

Grassland for Horses

A handbook on best grazing/forage management
practices and techniques





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Compiled and edited by the Teagasc Equine Specialist Team

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Introduction



Horses are selective grazers.

Grassland management for horses presents a number of management problems. Horses are very selective grazers and are often grazed on farms where there is no other form of livestock and hence no mixed grazing. This presents challenges to maintaining good quality grassland for grazing. Horses will eat down some areas until they are almost bare (lawns) while other areas in which they dung are left untouched (roughs).

This handbook examines best grazing management practices and techniques for horses.

Managing grass for horses



Grazing habits – evidence of lawn and roughs.

The objectives of managing grass for horses are to provide:

- quality grass for grazing;
- sufficient grass production for hay or haylage crops to be conserved for winter feeding; and,
- a well-cushioned turf for safe exercise for all, but especially for young stock.

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Over-grazing of paddocks by horses results in 'horse-sick' pastures. These have poor quality grasses, unproductive and harmful weeds, and a high population of parasites, resulting in an unbalanced diet for the horse. Well-managed grassland provides an even, leafy and palatable sward, free from harmful weeds, producing a balanced diet.



Even, leafy and palatable sward free from harmful weeds.

Problems with managing grass for horses

Horses' demand for grass is relatively constant throughout the year but the pattern of grass growth is extremely seasonal, as shown in **Figure 1**. Grass growth peaks in the spring and early summer, decreases in mid-summer and increases again in the autumn, depending on the season. The aim of good grassland management is to balance the demands of the horse with the growth pattern of the grass. The main ways to achieve this are:

- close off part of the grassland area for forage conservation;
- graze the excess grass with cattle or sheep;
- top the excess grass regularly; and,
- close off paddocks in early autumn for grazing during the winter months when grass growth has ceased.

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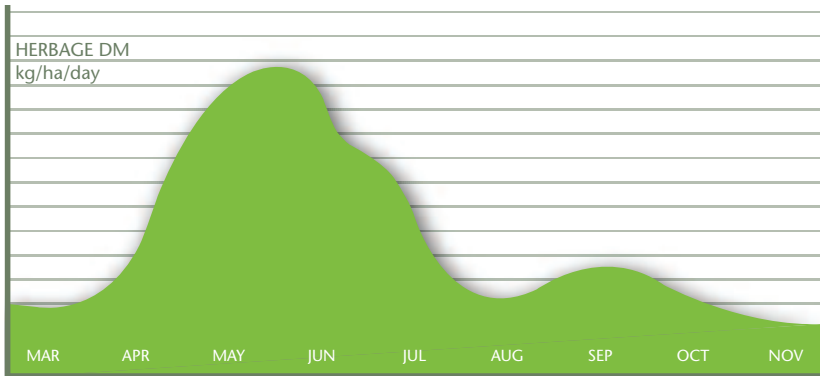


FIGURE 1: The relationship between grass growth and demand for grass by the horse.

As horses are selective grazers, the less palatable grasses are left to seed in 'rough' patches where the horses also dung and urinate. Tall-growing weeds colonise these areas. Continuous grazing with horses leads to severe deterioration in the quality of the grassland. Where swards are overgrazed, the 'lawns' become depleted in plant nutrients, the more productive grasses are suppressed and weed grasses and broad-leaved weeds become established. These problems are often exaggerated by over-grazing in wet winters so that the ground becomes poached. The resulting bare ground then becomes colonised by weeds and undesirable grasses.



Pasture that has been badly poached due to over-grazing in wet conditions.



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Soil fertility management for horses

Good grassland management is a key component of horse production as it will ensure good quality grass during the grazing season and the production of quality forage to meet winter feed requirements.

The starting point to managing soil fertility is to know the nutrient content of the soils on your farm. Take soil samples and establish soil nutrient levels, for example, pH, lime requirement (LR), phosphorus (P), potassium (K) and magnesium (Mg).

Soil sampling guidelines:

- use a standard soil corer for soil sampling;
- take a soil sample once every three to five years;
- avoid any unusual spots such as gateways/old field boundaries/feeding points, etc.;
- take a sample to represent two to four hectares;
- take a minimum of 20 soil cores per sample; and,
- sample the top 10cm of soil.

Soil pH and lime

Soil pH is a measure of soil acidity and we aim to maintain a soil pH of 6.3 on mineral soils and pH 5.5 on peaty soils for grass production. This is essential for nutrient availability (nitrogen (N), P and K) and will increase the productivity of the grass sward annually. Soil acidity is controlled through the application of ground limestone once every five years. Lime should only be applied on the basis of a recent soil test report.

Guidelines on lime application

1. Maximum single application of lime is 7.5t/ha. Apply remaining lime in year three.
2. Do not over-lime soils as this will reduce nutrient availability.
3. Lime can be applied at any time of the year.
4. Maintaining soil pH increases the release of soil N from organic matter in spring, contributing to early season growth.

5. On high molybdenum (Mo) soils, maintain soil pH <6.2 to reduce problems with copper deficiency.
6. On heavier and organic soils, apply lower rates of lime (<5t/ha) on a more regular basis to avoid 'softening the soil' and risk of poaching.

Phosphorus and potassium management

P and K levels change very slowly over time and sampling fields every three to five years is adequate. The aim is to maintain soils at Index 3 (see **Table 1**) by replacing P and K removed in grazed grass/haylage. P and K at Index 3 is the optimum soil index for grass production. Maximising grass production may not be required on the grazing areas for horse production and maintaining soil Index 2 may be sufficient, depending on grass production requirements. Soils at Index 4 have a high nutrient supply and offer the opportunity to save on fertilisers.

Soil P and K Index	Soil P (mg/l)	Soil K (mg/l)
1	Grassland 0.0-3.0	Grassland and other crops 0-50
2	3.1-5.0	51-100
3	5.1-8.0	101-150
4	>8.0	>151

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Stocking rate (SR)	N (kg/ha)*	P (kg/ha)	K (kg/ha)
1.0	25-40	3	4
1.5	25-40	5	6
2.0	25-40	6	8

*Apply 25kg N/ha in springtime. Apply additional N based on grass demand during the growing season ($\text{kg/ha} \times 0.8 = \text{units/ac}$).

Nitrogen

Low levels of N are required in horse production. Therefore, maintain good soil fertility levels (pH, P and K) to ensure good grass palatability and persistency of the productive grass species. An application of 25-30kg of N per hectare (20-25 units of N per acre) is sufficient at any one time. (See **Table 2** for suggested N rates.)

Maintenance P and K for grazing areas

P and K requirements for horse production systems will be lower than typical livestock systems. **Table 2** shows the maintenance (Index 3) P and K advice at different stocking rates (equine livestock unit/hectare). Building up P and K soils at Index 1 or 2 will require additional P and K as shown in **Table 3**.

Soil Index	P	K*
1	20	60
2	10	30

*Apply extra K for build-up in August/September.

P and K for hay/haylage

In order to maximise winter feed for horses, aim for soil Index 3 to maintain the productivity of these swards. **Table 4** shows the N, P and K required for forage production as either hay or haylage.

TABLE 4: Fertiliser N, P and K requirements for hay/haylage (5t DM/ha)

Soil Index	N (kg/ha)	P (kg/ha)*	K (kg/ha)*
1	100/125	40	175
2	100/125	30	150
3	100/125	20	125
4	100/125	0	0

**Increase/decrease P application by 4kg t/DM, K application by 25kg t/DM.*



Spreading lime is done to increase soil pH and improve the fertility of soil.

Use organic fertilisers as efficiently as possible

Organic manures are a valuable source of N, P and K and can effectively replace artificial fertilisers. To maximise the nutrients in organic manures, it is essential that they are applied at the correct time of the year. To maximise the N recovery it's important to apply organic manures in the spring time under weather conditions that will reduce N losses to the air, e.g., cool, calm and moist days.

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Fertiliser spreader.

Make sure the fertilisers used are properly balanced

A balanced plant nutrient supply is very important during the growing season. It's especially important for productive grass swards that soil reserves can supply sufficient nutrients to meet the peak demands at particular stages during the growing season. Select suitable fertilisers to supply the correct nutrient balance.

Fertiliser planning

Prepare a fertiliser plan on an annual basis to guide nutrient advice and comply with nutrient legislative (SI 101, 2014) limits. Consult with your local adviser to prepare a fertiliser plan for your farm.

Farmyard manure

Well-rotted farmyard manure (FYM) can be used very successfully on grass for horses. It has the advantage that it releases nutrients over a longer time period than chemical

TABLE 5: Storage capacity required, and prohibited periods for spreading fertiliser

Zones	Storage capacity required	Prohibited application periods		
		Chemical fertiliser	Organic fertiliser	FYM
A	16 weeks	Sept 15 - Jan 12	Oct 15 - Jan 12	Nov 1 - Jan 12
B	18 weeks	Sept 15 - Jan 15	Oct 15 - Jan 15	Nov 1 - Jan 15
C (Donegal and Leitrim)	20 weeks	Sept 15 - Jan 31	Oct 15 - Jan 31	Nov 1 - Jan 31
D (Cavan and Monaghan)	22 weeks	Sept 15 - Jan 31	Oct 15 - Jan 31	Nov 1 - Jan 31

Zone A = Carlow, Cork, Dublin, Kildare, Kilkenny, Laois, Offaly, Tipperary, Waterford, Wexford, Wicklow.

Zone B = Clare, Galway, Kerry, Limerick, Longford, Louth, Mayo, Meath, Roscommon, Sligo, Westmeath.

Zone C = Donegal, Leitrim.

Zone D = Cavan, Monaghan.

fertilisers. It may also encourage more even grazing by disguising the tainting effect caused by the horse’s own dung and urine. When applied it will reduce the amount of chemical fertiliser required.

An application of 25 tonnes per hectare (10 tonnes/acre) is very beneficial. Manure varies widely in composition depending on its origin and storage. Cattle or pig slurry may be used where available. Both forms of slurry provide similar amounts of N. The P in pig slurry is generally more available due to its high liquid content, while cattle slurry has higher levels of K.

Adequate storage capacity is required to ensure that stable manure will not be spread or stored on the land during periods when spreading is forbidden (Table 5). Spreading is also forbidden, regardless of the time of year, if weather or ground conditions are unsuitable and there is a risk of run-off into surface or groundwater. Where a holding is

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Purpose-built manure pit with channels diverting run-off to a holding tank.

located in more than one zone, the rules that apply to the zone of the greater storage capacity are applicable. More detail may be found in the Department of Agriculture, Food and the Marine's 'Explanatory Handbook for Good Agricultural Practice Regulations'.

Manure storage

FYM, effluents and soiled water must be collected in a way that prevents run-off or seepage, directly or indirectly, into ground waters or surface waters until it is to be applied to land.

For storing stable manure the two main options are:

- (i) construct a concrete base with surrounding channels that divert the run-off to a holding tank; or,
- (ii) store the manure on a concrete base located under a roofed structure for the duration of the closed period.

Outside the closed period (January 12, 15 or 31, depending on region, to November 1) FYM may be stored in the field as long as it is located away from all watercourses.

Grazing management



Broodmares grazing happily alongside cattle.

Grazing management includes fertiliser applications to maintain and improve sward quality and to provide a steady supply of grass throughout the season. But, it also includes the stocking policy, treatment of the grass, and weed control programme through the year. It is necessary to regulate excess grass production in the spring with higher stocking densities, using other classes of stock if necessary, and by topping or closing up some areas for cutting hay or haylage.

Mixed grazing

Grazing horses with cattle or sheep – mixed grazing – is good for controlling grass supply and maintaining an even sward. Cattle and sheep will eat what the horses do not. Sheep cause less damage and poaching than cattle if grazed in wet periods, and generally leave the turf in a more consistent condition. Remember, sheep fencing is not suitable for horses.

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Topping of grassland helps to keep pasture clean and encourages tillering.

Sheep or cattle can follow the horses to graze off the ungrazed areas, as their grazing behaviour is different from horses. Cattle are more likely to eat longer grass and could be followed by horses in some situations. Grazing cattle and sheep will reduce the build-up of worm larvae and eggs on the pasture, by breaking the life cycle of the equine internal parasites. Sheep are best to use for grazing in the early winter before closing for spring growth.

Topping

Not all horse owners will have access to sheep or cattle and therefore it may be necessary to top the pasture from time to time. This should remove excess growth well before seed heads form, encouraging new leafy shoots (tillers). Topping should not be left until the grass has become too long as a decaying mass of cut vegetation stifles the growth of new grass underneath. It is better to remove large quantities with a forage harvester and trailer. If the toppings include poisonous plants such as ragwort, it must not be ensiled. Wilted poisonous plants remain poisonous and may become more palatable to horses, resulting in chronic or acute poisoning if ingested.

Chain harrowing

Chain harrowing may be required, especially in early spring, to remove dead material from the bottom of the sward. This encourages new growth from the base of each grass plant and keeps a bottom in the pasture, preventing the development of bare patches. Chain harrowing in the autumn, when stock is likely to be brought indoors, breaks up and spreads the dung, and gives it every opportunity to disintegrate before the spring. Chain harrowing during the grazing period also spreads the dung effectively but, at the same time, spreads the contamination effect and is likely to lead to greater areas of rejection. Worm contamination is also spread by chain harrowing during the growing season. Summer harrowing has the advantage that it leads to more rapid dehydration of worm eggs when conditions are right.

In very small, intensively grazed paddocks, dung should be removed manually or mechanically. To prevent a build-up of parasites this must be done daily as some worm larvae migrate from the dung within a few hours of it being passed. In many cases, this technique is not practical as it is extremely labour intensive and expensive, but regular dung removal is looked upon as good practice.



Aerating machine.



Pasture being aerated.



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Compaction

A problem affecting pastures today is compaction in the upper layer of soil. The constant use of machinery for operations such as harrowing and rolling compounds the problem. A garden spade is a very valuable tool as it can be used to examine the soil for compaction.

Two types of compaction are generally identified: shallow compaction in the top four inches of the soil; and, deep compaction down to 12 inches of soil, which has usually been re-seeded from arable land.

Compaction does not allow the roots to penetrate the soil. It impedes drainage, reduces grass growth and produces a very hard surface for the horses. Shallow compaction can be remedied using an aerating machine in the spring and autumn. Deep compaction can be removed by using a shakeaerator or a paraplough. Stones can be pulled to the surface during these operations and it is necessary to repair the damaged areas.

Drainage

Heavy wet soils result in difficult grazing conditions and make the use of machinery very difficult as well as hampering growing conditions. It is very important that compaction is not confused with poor drainage. It is also important that the draining infrastructure currently on the farm is examined. Poor maintenance of existing structures could be the reason for apparent breakdown of the drainage and can be resolved by cleaning water courses and flushing drainage pipes. The rate at which water moves through soil varies enormously depending on the soil type and management. Open gravelly soils have a capacity for water flow that is much better than heavy clay soils. In poorly drained soils the rate at which water flows downwards through the soil is less than that being supplied by rainfall. This can be due to:

- a low rate of movement of water through the subsoil (or a layer of the subsoil);
- a high water table, possibly due to a low lying position; or,
- upward movement of water from seepage and springs.

The objective of any form of land drainage is to lower the water table providing suitable

conditions for grass growth and utilisation. A controlled water table also improves the load-bearing capacity of soil and lessens the damage caused by grazing and machinery. The first step of any drainage works is a detailed investigation into the causes of poor drainage using test pits. A number of test pits (at least 2.5m deep) should be excavated within the area to be drained in areas that are representative of the area as a whole. Establish soil type, rate and depth of water seepage (if any), visible cracking, areas of looser soil, and rooting depth as these can convey important information regarding the drainage status of the different layers. The depth and type of drain to be installed will depend on the interpretation of the characteristics revealed by the test pits. There are two principle types of drainage systems:

- groundwater drainage system – network of piped drains establishing a deep drainage base in the soil; and,
- shallow drainage system – these are used where soil is clayey (heavy) and infiltration of water is impeded at all depths.

Shallow drainage systems

Where a test pit shows little movement of water at any depth, a shallow drainage system is required. These soils have no obvious permeable layer, a very low rate of water movement through the soil and are more difficult to drain. Shallow drainage systems are those that aim to improve the capacity of the soil to transmit water and include mole drainage and gravel mole drainage. The aim of these drainage techniques is to improve the rate of water movement through the soil by fracturing and cracking the soil and to form a network of closely spaced channels. Mole drainage is suited to soils with high clay content which form stable channels. Mole drains are formed with a mole plough comprised of a torpedo-like cylindrical foot attached to a narrow leg, followed by a slightly larger diameter cylindrical expander. The foot and trailing expander form the mole channel while the leg creates a narrow slot that extends from the soil surface down to the mole channel depth. The success of mole drainage depends on the formation of cracks in the soil that radiate from the tip of the mole plough at shallow depths as the



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soil is displaced forwards, sideways and upwards. As such, the ideal time for carrying out mole drainage is during dry summer conditions, to attain maximum cracking in the upper soil layers as well as facilitating adequate traction preventing wheel spin on the surface. Gravel-filled moles employ the same principles as mole drains but are required where an ordinary mole will not remain open for a sufficiently long period to render its application economical, as in unstable soils with a lower clay content. Collector drains, installed across the slope at 0.75m below ground level are required for all mole drains. Depending on the topography and slope, the collector drains will be at a spacing of 10-60m. Larger spacing reduces costs, but results in higher chance of failure. The mole drains are drawn at right angles to the collectors (up-slope) at spacings of 1.0-1.5m and a depth of approximately 0.4-0.5m. Stone backfill for collectors should be filled to within 250mm of the surface to ensure interconnection with the mole channels. It is important to note that after mole drainage paddocks are rejuvenated with new seed and the sod is permitted to settle. Preferably graze with light livestock such as sheep initially to allow the sod to knit again as it could be dangerous for horses.

Maintenance of drainage systems

Every drainage system is only as good as its outfall. Cleaning and upgrading of open drains acting as outfalls from land drains is important. When drainage works are completed the layout should be drawn and noted on a farm map which can be used as a guide when maintaining the works as well as a record of the works.

Land drain outlets should be regularly cleaned and maintained especially if open drains are cleaned/upgraded as this may result in blockages at the drain outlet. The use of a concrete unperforated plastic pipe cover over the end of the drain pipe, minimum of 1m in length, will protect the outlet from damage and make locating and maintaining it easier.

The cost of drainage works varies depending on factors such as soil type, site access, extent of open drains, availability/cost of backfill stone, and experience with drainage works among other factors, as such costs are quite variable and specific to a particular

job. It is of the utmost importance that the selection of a drainage system for a particular site is not decided on the basis of cost. An effective drainage system should be designed and costed and then a decision made as to whether or not to proceed. There are many reasons for poor performance on heavy soils: poor soil fertility, low levels of ryegrass and poorly maintained existing drainage. All these issues should be addressed before major investment in drainage is considered. A drainage system once installed must have regular maintenance to remain effective and assist in improving levels of grass production and utilisation.

Paddocks

To operate a good system of grassland management, a number of fields or paddocks are necessary to allow grazing in rotation or conserving for hay/haylage. The optimum size of the paddock depends on the nature of the establishment and the number of animals that can be grazed together. In most cases, even for small establishments, it is necessary to divide the available grassland area into at least four parts.

If other livestock are to be grazed, attention will need to be paid to their fencing needs. Larger cattle can normally be kept behind conventional post and rail fencing, which is also ideal for horses. Sheep need either close meshed permanently fixed fencing or electric 'flexinet'. A single line electric fence in conjunction with conventional timber fencing is frequently used. This technique is designed to protect the fence from damage by horses. The electric strand is usually attached to the top rail. However, it is not suitable as a means of retaining sheep on the pasture.

The type of fencing selected will depend on a number of factors including budget, type of stock to be enclosed and location of fence. Post and rail fencing is one of the safest methods, but is also expensive and requires regular maintenance. The flexi rail fencing looks very similar from a distance, but it does not require the same degree of maintenance and can also have an electric fencer attached to it to prevent animals chewing on it.

Wire mesh fencing, as illustrated on page 23, is designed with horses in mind and is

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suitable to use when grazing horses with sheep. The gaps in the fence are smaller than with common sheep fencing to prevent both horses and foals putting a foot through it. Electric horse cable fencing is one of the cheapest options but is not ideal as a sole divider due to poor visibility. Where possible, it is more suited to use in association with a natural boundary behind it or in conjunction with post and rail fencing.



Electric fence single cable used effectively with a natural boundary.



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Left and right: Post and rail fence with single line electric fence.



Left and right: Flexible rail fencing.



Left and right: Wire mesh fencing.

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Safety at grass



Extremely hazardous and dangerous environment and wholly unsuitable for grazing or turnout.

Safety of stock is paramount. Unsuitable old wire fences can be very dangerous and barbed wire is absolutely forbidden. Natural fencing such as walls, banks and hedges can be satisfactory but it is important to check for weak places and repair when necessary. In spring when horses and ponies are losing their winter coat they will rub against any convenient post, rail or gate to alleviate the itch and it is important that boundaries are secure and checked daily.

Fields require regular inspection for hazards. If located near a roadway check for litter. There may be loose bits of wire about. Check for any holes and fill them in with stones and earth, stamping in well. Remove old dead branches protruding at eye level. Do not use old baths or containers with sharp edges as water troughs. Feed troughs should not have sharp edges or pose potential to cause harm. Circular feeders, suitable for other

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Poor quality grazing and hazardous feed trough.

stock, are not ideal for horses. Purpose-designed feeders are available with curved topped dividers as illustrated below.

Gates must open wide and shut properly and must have a secure catch. If located on a roadside, gates should also have a secure lock. Gates tied with string or looped round with wire are not satisfactory.

Be vigilant and develop a habit of noticing and removing anything in a field that could cause injury or harm to a horse/pony.



Left and right: Purpose-designed safe feeders for horses.

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Water trough placed in the fence line.

Water

A supply of fresh drinking water should be available in the paddock at all times.

Streams or other watercourses can be contaminated, and direct access to them may also lead to pollution. Troughs are often placed in a fence line to allow access from both sides.

Ensure that they are not placed under deciduous trees. An isolating tap and good insulation should be provided for mains supplies. Keep in mind that water from a mains supply is likely to have some minerals such as calcium excluded.

The size of the water trough required will depend on the number of animals accessing it and the refill rate of the water serving the tank. All troughs should be emptied and scrubbed out at least four times a year. Troughs should be checked daily to ensure that the ballcock is working correctly, and in winter to ensure that the water has not frozen over.

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Hedges and trees provide excellent shelter for mares and foals.

Shelter

Horses need shelter from sun, wind and, to a certain extent, from rain. Hedgerows, shelter belts and woodland edges may form part of the boundary of a horse's field. Trees can provide important shelter, particularly from the sun, and hedges form excellent windbreaks. Some trees, however, are poisonous to horses but may be palatable, so it is important to be able to identify them.

Yew, for example, is very dangerous even when small quantities are ingested. Leaves and acorns of oak trees can cause digestive disorders. Many garden trees are poisonous, in particular laburnum and robinia, box, privet, and thuja. In fact, many garden plants are dangerous for horses and if grassland intended for horses backs on to gardens, it is a good idea to erect a double fence and to ensure that householders do not dump garden cuttings in the field or feed the horses directly with any garden plants.



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Where trees and hedges are not present or do not provide adequate shelter, field shelters are a popular alternative. It is important to remember that field shelters are to serve more than one horse and must be designed so that dominant horses cannot trap others inside. A completely open front or more than one wide entrance are the best designs.

The siting of field shelters is also very important with regard to the best place to provide shelter. Do not locate shelters too close to an outside boundary or in a corner, as this limits the use of outside walls as a windbreak or for shade, and can lead to problems with horses cornering each other or trying to get between the shelter and the fence. All forms of housing for horses must comply with nitrates regulations and, as a result, field shelters must have a concrete floor if utilised during the closed periods. It is acceptable to provide field shelters without concrete floors outside the closed period.

Additionally, waste storage facilities must be adequate to comply with the regulations during the closed periods. All runoff from shelters must either be held by a lip at the entrance or collected in a holding tank during this period.

Stocking rate

Stocking rates vary considerably according to the total number of horses grazing a particular land block. A stocking rate of 1.5 horses/hectare (one horse per acre and a half) is a good general guideline as a stocking rate for grazing horses. Variations from this may be necessary, particularly where only small numbers are kept. Ponies require less.

Managing overweight horses and ponies at grass



Left and right: A correctly fitted grazing muzzle to control the intake of overweight horses/ponies or those prone to easily gaining weight.

In their natural environment, horses have free access to food and eat as they move around. Keeping horses at pasture is the most natural way of management, replacing grass with preserved forage such as hay or haylage during the winter months when the grass stops growing. During the summer months, access to pasture may need to be restricted by using strip grazing or bare paddocks with low energy forage to avoid excess weight gain. Excess weight at pasture can become a problem, particularly with our native breeds of horses and ponies, and in instances where stocking numbers are too low and there is no access to rotational or mixed grazing. Being overweight affects health, particularly in foals and youngstock. Breeders and owners are advised to be vigilant of body condition. Observe closely the overall shape of the horse or pony. Body fat tends to be laid down in specific areas. Assess the fat covering along the neck, withers, behind the shoulder, over the ribs, tail head and along the top-line. Note that the abdomen (belly) is not assessed as its shape is affected by factors other than body fat, such as gut fill.

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Strip grazing to control consumption. Remember water and shelter provision with strip grazing.

Laminitis is another cause for concern, particularly in ponies, but it can also affect horses. Overweight horses and ponies are at high risk, particularly animals that are turned out to a large area of new spring grass. Laminitis-prone horses and ponies should never be overfed any feed, including grass, and should never be allowed to become too fat. Overweight animals should not be starved but fed to ensure gradual weight loss. Appetite should be satisfied with hard, stemmy hay or straw and a broad-spectrum vitamin and mineral supplement. Plenty of fibre is necessary to support hindgut function and an absolute minimum of 1% bodyweight of forage should be fed per day. Remember, prevention of laminitis is better than cure:

- monitor grass intake carefully, and restrict grazing by strip fencing;
- a grazing muzzle (used with care and supervision) or turnout onto a bare paddock with hay is an option (animals should not be turned out on overgrazed paddocks without supplementary forage);



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- grass is thought to be at its safest during the very early morning hours before dawn, so turning out from dusk until dawn is an option;
- horses should not be turned out on frosty grass, particularly on a sunny morning;
- do not allow animals to become overweight, particularly those that are not exercised;
- all dietary changes should be made gradually: several meals per day should be given, rather than one or two feeds;
- coarse mixes and cereals should be avoided and replaced with high fibre cubes and vegetable oil if concentrate feed is necessary;
- ensure access to water at all times; and,
- ideally, and with veterinary advice, an exercise regime should be maintained, particularly if the horse is overweight and/or in a restricted area. Exercise aids the circulation.

Re-seeding

Re-seeding paddocks for horses should only be considered when absolutely necessary and should not be looked upon as the only way of improving a paddock. Primarily, re-seeding is required:

- where paddocks are badly damaged by poaching or drought;
- if the pasture is totally dominated by perennial weeds or grasses such as couch, soft brome, barley grass or tussock grass;
- to level out very uneven ground; or,
- when the quality of the sward has deteriorated due to consistent harvesting for forage.

Re-seeding must be done carefully. A spring re-seed (April) has a number of advantages over an autumn re-seed. First, the field is generally out of use for a shorter period; warmer conditions allow for improved tillering of the new grass seeds and result in better establishment of the sward. Second, it will also be possible to graze the new sward on a number of occasions prior to the harsh winter conditions setting in. If re-seeding is to be completed in the autumn it must be done by late August or early September to allow the sward to become well established by winter. All vegetation must be killed with herbicides before re-seeding. Equally important is the preparation of a fine, firm seedbed. Re-seeding using the conventional system of plough, till and sow, can lead to problems in terms of poaching due to the breaking down of the surface sod. Therefore, the one-pass system might be a better option to consider, which should help to maintain a more solid surface. Where fields have been damaged considerably by poaching or compaction, then ploughing would be the more likely option. It is also probable that the paddock will be 'out of commission' for at least two to three months after re-seeding.

Procedure for re-seeding using the one-pass system:

- spray with a glyphosate-based herbicide when the old vegetation is approximately 10cm (4in) high, then tightly graze off the vegetation five to seven days later or, alternatively, close the area proposed for re-seeding for silage and spray seven to 10 days before harvesting;
- apply lime and fertiliser as recommended by a soil test – where the minimum till system is used, a minimum of 3.5 tonnes of lime/ha (1.5 tonnes of lime/acre) should be applied prior to cultivation as the rotting surface vegetation will reduce the soil pH;
- cultivate the top 6-8cm (2in) of the soil with a suitable cultivator (e.g., power harrow or spike rotovator) to a fine tilt. Alternatively, one-pass machines are available to cultivate and sow; roll the seed bed prior to sowing to prevent the seed being buried too deep into the cultivated ground;
- broadcast the grass-seed mixture at a rate of 34kg/ha (14kg/acre), and roll again to consolidate the seedbed;
- complete the reseeded by early September;
- control any problem weeds as soon as possible;
- graze down to 6cm with sheep during early establishment; and,
- grazing is better than cutting in the year after sowing.

Grass seed mixtures

A suitable seed mixture should provide palatable grazing and a good cushion for the horse all year. Mixtures using some of the less productive grasses will not give the same output as an all-ryegrass sward. However, they can produce an excellent cushion for exercising horses. Clover should not be included in grass seed mixtures for horses. Herbs

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are often included but are difficult to establish even if fertility is right. The type of seed mixture used will depend on the intended use of the grass. Examples of three different grass seed mixtures are given in **Tables 6-8**:

TABLE 6: Seed mix 1 – grazing	
Inclusion rate	Suitable grass varieties
40% Intermediate diploid	Premium, AberMagic
40% Late diploid	Denver; Soriento; Portstewart; Mezquita; Drumbo; Majestic; Tyrella; and, Glenveagh
5% Creeping red fescue	
5% Timothy	Promesse; Comtal
5% Crested dogstail (optional)	
5% Smooth stalked meadowgrass	

TABLE 7: Seed mix 2 – hay (one-cut)	
Inclusion rate	Suitable grass varieties
25% Intermediate diploid	Premium; Solomon; and, AberMagic
25% Late diploid	Denver; Soriento; Portstewart; Mezquita; Drumbo; Majestic; Tyrella; and, Glenveagh
25% Hybrid ryegrass (perennial type)	AberEve; AberExel
15% Timothy	Promesse; Comtal
10% Meadow fescue	

TABLE 8: Seed mix 3 – intensive haylage (two to three cuts per year)	
Inclusion rate	Suitable grass varieties
25% Perennial hybrid	Barsilo; PiroI; Liqunda; AberEve; and, AberExcel
25% Italian ryegrass	Fabio; Davinci
25% Intermediate diploid	Premium
25% Late diploid	Mezquita; Glenveagh

Management of new swards

If seed is sown in the autumn there should be fewer weeds compared to when sown in spring. It is important that new lays are sprayed for weeds to ensure that the grass has every chance to establish and grow. The general rule is to spray four to six weeks after the grass has emerged or alternatively when grass is at the three-leaf stage. Sprays such as Alistell and Legumex DB (+Triad) are suitable options. Growing conditions must be good at the time of spraying to get a good weed kill. Following establishment, the grass should be grazed with sheep at the early stages of growth to encourage tillering and produce a dense bottom. The new pasture should not be cut for hay or silage in the first year.

Existing pasture improvement

Upgrading an existing pasture should begin by addressing any drainage problems, soil testing and treating accordingly, and tackling any existing weed problems. New seeds can be added to an existing sward but they must be able to compete with the existing older grasses already there. The older unproductive weed grasses tend to have good persistency levels and this can be a challenge to the new competing grasses.

The existing sward should be either tightly grazed or cut short with the excess grass removed. Seeds can be broadcast, direct drilled or slot seeded and rolled. A seeding rate of 25kg per hectare should be sufficient and the addition of slug pellets may be required. Rolling with a ring roller or light roller which can follow the undulations of the paddock is most beneficial. Ideally slurry should then be spread. The slurry will act in two ways: by temporarily suppressing the existing sward and by providing additional P and K for the new seeds. Ensure frequent grazing with lighter stock if possible until new seeds have emerged. It will only be on the third or fourth rotation after seeding that new plants will start to make a contribution to the sward.



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Forage conservation

When preserving grass it is necessary to remove either the moisture or the air as these are the factors that result in mould growth and deterioration of the forage. There are a number of differences between hay and haylage as follows:

- hay has a dry matter of 85% plus, whereas haylage has a dry matter of between 50 and 65%;
- hay is preserved by lack of moisture, whereas haylage is preserved by lack of oxygen;
- hay making is more reliant on good sunny conditions (up to seven days) than haylage (three to four days);
- haylage tends to have a higher nutritive value and therefore it should be possible to reduce hard feed;
- due to wrapping, haylage should not contain dust compared to stored hay, where soaking/wetting may be required; and,
- haylage is perishable when open and, once opened, must be consumed within four to five days.

Preserving hay

Important factors that impact on the cost of production and its ultimate value include the yield and quality of the meadow harvested as well as the success of the hay-making and storing process. Higher yielding meadows produce more hay per hectare and this can be commercially attractive in many situations. The growth stage of a meadow at mowing has a major effect on the eventual feed value of hay – meadows mown at a leafy growth stage should produce hays with much higher energy, protein and mineral concentrations and lower fibre contents than hays made at a mature growth stage (extensive stems and fully formed seed heads). Overall feed value of any meadow will be reduced if it contains a lot of dead vegetation at the base. This can happen, for example, where fields for hay production were closed the previous autumn without being grazed bare. Grazing such swards bare in either late autumn or spring can avoid this

problem. In all cases it is desirable that grass is clean (no contamination from manure or soil) and visibly free of poisonous and other weeds. Meadows that lodge and lie flat under extended wet conditions prior to mowing rapidly lose nutritive value and may contain a large population of mould. Hay-making can be very challenging in the Irish climate and solutions such as barn-drying are usually impractical. Losses in both herbage quality and quantity occur during hay-making due to plant respiration, weather and mechanisation. Respiration usually goes unnoticed and can result in 8% DM loss under good drying conditions or double that during rain. Wet conditions can also leach soluble nutrients and facilitate mould growth leading to a further 10-20% DM loss. Mechanical losses can be due to leaf shatter or failure to collect some grass and can exceed 10% of the crop in severe cases. Overall losses in the field can readily exceed 20% of the available dry matter in the standing meadow. Rapid drying and careful handling of the mown herbage are important when aiming to minimise losses. Variables such as rainfall, solar radiation, temperature, relative humidity, wind speed and soil moisture content all impact on the drying rate achievable.

In general grasses mature herbage dries faster than leafy herbage; light yields dry faster than heavy yields; and the drying rate of herbage slows as it gets drier.

In order to speed up drying and minimise losses during hay making:

- try to use the weather forecast to help undertake hay-making when drying conditions are good;
- mow meadows after the dew has evaporated as this removes about 2.5 tonnes of water per hectare;
- a range of mower types can be successfully used but mower-conditioners produce looser swaths (from which moisture can evaporate more easily) and the bruising of the grass may also quicken drying;
- operate the mower to place wider swaths on the stubble – the wider the swath the faster the initial drying rate (assuming no rain);
- ted the grass as this exposes much more of it to good drying conditions (this will likely need to be repeated at least once);



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- as the herbage progressively dries, tedding needs to be gentler (to avoid leaf shatter); look out for areas in the mown crop where drying is slower as these may need additional tedding or to be baled later;
- in the absence of tedding repeated inversion or turning of windrows are needed to speed up drying but it will be slower than tedding;
- rain prolongs drying time and considerably re-wets herbage that is tedded but windrowing tedded herbage before prolonged heavy rain limits re-wetting, however, the windrows then need to be re-tedded or inverted after the top surface dries;
- gently row up the grass into even, box-shaped windrows;
- it will normally take at least three days, or more likely four, of good drying for the mown meadow to be fit for baling as hay;
- bale the crop at 18-20% moisture, as if it is much drier than this there can be a lot of leaf shatter at baling – if it is wetter than this the subsequent duration of ‘field curing’ the bales before they can be safely stored under cover will be extended;
- baling very damp hay means the bales will heat and this will result in loss of feed value and growth of moulds and potentially even spontaneous combustion;
- as soon as bales are sufficiently dry, transport them for storage under cover; and,
- mould growth will increase the presence of spores/dust and possibly mycotoxins.

Preserving haylage

Well saved haylage should retain some of the green colour of the herbage from which it was made, should have a fresh ‘hay’ smell, and should have no musty or dusty smell of mould. It should therefore be very safe and acceptable to horses and safe for people to work with.

The steps for conserving haylage are:

- close off the field in mid-April, fertilise according to soil test results (**Table 4**) and roll if required;
- cut in mid-June (at heading date) to a stubble height of 8-10cm, preferably mid-afternoon (aim for a minimum of 3% sugars);

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- ted/spread twice daily for a couple of days: this period will depend on drying conditions and do not allow haylage to overdry;
- plan the bale size depending on the number of animals to be fed and set the baler density to maximum – the aim is to exclude all the air from the bale;
- where possible, move the bales to the storage area before wrapping;
- wrap within two hours of bailing: six to eight layers of plastic are required;
- take care moving the bales into storage and repair any perforations immediately;
- if storing the bales outside, keep away from trees and cover with a net; and,
- ensure that precautions are taken to prevent vermin infestation.

Well preserved haylage is golden yellow/green in colour with a pleasant smell. Do not feed badly preserved or mouldy haylage to horses. A damaged wrapped bale should be used immediately; otherwise, secondary fermentation will occur causing rotting of the bale.



Making haylage.



Baling haylage.



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Weeds

Grassland weeds thrive in wet weather as they are able to grow at the expense of grass, which doesn't grow so well in those conditions. Poor grass growth, bare patches, and poached fields are happy hunting ground for weeds. High levels of weeds in pastures not only reduce the pasture's nutritional value, but restrict grazing areas and restrict valuable grass growth. In normal circumstances low levels of weeds are of no consequence and their removal may not be cost effective. Certain weeds have high levels of trace elements and also have environmental benefits as food sources to birds, invertebrates and small mammals. However, when weeds reach density levels of 10 to 20% of the total sward, they will impact on either grassland quality or productivity. It is difficult to assess the damage weeds do, except where animal death or severe illness is the result of plant poisoning. Certain weeds can also make hay and haylage unpalatable. Management practices such as drainage, fertility, grazing, topping and mowing are very important when it comes to controlling weeds. All of these encourage the grassland to be competitive and dense.

Many weeds can be efficiently and cost effectively controlled just by knowing a little bit about how they grow and reproduce.

Noxious weeds

Ragwort, thistle and dock are scheduled as noxious weeds under the Noxious Weeds Act 1936. Any person responsible for land (owner, occupier, user or manager) on which these weeds are growing is liable, upon conviction, to be fined. A member of An Garda Síochána or any authorised inspector may at all reasonable times enter any farm or land to see if any noxious weeds are growing. Where they are growing, the person responsible may be served with a notice requiring the destruction of the weeds. Failure to comply with the conditions or terms of the notice served shall result in prosecution.

In addition, the Minister for Agriculture, Food and the Marine may arrange for the destruction of the weeds concerned and recover the cost of doing so from the person responsible. In the case of margins of public roads, the local authority is responsible under the Act. Some weeds, such as ragwort, are poisonous. Ragwort, thistle and dock seeds are widely scattered and can infect neighbouring fields and farms.

Species concerned

In the Noxious Weeds Order (S.I. No. 103 of 1937) the Department of Agriculture, Food and the Marine defines the noxious species as:

- common ragwort (*Senecio jacobaea*);
- spear thistle (*Cirsium vulgare*);
- creeping or field thistle (*Cirsium arvense*); and,
- two species of dock: the curled dock (*Rumex crispus*) and the broad-leaved dock (*Rumex obtusifolius*).

There are numerous other species of thistle, ragwort and dock that are not classified as noxious weeds. They are less invasive or problematic and may be confined to specific habitats.

Chemical control of weeds

NOTE: *All herbicides have labels with data on dose rates, dilution rates and timing of spray. It is important to read and follow the printed information to get optimum results.* For chemical control, at least three inches of new weed growth should be visible. Mild day and night temperatures are preferable. Use the recommended volume of water. Keep livestock off the sprayed area for seven to 21 days. A follow-up spray may be needed the following spring or autumn.

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Ragwort rosette stage year one.



Flowering adult plant year two.

Ragwort (*Senecio jacobaea*)

Ragwort, also known as ragweed, is a highly poisonous plant. The alkaloids it contains cause serious damage to the liver. Early signs of ragwort poisoning include loss of appetite and weight loss, diarrhoea, depression, sensitivity to sunlight (photosensitisation) and mild jaundice. More severe signs of abnormal behaviour occur, including compulsive walking, circling, head-pressing (against a wall for example), apparent blindness and extreme depression. Some horses and ponies may show signs of slight illness initially but generally the symptoms develop quite suddenly.

On good pasture horses avoid eating ragwort, but where there is over-stocking and grass is scarce the weed is unavoidably eaten. The poisons in ragwort are not destroyed by drying, and conserved forage containing ragwort is also a serious source of poisoning. Cases of poisoning occurring in late winter and spring often result from the feeding for some months previously of hay or haylage cut from ragwort-infested swards. The effect is cumulative and as little as 20kg (approximately one bale of hay) taken over the lifetime of a 500kg horse can be fatal.

Control and eradication of ragwort

The only way to safeguard against loss from ragwort poisoning is to eradicate the weed either by pulling, ploughing, cutting or chemical control.

Pulling

Pulling by hand is recommended where infestation is not severe and labour is available. Pulling after heavy rainfall when the ground is soft gives the best results, but this should be done in early summer before seed has set. Pulled plants should be removed and destroyed, or disposed of to landfill. As the rosette stage is not usually removed by hand pulling, the operation should be repeated for two consecutive years to achieve satisfactory eradication. Gloves must be worn when pulling as the toxins are said to affect humans through the skin.

Cutting

Cutting the plant before the flowers are open prevents the weed from seeding and spreading. This is of limited value unless carried out over a number of years and accompanied by good grassland management. In some cases cutting can induce development of several heads and the affected plants may persist as perennials. Cut plants should be collected and destroyed.

Chemical control

No single herbicide treatment will completely eliminate ragwort due to successive germination of the weed. Autumn application must be done before frost damages the foliage. Ragwort plants become more palatable after spraying and livestock must be kept off treated fields until all plants are dead. The removal of stock from pastures during the peak grazing season is frequently impractical and in these circumstances spraying should be carried out during the winter. See **Table 9** (page 48) for details of chemical control of ragwort.

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Spear thistle rosette stage.



Flowering stage.

Spear thistle (*Cirsium vulgare*)

Spear thistles depend on their seed for regeneration so prevention of seeding is of crucial importance.

Control and eradication of spear thistle

Physical control

As spear thistle does not produce a spreading root system it is possible to control by hand hoeing individual plants and small patches, provided that the growing point and the top 20-40mm of the tap root are removed. This should be done before mid-July when the plants are in late bud or early flower stage.

Topping may help to reduce seed production but is, however, of limited value as spear thistles mature over an extended period and if soil moisture is adequate thistles are likely to recover and re-grow.

Chemical control

See **Table 9** (page 48) for details of chemical control of thistles:

- for effective chemical control thistles must be growing actively;
- spraying should be completed before the centre flowering stem develops (i.e., up to the end of June). Although spear thistle remains reasonably susceptible even up to flowering, treatment at this late stage involves the use of more active forms of the herbicides and of higher application rates; and,
- the use of a wiper applicator is effective if the thistle population is uniform in size.

Creeping thistle (*Cirsium arvense*)

The creeping thistle is one of the most troublesome noxious weeds. It thrives in reasonably fertile grassland. Winter poaching and overgrazing in spring encourages the spread of thistles.

Control and eradication of creeping thistle

Physical control

Cutting is not an effective means of control for creeping thistle, as it can regenerate from its roots. Cutting is effective mainly in preventing seeding. Cutting of flower stems before opening of the flower buds will prevent seed spread for that particular season. Repeated cutting at the same stage of growth over several years may 'wear down' an infestation which can remain viable and dormant for years.

Chemical control

See **Table 9** (page 48) for details on chemical control of thistles.

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Broadleaved dock.



With seed heads.

Curled and broadleaved dock (*Rumex crispus* and *Rumex obtusifolius*)

Both dock species produce many seeds that can remain viable in the soil for decades. Spread may also occur from fragments of the taproot, which can produce new plants if they contain a dormant bud.

Docks have thick roots, which penetrate deep into the soil and are difficult to remove. The main taproot is long and thin. Growth commences in early summer. They flower between June and October. The curled dock is more widely distributed on arable land.

Control and eradication of docks

Physical control

Physical control of either species of dock is practical only on a limited scale. Pulling by hand is only effective in small infestations. Hand-pulling of the shoots before they have set seed can be effective on days when the soil is moist, but care needs to be exercised to avoid leaving fragments of root behind.

Cutting or topping can be done before flowering in mid-June and is effective mainly in preventing seeding, though continued topping will wear down the taproot. Cutting or topping should not be carried out for at least two weeks after spraying to allow the herbicide used to fully penetrate the root.



Sprayed dock.

Chemical control

- Spraying of docks should be done in warm weather, and if infestation is heavy, a second spraying may be required; and,
- spraying should be carried out when the first flower stalk is emerging during the period from May until the end of summer while docks are growing vigorously and not yet setting seed.

See **Table 9** (page 48) for details on chemical control of docks.

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TABLE 9: Chemical control of weeds

Weeds	Herbicide	Rate/ha	Comments
Docks	Dockstar	3.0 l/ha	All species of actively growing docks. Rosette stage when foliage is 150-200mm high/across without a seed head showing. May-Sept
Docks	Eagle	40-60 g/ha	Controls broadleaved and curled docks. Use in spring/early summer or autumn when actively growing. Clover-safe option.
Docks also creeping buttercup and creeping thistle	Foundation	1.25 l/ha	Controls broadleaved and curled dock
Docks also nettles; thistles; creeping buttercup and creeping spear thistle	Tackle	2.0 l/ha	Controls broadleaved and curled docks. In May/June when growing. Repeat on regrowth in Aug-Oct.
Docks also creeping buttercup; ragwort; creeping and spear thistle	Bandock	4-5 l/ha	Apply in June-Sept when actively growing rosette stage and before flowering bud is visible
Docks also creeping and spear thistle; nettles; docks also thistles; ragwort; nettles; buttercups; deadly nightshade	Pastor	4.0 l/ha docks and thistles 3.0 l/ha nettles	Apply when actively growing rosette stage up to 250mm high/across. Controls broad leaved and curled dock.
	Forefront	2.0 l/ha	Apply to rosette stage when actively growing. Controls broad range of weeds. Most complete grassland weed control solution, except rushes.
Docks also nettles and dandelions	Starane2/Binder/Hurler, etc.	2.0 l/ha	Apply to actively growing rosette stage
Ragwort also dandelion; spear thistle	MCPA 500	3.5 l/ha	Use in Spring/Summer
Thistles, soft rush; ragwort; dandelions; daisy; buttercup	2,4-D Amine	1.4-2.8 l/ha	Use in Spring/Summer
Thistles – spear and creeping	MCPA 500	3.5 l/ha	Mid May to mid June in the early bud stage – may require follow up in the following year
	Thistlex	1.0 l/ha	At rosette stage when actively growing; up to 200mm high or across
Nettle	Nettleban (high volumes of water 400 l/Ha)	3.0 l/ha	
Spot treatment of nettles, docks, thistles and brushwood/scrub/gorse.	Grazon 90	60ml in 10l water	Follow label for knapsack mixing and application instructions

NOTES FOR TABLE 9

Asulox and 'straight' versions of CMPP (Duplosan, Optica etc.) are no longer registered for use on agricultural grassland. Keep prescribed cross-compliance records of all applied herbicides.

NOTE: This information is provided as a guideline only. Please see individual product labels for authoritative detail and read and adhere to the recommendations prior to using the products. All products applied to grassland should be recorded for inspection by the Department of Agriculture as part of cross-compliance rules. Contact DAFM for more information.

Other weeds

Dandelions

These can reduce the overall value of a pasture if allowed to establish. They are only spread by seed. Once established, they develop a large tap-root but unlike docks, creeping thistles or buttercups, will not propagate from their root system. Dandelions flower once they get one warm week in March and usually before most people think of spraying them. Once flowered it is very hard to get good control of the root system. Products based on fluoxypyr and aminopyralid offer the best chance of translocating into the roots.

Soft rush

This is usually found on wet and neglected pastures. It has become more prominent during wet summers of recent years. It is recognised by dense tuft of brown flowers coming from the side of the stems and a continuous white centre (pith) when the stem is peeled back. Soft rush is mainly spread by seed but can also spread by underground stems. Rush control is based on a combination of fixing soil problems and removal of the initial infestation with herbicides. Soft rush can be controlled with MCPA or 2,4-D applied in June or July when growth conditions are good. Cutting and removal of the rush before spraying will give the best results. Follow up drainage/management is essential if long-term control is required.

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Poisonous plants

A number of common garden plants, hedging and shrubs are dangerous to horses and must be monitored for their presence in grazing areas. As outlined earlier, many garden trees are poisonous, among which are: laburnum, alder buckthorn, common alder, holly, juniper, cherry laurel and daphne laurel. Also, box, privet, rhododendron, robinia, thuja and St. John's wort. Other plants and trees are dangerous to horses, and it is important to be aware of them, including:



DEADLY NIGHTSHADE (*Atropa belladonna*)



This is highly poisonous. The effect is variable, but as little as 150g of fresh leaves are fatal.



YEW (*Taxus baccata*)



All parts of this tree are highly poisonous. Only small amounts (0.5-2g per kilogram of

body weight) can be fatal. It is especially dangerous in winter, and cut leaves or branches become more toxic as they dry. Death may occur within minutes, or in up to three days. Immediate treatment may be successful.



FOXGLOVE (Digitalis purpurea)

This is a highly poisonous species and horses will rarely eat it, except in hay. Some 120-150g can be fatal.



BUTTERCUP (Ranunculus spp.)

These are common in heavily grazed horse pastures in latrine and wet areas but are usually avoided by horses; contrary to popular opinion, buttercup is not a sign of acid soil, but may be an indication of 'horse sickness'. They are mildly poisonous, but are safe in hay.

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OAK (*Wuercus spp.*)

Leaves and acorns can cause digestive upsets, but large amounts are needed; they rarely cause death.



HEMLOCK (*Conium macula tum*)

Found in wet conditions, on river banks, etc. Rarely eaten, but is highly poisonous and can be fatal. Hemlock is large and white-flowered with characteristic purple blotches on the stem.



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HORSETAILS (Equisetum spp.)



This is a species of damp conditions. It is poisonous to horses, although horses are unlikely to eat it and large amounts are needed for clinical symptoms to occur. Death is rare and vitamin B1 is an antidote.



BRACKEN (Pteridium aquilinum)



This is sometimes eaten in autumn when its toxicity has declined. Vitamin B1 is an antidote.



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Managing pesticides

What to do with used pesticide containers?

The Pesticide Registration & Control Division (PRCD) has produced an excellent guide on how to deal with empty pesticide containers.

The PCRD has printed leaflets of this guide available on request for growers, merchants, distributors, etc., or you can download the guide at: http://www.pcs.agriculture.gov.ie/Docs/Good_Practice_Guide_for_empty_pesticide_containers.pdf

Plant protection products regulations (SMR 9)

These regulations apply to all farmers using plant protection and biocidal products. The farmer requirements are summarised as follows:

Use of pesticides

Only use pesticides that are authorised by the PRCD. The full list is published each year by the PRCD and available from their website www.pcs.agriculture.gov.ie. Pesticides should be used and handled in accordance with current label recommendations.

The majority of pesticides may be used for up to **18 months** after the product registration expires. **After this time, the product cannot be used or stored.** To avoid problems, practice good stock rotation – use old stock before new stock and only purchase product quantities that you can reasonably expect to use within the growing year.

Records of pesticides

Keep a record of pesticide application date, rate and quantity. Keep a record of the PCS registration number of any pesticides purchased and used.

Pesticide store

Keep pesticides in a signed, dedicated, secure shed/press, etc. Ensure the pesticide store

is leak-proof and have a bucket of sand available to soak small spillages. The pesticide cabinet or store should be designed to contain chemical spillages and prevent them contaminating the surrounding areas. Store products in original packs, with powders stored above liquids. Dispose of empty pesticide cans to an authorised body – keeping the disposal receipt. It is good practice to use pesticides immediately after purchasing. However, any surplus or unused product must be stored in a secure pesticide store – see above.

For further information, contact the Teagasc Equine Specialist service:

Declan McArdle

Teagasc, Grange, Dunsany, Co. Meath

T: 046 902 6718

M: 087 683 1876

E: declan.mcardle@teagasc.ie

Wendy Conlon

Teagasc, Mellows Centre, Athenry, Co. Galway

T: 091 845 291

M: 087 9879083

E: wendy.conlon@teagasc.ie

Farm Management and Rural Development Programme

Teagasc,

Mellows Campus,

Athenry,

Co. Galway

T: 091 845 200

E: info@teagasc.ie

Contact details

Teagasc

Public Relations Department

Head Office

Oak Park

Carlow

Tel: 059 9170200

Email: info@teagasc.ie

www.teagasc.ie

ThinkMedia.ie • July 2016