



Evidence based parasite control for horses
Which tests to use and when to use them to target wormers

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Directors & SQPs | Westgate Laboratories

www.westgatelabs.co.uk/downloads-for-rvc/

Westgate
LABS



POLL!



LOVE2SHOP

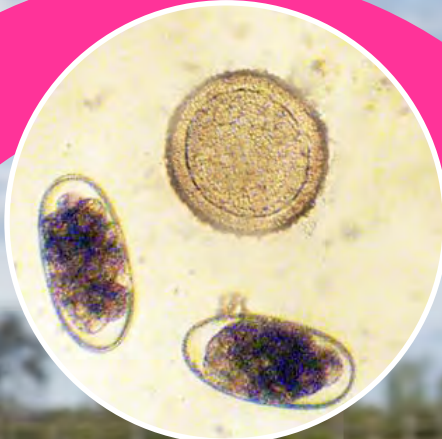
VOUCHER

?
Q&A

What we're going to cover:

- How horses get worms and the parasites that affect them.
- Resistance - why we need to move to test based worm control
- Testing techniques available for the different parasites affecting horses
- How to build this into a programme and a look at some real life case studies.

www.westgatelabs.co.uk/downloads-for-rvc/



worm eggs



worm larvae



eew... what's this in my horse's poo?

Wild horses

- Non intensive
- Graze large areas
- Multi species

= LOW RISK



Domestic horses

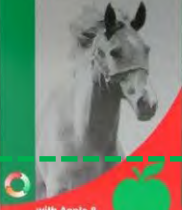
- Intensive
- Confined grazing areas
- Single species

= HIGHER RISK

Panacur
EQUINE GUARD

with Apple & Cinnamon Flavour
HORSE WORMER –
ORAL LIQUID APPLICATION
For the control of Encysted
Inhabited and Encysted
Mucosal small redworm
5 DAY COURSE

225ml bottle



with Apple & Cinnamon Flavour
wormers direct

BENZIMIDAZOLES



IVERMECTIN



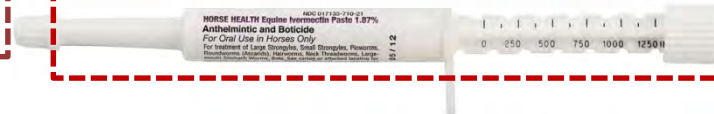
MOXIDECTIN



PYRANTEL



PRAZIQUANTEL



Horse wormers

Licenced in the UK



**IVERMECTIN +
PRAZIQUANTEL**



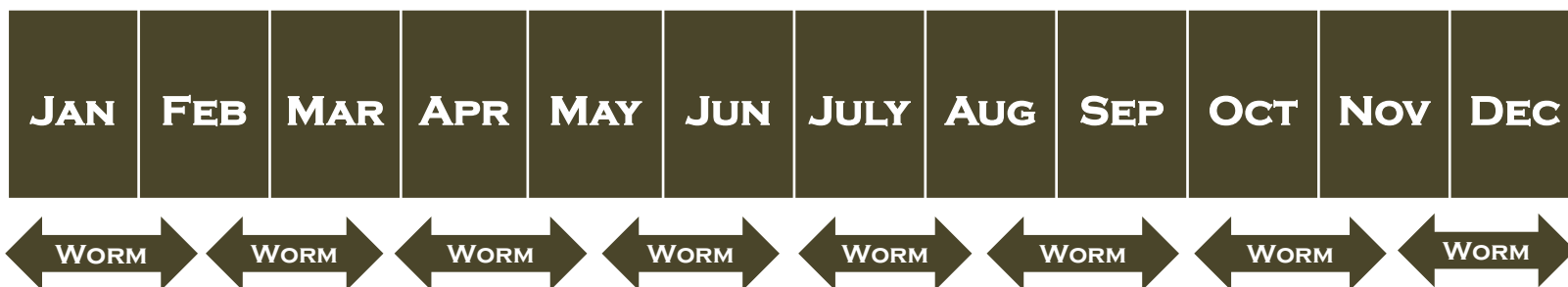
**MOXIDECTIN +
PRAZIQUANTEL**

Combination wormers

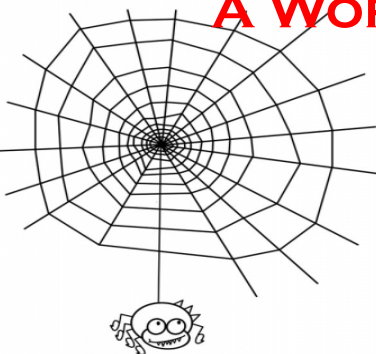
Licensed in the UK



KILL THEM !

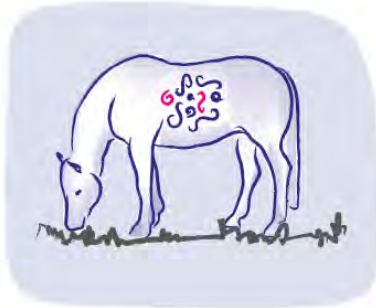


A WORMING PROGRAMME FROM THE GOOD OLD DAYS

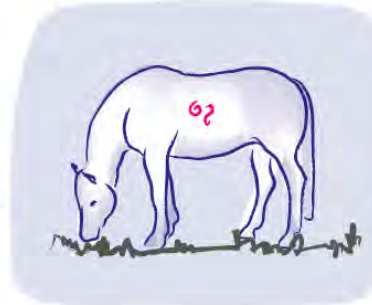


Wormer Resistance and how it develops

A horse naturally has a worm burden of non-resistant and some resistant worms



The horse is wormed



Drug exposure kills all but the small number of resistant worms

Eggs from resistant worms are shed onto the pasture to continue the lifecycle

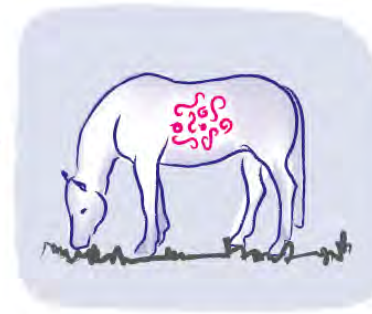


Worms never regain their sensitivity to drugs once resistance develops



Worms on the horse pasture are resistant to the available wormers and do not respond to treatment

If this happens with all drugs then keeping horses here in the future would be difficult



The population of resistant worms increases as the horse is repeatedly exposed to wormer

Resistance Status of the Five Main Wormers available to treat horses in the UK

Prepared in conjunction with Professor Matthews of the Moredun Research Institute



DRUG	Adult small redworm (Cyathostomins)	Encysted small redworm (Cyathostomins)	Large redworm (Strongylus vulgaris)	Larval large redworm (Strongylus vulgaris)	Roundworm (Parascaris equorum)	Tapeworm (Anoplocephala spp.)	Pinworm (Oxyuris equi)	Lungworm (Dictyocaulus arnfieldi)	Liver fluke (Fasciola hepatica)	Threadworm (Strongyloides)	Bots (Gasterophilus spp.)	NB: not a horse worm
FENBENDAZOLE	✓	✓ ⁵	✓	✓ ⁵	✓	✗	✓	✗	✗	✓	✗	
PYRANTEL	✓	✗	✓	✗	✓	✓ ²	✓	✗	✗	✗	✗	
IVERMECTIN	✓	✗	✓	✗	✓	✗	✓	✓	✗	✓	✓	
MOXIDECTIN	✓	✓	✓	✓	✓	✗	✓	✓	✗	✓	✓	
PRAZIQUANTEL	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	

Updated October 2018

- No known resistance
- ✓ Licensed
- 5 5-day course
- 2 Double dose
- ✗ Not licensed

Pink - redworm or roundworm resistance commonly reported in published studies. Measured as no/low worm egg count reduction after wormer treatment

Yellow - shortened redworm egg reappearance period after treatment reported in all recent UK published studies.

Dark orange – resistance reported as measured by no/low redworm egg count reduction after treatment. Prevalence of pyrantel resistance in redworm varies between study populations in published studies.

Lime green – anecdotal reports of reduced wormer effectiveness in these species. No published efficacy studies.

what will
you do
when the
wormers
don't work
anymore?



#slowdrugresistance



Which of these horses have worms?



Minimising Exposure to Wormers



Using EquiSal Tapeworm in a targeted programme reduced the use of tapeworm wormers by **86%**

LIGHTBODY *ET AL* (2017)

“Faecal egg counts can be used to identify the likely 15-20% of horses that need worming and can reduce wormer use by up to **82%**”.

LESTER & MATTHEWS (2013)

Fewer than **27%** of horses EquiSal tested require treatment for tapeworm

AUSTIN DAVIS
BIOLOGICS



could you
be giving
unnecessary
wormers?

POLL 1.



Parasites Affecting Horses

Test routinely; Treat if required

Autumn/Winter

SMALL & LARGE REDWORM



ASCARIDS



TAPEWORM



ENCYSTED SMALL REDWORM



worm count x 3 per year plus x 1 resistance test

EquiSal test x 2 a year

test and/or treat

Test only if necessary; Treat if required

Treat if required

LIVER FLUKE



LUNGWORM



PINWORM



BOTS



wet grazing with sheep
test December-May

grazing with donkeys
test May-September

rubbing tail head
sellotape test

bot eggs on hair
1 x winter wormer

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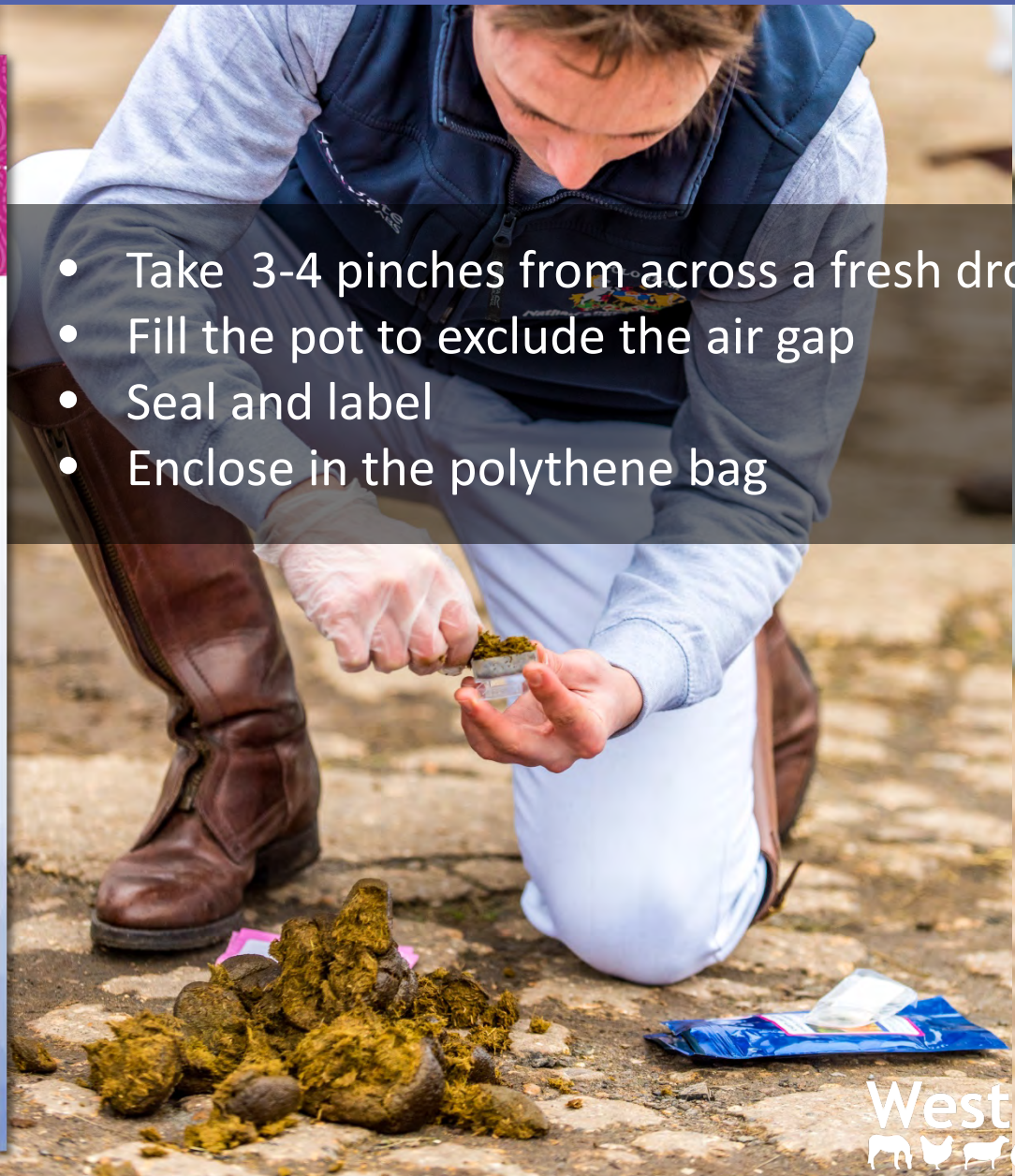
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Taking a sample for a worm egg count



- Take 3-4 pinches from across a fresh dropping
- Fill the pot to exclude the air gap
- Seal and label
- Enclose in the polythene bag



Modified McMaster technique

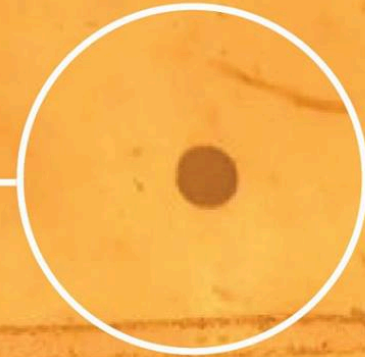
- Measured amount of dung
- Float off worm eggs to count under the microscope
- Statistical result of eggs per gram



Worm eggs seen under the microscope

ROUNDWORM EGG

or ascarid egg



TAPEWORM EGG



3 x REDWORM EGGS

or strongyle eggs



Worm egg counts

A single worm egg count is a useful snapshot

Quarantine & test new horses coming into a herd

Use as a reduction test to monitor wormer efficacy 10-14 days after treatment

As a barometer of overall immune health in the horse

Conduct every 8-12 weeks to identify high egg shedders in a herd



Worm egg count results | treatment scale



The sign < means 'less than' so a result of <50 e.p.g. means no eggs seen in the sample.



Up to 200 e.p.g. is a LOW count, your worming measures are working. No need to worm at this level.



Between 200 e.p.g. and 1200 e.p.g. is a MEDIUM count and the horse needs worming.



Over 1200 e.p.g. is a HIGH count, the horse need worming and the worming programme needs attention.

epg = eggs per gram

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Small redworm blood test

Launched September 2019

Recommendation is to test only low and medium risk horses and to worm high risk horses proactively

ELISA test that detects all stages of small redworm including encysted

Sample needs to be taken and results interpreted by a vet

Testing suggested between September and end of December



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EquiSal Tapeworm Testing

Measures antibodies in the horse's saliva

The horse mustn't have eaten, drunk or been exercised for 30 mins before testing

Place the cotton swab in the interdental space until the indicator turns pink



/ LAB TEST



/ HORSES



/ TAPEWORMS



EquiSal Saliva Score Results

Test every **6 months**

Wait until **4 months**
have elapsed since the
last tapewormer or **2
months** for reduction
test

	EquiSal Tapeworm Saliva Score	Tapeworm diagnosis	Tapeworm treatment recommended
Green	< -0.09	Low	No
Yellow	-0.09 – 0.6	Borderline	Yes
Red	> 0.6	Moderate/High	Yes

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Adhesive Tape Testing for Pinworm



- Best taken in the morning before 9am
- Take a 4" length of clear sticky tape and press firmly onto the skin around the anus area
- Fold the tape in half, sticky side to sticky side.
- Pop the folded piece of tape into the sample bag



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Worm Egg Counting For Liver Fluke



- Take 3 samples over a 3 day period
- A worm egg count is performed with a different solution to float the worm eggs off
- Or Liverpool have developed an ELISA blood test
- No licenced flukeicide for horses



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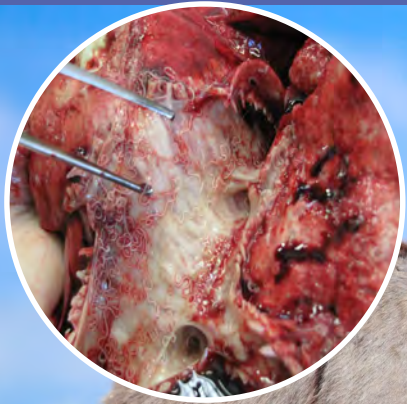
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Baermann's Sedimentation Test For Lungworm



- Test the donkey as well as any horses that might be showing symptoms
- This test requires 2-3 times the amount of faecal matter than a worm egg count
- Takes a number of days to complete.



/ LAB TEST



/ HORSES



/ LUNGWORM

Donkeys & Mules

- EquiSal test not scientifically validated on donkeys at post mortem level but used with good effect.
- Panacur 5 day Guard, Eqvalan & Strongid P are the only licensed wormers for donkeys.
- Vets at the Donkey Sanctuary successfully prescribe EquiMax and Equest Pramox.
- Treat MULES in line with donkeys.

In line with all equines the British Equine Veterinary Association advocate a targeted worming approach.



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Bots



- No means of testing for bots
- Look out for eggs laid on the horse's coat through summer and autumn
- Scrape with a bot knife
- Ingested larvae not treatable until they're in the stomach of the horse. Target with a single treatment after the first frost of the winter which will kill bot flies and ensure no more reinfection.

A Veterinary Approved Programme For Healthy Horses

SPRING

Worm egg count for redworm & ascarids

Saliva test for tapeworm

SUMMER

Worm egg count for redworm & ascarids

AUTUMN

Worm egg count for redworm & ascarids

Saliva test for tapeworm

LATE AUTUMN/
WINTER

Blood test with your vet and/or treat for possible encysted redworm, depending on risk.

✚ Worm egg count reduction tests should be 'performed at least annually'* to monitor drug resistance.
(Equine de-worming; a consensus of current best practice. In: UK-Vet Equine. 2019.)



/ LAB TEST



/ HORSES



/ WORM EGG
COUNT



/ TAP EWORMS



/ RESISTANCE
TEST

Westgate
LABS

Parasites Affecting Horses

Test routinely; Treat if required

Autumn/Winter

SMALL & LARGE REDWORM



ASCARIDS



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What influences parasites?

Weather



90%



13°

≥95%



13°

≥95%



14°

90%



15°

80%



15°

- Warm wet weather increases risk of parasite infection



- Spring & autumn highest risk times



- Extremes of weather help to break lifecycles

POLL 2.



[80:20]

750 e.p.g.

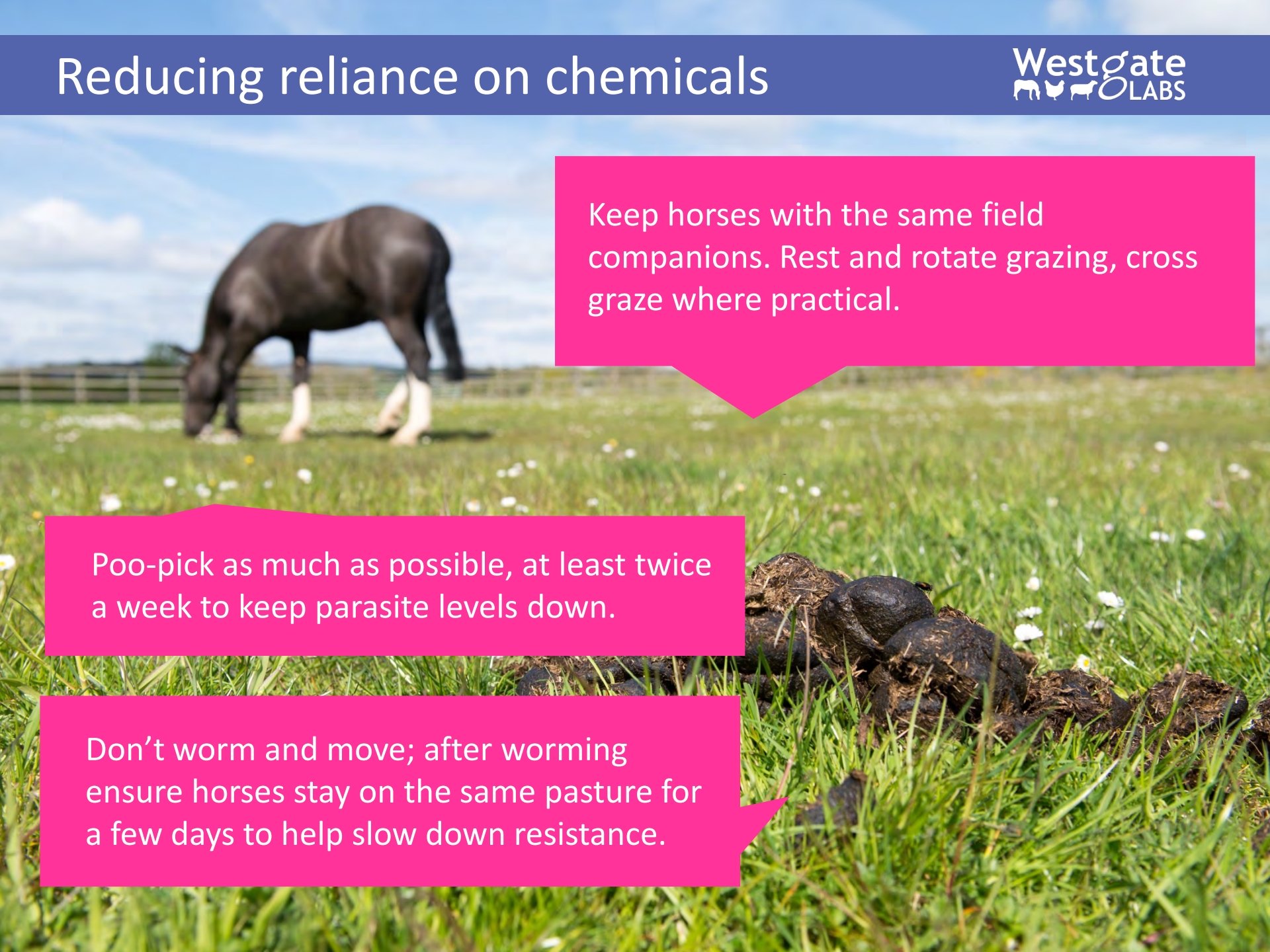
<50 e.p.g.

50 e.p.g.

100 e.p.g.

<50 e.p.g.

Reducing reliance on chemicals



Keep horses with the same field companions. Rest and rotate grazing, cross graze where practical.

Poo-pick as much as possible, at least twice a week to keep parasite levels down.

Don't worm and move; after worming ensure horses stay on the same pasture for a few days to help slow down resistance.

Targeted worming for yards



The more horses kept together the more important good parasite control becomes.

- Worm count & Equisal test regularly to identify high egg shedders
- Target wormers appropriately
- Quarantine new horses
- Co-ordinate testing and treating
- Test for resistance

Mares & Foals

- Youngsters are especially vulnerable to parasites especially ascarids
- Treat proactively every 4-6 weeks alternating between pyrantel and fenbendazole until the foal is six months old
- Tapeworm test after weaning
- Worm for the possibility of encysted redworm in winter



Moxidectin is not a suitable drug for young foals until they have a sufficient covering of body fat.

Equest: 4 months Equest Pramox: 6.5 months

Ivermectin is not the best choice of product for routine dosing of young horses as there is some known resistance to ascarids.



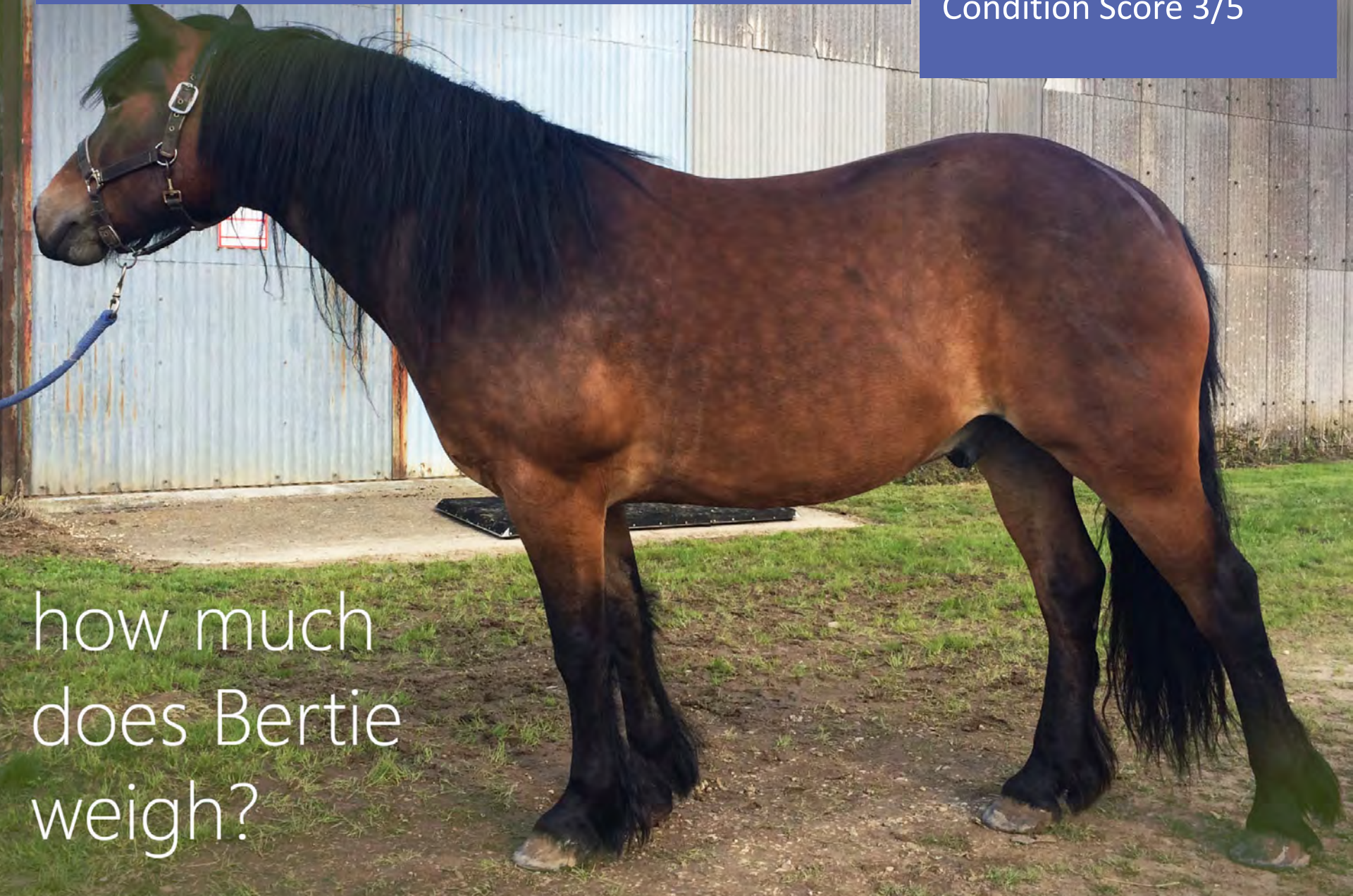
Threadworm

Strongyloides westeri

Can be passed through the mare's milk to infect the foal. Leading parasitologists now question whether there is any negative impact on the foal and therefore the need to treat. Moxidectin (Equest) given four weeks before the foaling due date or an ivermectin based wormer around foaling time are both effective

Dosing appropriately

14hh Highland Pony
Condition Score 3/5

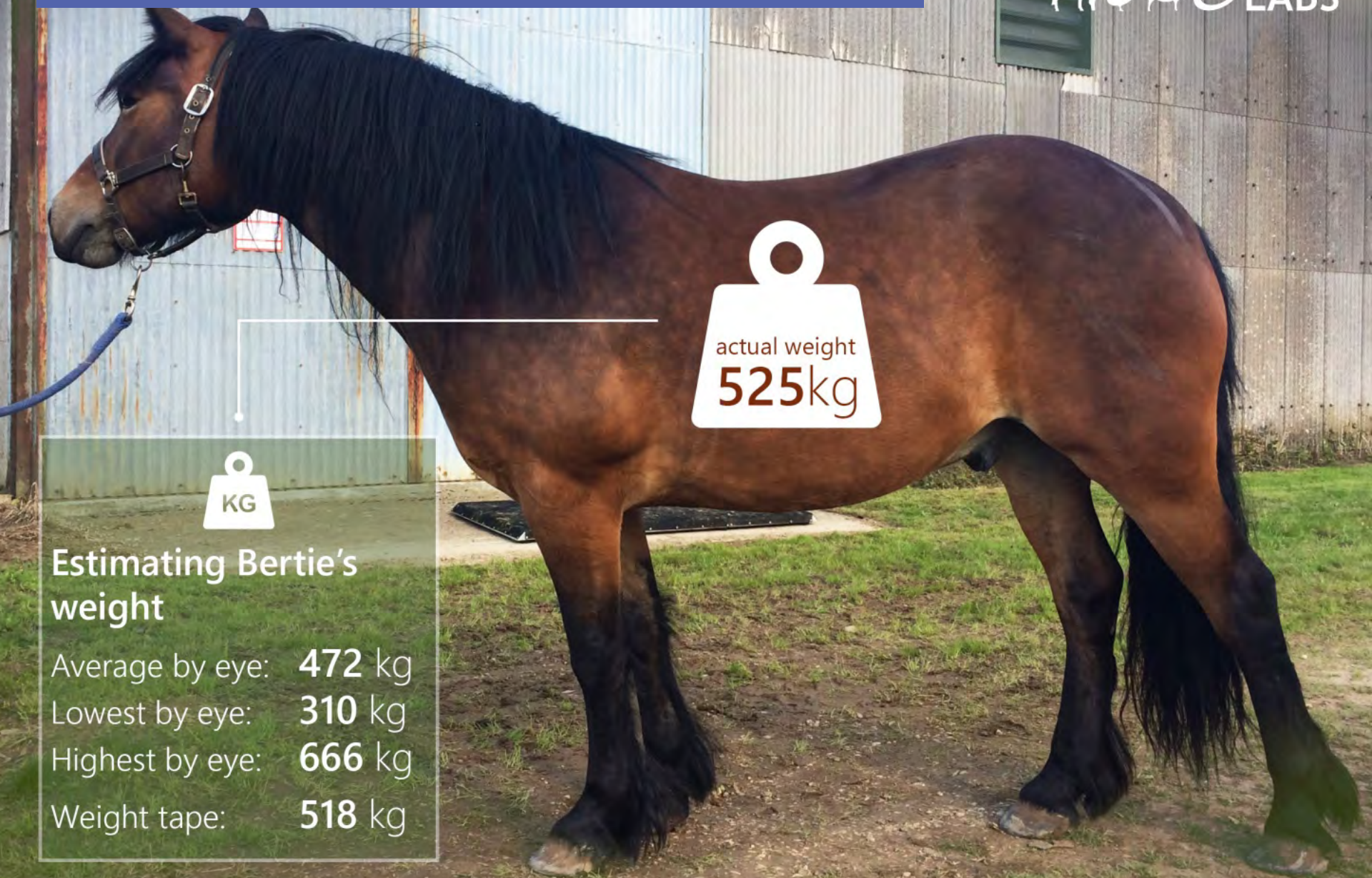


how much
does Bertie
weigh?

POLL 3.



Dosing appropriately



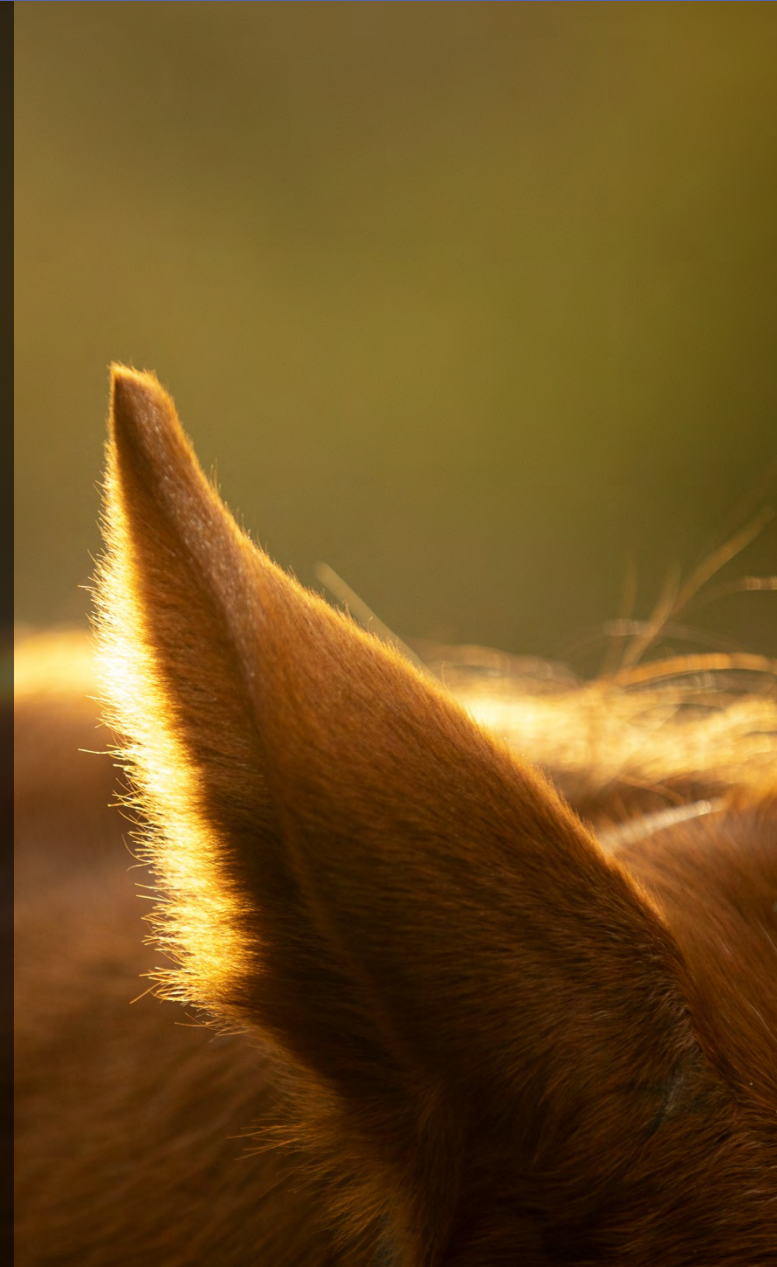
actual weight
525kg



Estimating Bertie's weight

Average by eye:	472 kg
Lowest by eye:	310 kg
Highest by eye:	666 kg
Weight tape:	518 kg

1. How old is the horse?
2. What and when was the last wormer given?
3. Was the horse wormed for encysted redworm in the late autumn/winter?
4. When was the horse last tested or treated for tapeworm?
5. Is it in good condition? Are there any health issues?
6. What is the horse's grazing like? Does it travel away to competitions or training?
7. Check that they know the weight of the horse?
8. Is the horse destined for the food chain?



Scenarios: Bertie's high redworm, MARCH



Bertie is a 10 year old Highland pony who was wormed in December with Equest . It's March now and he has a count of 2000 e.p.g.

PREFERRED ROUTE


- Question correct amount given? Did he get the full dose? How much does he weigh?
- Question potential parasite challenges? Husbandry? Other health issues?

No concerns –
ivermectin &
retest

Any doubts –
moxidectin &
retest



Scenarios: Teddy's tapeworm, APRIL

A rider in purple and pink attire is jumping a light-colored horse over a green hedge. The horse is in mid-air, clearing the jump. The background is a blurred green field.

Teddy is a riding club horse. He had always been treated regularly for tapeworm, the most recent dose in Equest Pramox in January, three months before. In April the owner decided to EquiSal test him. He came back with a high saliva score at 13.

Scenarios: Teddy

- Change the drug and double dose pyrantel.



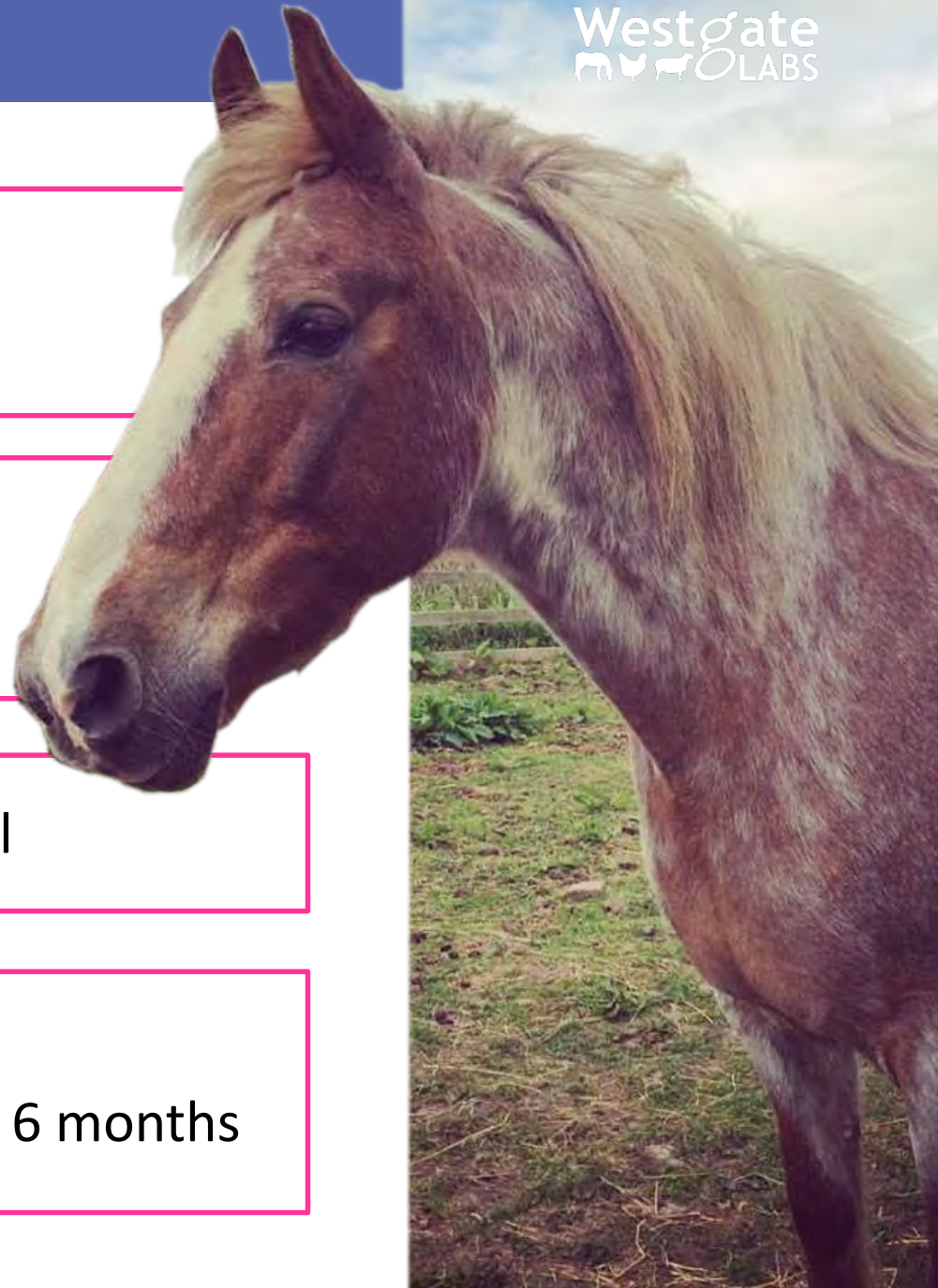
- Test again after 2 months
Saliva score -0.4 borderline




- Treat again with praziquantel



- Test again after 2 months
Saliva score low test again in 6 months



Scenarios: Mabel, new horse JULY

A photograph of two women in a stable. The woman on the left is wearing a blue quilted vest over a black and white striped shirt. The woman on the right is wearing a green hoodie with 'ATHLETIC VANCOUVER' printed on it. They are both looking at a clipboard held by the woman on the left. In the background, a brown and white horse is visible, slightly out of focus.

Mabel 8 years old no worming history. She's been in isolation and her worm egg count is 950 e.p.g. strongyle eggs and a mod/high EquiSal test.

Scenarios: Mabel, new horse JULY

DOSING OPTIONS



- Ivermectin/praziquantel

OR

- Double dose pyrantel

OR

- Praziquantel then ivermectin if sensitive with probiotic

THEN

- Follow up with reduction tests

Avoid moxidectin
where possible



Scenarios: Eriskay

Eriskay has been on a targeted programme for a year. She has just had a clear worm egg count but her owner found these worms in her droppings and is now questioning the result and saying worm counts can't be trusted.



Eriskay has pinworm for which a worm egg count is not a reliable test.

1. Reassure the owner about the safety of using worm egg counts and following a test based programme.
2. Advise one of the older style chemicals such as pyrantel or fenbendazole depending on time of year and other treatment needs such as tapeworm
3. At the same time the owner must also rigorously clean down and disinfect anywhere the horse might rub such as stable wall, gate and fence posts with a product like Virkon to prevent reinfection.
4. Sellotape test 2 weeks after treatment to check if it's been effective and potentially treat again if necessary.



Scenarios: Exy's sudden roundworm



Exy is a 12 year old thoroughbred cross only ever wormed with ivermectin or moxidectin (plus praziquantel). He grazes in a closed herd with two other horses who are both 15+ years.

A recent test showed a count of 600 epg strongyle (redworm) 5850 epg ascarid (roundworm) plus pinworm eggs on a sellotape test

Scenarios: Exy

- 5 day guard, fenbendazole
- Reduction test
- Ivermectin/moxidectin in 6 weeks time (to target redworm depending on time of year)
- Resume regular WEC every 3 months thereafter
- Discuss dosing the other two older horses for ascarids



Scenarios: Why did Exy suddenly present with ascarids?



MAYBE

He hadn't been exposed before? A mare from a 'dubious background' was on the field last year and could have been the ascarid source.

OR

Exy' had harboured the ascarids for many years and the constant use of 'mectin wormers had allowed them to remain untreated as some are resistant to these wormers.

OR

Had something happened to affect his immune system?

Scenarios: Fern a very wormy youngster

Fern is a two year old Dales Pony purchased as a weanling.

She has a consistent redworm count every 8 weeks when worm egg counted. Has been on a weighbridge to ensure correct dosage administered each time. Treated under the vet as required more frequent treatment than an SQP could advise.

Test date	Result	Wormer
20/04/2018	1000EPG	Panacur 5 day
17/05/2018	50 Epg	
21/05/2018	100EPG	
01/06/2018	200EPG	IVERMECTIN
11/07/2018	700EPG	MOXIDECTIN
30/08/2018	1700EPG	Panacur 5 day
13/09/2018	200 res	Double Strongid-P (two tubes) as Mod/high EquiSal result
25/09/2018	<50	
22/10/2018	250EPG	IVERMECTIN GRANULES
30/11/2018	<50	
11/12/2018	400EPG	Equest-17/12- saw redworm
11/02/2019	300EPG	Equest 13/2

Fern had a worm count when tested but this responded to the Panacur – she didn't come with resistant worms

The worm egg count rose steeply despite treatment!

She has picked these up from the new pasture

Test date	Result	Wormer
-----------	--------	--------

15/04/2019	200EPG	Eraquell
------------	--------	----------

10/06/2019	200EPG	Eraquell
------------	--------	----------

08/08/2019	<50	
------------	-----	--

29/08/2019	<50	
------------	-----	--

11/09/2019	<50	
------------	-----	--

03/10/2019	<50	
------------	-----	--

04/11/2019	300epg	
------------	--------	--

21/11/2019	200epg	
------------	--------	--

03/12/2019	400epg	Equest
------------	--------	--------

17/01/2020	<50	
------------	-----	--

07/02/2020	<50	
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Worms never regain sensitivity to drugs once they become resistant but we see the count stabilising as Fern's own immune system becomes better able to deal with the infection.

Test date	Result	Wormer
-----------	--------	--------

12/03/2020	<50	
------------	-----	--

30/04/2020	<50	
------------	-----	--

17/06/2020	200epg	
------------	--------	--

29/07/2020	200epg	
------------	--------	--

19/08/2020	150epg	
------------	--------	--

19/10/2020	100epg	
------------	--------	--

16/12/2020	300epg	Equest
------------	--------	--------



Fern managing a low worm burden herself until the proactive treatment for encysted redworm.

SUMMARY

1. Avoid regular dosing, reserve moxidectin
2. Make testing the centre of a worm control programme, test for chemical resistance
3. Remember the limits of worm counts and address encysted redworm once per year
4. If you see colic in practice then consider parasites as a cause



Thank you!

RAFFLE!





QUESTIONS?

www.westgatelabs.co.uk/downloads-for-rvc/