

# Effective control of ectoparasites in sheep



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## Foreword

The control of parasites in sheep, both ecto (scab, flystrike, lice, etc) and endo (roundworms, fluke etc) is one of the biggest challenges facing livestock farmers in Wales today. Parasite resistance to chemical treatments is increasing and consequently the availability of effective chemical treatments is declining and changes in legislation are impacting on farmers' ability to buy and dispose of chemicals used to treat parasites.

Ectoparasite infections cost the Welsh sheep industry several millions of pounds each year with scab alone costing £2.3m per year, and yet they could be relatively easily controlled. Results from recent surveys of Welsh producers and their veterinary practitioners indicated that there is significant demand for ectoparasite control programmes so now is the time to act.

Successful ectoparasite control is based on prevention - adequate biosecurity measures can prevent infection in the first place - and correct diagnosis and appropriate treatment of any infection which does establish. The information provided in this booklet aims to help farmers in Wales to prevent ectoparasite infection in their flock whilst maintaining high standards of animal welfare and safeguarding the environment.



# Sheep Ectoparasites - implications for flock health

Sheep can be affected by a number of parasites that inhabit their skin or fleece (ectoparasites). Ectoparasites can have a significant effect on sheep productivity by downgrading the wool clip, reducing reproductive potential leading to a poor lamb crop, and by reducing meat production. Untreated infestations of scab or blowfly strike can be fatal whilst ticks can carry other sheep diseases as well as human infections.

More importantly ectoparasites can adversely affect the welfare of infested sheep. Flockowners have a legal responsibility to prevent or cure infestations within his/her flock. Failure to do so can result in a prosecution for animal cruelty with a potential heavy fine or even a prison sentence.

**Permanent Ectoparasites** spend their entire life cycle on the sheep and include:

**Scab mites** (*Psoroptes ovis*)

**Ear mites** (*Psoroptes cuniculi*)

**Keds** (*Melophagus ovinus*)

**Chewing lice** (*Bovicola ovis*)

**Mange mites** (*Chorioptes bovis*)

**Sucking lice** (*Linognathus ovillus*, *L. pedalis*)



*Scab is one of the most contagious diseases of sheep and is transmitted by direct contact with infected sheep or objects. The scab mites live on the surface of the skin causing an allergy to their droppings.*



*Chewing lice feed on skin debris and hair and heavy infestations are associated with sheep in poor body condition.*

Permanent ectoparasites are passed on by:

- Infested stray or purchased sheep
- Borrowed rams
- Contact with infested sheep eg at markets, common grazing, or gatherings
- Infested housing
- Infested livestock lorries or trailers
- Human contact (eg contractors, shearers, vets etc) carrying parasites from farm to farm

**Semi-Permanent Ectoparasites** infest the host for only a small part of their lifecycle. They are part of the normal fauna of a farm or grazing and they are not generally introduced through the introduction of infested sheep or contact with infested animals.

**Blowflies** (*Lucilia* spp, *Calliphora* spp)  
**Head flies** (*Hydrotea irritans*)

**Nasal bot flies** (*Oestrus ovis*)  
**Ticks** (*Ixodes* spp, *Haemophysalis* spp)

Tick-borne diseases are reported to kill up to 20% of lambs in infected hill/upland flocks.

Blowfly strike is estimated to cost the Welsh sheep industry £0.8million each year.

Nasal bot flies and the green – or blue-bottles that are responsible for flystrike are capable of flying for several miles.

A recent survey\* conducted by HCC indicated that Welsh producers experience problems with ectoparasites and the majority of respondents routinely treat their sheep for ectoparasites.



*Ticks feed on blood and can transmit infections to sheep and to humans.*

	Respondents with problems in their flock (%)	Average % of sheep affected	Farms that routinely treat for ectoparasites
Scab	11.6%	22.9%	72.5%
Fly strike	57.5%	5.8%	94.7%
Ticks	11.1%	26.5%	69.5%
Lice	15.0%	23%	72.4%

\*2070 completed surveys were returned

# Reducing the risk of bringing in ectoparasite infections

Whether you are a conventional farm or an organic enterprise, prevention is much better than cure and good biosecurity can prevent the introduction of ectoparasites. However, more than 30% of farmers still do not quarantine incoming sheep. When bringing new animals on to the farm always assume they are carrying ectoparasites and follow the guidance below to avoid infecting your whole flock:

1. **Quarantine ALL incoming stock** (purchases, returned market stock, borrowed rams etc) away from the resident flock for at least three weeks and observe for signs of infestation.
2. **Treat ALL incoming sheep** with an injectable product effective against scab or dip in an organophosphate (OP) dip **whether or not they show signs**. Quarantine treatment of incoming groups of sheep saves the cost and labour of having to treat the entire flock, should infested sheep be introduced.
3. **Check regularly for other diseases** (such as lice) and treat as necessary.
4. If you suspect that an ectoparasite is present **get the sheep examined by a vet** before mixing with the rest of the flock. The vet will identify the parasite and advise on the correct course of treatment. This could save considerable money in the long run.



*Check stock carefully - nibbling, rubbing, scratching, deranged wool and areas of wool loss are indications of infestations.*

5. **Maintain field boundaries and gates** so that neighbouring stock cannot stray or make direct contact with your own. Work with your neighbour to help control scab and other ectoparasites.

Although the stocking density on Welsh farms may not influence the occurrence of scab, the density of sheep farms in the hill farm areas is likely to allow more mixing of sheep. In the recent ectoparasite survey, up to 17% of Welsh sheep producers graze their sheep on common ground during the summer months. The incidence of scab is much higher in flocks using common grazing.

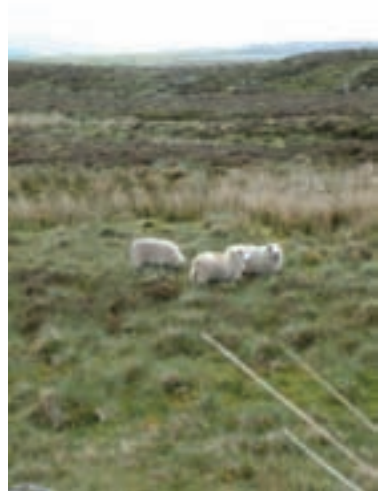
If treatment is not coordinated with neighbours then potentially infected sheep can easily come into contact with treated sheep through ineffective biosecurity ( e.g. poorly maintained fences, common rubbing posts).

Include ectoparasite control in your flock health plan and consult with your vet on the most appropriate treatments for your sheep.

**Remember that it is much more cost effective to isolate and treat new stock than to risk infecting the whole flock.**



*Double fencing helps to prevent neighbouring stock from mixing*



*Grazing common ground increases a flock's chance of becoming infected with scab mites.*

# Treating ectoparasite infections

A number of products are available for the control of sheep ectoparasites but for these products to be effective it is important that the right product is used in the right circumstance.

Recent surveys of Welsh sheep producers revealed that most farmers routinely treat for ectoparasites and that treatment is often combined with other management practices. However, in a number of cases, inappropriate treatments are being used to try to control a range of ectoparasite infections.

Administration of the wrong treatment is not only ineffective but costs more since the correct treatment must then be purchased and administered to the same animals. Use of the wrong treatment can also select for drug resistance, increasing the cost of control.

Some products are broad spectrum, controlling all the major ectoparasites, others have medium spectrum of activity controlling more than one type, whilst others have a very narrow spectrum of activity controlling only one type of ectoparasite (see table opposite).

Always read the label – some injectables, for example, are a one-off injection but others need two injections 10 days apart.

To date, no product has been approved for use in showers or jettlers.

Scab mites and lice can live off the sheep for at least 16 days. Do not return treated sheep to the contaminated grazing or housing. If possible return to pasture or housing that hasn't held potentially infested or infested sheep for at least three weeks. Similarly don't restock the contaminated grazing or housing for at least three weeks.



*Neil Sargison, NADIS*

*Administration of the wrong treatment means that sheep will have to be treated again with the correct product.*

# Chemical treatments for external parasites of sheep

Active chemical	Examples of Products	Method	Scab		Blowfly		Ticks		Lice		Protection	Meat Withdrawal Period
			Prevention	Treatment	Prevention	Treatment	Prevention	Treatment	Prevention	Treatment		
Diazinon (OP)	Coopers Ectoforce Gold Fleece Paracide plus	Plunge dipping	✓	✓	✓	✓	✓	✓	✓	✓	No official claim	35 days
Doramectin	Dectomax	ONE Injection	✗	✓	✗	✗	✗	✗	✗	✗	No official claim	70 days
Ivermectin	Ivomec Panomec Virbamec	TWO Injections	✗	✓	✗	✗	✗	✗	✗	✗	No claim	42 days
Moxidectin	Cydectin 1%	TWO Injections to treat (one to prevent)	✓	✓	✗	✗	✗	✗	✗	✗	At least 28 days	70 days
Moxidectin	Cydectin 2% LA	ONE injection	✓	✓	✗	✗	✗	✗	✗	✗	60 days	104 days
Cypermethrin alpha	Dysect	Pour-on	✗	✗	✓	✓	✓	✓	No claim	✓	8-10 weeks for blowfly 8-12 weeks for ticks	28 days
Cypermethrin	Crovect	Pour-on	✗	✗	✓	✓	✓	✓	No claim	✓	6-8 weeks for blowfly strike prevention	8 days
Deltamethrin	Coopers Spot - on	Spot-on	✗	✗	✗	✓	✓	✓	✓	✓	4-6 weeks for lice and ticks	35 days
Cyromazine	Vetrazin	Pour-on	✗	✗	✓	✗	✗	✗	✗	✗	10 weeks	3 days
Dicyclanil	Cliik	Pour-on	✗	✗	✓	✗	✗	✗	✗	✗	16 weeks	40 days

\*Product will reduce the incidence of ticks and lice but not completely eliminate it.

There are more products available, the ones listed are examples.

Information taken from NOAH Compendium.

No chemicals should be used on ewes producing milk for human consumption.

Check manufacturer's instructions carefully before application.

Organic farmers please check with your certification body.

Take veterinary advice, read the label and take particular notice of the withdrawal times.

A full list of approved ectoparasite treatments can be found at

[www.vmd.gov.uk/generalinfo/sheepdips](http://www.vmd.gov.uk/generalinfo/sheepdips)

Consult your vet to ensure you are using the right treatment for the right parasite. Do not select for drug resistance. The current chemical treatments are all we have for the future – use them wisely. New products and methods of control are being developed but will not be available for at least 10 years.

Recent surveys show that:

- Doramectin and Cyromazine are often inappropriately used for the control of ticks and lice – the misuse and overuse of these products increases the risk of resistance developing
- Some survey respondents described the use of wormers for the treatment/prevention of blowfly strike. However, wormers do not target the ectoparasite and since scouring is not only caused by worms the use of wormers to control blowflies may contribute to the development of wormer resistance and so is not considered to be an appropriate strategy for blowfly control.
- Wormers from the Macrocyclic lactone group (Doramectin, Ivermectin and Moxidectin) are often used to treat scab. However we must ensure that MLs remain viable to control internal parasites. The role that MLs play in the control of scab on organic farms also means that they must be used correctly so that farmers can avoid the development of wormer resistance on those enterprises.

All treatments should be administered strictly according to the manufacturers' instructions.

Treat ALL contact sheep, not just those presenting with the clinical signs of infestation otherwise this could prove costly! Other sheep may have sub-clinical disease, recycling parasites within the flock.

Ensure that you are also within the law regarding human and environmental safety.



# Ectoparasite control on organic farms

In the recent survey, more organic farmers identified problems with ectoparasites than did conventional farmers. This may be due to the reduced treatment options available to organic farmers, who therefore see infections as a bigger problem and have to focus strongly on biosecurity and prevention. Given the routes for transmission of ectoparasite infections, if neighbouring farms are not practicing adequate control then this causes a particular problem for organic farmers.

	Organic respondents with problems in their flock
Scab	16.7%
Fly strike	66.9%
Ticks	16.1%
Lice	23.9%

*\*168 completed surveys were returned from organic enterprises*

As with conventional farms, the correct diagnosis and appropriate treatment of any infection is vital.



## Treatments

Organic farming focuses strongly on prevention and good management and a farm health plan is compulsory. The farm health plan must identify options for treatments should they be necessary and this must be approved by the certification body. Organic farmers may use any approved products on the market, although some certification bodies do not allow the use of organophosphate dips and animals treated with OPs are likely to be difficult to sell with an organic symbol.

# Safeguarding the environment and sheep

Ectoparasite control can be tackled by various options, of which, dipping is most favoured by many farmers, BUT remember.....

- You need to have a national certificate of competence to purchase and use sheep dip and Groundwater Regulations authority to dispose of used dip to land.
- Dipping facilities must be properly sited and maintained with drainage areas connected to a 'dip-tight dipping bath'. Leakage of small quantities of dip, can have a disastrous effect on streams and rivers. Carry out a full check each year and repair all defects before the dipbath is again used.
- When mobile dips are used, the site must be selected carefully so that the environmental impacts are minimal ie flat sites where dip cannot run into drains, ditches, watercourses or soak into the land.
- To make sure that dip can be stored and transported safely and that you have put procedures in place for dealing with accidents, spillages or sheep escaping to a watercourse.
- To keep sheep penned until their fleeces have stopped dripping and don't allow them access to a water course for at least two weeks after dipping.
- The disposal of used dip must follow the conditions set out in the Defra "Groundwater Protection Code – use and disposal of sheep dip compounds".

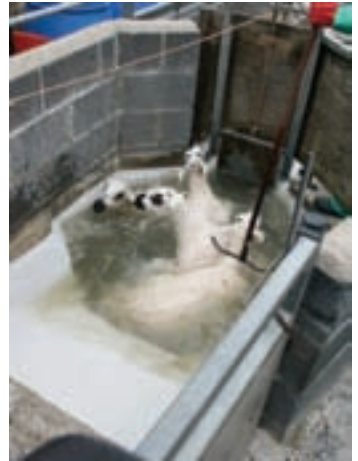


Greater care by farmers, improved legislation and better advice have reduced the number of pollution incidents from dipping.



# Simple steps for effective dipping

1. **Plan before dipping.** Ensure there is enough product available and that full sets of protective clothing are available to every one involved in the dipping operation. Make sure the dipping facilities are all in good working order and that the dipbath has been emptied and thoroughly cleansed from the last dipping. Know the exact volume of the dipbath so that the initial charging and subsequent topping up result in a correct concentration of dip.
2. If dipping extends over 2 or more days the bath **must be emptied and cleansed after the first days operation.** The second morning it should be re-charged before dipping begins. Always use clean water preferably from the mains, as contaminated water can lead to post dipping lameness.
3. **Make sure that every sheep is immersed for the correct period of time** for the disease for which it is being dipped and for the product which is being used.
4. **Do not dip sheep** when they are hot, tired or thirsty nor when full of food. Avoid extremes of heat or cold, during rain, close or thundery weather or when the wool is wet. Gather sheep and stand in yards to settle overnight before dipping early the next day. Dip lambs and ewes separately. Don't dip sheep, except in emergency, less than 3 weeks after shearing as there is insufficient grease and wool cover to retain the insecticide.
5. At the end of dipping wash down all protective clothing with water. Immediately on leaving the dipping area wash hands, face and any exposed skin thoroughly with soap and warm water. **It is important that the person in charge** ensures that everyone involved in the dipping operation complies with these procedures.



# Summary guidelines for effective ectoparasite control

A few relatively simple measures can help to prevent ectoparasite infections on your farm and save you considerable amounts of time and money.

- Good biosecurity is crucial. Quarantine and treat all incoming stock for at least three weeks. This saves the cost and labour of having to treat the entire flock should infested sheep be introduced.
- Maintain field boundaries and gates so that neighbouring stock cannot stray or make direct contact with your own.
- Work with your neighbours – particularly those sharing common grazing, so that your combined control strategies can be most effective.
- If sheep do show signs of skin parasites make sure that you get an accurate diagnosis before treatment. Your vet can identify the parasite and advise on the correct course of treatment which could save considerable money in the long run.
- Administer the correct treatment properly. Only use licensed Veterinary Medicines and follow the manufacturers guidelines for use and disposal of the product exactly to get maximum effectiveness and to prevent any environmental contamination. Administering the wrong treatment is a costly mistake. Wrong treatments are often ineffective and can select for drug resistance.
- Ensure that ectoparasite control is included in your flock health plan and consult with your vet on the most appropriate treatments for your sheep.

## Further information

For further information on any of the content in this booklet or on the work undertaken by HCC please contact HCC on tel: 01970 625050, email: [info@hccmpw.org.uk](mailto:info@hccmpw.org.uk) or visit [www.hccmpw.org.uk](http://www.hccmpw.org.uk).

Advice can also be sought from your vet or sheep advisor

Further information about ectoparasites in sheep can be found at [www.vmd.gov.uk/General/sheepdip/sheepdips.htm](http://www.vmd.gov.uk/General/sheepdip/sheepdips.htm)