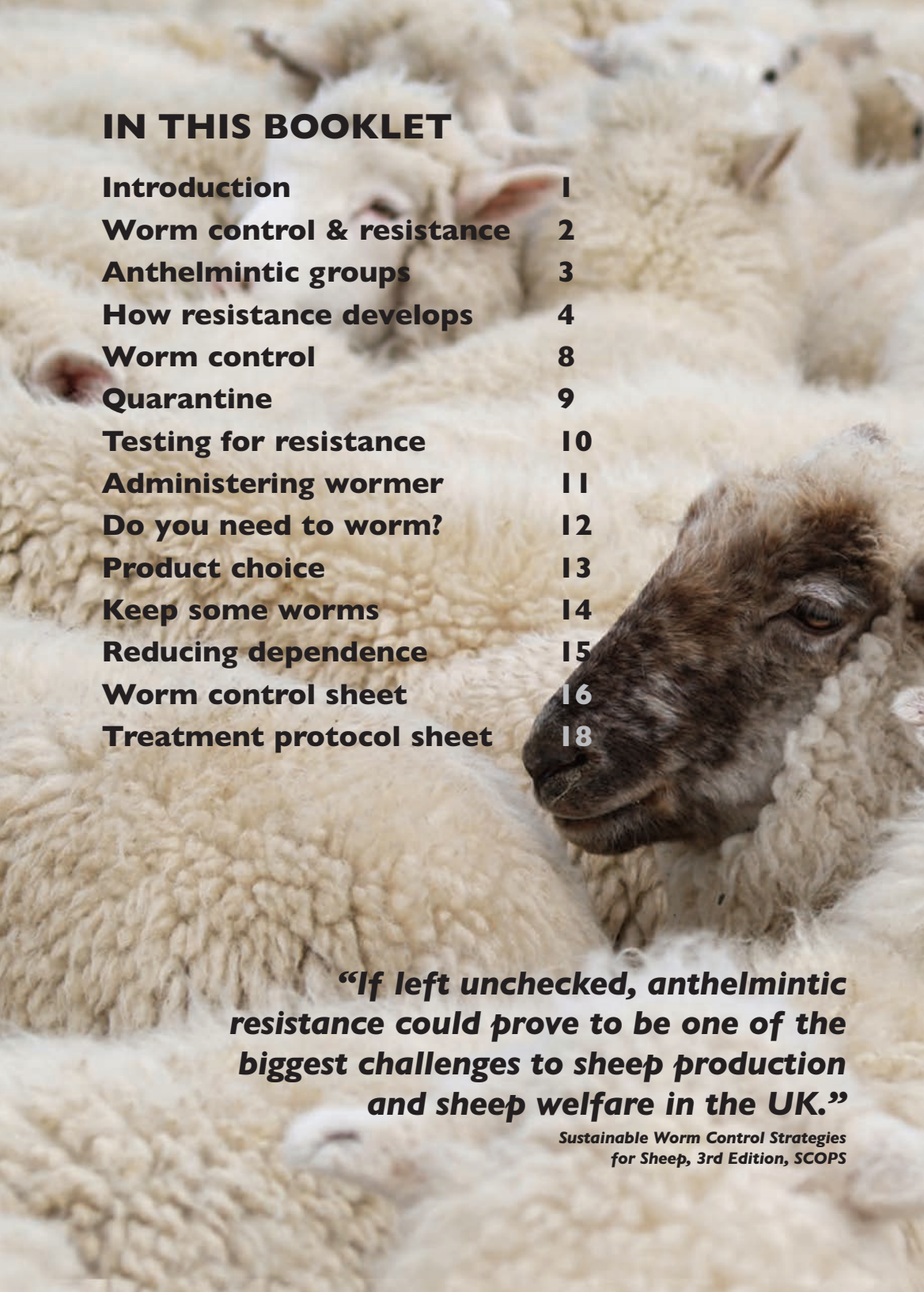
Sheep Worm Control and Resistance Management

xLvets
Excellence in Practice

Grass roots | Worm Control

IN THIS BOOKLET



"If left unchecked, anthelmintic resistance could prove to be one of the biggest challenges to sheep production and sheep welfare in the UK."

Sustainable Worm Control Strategies for Sheep, 3rd Edition, SCOPS

Introduction

Worm control is a VITAL part of health and production management in sheep flocks and good control is highly dependent on the timely use of effective anthelmintics (wormers).

Unfortunately, a direct and unavoidable consequence of using anthelmintics to control worm populations is the development of resistance to many of the wormer products we use.

SCOPS is mentioned a number of times in this booklet, but what is SCOPS?
SCOPS - Sustainable Control of Parasites in Sheep - is an industry led group formed to develop sustainable strategies for parasite control in sheep and facilitate and oversee the delivery of these recommendations to the industry. www.scops.org.uk

In some parts of the world the level of resistance has reached the point where sheep farming is no longer sustainable.

Fortunately, most sheep farmers are still achieving good levels of parasite control using their current worming methods, but this has led to a certain level of complacency regarding the future.

This booklet has been designed to enable sheep farmers to recognise the resistance threat and act before they find that their normal procedures and products are no longer controlling worms on their farms.

We cannot be complacent, widespread resistance is being detected on many farms in the UK. However, if changes are made to worming programmes now, most farms could still maintain effective worm control into the future.

Sheep farmers can slow the progress of wormer resistance by changing certain practices on farm, making it possible to sustain the effectiveness of the existing groups and safeguard the effectiveness of new wormer groups on the majority of sheep farms for years to come.

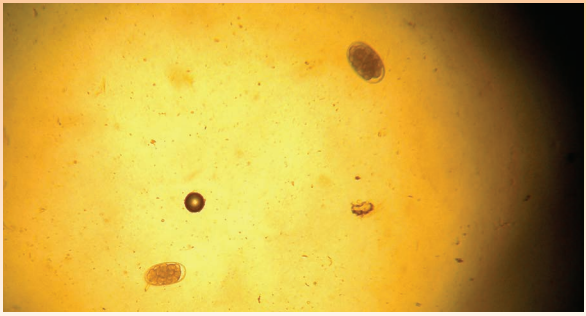
However, every farm is different and one answer doesn't fit all, so this booklet has been designed to help you and your vet identify your own circumstances then develop an individual worm control and resistance management flock plan.

Worm Control and Resistance

Most sheep farmers have based their farm's worm control on treating the flock at certain points of the year or when sheep are at a certain age. Wormers have been highly effective but their sustained, use has led to wormer resistance - probably the biggest risk to sheep farming in the UK at the moment.

Pinpoint the set times you currently worm your flock using this table >

Any worming regime must now take anthelmintic resistance (AR) into consideration if it is to remain effective in both the short and long term.



When do you currently treat your sheep:

- **Tups**
- **Ewes**
  - Pre-tupping
  - Lambing
- **Lambs**
- **Shearlings**
- **Bought-In**
  - Worm Same Day

Current Worming Groups

BENZIMIDAZOLES (1-BZ)

WHITE

Status:
Resistance can be found on most farms.

LEVAMISOLES (2-LV)

YELLOW

Status:
Resistance less common than to BZ, but incidence is increasing rapidly.

NOTE: A different product name does not necessarily mean a change in wormer group. If unsure please ask your vet for advice.

MACROCYCLIC LACTONES (3-ML)

CLEAR

Status:
Resistance is growing. Very important we protect the effectiveness of this group.

GROUP 4 (4-AD)

ORANGE

Status:
No known resistance currently. Use in accordance with SCOPS guidelines.

GROUP 5 (5-SI)

PURPLE

Status:
No known resistance currently. Use in accordance with SCOPS guidelines.

How Resistance Develops

Production can be affected even when the percentage of resistant worms is low. In fact the effects of resistance can be seen when only 20% of the worm population is resistant.[1]

Resistance develops gradually over years, but it can be slowed down greatly if SCOPS guidelines are used to help you manage resistance on your farm.

Illustration of resistance development process accelerated over the next four pages for illustrative purposes.

Ref 1. SCOPS manual V3. Scottish data - Moredun (last published survey): England - SCOPS project farms; Wales - Farming Connect Survey results ADAS/VLA.

Resistance is the ability of worms to survive the normal dose of a wormer and pass that ability on to their offspring.

Most pastures contain a mixture of worms that are:

RED WORMS
Resistant to any given wormer

BLUE WORMS
Susceptible to any given wormer

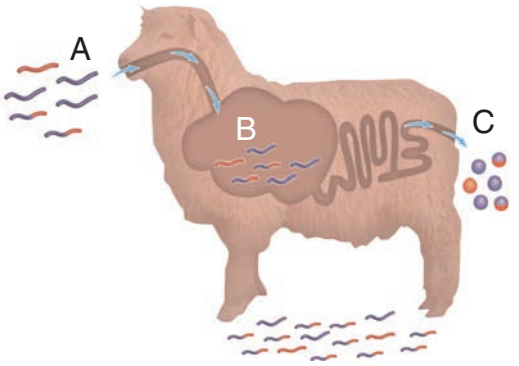
50/50 WORMS
Part resistant/part susceptible

BLUE EGGS
Egg that will develop into a susceptible worm

50/50 EGGS
Eggs that will develop into a part resistant/part susceptible worm

RED EGGS
Egg that will develop into a resistant worm

Resistance Development

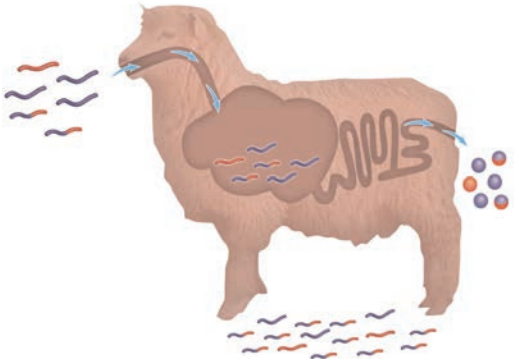


1. Life cycle

A Worm larvae are picked up from the pasture.

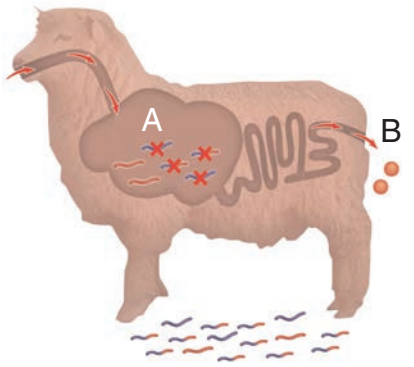
B Larvae develop into worms and breed in the stomach and intestine of sheep.

C Female worms lay eggs which pass in faeces onto the pasture.



2. On the pasture

Worm eggs on the pasture are said to be 'in refugia' - they are not exposed to wormer.



3. At worming

A When the correct dose of a wormer is given only resistant (red) worms survive. Susceptible and part susceptible/part resistant worms will be killed.

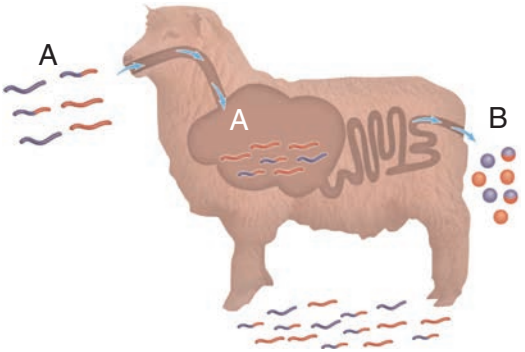
B Worm eggs in faeces, released onto the pasture, will then be from resistant worms.

4. Inside sheep at worming

A Inside the sheep resistant worms surviving the worm drench have a competitive advantage.

B Only resistant worm eggs are passed.

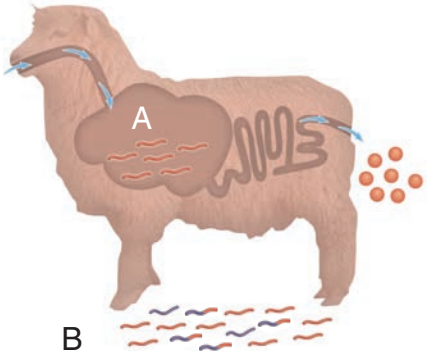
C On the pasture, the proportion of resistant worms slowly increases over time.



5. Worm advantage

A Inside the sheep, resistant worms keep their advantage until the sheep can pick up more susceptible worms from the pasture (those that were “in refugia”).

B The proportion of resistant and susceptible worm eggs passed becomes balanced once the sheep has picked up susceptible worm larvae from refugia.

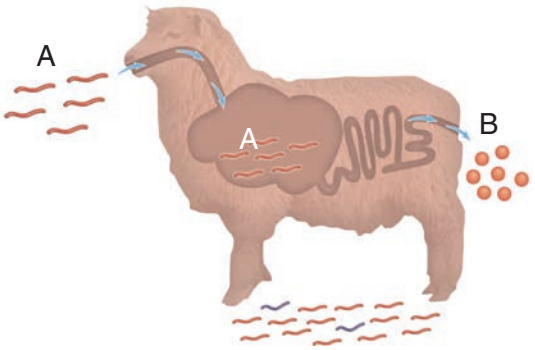


6. Resistance Development

Resistance continues to slowly develop

A If wormers from the same anthelmintic groups are given repeatedly, selection pressure continues for resistant worms.

B On the pasture, the proportion of resistant worms increases still further.



7. Resistance Build Up

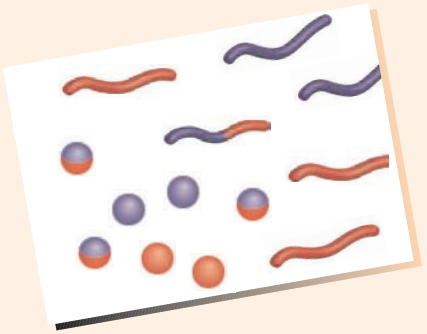
Over a long period, a large proportion of the worm population may become resistant.

A Over time resistance can build-up until productivity losses become evident.

B The majority of worm eggs in faeces, released onto the pasture, will be from resistant worms.

Find Out Your Status

Keep out of the RED and into the BLUE



SCOPS Guidelines No. 3

Test for Anthelmintic Resistance on Your Farm

Worms can be resistant to one, two, or all three classes of the original wormers. Over time resistance can build up until productivity losses become evident.

Clinical signs include lambs being slow to fatten, scouring, anaemia and ill thrift.

- Find out your status: Worm egg count and resistance checks are inexpensive and easy to arrange with your vet.

Control Plan

Sheep producers using the results of faecal egg counts as part of an integrated Flock Health Plan could see the benefits both financially and in the improved health of their stock. Whats more it will help maintain effective wormers on your farm, whilst ensuring the future of the UK sheep industry.

Work through the Worm Control Plan on page 16 with your vet as part of your Flock Health Plan.

WORM CONTROL

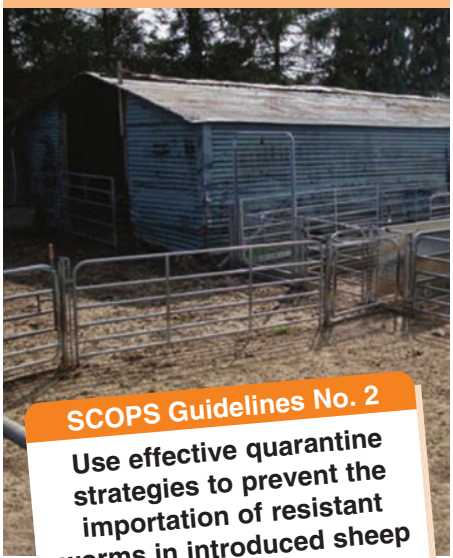
✓ How Much Do You Do NOW?

- ❑ I work with my vet to develop an annual worm control plan
- ❑ I monitor my grazing management
- ❑ I know which parasites threaten my lambs
- ❑ I know which wormers are working effectively because I have tested for resistance
- ❑ I use faecal egg counts to monitor the need to drench and avoid unnecessary worm treatment
- ❑ I don't rely on routine treatments alone
- ❑ I leave the fittest 10-20% of the group untreated
- ❑ If I can't weigh every sheep, I dose for the heaviest in the group
- ❑ I regularly calibrate my drenching gun
- ❑ I administer drench correctly
- ❑ I quarantine treat bought-in sheep
- ❑ I store products securely, out of heat /sunlight and always use within date

Quarantine

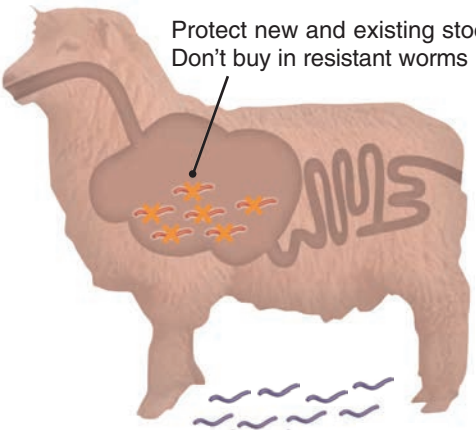
Sheep farmers need to buy replacement ewes and rams, but when buying in any sheep there is always the risk of bringing in disease, and wormer resistance - even if the seller is well known to you.

It's vital that every flock has quarantine procedures set up BEFORE new stock arrives, to make sure only new sheep arrive on your farm and not new diseases and resistant worms.



SCOPS Guidelines No. 2

Use effective quarantine strategies to prevent the importation of resistant worms in introduced sheep and goats



Even if you have resistance on your farm already, quarantine is still best practice as you do not want to introduce worms that are double or even triple resistant.

YARD

New arrivals need to be kept on concrete for 24-48 hours without contacting existing stock. Any eggs from resistant worms within the gut can then be cleared away rather than contaminate pasture.

Quarantine TREATMENT

Quarantine dose with monepantel (Group 4-AD orange wormer) followed by moxidectin (Group 3 ML clear wormer) immediately after.

QUARANTINE

- Turn the sheep out onto dirty pasture - ideally pasture grazed by lambs as recently as possible. If by chance a resistant worm does survive, its effect is minimal as all the farms 'usual' worms will dilute out the eggs produced by the resistant worm.

Talk to your XLVet practice about a quarantine procedure for your farm.

Testing

Worm egg counts, or faecal egg counts (FEC's), are a key tool within your worm control programme. They inform you about future contamination levels and enable you to answer three vital questions:

1. **Do you need to worm your sheep?**
2. **Has your wormer worked?**
3. **Is there resistance?**

Farmer Feedback...

"I was able to correct the poor lamb growth rates and through FEC monitoring the worm burden is now at very low levels. Drenching and labour costs have also been reduced."

Mr Thompson, Cumbria

SCOPS Guidelines No. 3

Test for anthelmintic resistance on your farm

Use of worm egg counts

Your vet will recommend carrying out FEC's as part of your worm control plan and will ask for faecal samples to be collected from ten sheep from the same production stage group. This is done by loosely holding the group for 5-10 minutes in a corner of a yard or field then let them go. The fresh dung samples can be easily picked up and sent for analysis.

Using (FEC's) to target wormer use in your flock will help to:

- Diagnose worm issues sooner - which will enable you to control the worm burden earlier and reduce production losses.
- Estimate the level of infection (with some worms) - which will enable you to monitor the need to drench.
- FEC's can prove that drenching is unnecessary - saving you time and money.
- Allow targeted timing of dosing - which improves the effectiveness of treatments on productivity.
- Monitor whether treatment has worked - enabling you to identify the need to redose sooner.
- Detect the emergence of resistance - enabling you to engage with your vet sooner and influence performance.

Administering

Proper Worming:

1. **Check Weigh Crate**
2. **Weigh** - DO NOT guess-dose for the heaviest across the whole group.
3. **Calibrate** - check the gun is in good working order giving the correct dose.
4. **Check Wormer** - shake white products before use. Do not use if expiry date passed. Once opened use within time allowed (see label).
5. **Technique** - dose over the back of the tongue not just in the mouth.

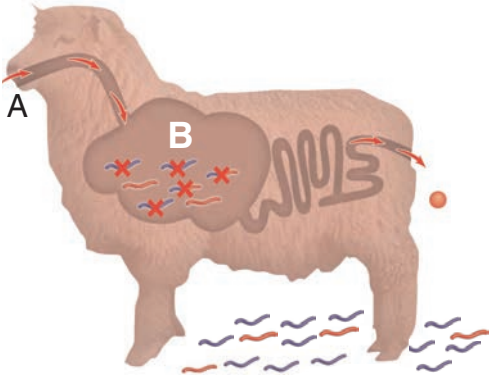
SCOPS Guidelines No. 4
Administer anthelmintics effectively

CORRECT Dosing

Correct dosing slows down the rate of resistance as fewer resistant genes are passed on to the next worm generation.

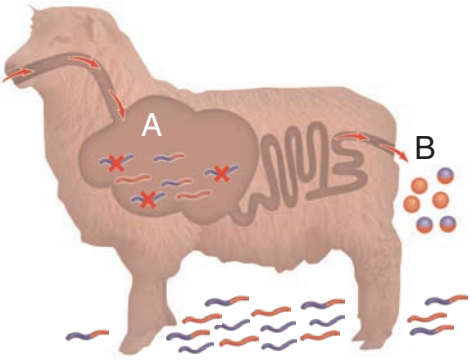
A Full dose of wormer given.

B Only fully resistant worms survive a full dose of wormer.



UNDER Dosing

Resistant and part resistant worms survive under dosing (A) and the eggs from both are released onto pasture within faeces (B). This means more genes for resistance are present when the worms mate, so the number of resistant worms increases more rapidly.



Do you need to worm?

Don't simply follow the same old routine without knowing whether you actually need to drench your sheep.

Avoid unnecessary dosing by carrying out worm egg counts before treatment to confirm whether a group actually do require worming. This will allow you to reduce your wormer costs, save time, reduce flock stress and slow the development of wormer resistance without compromising growth rates or welfare.

Worm only when necessary

Bought-in stock

Use quarantine treatments every time you buy in sheep (see page 9).

Dosing lambs

The risk period can be very weather dependant. Make use of worm egg counts and parasite forecasts to accurately determine the type of parasite and the time for dosing.

Times to speak to your vet include:

Ewes at lambing

Treatment of ewes at lambing for twin/ triplet bearing ewes and the youngest and oldest ewes. However, it is recommended that 10% - 20% of all ewes are not treated at lambing (very important if using 3-ML). This will slow the development of wormer resistance without increasing the risk of disease. The best ewes to leave untreated are healthy ewes in good condition that have had a single lamb. Drench ewes at or shortly after lambing.

Pre-tupping

Pre-tupping doses of ewes is not usually required as ewes at this time of year have a low worm burden. Dosing will tend to select for AR. Treat only shearlings and thin ewes. Consult your XLVet before dosing pre-tupping.

Product choice

Cost is no indication of effectiveness and using what you always use or what works well on your neighbours farm, may not work on yours now.

The smart way to choose a drench is to base your decision on a drench resistance test.

Visit www.grassroots.xlvets.co.uk for more information on available sheep worming products, the chemical groups, withdrawal periods and links to the SCOPS Anthelmintics Listing (illustrated below).

Choose the right product

Ensure that you choose the right product as targeting worms correctly means better results and reduces the risk that you will need to treat again, saving you time and money and your stock stress.

Source a narrow spectrum product where appropriate, which will reduce selection for resistance to the broad spectrum groups. Use combination products only when they are necessary.

Check resistance

Talk to your veterinary practice about post-dosing faecal egg counts (drench tests). A quick indication as to whether the drench has been successful can be gauged by laboratory testing faecal samples from five to ten sheep after treatment. Ideally tests should be repeated at intervals and as a part of the on-going monitoring within your flock health plan.

SCOPS Guidelines No. 6

Select the appropriate anthelmintic for the task

Keep some worms

After drenching don't take your sheep containing resistant worms to clean or low challenge pasture. Make sure you always take some susceptible worms with your sheep to reduce worm population resistance on the new area by choosing option 1 or option 2.

SCOPS Guidelines No. 7

Adopt strategies to preserve susceptible worms on the farm

It is now recommended that one of the following two approaches is used:

OPTION 1

Dose and move leaving 10% - 20% of the flock untreated

The untreated sheep will take susceptible worms with them to the clean pasture, slowing the development of resistance on your land.

OPTION 2

Dose and delay - return sheep to original pasture for 4-7 days then move to clean pasture

Sheep are allowed to become lightly re-infected with susceptible worms before they are moved to clean pasture enabling the susceptible worms to dilute the resistant population.

Reduce dependence on wormers

Alternative control measures include:

- **grazing management including stock movement to lower burden pasture, mixed stocking, new leys etc**
- **using regional information and risk assessments**
- **using rams that have been selected for resistance to worms**

Talk to your local XLVets practice about carrying out a Grassroots Worm Control Resistance Check on your farm.

FREE* Post-dose resistance test when you buy your wormer from an XLVets practice

* Available at participating XLVets practices. Practice to confirm availability.

SCOPS Guidelines No. 8

Reduce dependence on anthelmintics

xLvets Excellence in Practice

Grassroots WORM CONTROL RESISTANCE CHECK

1. Collect faeces samples

Ideally samples need to be collected and delivered to the practice same day. If this is not possible they can be stored in the fridge in an air tight bag. See page 10 for collection tips.

2. Faecal egg count

Worm egg count performed prior to dosing sheep to establish if there is a need to drench.

3. Faecal egg count results

Farmer contacted with results.

4. Advice

If results indicate worm egg burden treatment recommendations will be given.

5. Post-dose faecal egg counts (resistance test)

Collect faeces samples 14 days after drenching with BZ (Group 1) and ML (Group 3) and 7 days later for LV (Group 2). Follow the same protocol as above.

6. Resistance Test Results

If results indicate resistance to the drench, farmers will be contacted and advice given.

Your worm control now

	Jan	Feb	Mar	Apr	May	June
EWES						
TUPS						
SHEARLINGS						
LAMBS						
BOUGHT-IN						

July	Aug	Sep	Oct	Nov	Dec

Treatment protocols

Product Choice	Protocol

Product Choice	Protocol

Notes for your vet

Find out more

Contact your local XLVets practice and ask to speak to someone regarding Grassroots Worm Control.

To find your local XLVets practice and to learn more about worm control and resistance management visit the XLVets website xlvets.co.uk

Further information is also available on the SCOPS website scops.org.uk

xLvets
Excellence in Practice

Grass roots | Worm Control

www.grassroots.xlvets.co.uk