). Duration: 1 to 2 years maximum with cultivars of the 'Ackerklee' type of red clover, 1 to 3 years maximum with cultivars of the 'Mattenklee' type of red clover.
- Plantain cv Ceres Tonic (1 kg/ha) – Red clover (6 kg/ha) – White clover (2 kg/ha)
- Chicory cv Puna II (4 kg/ha) – Red clover (6 kg/ha) – White clover (2 kg/ha)
- Plantain cv Ceres Tonic (1 kg/ha) – Chicory cv Puna II (4 kg/ha) – Red clover (6 kg/ha) - White clover (2 kg/ha)

The choice of cocksfoot and tall fescue is preferred because both species are drought resistant, which is favourable to summer growth. Diploid red clover cultivars are preferred because they are easier to dry than tetraploids.



Chicory tap root.
Credit: Kévin Morel



Technical leaflet

2 Description of the innovation (continued)

Red clover or alfalfa and grass mixtures continue to grow during periods of drought long after permanent grasslands have stopped growing. In summer, the grazing season can be extended by grazing these temporary grasslands. Cuts are harvested on these grasslands for stocking winter forage before and after the summer grazing period.

The "new mixtures", sown before winter or in spring, based on plantain, white and red clovers, with or without chicory, are also very productive in summer. They can be grazed in summer. Plantain and chicory are two dicotyledon species with a strong taproot that allows them to draw deep water. This allows them to grow during drought. Chicory as tall fescue are also high-temperature resistant. They continue to grow up to 35°C while most other forage species stop growing at about 25°C. Chicory is a bi-annual species. Sown before winter, it produces an unpalatable stem the following spring. Sown in spring, it produces only digested leaves the first year. It is therefore strongly recommended to sow it in spring. Plantain is a perennial species that produces stems every year. These stems represent a low biomass compared to leaves and can easily be ingested by animals. Plantain can be sown before or after winter. The two species are mainly suited to grazing. They are not advisable for the production of dry fodder, their leaves become too brittle when they dry. Chicory is especially suitable for deep drying soils. Plantain can be sown on a wider soil range than chicory but should not be planted on soil waterlogged in winter.



Mixtures sown before winter are more productive and can be grazed earlier the following year than spring sown mixtures. Chicory mixtures are kept for one year, those based on plantain can be kept longer, for example three years. Plantain ± chicory + clover blends not only produce pasture forage during dry periods when permanent grasslands are no longer growing, they also provide excellent forage for fattening animals on grass. Plantain and chicory contain tannins that depress the populations of gastro-intestinal parasites which increases animal growth performance.

With these mixtures, summer grazing can be extended from one to two months for example, compared to grazing on permanent grassland, depending on drought intensity and duration. Instantaneous stocking rate must be important to quickly gather forage and move animals to the next surface so as not to depress species that are not trampling resistant such as alfalfa or chicory. Stocking is organized by moving a front electric wire every day to every three days. Permanent fences are not necessary. If there is time to graze certain plots twice, these passages must respect the principles of rotational stocking.

This innovation is well adapted to a variety of Atlantic or continental climates.

This system is particularly suitable for farms integrating annual crops and livestock. It can be adapted to a 100% grass-based system provided that temporary grasslands are sown.

Technical leaflet



3 Results obtained with the adoption of the innovation

Being able to graze two months more in summer makes it possible to strongly reduce the constitution of preserved fodder stocks. These stocks are much more expensive, about twice as much as grass harvested by grazing animals. In the case of the fattening of young animals on the grass, these summer forages also allow savings of concentrated feeds.



Plantain-chicory-clover mixture.
Credit: Kévin Morel



Advantages

- lower feeding costs
- less manpower for animal feeding and building cleaning
- improved animal welfare
- better product quality



Disadvantages

- It requires the daily movement of the electric wire which must sometimes be done by rainy and windy weather
- In the case of dairy cows, animals must also be brought back every day to the barn for milking
- Compared to a maize silage and concentrated feed ration, stocking requires more flexibility, observation and thought

More information

- Labreuveux M., Hall M.H. and Sanderson M.A., 2004. Productivity of Chicory and Plantain Cultivars under Grazing. *Agronomy Journal* 96: 710-716.
- Laws D. and Genever L., 2013. Using Chicory and Plantain in Beef and Sheep Systems. AHDB Beef & Lamb AHDB Beef & Lamb, Warwickshire, UK: 26 pp.