Cattle parasites and their control

Aim

COWS aims to provide the best available, evidence-based information and advice to the cattle industry in relation to the sustainable control of parasites in cattle.

We are an independent industry led group

www.cattleparasites.org.uk

Twitter: @COWSworms

Who?

COWS also has input from farmers and independent consultants

Why?

- Currently, anthelmintic resistance is common in sheep, less so in cattle
- However, suspect resistance has been reported in the liver fluke (to triclabendazole) and the intestinal worm, *Cooperia* (to macrocyclic lactones).
- COWS is following the lead of SCOPS in the provision of up-to-date, evidence-based advice on parasite control and the management of resistance to the cattle industry

Introduction & Scope

- Gut worms
- Lungworms
- Liver fluke & Rumen fluke
- External parasites
- Parasite control
  - Administration of anthelmintics
  - Management options
  - Anthelmintic resistance

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Gut worms – Parasitic gastroenteritis (PGE)

- Known as Nematodes or roundworms
- Two main species of gut worms
  - *Ostertagia ostertagi* (Abomasum)
  - *Cooperia oncophora* (Small intestine)
- Greatest threat to young stock (1st season grazing calves)
  - Scour, weight loss, failure to thrive
- BUT adult productivity can be affected
  - Reduced food intake, growth rates, milk yield

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Epidemiology – gut worms

- All these species have direct life cycles
- Eggs shed on pasture in dung
- Develop to L1----L2----L3 within dung pat
- Development is dependent on temperature (it proceeds faster when it is warmes).
- L3 is infective stage, which migrates from the dung to the pasture
- L3 can survive over winter on pasture
- Control based on preventing build up of L3 on pasture
- Ingestion of large numbers of L3 can cause disease
- Disease typically seen from July onwards

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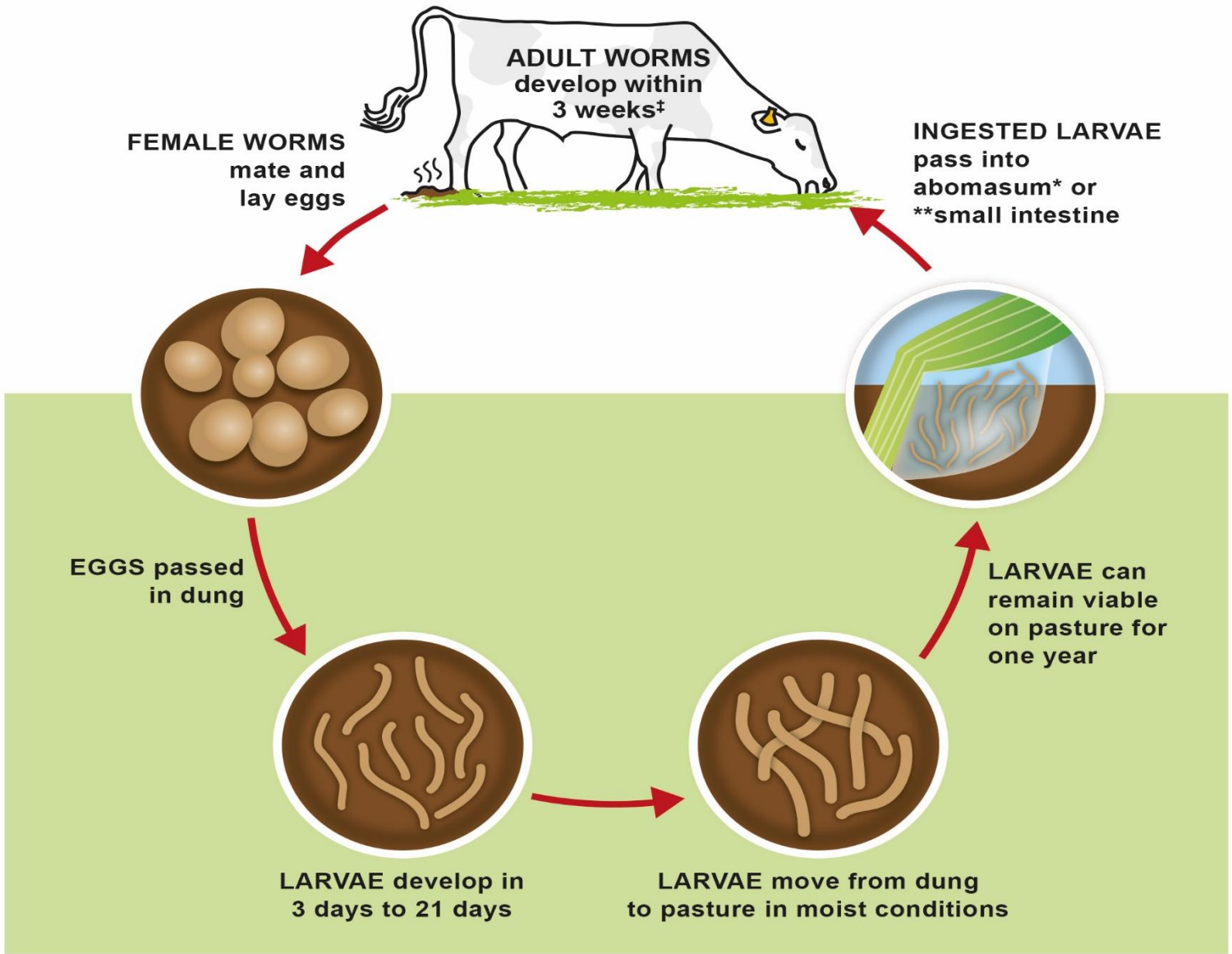
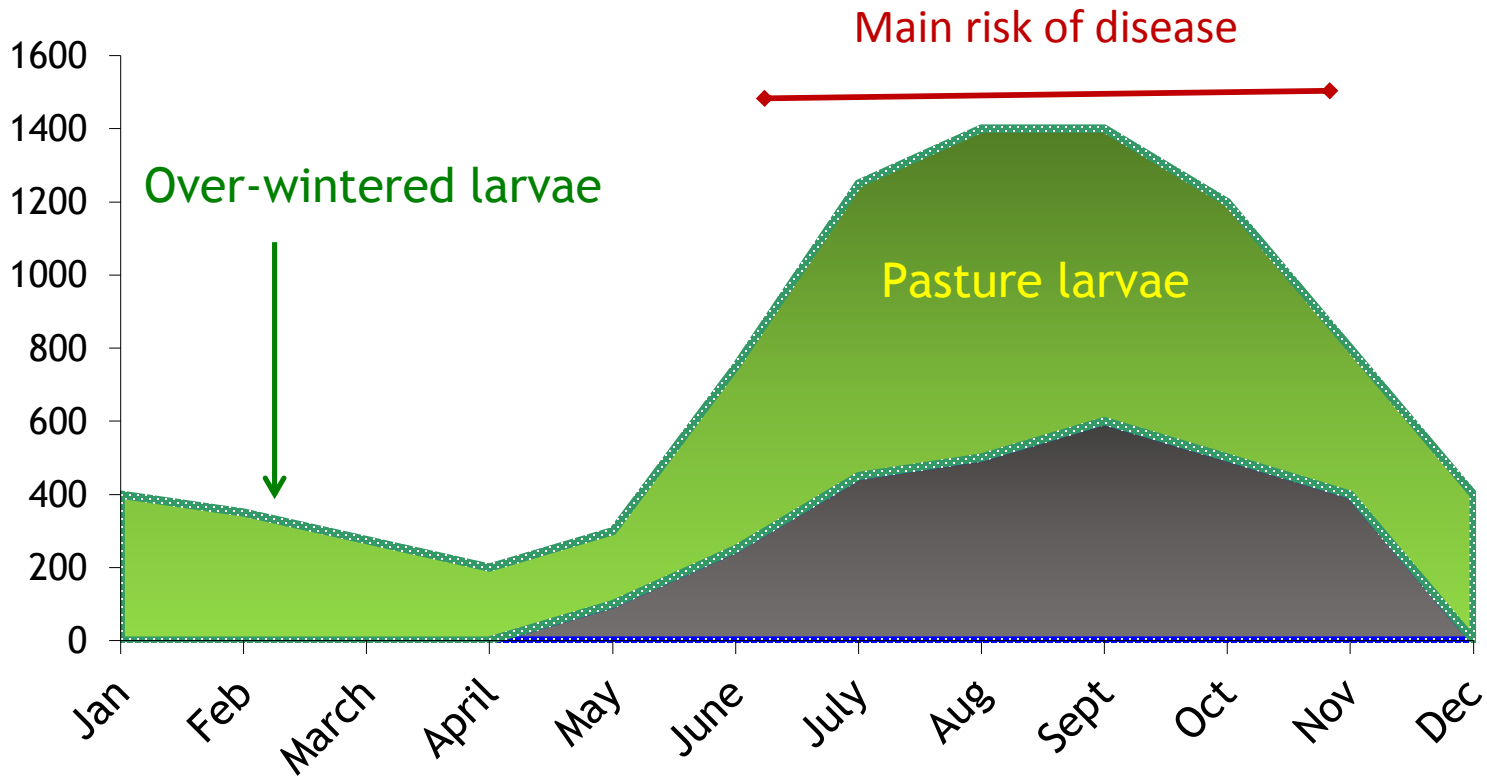
OSTERTAGIA AND *COOPERIA* GUT WORM LIFE CYCLES



* Ostertagia ** Cooperia ‡ Development can be inhibited in autumn and resume in late winter or early spring

Seasonality of gut worms: Weaned calves



Turnout April; Housing November; No treatment or moves

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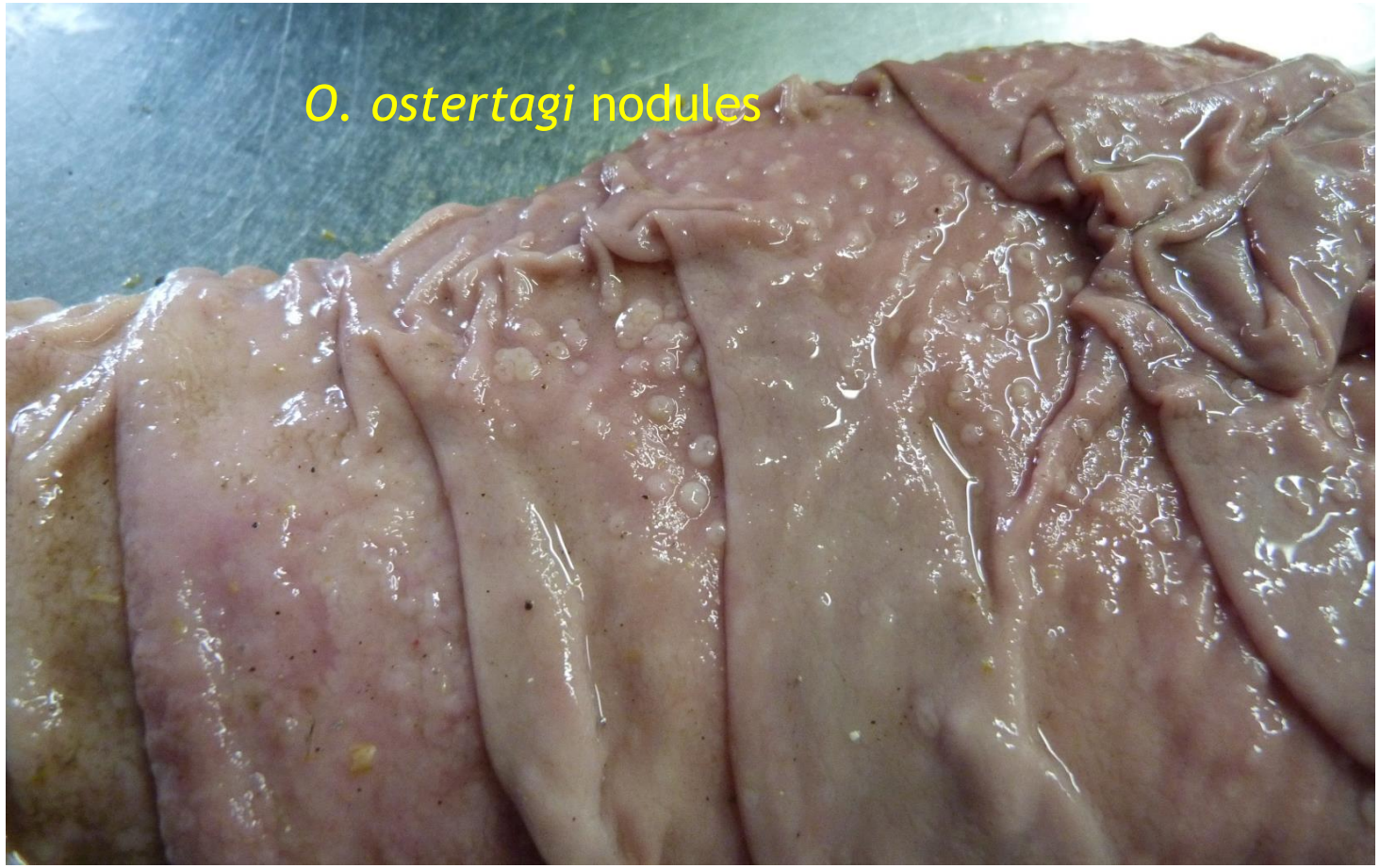
Abomasal pathology



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Lungworm

- One species (*Dictyocaulus viviparus*)
- Highly pathogenic
- Very unpredictable epidemiology
- L1----L2----L3 develop in the dung
- Temperature dependent development
- L3 infective stage, spread by *Pilobolus* fungus, can reach fields where no cattle have previously grazed
- Cattle develop strong immunity, but can be short lasting (≤6 months) in the absence of exposure
- A vaccine is available to protect cattle

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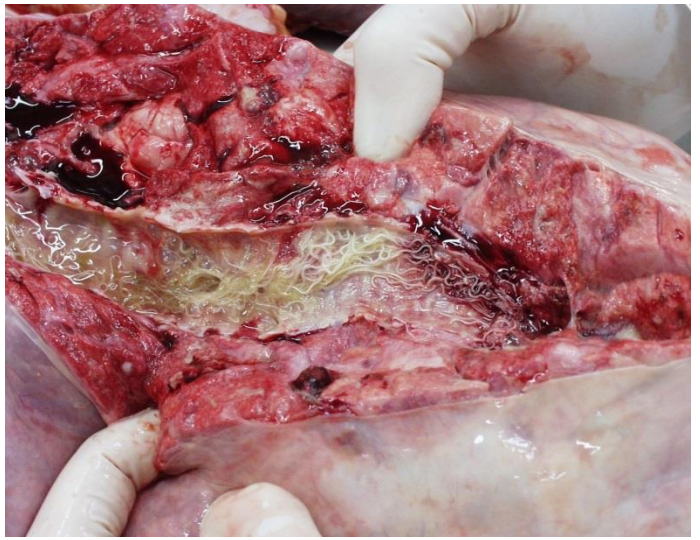
Larval development and dispersion



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Liver and Rumen fluke

- Highly pathogenic in sheep, the same parasite infects cattle
- Major cause of production losses in cattle
- Indirect life cycle – transmitted through a mud snail
- Life cycle dependent on temperature AND rainfall
- Cattle most at risk from infection in the Autumn

- Rumen fluke is relatively new and becoming quite common
  - The juvenile fluke can cause clinical disease, but the adults do little damage.
  - Transmitted by the same mud snail vector as liver fluke

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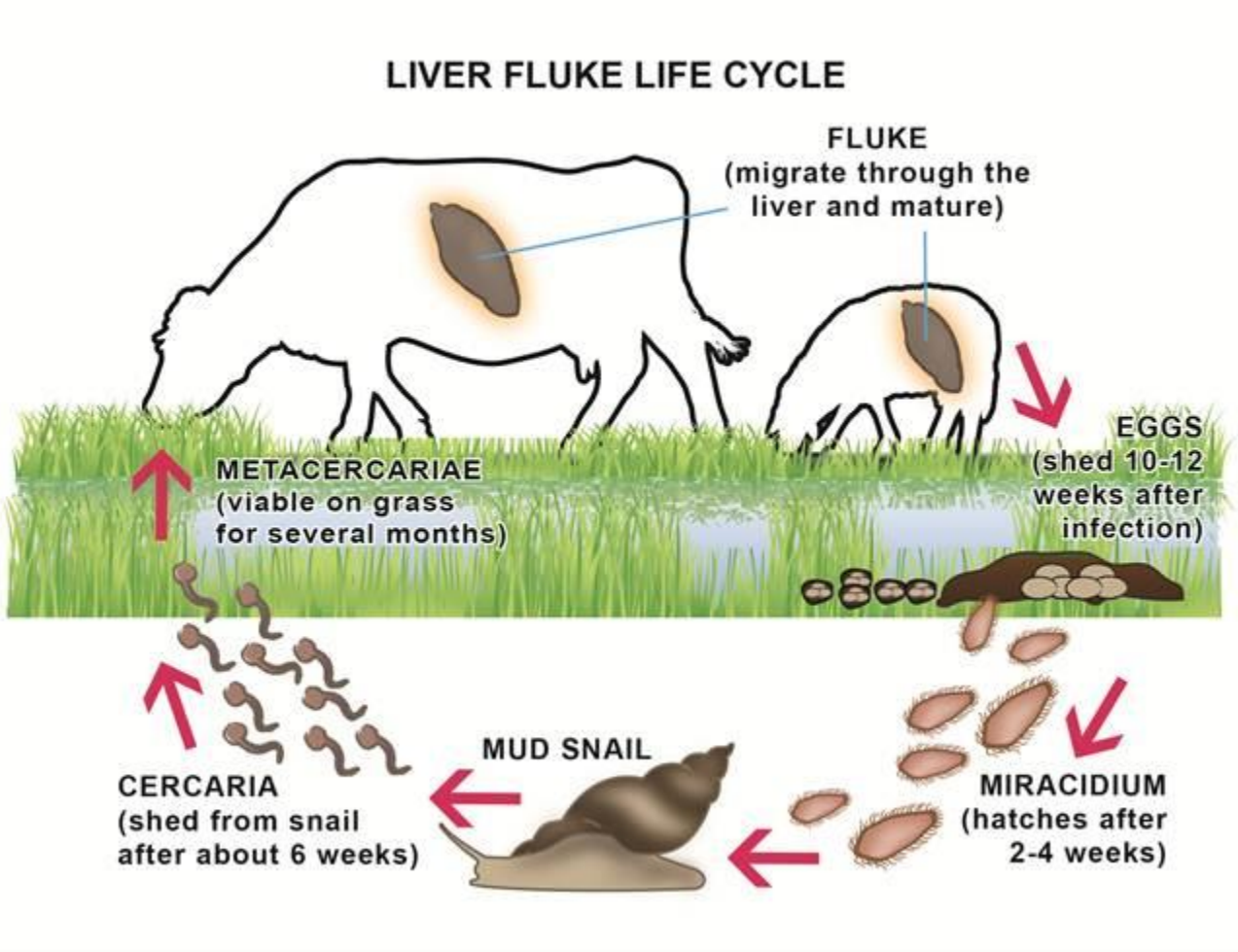
Liver fluke life cycle



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Liver fluke

Main ectoparasite groups

Lice

Flies

Mange Mites

Ticks

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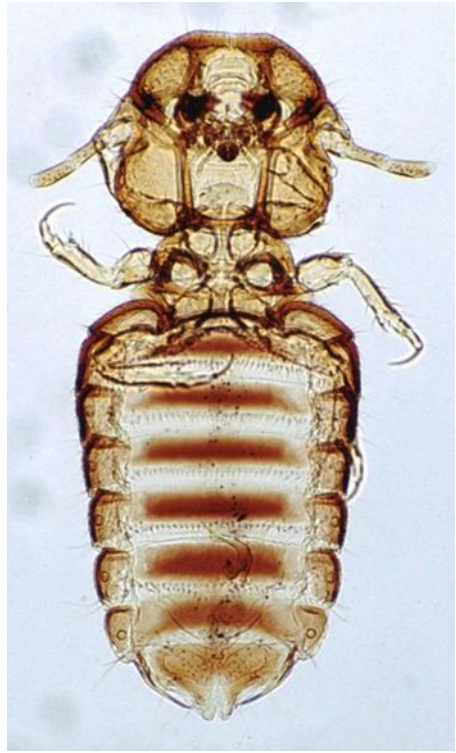
External parasites



- Lice
  - Long winter coats, close contact, warmth and dark conditions means lice are mainly a winter problem
- Mites
  - Most common type is Chorioptic mange, hair loss and irritation around base of the tail and the heels
- Flies
  - A summer problem
  - Biting flies (horse flies and stable flies)
  - Nuisance flies (head and horn flies)
  - Can transmit infections and bother cattle, reducing feeding time
- Ticks
  - Transmit disease such as Red Water Fever
  - Damage hides

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Impact of ectoparasites

Clinical Disease

Behavioural Changes

Production Losses

Hide Damage

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Current tools for parasite control

- **Anthelmintics**
  - Strategic
  - Therapeutic
- **Grazing management**
  - Evasive grazing
  - Mixed grazing
- **Nutrition**
  - Grassland management
  - Supplementation
- **Vaccination**
  - Lungworm (Huskvac)

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Control measures – Identify risk

- What parasites are on the farm?
- Assess pasture & cattle risk
- Key time points - turnout, mid-summer, housing

Parasite	**Time to acquire immunity**
Ostertagia	2 grazing seasons
Cooperia	1 grazing season (3-6 months)
Lungworm	1-2 months, but repeat exposure is required to maintain immunity
Liver fluke	None

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Matrix for nematode risk assessment

Risk factor	High	Medium	Low
Age (grazing seasons, GS)	<1 year (1st GS)	1-2 yrs (2nd GS)	>2 years (adult)*
Weight gain (<2 yrs old) 2 months after turnout	<0.7 kg/day	0.7-0.8 kg/day	>0.8 kg/day
Faecal worm egg count (FGS) 2 months after TO (epg)	>200	50-200	<50
Field type	Permanent pasture	Silage/hay aftermath	Newly sown fields
Grazing history	Grazed by cattle <1 year old within last year	Grazed by cattle 1-2 years old within last year	Grazed by adult cows, sheep** or other species within last year

Incomplete table - see Integrated control chapter of technical manual p13

Control measures – Treat/manage appropriately

- Strategic or therapeutic policy?
- If wait and see is choice then monitor regularly
- Determine which products work well on your farm

COWS strongly advises that farmers discuss product choice with their vet or suitably qualified person (SQP) as part of their herd health plan

Control measures – minimize the risk of resistance

- Dose properly
  - Weigh animals
  - Calibrate dosing equipment regularly
- Aim for good parasite control at housing
- Implement an appropriate quarantine programme

The 5 R's for the effective use of wormers

The right product for the right type of worm

The right animal

The right time

The right dose rate

Administered in the right way

Incorrect parasiticide administration

- **Under-dosing**
  - Poor efficacy when treating clinical cases
  - Reduced persistency & duration of protection
  - Increased risk of resistance

- **Over-dosing**
  - Risk of toxicity
  - Withdrawal periods for meat and milk are determined using the recommended dosage; higher dosages mean that withdrawal periods should be increased

Product choice

Cattle Endoparasiticides and Ectoparasiticides

Better Returns Programme

Group 3: Macrocyclic Lactones (ML) (Clear)

PRODUCT	COMPANY NAME	CHEMICAL NAME	PARASITES CONTROLLED									USE	WITHDRAWAL PERIOD (MEAT)	MILK WITHHOLD
			Roundworm	Lungworm	Tapeworm	Liver fluke	Mites	Warbles	Lice	Hornflies	Eyeworm			
Animec 1% Injection	Chanelle AH	Ivermectin	Yes	Yes	No	No	Yes	Yes	Yes	No	No	Injection S/C	49 days	X
Animec Pour-On 0.5%	Chanelle AH	Ivermectin	Yes	Yes	No	No	Yes	Yes	Yes	No	No	Pour-On	28 days	X
Bimectin Injection	Bimeda	Ivermectin	Yes	Yes	No	No	Yes	Yes	Yes	No	No	InjectionS/C	49 days	X
Bimectin Pour-On for Cattle	Bimeda	Ivermectin	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	Pour-On	31 days	X
Cydectin 0.5% Pour-On for Cattle	Zoetis	Moxidectin	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	Pour-On	14 days	6 days
Cydectin 1% Injectable Solution for Cattle	Zoetis	Moxidectin	Yes	Yes	No	No	Yes	Yes	Yes	No	No	Injection S/C	65 days	60* days
Cydectin 10% LA for Cattle	Zoetis	Moxidectin	Yes	Yes	No	No	Yes	Yes	Yes	No	No	Ear Injection	108 days	80* days
Dectomax 10mg/ml Solution for Injection for Cattle and Sheep	Elanco AH	Doramectin	Yes	Yes	No	No	Yes	Yes	Yes	No	No	Injection S/C	70 days	60* days

Current resistance / Poor efficacy status

Parasite: parasiticide	Solution
Cooperia spp to macrocyclic lactones (Intestinal worms)	In FGS calves, treat with LEV or BZD or administer concurrently with ML
F. hepatica to triclabendazole (TCBZ) (Liver fluke)	Use an alternative flukicide
P. ovis to macrocyclic lactones (Psoroptic mange)	Isolate infested animals and repeat treatment until cured

Key messages

- Know the critical danger time - peak exposure to infective stages
- Think about life cycles and intervention points
  - Block transmission
  - Avoid high risk pasture at key times of year
- Know what is in veterinary medicines
- Talk to your vet or SQP
- Use drugs correctly
- Combine management strategies with drug control
- Think about quarantine measures

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More information

- **www.cattleparasites.org.uk**
- **@COWSworms**
- **Each chapter of the technical manual has a top tips page**