

Ragwort Poisoning in Livestock: Prevention and Control

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Technical Note

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SUMMARY

- Ragwort is highly poisonous to livestock and should be controlled in grassland.
- Cattle and horses, along with pigs and chickens, are highly sensitive. Sheep, goats and deer are more tolerant. There is no specific treatment.
- Dead and dying ragwort is attractive to stock, and remains poisonous. Ensiled ragwort is highly dangerous, contaminating the whole silage clamp.
- Control of low populations can be maintained by pulling (but not cutting), and by older sheep or goats grazing overwinter/early spring.
- For higher populations where herbicides can be used, grazed pastures should be treated from late April to late May. Grassland to be cut for hay or silage should also be treated in the autumn of the preceding year. Spot treatment with citronella oil can be done at any time - particularly useful for low populations or patches, and where stock needs to be reintroduced quickly.
- For long-term control, improve grass management to promote a dense vigorous sward.



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What is ragwort?

Ragwort is the common name for one of our most conspicuous grassland weeds. It is potentially deadly to livestock, especially cattle and horses. The most common form of ragwort is common ragwort, but marsh ragwort is found locally in Orkney and Oxford ragwort is found on light soils in Eastern Scotland, Orkney and in Southern Britain.

- **Common ragwort** (*Senecio jacobaea*) has finely divided leaves with a blunt end lobe and appears as a rosette from which a tall flowering spike develops in April/May topped by a large flat topped head with yellow flowers borne on one or more stout stems. It prefers lighter drier, lighter soils, but can occur anywhere.
- **Marsh ragwort** (*Senecio aquaticus*) has less divided leaves and a smaller, more irregular head on a shorter, slender stem. It occurs on heavy or poorly drained soil, and is particularly abundant on Orkney; locally elsewhere.
- **Oxford ragwort** (*Senecio squalidus*) is similar to marsh ragwort, but the leaves have a pointed end lobe. It is found locally in drier areas, particularly near railway lines and roadsides. It is, however, found more commonly in the south of Britain.

A related weed, **groundsel** (*Senecio vulgaris*) is also poisonous to stock, but is much more rarely a weed of grassland.

All the ragworts are prolific producers of feathery 'parachute' wind-dispersed seed, which can travel long distances. They germinate readily where the soil surface is exposed in grass swards. This can occur because of poor sward establishment, overgrazing, drought, winter grass kill, poaching or the activities of rabbits and moles. There is anecdotal evidence that ragwort is more common than it has been, and that this may be related to the advent of set-aside fallows and new farm woodland projects leaving more bare ground available for establishment. It may also be a consequence of reduced vegetation management by local authorities and railway track maintenance organisations, particularly with the reduced armoury of herbicide treatments available.

Ragworts usually just produce a flat rosette of leaves in the first year of growth, rarely flowering. The flowering head appears in the second year. In general, common ragwort dies after setting seed, but can persist and flower for several years. The Oxford ragwort is more persistent, but the marsh ragwort more strictly biennial. In all cases, topping by cutting, tends to stimulate perenniality, and the regrowth is often particularly vigorous.

Ragwort Poisoning

Horses and **cattle** are much more susceptible than **sheep** and **goats**. **Deer** are relatively resistant, but

pigs and **chickens** are sensitive. **Sheep** and **goats** will eagerly eat the rosettes and crowns over winter and early spring, and providing the weed is not too abundant, they rarely come to harm (but see Symptoms over). **Cattle** and **horses**, on the other hand, do not normally graze ragwort, but when other food is scarce may be forced to do so. Once they start they can develop a depraved appetite for the plant and will selectively graze. Mineral deficient **cattle** are likely to select ragwort, which is rich in minerals, even when grass is plentiful. With increased free range grazing of **pigs** and **chickens**, there is a clear risk to these stock because of their opening up of swards allowing ragwort seedlings to establish and to be consumed. **Horses** also leave gappy swards which assist in the establishment of ragwort, which may increase the risk of selective grazing.

Techniques for controlling ragwort, whether physical or chemical, increase its palatability and attraction to stock. The wilting process, particularly when associated with herbicide use, increases the soluble sugar content of ragwort foliage.

Cutting for hay is therefore dangerous. However, by far the greatest danger of ragwort poisoning exists in contaminated **silage**. **Cattle** cannot distinguish ragwort in silage, and it does not lose any of its toxicity when ensiled. Indeed, the poisonous substances diffuse out of the ragwort foliage and

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can permeate the entire mass of silage. Discarding a layer containing ragwort does not therefore remove the danger, and a single ragwort plant in a bale of silage can be enough to poison stock.

It is a **very risky** indeed to conserve as silage any field with more than a few scattered ragwort plants, which should be dug out. Deaths caused by contaminated silage rarely occur singly and there have been cases where almost whole herds have been lost.

Once cattle or horses have consumed a fatal dose (probably around 3 kg of fresh plant material for an adult) there is **no known antidote**.

Symptoms

The poisonous substances in ragwort are alkaloids which cause cirrhosis of the liver.

- Poisoning may be **acute** due to the rapid intake of a large quantity, and death can occur within a few days.
- More commonly the effects are **chronic** and cumulative. In chronic cases animals often seem healthy for weeks and it can be months after eating ragwort before the symptoms appear, generally leading to death.
- Little is known of **sub-lethal** ragwort poisoning, but it can be a cause of poor performance and

loss of condition. In New Zealand, lambs reared in ragwort-rich pasture have been found to not fatten well when brought to clean pastures.

- Early symptoms in **cattle** include poor appetite, constipation and, later, jaundice. Frequently severe diarrhoea with straining can lead to the eversion/ prolapse of the rectum. Just prior to death the animal may become fierce and unapproachable.
- In **horses**, lethargy and yawning are characteristic symptoms, giving rise to the name 'sleepy staggers'. Blindness is frequently apparent and the animal may walk in circles, or in a straight line for long distances.

How do you control ragwort?

Complete prevention of poisoning from ragwort is only possible by denying stock access to infested fields or infested feed. Denying access to infested fields is usually impracticable, so removing the weed to levels where it does not create problems, and reducing the likelihood of reinfestation should be the aim of management strategies.

There are husbandry, physical, and chemical methods that can contribute to control. On **organic farms** only husbandry and physical means of control are possible.

Control by Physical Techniques

- **Cutting** is not recommended. Although it may reduce seed production, it can promote perennialization of ragwort, which will come back the following year more vigorously.
- **Pulling** can be quite effective, and new machinery has been developed which can pull ragwort, and may become more widely available in the next few years. However, the technique can leave root fragments from which new plants can develop in the bare space left by removal of the parent plant. Manual pulling is only recommended for light populations, especially before silage and hay cuts, where spraying is uneconomic, and where farming organically.
- **Ploughing** is effective where grass re-establishment is proposed, but it will not be long before ragwort seedlings appear if they are present in the seedbank. Light harrowing of the establishing grass in the autumn and early spring may help because ragwort does not tolerate ground disturbance.
- **Sheep and goats** are less susceptible to ragwort poisoning. Sheep have regularly been used to graze ragwort in winter and early spring as an aid in keeping low to moderate ragwort populations at a low level. Goats can have the same effect, and could be considered for small areas such as horse paddocks. However, as indicated under **Symptoms**, young stock should not be used, nor should pregnant ewes.

This approach is only recommended for light infestation and to prevent establishment in a new sward, because there is still a poisoning risk.

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Improved Grassland Management

Ragwort will not establish in a dense, vigorous sward. Such a sward requires controlled grazing and adequate fertiliser application. Early housing of **cattle** to prevent overgrazing and poaching can help. With **horses** this often proves an impossible task because of land restrictions associated with many stables, and this has caused ragwort infestations to be a particular problem on such land.

- Use seed mixtures based on persistent, winter hardy, high tillering grass varieties to improve ground cover.
- Good grazing practice can lead to a closer, denser sward, and slows re-infestation compared with immediate use for silage and hay.

However, horses are poor grazers that readily leads to opening up of the sward. Make sure the sward is well established before allowing horse grazing.

- Marsh ragwort control can be improved by better drainage, although it may persist in heavy soils in areas of heavy rainfall even if drainage is good.
- Controlling **sources of ragwort seed.** Ragwort can be present in large numbers in long-term fallow set-aside, new woodland areas, and waste areas. It is important such sources near to risk areas be controlled as the seed can spread readily. Many infestations in grassland probably arise as much from such sources as from the weed seedbank in the grass field.

Although better grass management is the only way to long-term control of ragwort, it is accepted that on poor, droughty soils and where horses are grazed, insufficient grass vigour is a problem. In these situations diligent use of sheep or possibly goat grazing overwinter, pulling or digging-out, or/and routine herbicide spray operations, may be the only methods of control.

Herbicide Treatments

- Spot treatment is possible with low or new infestations. Citronella oil ('Barrier H') can be

used at any time of year and is much quicker acting than other herbicides - especially in spring, allowing more rapid entry for stock. It scorches grass, so can only be used as a spot treatment. The product was designed for and is very useful for horse paddocks, but it is useful for controlling small populations anywhere.

Low populations can also be treated with a wipe-on applicator, using glyphosate at stem extension up to the start of flowering. However, this is relatively slow acting, does not get new seedlings and it takes a while for plants to rot away.

- The **best time to treat** ragwort with an overall pasture treatment is in late April to late May when the second year and older plants are still at the rosette stage and new seedlings have emerged. Summer treatment gives better seedling control but poor control of flowering plants. As ragwort is slow to die, hay or silage cutting or grazing cannot be undertaken for at least a month after spraying, and until the ragwort has rotted away.
- **Where silage or hay is to be cut**, the best time to treat the ragwort is in the autumn of the preceding year. This timing also allows the farmer to see how effective the treatment has been before committing to using the field for silage.

Treatment at any time from mid-September to November can give good results, providing the weather is mild. This timing is also useful if clover is important because it is less sensitive to herbicides at this time of year.

- The April/May treatment can give up to two year's control, even where there is no change in grass management, but seedlings can emerge later in the season, requiring a follow-up next year.

Autumn treatment misses the following spring emergence, and consequently a follow-up treatment the following autumn is recommended.

- Unfortunately, herbicide treatments are not always fully effective, and 'half-kill' can occur. This can cause serious problems as the plant

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does not die and can be more attractive to stock until it recovers fully from the treatment. The options are to await full recovery before

letting cattle or horses back on the grass, or repeating the spray treatment and re-await rotting of the treated plants again.

Herbicide choice

- The main herbicide treatments are based on **MCPA** and **2,4-D** (many products available). Both herbicides are fairly effective herbicides for ragwort control. Possibly 2,4-D is slightly more effective than MCPA. However an approved mixture of MCPA + 2,4-D which, in effect, allows a higher active dose to be used is marketed as 'Headland Polo'.

For MCPA the recommended dose of application is around 3.5 l/ha of 500 g/l formulations (formulations range from 465-500g/l). For 2,4-D the dose is around 5 l/ha of a 500 g amine salt/litre formulation, or 2.8 l/ha of 500 g ester/litre formulation (formulations range from 470-500 g/l). Check the label before use to confirm the dose rate, and use the highest dose recommended on the label. For Headland Polo, a 360g 2,4-D + 315g MCPA/l dma salts formulation, there is approval for an autumn/ spring or spring/autumn sequence of up to 3.5l/ha, which allows control of new seedlings as they appear.

At these doses clover can be killed or severely damaged, with the autumn treatment being less damaging.

- Other herbicides effective on ragwort include **dicamba + mecoprop + MCPA** (many products), **clopyralid + fluroxypyr + triclopyr** ('Pastor'), **clopyralid + triclopyr** ('Grazon 90') at the highest doses recommended, but these products are much more expensive and are less safe to clover. Where they are useful is where other weeds such as docks, thistles and/or nettle also need control.
- **Asulam** ('Asulox') is safer to clover, but is not as effective on ragwort as MCPA or 2,4-D, and is more expensive. Its use may be considered where bracken or docks are also a problem.
- **Glyphosate** (many products) can be applied as a spot treatment on dense patches, but grass will also be killed. However, selective application by wiper applicators is also possible to plants that have started to extend flowering shoots 10 cm above the grass canopy.

The wiper application should be used in at least two directions to get good cover of the foliage. This technique is effective on flowering plants and is very safe to clover. Rosettes are not controlled, so sequential annual treatments are required as each generation of ragwort flowers. However, if these are combined with good grass management, then the sequential treatments will eventually reduce the population successfully.

There are a range of such applicators available, mountable on tractors and with versions mountable on all-terrain vehicles and motor-bikes, as well as hand-held versions. There are also contractors with the appropriate machinery available for hire.

- **Citronella oil** ('Barrier H') is available as a ready to spot-treat pack with a spray applicator. It rapidly scorches ragwort, and some other perennial weeds, and will scorch grass but that will recover, so it is safer than glyphosate. Sold as 5l pack for up to 1600 rosettes, so generally most useful for low or local populations.
- Herbicides work best on ragwort in good growing conditions, in mild, calm weather, with no rain due for at least eight hours.
- **It is essential that stock is removed from the field during spraying operations and thereafter for at least 3-4 weeks, and until the ragwort foliage has rotted.**

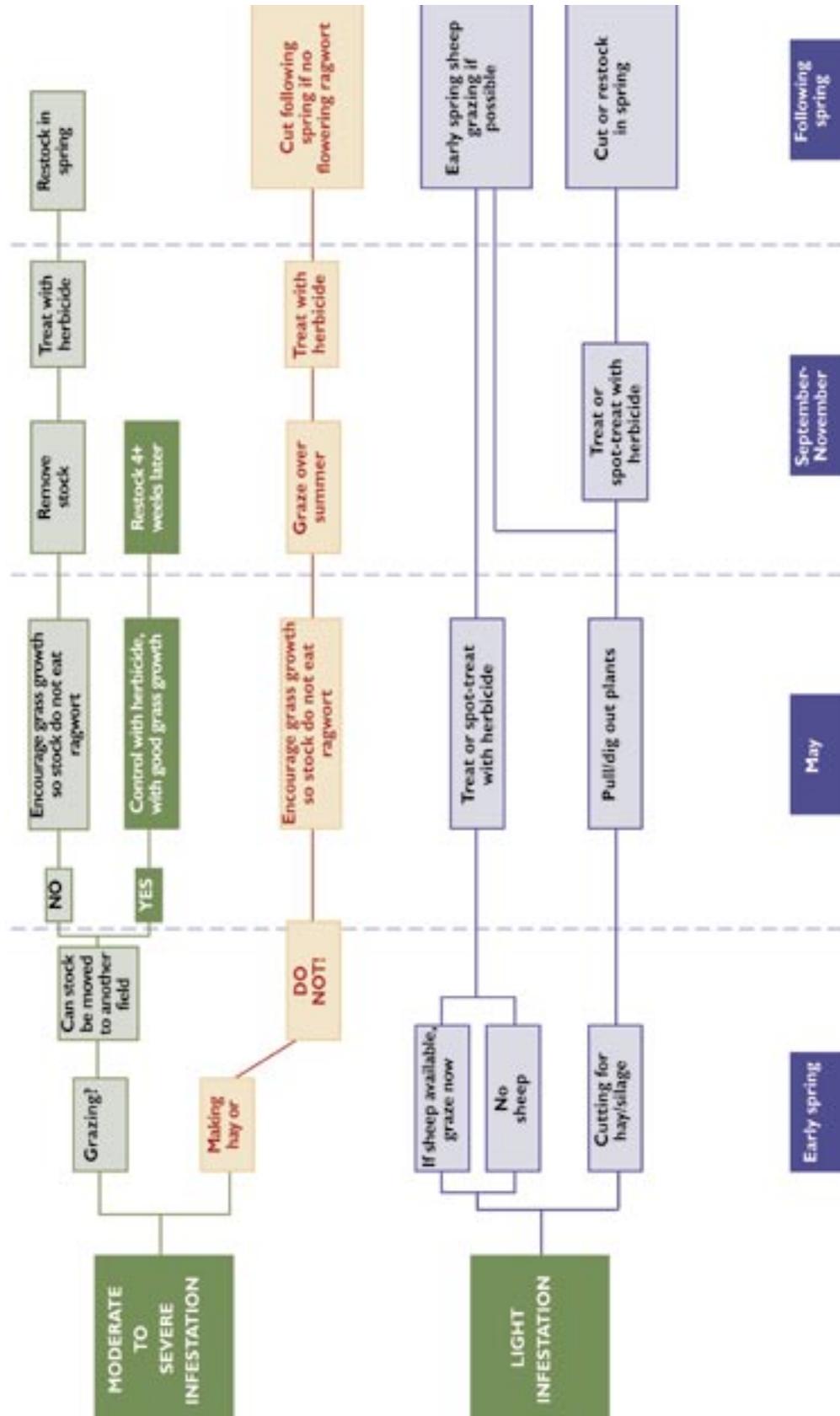
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Ragwort and the Law

Ragwort is a listed injurious weed under the Weeds Act (Scotland) 1959. Under this Act the appropriate authorities can insist on control by a landowner or tenant. This is usually undertaken when ragwort infestations are causing a major nuisance to third parties. The usual course of action is through the Scottish Executive Environment and Rural Affairs Department (SEERAD) local office. A similar request for control may also be made where ragwort is affecting areas of special scientific interest. The landowner or tenant must show that they have done their best to undertake an appropriate management programme.

Conversely, in certain nature reserves the presence of ragwort is not discouraged because it plays host to a range of important moths and butterflies. The legal situation regarding such infestations is not as clear.

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