

# Deer Parasite Control Plan (part of an Animal Health Plan)

## Preparation of a Deer Parasite Control Plan is based on:

- Experience and general principles
- Types of deer and classes of stock
- Knowledge of management and environmental risk factors (see also chart on Assessing Risk Factors)
- Knowledge of the parasites present and whether anthelmintic resistance is present or suspected
- Information from Hub, Fact Sheets, Focus Farm presentations
- Advice from animal health professionals (vets)
- A formal annually reviewed Animal Health Plan

## Type of Deer Farm and Classes of stock:

- Breeder (breeding herd, sells most weaners, retains female replacements)
- Breeder/finisher (breeding herd, finishes majority of weaners, retains female replacements)
- Finisher (buys weaners for finishing)
- Velveter (farms velveted stags)
- Combinations of above

## Management and Environmental Risk factors include:

- Parasites and grass both like warm wet conditions (*parasites develop and risk increases when the grass is growing*)
- Farm type (*improved pasture, unimproved, specialty forage, make or buy hay/silage*)
- Stocking rate (*higher stocking rates increase risk*)
- Topography (*flat, rolling, intermediate, hill*)
- Altitude - low, mid, high (*the higher the country the shorter the growing season and the lower the risk*)
- Irrigation (*increases grass growth and parasite risk*)
- Annual seasonal variation (*autumn - high risk, winter - low risk, spring/summer - medium risk*)
- Normal seasonal conditions (*warm wet periods – high risk, dry or cold periods – reduce risk*)
- Possible abnormal weather events (*exceptionally wet, dry, heavy snow etc*) leading to changes in risk
- Pre-rut weaning or post-rut weaning

## Types and classes of deer at greatest risk from parasites:

- Weaners are very susceptible to parasites in their first autumn, before they have developed any immunity to parasites.
- Under normal pasture conditions, weaners are especially susceptible to lungworm in early autumn and gastro-intestinal worms later in autumn
- Wapiti are more susceptible to parasites than red deer, don't develop such good immunity and need more treatments.
- Avoid treating yearling and adult deer unless necessary (ie high challenge, poor feed, weight loss, genotype, seasonal stress etc).
- Hinds that have lost weight and condition while lactating may benefit from treatment before mating.
- Stags may benefit from treatment after the rut, before the winter.
- It is good practice to quarantine drench bought-in animals with an effective combination of anthelmintics to reduce the risk of bringing resistant parasites onto the farm.

## Parasite Control Decision Tree for Weaners

### Jan/Feb (Pre-weaning)



#### High parasite risk factors in autumn

- Lungworm especially
- Warm wet summer
- High stocking rate
- Clinical signs of coughing, diarrhoea
- Sudden deaths
- Rising FLC/ FEC



Treat with anthelmintic

#### Anthelmintic treatment (see below for advice on what anthelmintic to use)

- Injection (moxidectin or abamectin), plus double dose of Oral Combination White (oxfendazole/albendazole) and Clear (levamisole)
- \*Oral Triple Combination at double dose (Trimox/Matrix)



### Pre-or post-rut weaning



#### Pre-rut weaned

Treat at Feb/March weaning

#### Anthelmintic treatment

- Injection (moxidectin or abamectin), plus double dose of Oral Combination White (oxfendazole/albendazole) and Clear (levamisole)
- \*Oral Triple Combination at double dose (Trimox/Matrix)



#### Low parasite risk factors in autumn

- Dry summer
- Low/Medium stocking rate
- No clinical signs
- No deaths
- Zero or very low FLC/ FEC



No Treatment



#### Post-rut weaned

Feb/March

Usually less treatment necessary while still unweaned as long as feed conditions are good and mothers milking well.

Treat if feed is short and calves having to graze pasture to short residual levels



Treat at 3-6 weekly intervals March –June

**Anthelmintic treatment**

- Injection (moxidectin or abamectin), plus double dose of Oral Combination White (oxfendazole/albendazole) and Clear (levamisole)
- \*Oral Triple Combination at double dose (Trimox/Matrix)



Treat at 3-6 weekly intervals March -June

**Anthelmintic treatment**

- Injection (moxidectin or abamectin), plus double dose of Oral Combination White (oxfendazole/albendazole) and Clear (levamisole)
- \*Oral Triple Combination at double dose (Trimox/Matrix)



Winter (July-Aug) – usually low risk and no treatment required, especially if being fed supplements or crops



Spring / summer  
High or low risk



**High parasite risk factors in spring**

- Wapiti-type or wapiti x red deer
- Low salivary CARLA test levels
- Clinical signs of coughing, diarrhoea
- Sudden deaths
- Poor growth rates



Anthelmintic treatment

**Anthelmintic treatment**

- Injection (moxidectin or abamectin), plus double dose of Oral Combination White (oxfendazole/albendazole) and Clear (levamisole)
- \*Oral Triple Combination at double dose (Trimox/Matrix)

**NB choice of anthelmintics important re WHT**



**Low parasite risk factors in spring**

- Red deer
- Good salivary CARLA levels
- No clinical signs or deaths
- Good growth rates



No treatment

NB ensure yearlings slaughtered for venison are outside WHT at time of slaughter

## What anthelmintic should I use?

Table 1 lists anthelmintics currently registered for use in deer, the type and family, the active ingredients, route of administration, brand names and with-holding times (WHT). **NB** there is mounting evidence that anthelmintic resistance, particularly for the gastrointestinal parasites, is developing on NZ deer farms that have used macrocyclic lactone (ML) anthelmintics (ie ivermectin, moxidectin, abamectin etc) for some time. This anthelmintic resistance shows up especially with pour-on anthelmintics. Consequently, we recommend that **pour-on anthelmintics should not be used**. Pour ons are effectively underdosing and as such encourage the development of resistance.

**Table 1. Anthelmintics registered for use in deer (June 2013)**

Type/family	Active ingredient	Route of admin	Brand name	WHT
White	oxfendazole	oral only	Oxfen C Bomatak	10 days
	albendazole	oral only	Valbazen	7 days
	fenbendazole	oral only	Panacur 100	10 days
Macrocyclic lactone (ML)	moxidectin	pour-on	Cydectin Pour-on Exodus Pour-on	Nil
	abamectin	pour-on	Genesis Pour-on Baymec Pour-on Bomectin Gold Pour-on	28 day
	eprinomectin	pour-on	Eprinex Pour-on	7 days
	ivermectin	pour-on	Noromectin Pour-on	21 days

Apart from white oral drenches (oxfendazole, albendazole and fenbendazole), there are no anthelmintics other than pour-ons that are licensed for use in deer. However, deer farmers are permitted to use anthelmintics that are **not registered** for use in deer, but it means that they must use a **Default WHT of 91 days** because residue studies have not been carried out. The exception is **Cydectin injection**, for which limited residue studies have been done and ACVM have granted a special **49 day WHT** as long as the correct dose rate is used and it is administered correctly and has been prescribed by your veterinarian.

To overcome resistance problems and to help slow the development of anthelmintic resistance developing the recommendation is to use a moxidectin or abamectin injection plus a double dose of an oral combination drench (white + levamisole) at the same time. Don't mix individual anthelmintics together. \*Alternatively where the level of resistance has been assessed to be low then an oral commercial triple combination anthelmintic containing a macrocyclic lactone (ML) + white + levamisole at double the sheep dose rate may be used eg Trimox or Matrix.

### Recommendations:

- **Don't use pour-on anthelmintics**
- **Unregistered anthelmintics may be used in deer but they have a default WHT of 91 days, with the exception of Cydectin injection, which has a WHT of 49 days**
- **Use an injection of the most potent ML (moxidectin or abamectin) in combination with a double dose of an oral white/levamisole combination OR use a double dose of a triple combination oral drench by itself**

**Longevity of action** (ie how long does the anthelmintic work) **and how often should I use it?**

<b>Family</b>	<b>Activity (estimated)</b>	<b>Treatment interval*</b>
<b>White drenches (if used alone):</b>		
Oxfendazole, albendazole (oral)	No prolonged activity	Drench at 3 week intervals
<b>Macrocyclic lactones (MLs) and ML/white drench combinations:</b>		
Moxidectin, abamectin (oral and injection)	~ 7-10 days activity	Treat at 4-5 week intervals
Doromectin (injection)	~7 days activity	Treat at 4 week intervals
<b>Triple combination drench:</b>		
ML + white + levamisole	~7 days	Drench at 4 week intervals

\* Reduce interval if high risk of heavy challenge. Increase interval if low risk and low challenge

Table 2. List of most of the anthelmintics currently available (Jun 2013), showing the type or family, the active ingredient(s), the routes of administration and brand names:

<b>Table 2. Anthelmintics currently available</b>			<b>NB. Few registered for deer</b>
<b>Type/family</b>	<b>Active ingredient</b>	<b>Route of admin</b>	<b>Brand name</b>
<b>White</b>	oxfendazole	oral only	Oxfen C, Bomatak, Parafend
	albendazole	oral only	Valbazen, Albendazole C
	fenbendazole	oral only	Panacur
<b>Macrocyclic lactone (ML)</b>	moxidectin	oral, inj, pour-on*	Cydectin, Exodus
	abamectin	oral, inj, pour-on*	Genesis, Baymec, Bomectin, Paramectin, Virbamec, Abacare, Zoomec
	doramectin	inj, pour-on*	Dectomax
	eprinomectin	pour-on only	Eprinex Pour-on
	ivermectin	oral, inj, pour-on*	Ivomec, Noromectin, Virbamec
<b>Clear</b>	levamisole <sup>\$</sup>	oral only	Levicare <sup>\$</sup>
<b>New generation</b>	monepantel <sup>\$</sup>	oral only	Zolvix <sup>\$</sup>
<b>Combinations</b>			
• <b>Double</b>	derquantel <sup>\$</sup> , abamectin	oral only	Startect <sup>\$</sup>
	abamectin, levamisole	oral only	Converge, Leviben, Outlaw, Saturn, Switch
	oxfendazole, levamisole	oral only	Scanda
	albendazole, levamisole	oral only	Duell, Strategik, Arrest
	eprinomectin, levamisole	Inj/ pour-on	Eclipse E /Eclipse
	• <b>Triple</b>	abamectin, oxfendazole, levamisole	oral only
abamectin, albendazole, levamisole		oral only	Troika
moxidectin, albendazole, levamisole		oral only	Trimox

\* Not all brands have all forms of administration

<sup>\$</sup> Correct dose rate not established for deer