

## Dock Control

Combining the best methods for successful control



## Combining preventive and direct control measures

The two main dock species broad-leaved dock (*Rumex obtusifolius*) and curly dock (*Rumex crispus* L.) are a problem for many organic farms in most areas. Although docks are not specifically an 'organic' problem, management on organic farms without recourse to herbicides can be particularly challenging. **To date, there is no 'magic bullet' for the solution of the dock problem on organic farms.** The most promising approach therefore is a combination of several measures.

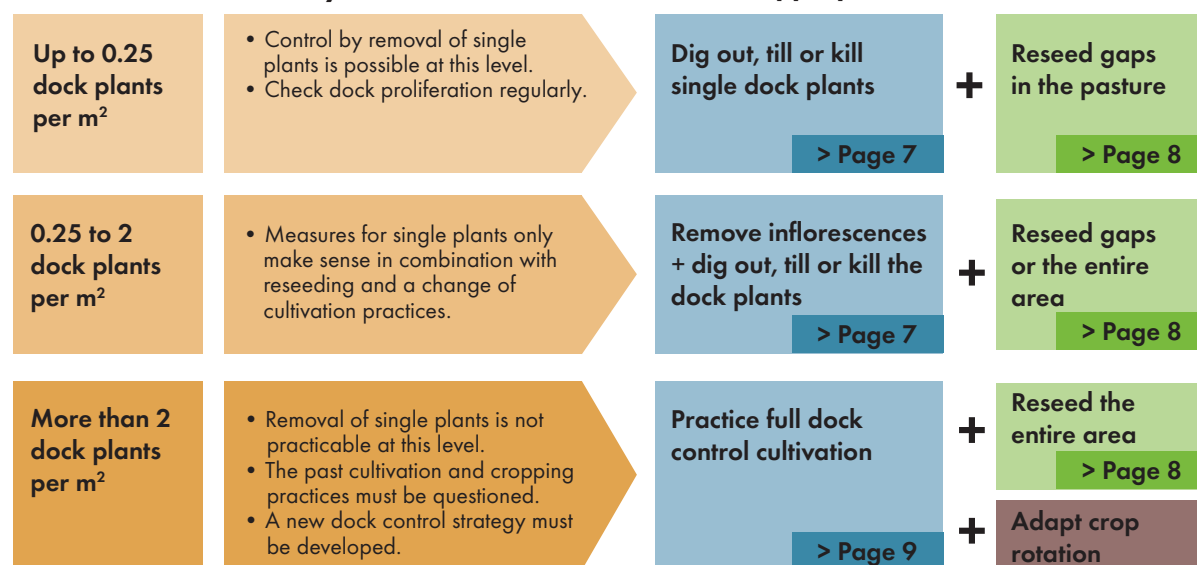
The strategy presented in this technical guide builds on measures to prevent the (further) establishment of dock plants. Depending on the level of dock infestation, different techniques are recommended for removing and suppressing established docks. **Only by dealing with the causes of dock proliferation can the reproductive cycle be broken and long-term control be achieved.**


### Dock control strategy

#### 1. Avoid the causes of dock proliferation

- Gaps in crops? [> Pages 4–6](#)
- Weakened crops? [> Pages 4–6](#)
- Spreading of dock seeds? [> Pages 4–6](#)

#### 2. Assess the dock density



 Permanent pasture + Arable field

 Permanent pasture

 Arable field



#### In pastures: Take the proportion of good grasses into account!

Suppression of docks necessitates a competitive sward. For successful control, the proportion of good grasses in the sward plays a central role. If the percentage of valuable grasses is over 40%, this should be an adequate basis for sward improvement along with other dock control measures.

If the percentage of desirable grasses is below 40%, the proportion should – regardless of dock proliferation – be increased by repeated oversowing or reseeding with suitable species.

If the proportion of good grasses is under 15%, reseeding is necessary – regardless of dock proliferation.



## The dock's strengths and weaknesses

The problematic nature of the dock plant originates, in part, in its great ability to re-grow and suppress other plants after cutting or grazing. This is due to the dock's large storage root with regenerative buds at the crown. Additionally, docks have an enormous reproductive potential, thanks to the number of seeds that can be formed by each plant, and which have an early germination capacity and robustness.

The broad-leaved dock spreads most rapidly in intensively cultivated grassland with excessive fertilisation or manuring and over-grazing, but also in under-grazed or poorly managed pasture.

Wet fields and soils rich in nitrogen, potassium and magnesium are particularly inclined to encourage docks. Thus, docks are an indicator of high nitrogen content in the subsoil. On poor, shallow soils, docks grow rather poorly.

Dock seeds are dependent on light to germinate, so a dense sward will help prevent them getting established in grassland.

From the 5- to 6-leaf stage onwards, docks can no longer be controlled by either grazing or competition from the pasture grasses. Soil compaction further reduces grass competition and encourages docks.

### Dock fact-sheet



#### Leaves

- The large leaf surface makes the dock a space-robbing plant.
- The seedlings have a slow juvenile development.
- Low sensitivity to cutting.
- Only the young shoots and some of the young leaves are eaten by cattle. The fully developed leaves are only eaten by goats and sheep because of their high content of oxalic acid.



#### Seeds

- One plant can produce up to 60,000 seeds per year.
- Dock seeds are viable for up to 80 years.
- 16 % of the seeds are viable only 6 days after the first flowering.
- 18 days after the first flowering 90 % of the green seeds are viable.
- Seeds are carried only a few meters by wind.
- Viable seeds pass through the intestinal tract of ruminants. In stacked manure and liquid manure germination capacity of dock seeds decreases only very slowly.
- Seeds survive unharmed in hay and straw.
- Unripe seeds on cut stems can mature and sprout while on the ground.

#### Root

- The taproot can grow through compacted, waterlogged, oxygen-poor soil down to depths of 2.6 m. From deeper soil levels, where there is little or no competition from other plants, it absorbs nutrients.
- The roots are protected from rotting by tannins.
- Dock roots have a great re-sprouting ability thanks to reserves.
- The taproot has regenerative buds on the root crown, down to a soil depth of 10–12 cm.






## Identifying the causes of docks spreading

For successful dock control, the causes of its spread must be identified and eliminated. The causes are often found in cultivation practices, manuring or the crop rotation. Due to the dock's biology, there are three main causes for its spread:


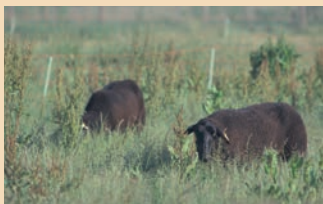

- (1) gappy pastures,
- (2) weakened fodder plants or advantageous growing conditions for the dock, and
- (3) dock plants spreading their seeds.

In arable and grassland farms, the dock often originates from the grassland. Through seeds in farmyard manure, it finds its way from the grassland, or sometimes from field headlands, onto the arable field. Docks can be introduced into the farm via imported manure, contaminated seeds, grazing animals, water and machines.

### Gaps in crops

		How to proceed?
	<p><b>Damage by winterkill or drought</b> Gaps in pastures due to damages by winterkill or drought are common-places.</p>	<ul style="list-style-type: none"> <li>• Ensure 'fist-high' sward when going into winter.</li> <li>• Oversow early in spring or after drought with a grass seed mixture adjusted to the location (for details see page 8).</li> </ul>
	<p><b>Too low mowing</b> Mowing too low damages the pasture and reduces its competitiveness.</p>	<ul style="list-style-type: none"> <li>• Do not cut permanent pasture and grass - clover lower than 6 cm, and lucerne - grass mixtures not lower than 7 - 8 cm.</li> <li>• Sharpen the blades regularly.</li> </ul>
	<p><b>Poaching and machinery compaction</b> Sward gaps and soil compaction give docks an opportunity to establish.</p>	<ul style="list-style-type: none"> <li>• Do not graze pasture during wet periods.</li> <li>• Avoid trampling damage around hayracks and water troughs (move them regularly). Immediately reseed and roll in after trampling damage.</li> <li>• Avoid all driving on wet soil, or using overly heavy machinery (axle load of max. 3-5 t, tyre pressure &lt;0.8 bar).</li> <li>• Use twin tyres.</li> </ul>
	<p><b>Damage by wild animals</b> Moles, mice and voles can cause major damage in some years.</p>	<ul style="list-style-type: none"> <li>• Trap vermine.</li> <li>• Harrow and roll meadows and pastures when growth starts.</li> <li>• After grazing, harrow mole heaps and bare patches.</li> <li>• Encourage birds of prey and other predators.</li> <li>• Promote weasels with structural elements such as hedges or cairns.</li> </ul>
	<p><b>Open soil in arable crops</b> Even small root pieces of docks can sprout again.</p>	<ul style="list-style-type: none"> <li>• Control docks in arable crops after drilling.</li> <li>• As dock seedlings do not like competition, undersowing a ley reseed in a competitive cereal such as oats will reduce establishment of new docks.</li> </ul>

## Weakened crops

		How to proceed?
	<p><b>Over-grazing</b> Damage to the sward and excessive nutrient levels will encourage docks.</p>	<ul style="list-style-type: none"> <li>• Avoid grazing too hard, particularly in early spring when the soil is wet, otherwise it will allow dock seeds to germinate.</li> <li>• Either practice set stocking which creates a dense sward, or rotational grazing with a short duration of grazing of 1 to 2 days with rest intervals of 20 to 40 days, according to the season.</li> <li>• Make sure grazing height is at least 5–6 cm for set stocked sheep or 7–8 cm for cattle in early season.</li> <li>• Avoid late autumn mowing which may leave an open sward over winter.</li> <li>• Alternate grazing and cutting to create a dense competitive sward.</li> </ul>
	<p><b>Under-grazing</b> Under-grazing leads to dead patches of grass and an open sward susceptible to weed invasion.</p>	<ul style="list-style-type: none"> <li>• Ensure correct stocking rates.</li> <li>• Avoid long periods between grazing or mowing.</li> <li>• Sheep are more effective than cattle at creating a short dense sward which will be less susceptible to weed invasion.</li> </ul>
	<p><b>Over-fertilisation / inappropriate application of manures</b> Excessive manure, particularly slurry will suppress the pasture plants, leave bare soil and encourage docks.</p>	<ul style="list-style-type: none"> <li>• Apply mineral fertilisers and manures according to soil analysis recommendations.</li> <li>• Adjust fertility to suit pasture species or crop type. Ensure good soil fertility to encourage competitive pastures, but avoid excessive nitrogen which promotes docks and other nutrient-dependent, competitive weeds.</li> <li>• Avoid excessive use of manure and slurry. Low application rates such as 10–15 tonnes per ha FYM to grassland or 20 m<sup>3</sup> per ha slurry are preferable.</li> <li>• Spread manure and slurry evenly.</li> <li>• Apply manure and slurry only in cool, humid weather on a dry, absorbent soil and a short sward, which will encourage pasture growth.</li> <li>• Avoid application to waterlogged soils.</li> </ul>



## Avoiding spreading of dock seeds

		How to proceed?												
 	<p><b>Seeds spreading in the field</b> The huge number of seeds and their long viability results in high potential for infestation, even given otherwise good management.</p> <p>A mulching machine with collecting box removes the remaining dock stalks after grazing.</p>	<ul style="list-style-type: none"> <li>• Cut flowering stalks and gather them as soon as they are visible, at the latest before forage or cereal harvest, or mulching. Flowers which have not been disposed of will have shed some of their seeds before harvest. Do not pull flowering stalks out as this promotes new growth. Dispose of the stalks properly (see below).</li> <li>• Re-mow the pastures. Ensure proper disposal of the residues containing dock plants.</li> <li>• Prevent docks in field margins from flowering by forking or frequent topping.</li> <li>• Cultivate heavily shaded locations near woodland edges separately; if necessary, grow fodder crops for better dock control.</li> <li>• Grazing a ley hard with sheep will keep docks under control and stop them seeding.</li> </ul>												
	<p><b>Seeds spreading from gathered dock stalks</b> The seeds on gathered stands can ripen and germinate while lying on the ground.</p>	<ul style="list-style-type: none"> <li>• Do not place cut-off stalks and dug-up roots on the field edges or on manure. Dispose of them in a way that will prevent germination or re-growth.</li> <li>• In order to kill the seeds, the manure must be composted at a minimum temperature of 60–65 °C for at least 7 days or for 3 weeks at 55 °C at least.</li> <li>• Gathered dock plants can also be composted separately, or added to a composting plant. The resulting nitrogen-rich compost has a similar fertilizing effect as nitrogen-rich liquid manure.</li> <li>• Disposal in a biogas digester is the safest method. After only a few days, the dock seeds are no longer viable.</li> </ul>												
	<p><b>Introduction of dock seeds by machinery</b> Dock seeds and root fragments can be readily spread between fields and between farms.</p>	<ul style="list-style-type: none"> <li>• Clean mowing, topping, harvesting and cultivation machinery, before use and between fields and farms.</li> <li>• Clean the conveyor systems and the sieves of hired combine harvesters.</li> </ul>												
	<p><b>Use of contaminated seed, straw, fodder or manure</b> Seed certification allows for a low level of dock contamination as this appears to have been a source of dock infestation on some farms.</p>	<ul style="list-style-type: none"> <li>• Only use crop and grass seed from assured dock-free stocks.</li> <li>• If possible, store slurry for at least 3 months. For new installations, build two smaller slurry pits rather than a single large one. Ensure thorough composting of manure produced from doubtful forage sources.</li> <li>• Be careful when buying hay, silage and straw! Only use straw and fodder from securely dock-free farms.</li> </ul>												
		<p><b>Dock seed viability in feed</b></p> <table border="1"> <tbody> <tr> <td>Hay</td> <td>–</td> <td>Seeds not killed</td> </tr> <tr> <td>Silage, ripe dock seeds</td> <td>+</td> <td>Some seeds killed</td> </tr> <tr> <td>Silage, green dock seeds</td> <td>+++</td> <td>Most seeds killed</td> </tr> <tr> <td>Grass drying</td> <td>+++</td> <td>All seeds killed</td> </tr> </tbody> </table>	Hay	–	Seeds not killed	Silage, ripe dock seeds	+	Some seeds killed	Silage, green dock seeds	+++	Most seeds killed	Grass drying	+++	All seeds killed
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## Digging out and tilling in permanent pastures

Given a weak proliferation of docks, digging out and tilling is still the most effective method in permanent pastures. Unlike manual digging out, mechanical tilling is not practicable in all situations. Of the new methods, the hot water treatment has also proved effective. Cutting the root crown with a hoe blade is quick, but some regrowth can be expected.

The ideal time for single plant control is at the dock's rosette stage. An intervention in spring can effectively prevent the spreading of seeds. The removal of single docks is worthwhile until just after the appearance of inflorescences.

### Digging out



The ideal weeding fork is light, has a strong handle and is able to clasp the root at some depth without pulling out too much soil.

#### Performance and effectiveness:

- 2–3 plants per minute (90–150 per hour)
- Effectiveness of up to 90 %, if properly performed.

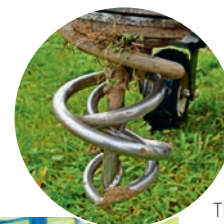
#### When?

- 1<sup>st</sup> round: before end of April
- 2<sup>nd</sup> round: at the latest end of June / beginning of July, shortly after the emergence of inflorescences
- Additional rounds as often as possible after rain-fall or given sufficient soil moisture

#### How to proceed?

- Pierce the soil with the weeding fork 10–15 cm away from the plant at an angle of 45°, so as to clasp the secondary roots.
- Loosen the soil first, then lever out the dock root.
- Prise out the root at a minimum of 12 cm depth.
- Remove the soil clinging to the root, fill it back into the hole and press it down.
- Sow over the disturbed area (using e. g. a PET bottle with an opening of 0.5 cm).
- Remove the dock roots.

### 'Dock twirler'



The Swiss 'Dock twirler' is a further development of the German dock-tiller (below, model MEV).



#### Mode of operation:

- Three contrarotating spiral-shaped spikes clasp the dock 30 cm deep. Then, the machine pulls the dock plant out of the ground. The root is separated by hand from the attached soil (about 0.8 kg).
- The machine must be mounted to a 1.6 t heavy (small) excavator or yard loader.

#### Performance and effectiveness:

- 120–180 plants per hour
- Effectiveness of more than 90 % with careful execution. No re-growth of the dock plants.
- On slopes, the use of the dock twirler is restricted.

### Hot water treatment



The machine for the application of hot water and steam to dock plants was developed by Agroscope in Switzerland.

#### Mode of operation:

- A hot water – steam mixture of 90–95 °C is applied around the dock root with a rotary nozzle for at least 10 seconds. The contact with the hot water kills the root to a depth of about 12 cm. Seeds in the immediate vicinity are also killed.

#### Performance and effectiveness:

- 120–180 plants per hour
- Effectiveness of at least 80 % (highest in dry soil)

#### Verdict:

- The method leaves 4 cm small holes in the ground.
- The procedure is only suitable for grassland.

## Oversowing or reseeding permanent pasture

By oversowing once, or repeatedly, the density and the proportion of grasses in the sward can be improved. This measure can also be used pre-emptively, in order to increase the proportion of desirable plants and to improve the competitiveness of the sward.

### What to consider?

- Oversowing is substantially cheaper than reseeding, and the yield loss is minimal.
- Specialist grass renovation drills are preferable, but pneumatic seeders and broadcasting is cheaper and adequate in most situations.
- The seeds can be bulked up with sand or sawdust.
- In dry conditions seed-drill is advisable.
- Select competitive high yielding grass species based on the situation. Consult advice if necessary.

## Sowing with drill or strip-seeder



Combined with harrow and roller, slug-pellet spreaders are very well suited for oversowing.

The seed-drill is suited for flat terrain. In moist soils, it clogs and smears less than a strip-till machine.

### Conditions

- **Matted** sward
- Less than **40%** of valuable forage grasses. Grass sward full of gap-fillers like rough meadow-grass or creeping buttercup.

### How to proceed?

- In matted grass swards, a specialist strip drill is needed which reduces the competition and deposits seed between the plants.
- Seed rate 20–25 kg per ha. Less competitive grasses such as meadow fescue can also be introduced as well as clover.

### Important

- If the reseeding succeeds, the pasture is significantly improved. If needed, the procedure should be repeated after 3–5 years.

### Costs

- £35 / ha for drilling plus £45–130 / ha for seed.

## Sowing with a seed harrow

### Conditions

- Fragmentary stock
- **More than 40%** of valuable forage grasses. With little rough meadow-grass.

### How to proceed?

- Prior to oversowing, level the surface with a drag harrow when the soil is dry.
- Do not destroy the existing sod, but create gaps so that the seeds get contact with the soil.
- Apply 5–10 kg per ha of seeds with broadcast spreader, slug-pellet spreader, or harrow with pneumatic airseeder box. An alternative is to spread pre-soaked forage seed in slurry.
- Given dry conditions, roll in the seeds with a ring roller.
- Apply slurry immediately after sowing or once the seedlings have become well established.
- Pasture can be oversown two days before hard grazing in spring. The grazing livestock will provide the soil-contact for the seeds.

### Important

- It may take 2–3 years to see the success of oversowing.
- Repeat oversowing until the intended sward is achieved. Repetition lessens the risk of a sowing failing because of dryness, frost or competition.

### Costs

- About £45 per ha for sowing over twice, plus the seed cost.

### When to carry it out?

- As a general rule sow onto a short sward.
- In locations with summer drought: Prior to the first cut.
- In damp locations: After the first cut and until late August.



## Restoring highly infested land

The presence of more than two dock plants per square meter or a proportion of less than 15 % of valuable forage grasses in the pasture requires a full dock control cultivation and reseedling of the entire area; oversowing will not be effective in this case anymore.

Basically, the procedure is the same in arable crops as in pastures. But controlling docks in arable land is generally easier than in permanent pasture.

### Standard soil cultivation practices not effective

The standard practice of **ploughing** to 20 cms and cultivation results in inversion of mature docks with stem, crown and root. Burying the docks with regular ploughing weakens the plants, but will not kill them. The plants will regrow because of their great energy reserves.

**Simple cutting** of the dock roots with duck feet is not sufficient to kill dock plants, even young ones unless cutting beneath the crown. On the contrary, shallow under-cutting may even encourage re-sprouting of the buds.

Intensive tilling or discing usually helps spread the dock further via fragmentation, as even small root pieces can re-sprout.



Even smallest root pieces can re-sprout to new dock plants. Thus, intensive tillage generally promotes docks by cutting the roots into small bits, instead of weakening the plants.

**Undersowing** in arable crops does not provide a sufficiently competitive plant stand for control of mature docks.

The central point, which needs to be understood before starting to try to kill dock plants by cultivation, is that the crown of the dock has quite different regrowth characteristics to the root. The true root does not grow back because it does not have shoots, the crown, which may be 5–12 cms deep in the soil, depending on its age, is what produces shoots and grows back. This part of the plant has to be desiccated and killed when restoring an infested field.



The skim plough (picture: a Ovlac skim plough) allows precise superficial tillage due to the support wheel.



Alternatively to the skim plough a cultivator may be used (picture: a Lemken Terradisc). The duck feet undercut the soil and any docks across the entire working width. The working depth can be adjusted with a support wheel. The cultivator mixes the soil more intensively than the skim plough.

### Cutting off dock crowns and repeated shallow cultivations

In addition to interrupting the dock life-cycle, the most promising method for restoring highly dock-infested pasture and arable land is some form of cultivation that cuts the crown off the root and gets the roots onto the soil surface in order to dry them out. Repeated shallow cultivations will bring the dock crowns to the soil surface, knock off attached soil, disturb and desiccate the plants and finally kill them. It may need 6–8 weeks to really dry out the dock crowns. Dry weather in summer is essential for such a dock treatment in the UK.

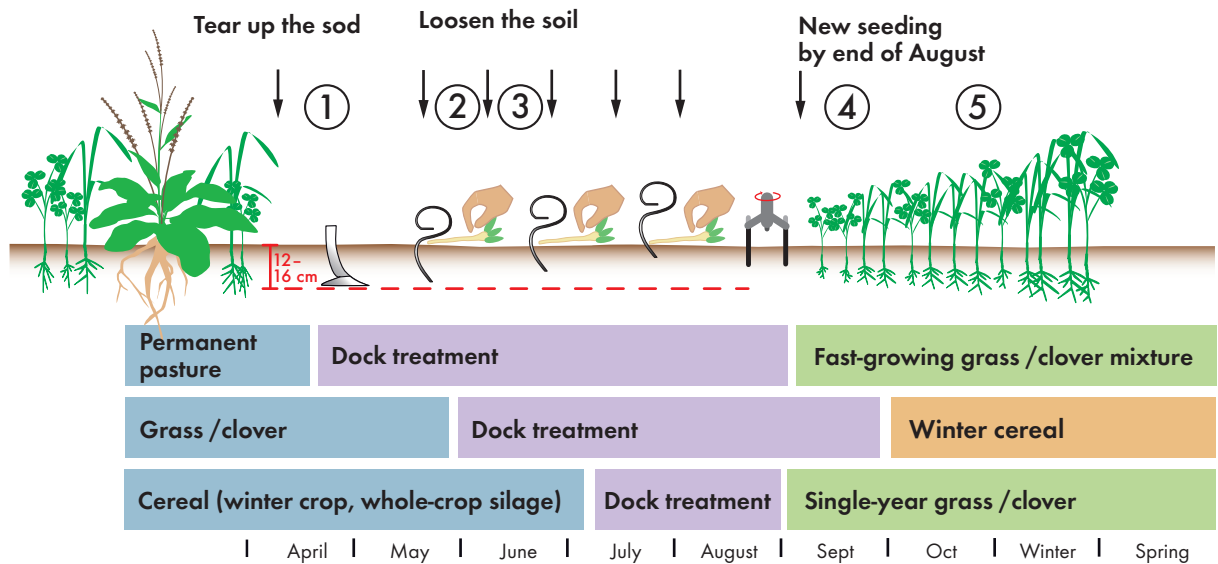
Such intensive 'fallow' treatment must be followed by a competitive crop to avoid re-establishment of docks.



A dock plant after the passage with the cultivator: The plant was cut off at a depth of at least 12 cm to avoid that it resprouts.

### What to consider?

- Specific national programmes may disallow e. g. cultivation of permanent pasture. If in doubt, consult the Environment Agency.
- Ploughing / cultivation may also cause ecological damage such as loss of diversity, soil life or damage to soil structure.



### How to proceed?

1. In light soils, and wherever cultivation is an option: undercut the ley in spring or early July in dry conditions with a well-overlapping wing-share cultivator, like a Lemken Terra-disc / Krystal or similar duck foot under-cutter, at a depth of 12 to 16 cm with a foot under-cutter or a shallow plough.
2. Loosen the soil with a spring-tine harrow 3–5 times every 10–15 days. Take every opportunity to disturb the dock crowns with cultivations whenever the weather is dry enough.
3. After each loosening with the spring-tine harrow, the dock crowns are picked-up by hand or with a rotary harrow or a traditional potato harvester. Alternatively, the desiccated and definitely dead crowns can be ploughed 25 cm deep.

4. Then, from August, proceed with sowing a location-appropriate, fast-growing grass / clover mixture or competitive cereal crop.
5. Pull out regrown dock plants by hand during damp weather.

If no improvement is seen in the subsequent year, the procedure may need to be repeated.

### Summer or winter dock treatment?

Given a dry summer, summer dock treatments after an early-harvesting cereal (winter barley, whole-crop silage), or after breaking up a ley early e. g. in early July have proven most effective.

In some circumstances, winter dock treatments are also an option, but generally not in the UK due to wet conditions, risk of soil damage and the fact that the dock root cannot be killed in mild wet conditions.



In arable land, after dock control, there may be time for a late summer cover crop such as rye-grass and Persian clover. The deep root growth helps transporting nutrients up from sub-soil, mobilising phosphorus, and building up soil structure.

### What to grow after the dock treatment?

- Competitive grass/clover mixtures, which establish quickly and include competitive species, will reduce establishment and growth of the docks. In arable land, cocksfoot (*Dactylis glomerata*) has been shown to be effective, whilst lucerne, having a very open sward when grown on its own, should generally be sown in a mixture with more persistent species.
- Undersowing a ley in a cereal is preferable to direct sowing, as the competition will reduce dock seeding survival.
- Among cereals, oats are more competitive than wheat.
- Include deep-rooting crops and catch crops in the crop rotation, in order to compete with docks for water and nutrients in deeper soil layers.
- Buckwheat appears to have an allelopathic effect on mature docks, significantly reducing their vigour.
- Field beans and peas will encourage docks and should not be grown, if there is a field problem.

## Further control methods: What are we to make of them?

Physical methods	<b>Electrical weed control</b> 	<b>Mode of operation:</b> An electric current of 5000 Volts is passed into the dock plant from a high-voltage battery via a conductor. The electric shock is supposed to destroy the plant cells. So far, only a prototype exists.	<b>Effect:</b> Partially effective against dock <b>Verdict:</b> High energy consumption
	<b>Microwave technology</b> 	<b>Mode of operation:</b> Microwaves are sent through the ground and denature the well-hydrated dock roots. A 100 kg heavy prototype was developed at the Swiss research station of Agroscope Tänikon. <b>Effect/performance:</b> The microwaves have a focused effect upon a dock plant.	However, earthworms in the target range are also hit. The performance and the effect have not been convincing so far. <b>Verdict:</b> With a consumption of 1 dl of diesel per dock root this process is too energy-consuming. The development of the device has therefore been discontinued.
Biocontrol measures	<b>Fungi</b> 	<b>Mode of operation:</b> Rust and leaf-spot fungi attack the dock's leaves and can weaken the plant. <b>Effect/performance:</b> <i>Uromyces rumicis</i> (a rust fungus) can reduce the weight of plant stems and leaves by 30–50% given artificial infection.	<i>Ramularia rubella</i> (septoriosis) forms big red spots about 1 cm long, and results in the leaves dying. Its attack can reduce the roots' weight by up to 50%. <b>Verdict:</b> The fungi are not UV-stable and can easily be washed off. Their potential for dock control is therefore rated as low.
	<b>Fiery clearwing</b> 	<b>Mode of operation:</b> Mass release of fiery clearwing ( <i>Pyropteron chrysidiforme</i> ) can cause the dock to die. The moths lay eggs on the plants and the larvae feed on the roots. In Australia, the use of a closely related species has been successful.	<b>Effect/performance:</b> In Europe, infestation of up to 80% of the plants was observed in field tests. But in general, the performance has not been convincing so far. <b>Verdict:</b> The method is still being developed and practical trials are underway.
	<b>Dock beetle</b> 	<b>Mode of operation:</b> The black larvae and shiny blue-to-golden-green beetle feed on dock leaves. A single beetle eats 3 to 5 cm <sup>2</sup> of leaf surface per day. The beetle only occurs in permanent pastures. <b>Effect/performance:</b> With 3 to 4 generations per year, the beetle can completely skeletonise and hence weaken dock plants. <b>Verdict:</b> The beetle cannot fatally damage the dock plants, as docks are able to adapt	to loss of leaf surface, but the performance of desirable forage crops may be improved. Known strategies for promoting the dock beetle in permanent pastures: <ul style="list-style-type: none"> <li>• Delaying cutting until the larvae have buried themselves in the soil for pupation. To determine the ideal time of cutting, the dock plants must be checked every week.</li> <li>• Leaving strips of grassland uncut ensures food for the beetle from spring to autumn.</li> </ul>
Biodynamic	<b>Weed peppers</b> 	<b>Mode of operation:</b> The idea is to signal to nature that the plant is undesirable, thus taking away its basis for existence. Dock seeds are burnt together with wood when the moon is waning. According to Maria Thun, the ash can be raised up to D8 for application, and can be applied with a syringe. The	ash can also be pulverized in a mortar and spread. The procedure is to be repeated every year for 4 years. <b>Effect/performance:</b> The effectiveness has not yet been scientifically proven. <b>Verdict:</b> According to practitioners, a reduction of docks can occur.



## Useful addresses

### Dock-weeding forks

Lazy Dog Tool Company Ltd.  
Sycamore Cottage, Headland Road,  
Appleton Le Moors, North Yorkshire, YO62 6TE, UK  
Phone / Fax: +44 (0)1751 417 351, Philip Trevelyan  
enquiries@lazydogtools.co.uk  
<http://lazydogtools.co.uk/aims-and-history/>

### Cultivators

Paul Creasy, General Manager,  
46 Fuller Road Harleston Industrial Park  
IP20 9EA Harleston, United Kingdom  
Phone +44 (0)1379 855 449  
p.creasy@lemken.com  
[www.lemken.co.uk](http://www.lemken.co.uk) and [www.lemken.com](http://www.lemken.com) >  
English > Soil-cultivation > Stubble-cultivation >  
Cultivators

### Dock-tillers

Firma Riesenhuber  
Mitterweg 6, 4582 Spital/Pyhm, Austria  
Phone +43 (0)7562-8768

Franz Hagenauer  
Oberfeldstraße 6, 5082 Grödig, Austria  
Phone +43 (0)6246/72460, Fax -055  
office@mev.co.at  
[www.landmaschinenersatzteile.at](http://www.landmaschinenersatzteile.at), [www.mev.co.at](http://www.mev.co.at)

### Hot water treatment

Hans Bachmann Hochdruck-Anlagen AG  
Wilerstrasse 10, 9606 Bütschwil, Switzerland  
Phone +41 (0)71 983 27 79, Mobile: +41 (0)79 404 66 47  
[www.blackenvernichtung.ch](http://www.blackenvernichtung.ch)

### Dock twirler (Blackenzwirbel)

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