

INVESTIGATION OF POOR VELVET PRODUCTIONP. McHugh

In August 1991 I was approached by a deer client regarding 2 problems in his herd.

1. Decreasing velvet production.
2. Decreasing liveweight for age.

The decreasing velvet production is illustrated in the following table:

<u>YEAR</u>	<u>AGE GROUP</u>			
	2 YEAR	3 YEAR	4 YEAR	5 YEAR
1990	0.75 kg			
1989	0.77 kg	1.26 kg		
1988	1.00 kg	1.48 kg	1.81 kg	
1987	1.41 kg	1.98 kg	1.94 kg	2.06 kg
1986	1.30 kg	2.00 kg	2.36 kg	2.11 kg

The decreasing liveweight for age is illustrated in the following table:

<u>YEAR</u>	<u>WEIGHT</u>			
	WEANING	JULY	DECEMBER	1.5 YEARS
1989	44.2	52.5	83.4	89.4
1988	35.0	49.3	83.8	91.3
1987	45.0	59.4	-	84.4
1986	48.3	-	-	100
1985	47.0	-	-	102.3
1984	48.9	-	-	106

Since 1990 the operation has run over 2 properties of 1000 acres each.

MIDWINTER STOCK NUMBERS:

## PROPERTY ONE:

1000 mixed age stags  
 500 8-month stags  
 300 8-month hinds

## PROPERTY TWO:

1600 mixed age hinds

Over winter there is no appreciable grass growth. All stock are supplementary fed a menu of hay, silage, choumollier, turnips and barley. Grass growth starts late August/early September.

The animal health programme consists of regular drenching of all young stock with a benzimidazole drench from weaning to 15 months of age.

On 08/08/91 I visited the property to examine and blood sample some stags. The animals were being grazed in mobs of 150 - 300 having a menu of supplements as described previously and were being run on and off crop.

Upon examination as a group they appeared listless, thin, poor coated and inappetant. Coincidentally a trial was being run on two small groups of stags that had been selected from the main mob and grazed separately being fed medicated nuts as well as other supplements. These animals appeared far healthier than the main mobs with more gut fill, better coats and alert demeanour.

Blood samples were taken.

HAEMATOLOGY

	Hb(g/dl)	P.C.V.
1.	15.2	.42
2.	14.1	.38
3.	9.1	.27
4.	14.5	.40
5.	12.0	.38

Normal values:

Hb : 15.7 - 21.0  
P.C.V. : .42 - .55

SAMPLEAVERAGE VALUENORMAL VALUE

Serum Copper(umol/l)	5.18	8 - 22
Serum Ferroxidase(iu/l)	5.4	16 - 27

Serum B12(pmol/l)	123.5	?
GSH-Px	24	>2 (cattle)
Serum Zinc	9.59	>12 (sheep)

The animals were anaemic and low in both Copper and Zinc.

It was decided to randomly treat 150 stags of various age groups with 10 grams Copper orally ( Cuprax C, Coopers) with 850 as controls. In addition small groups of stags were also treated with Copper and B12(10mls Prolaject B12, Bomac) and B12 only. Subsequent velvet production would be compared. The copper bullets were administered during Tb testing on 15/08/91

On 19/08/91 four mixed age stags were sent to the works and liver samples taken.

<u>SAMPLE</u>	<u>AVERAGE</u>	<u>NORMAL VALUE</u>
Liver Copper(umol/kg)	36.75	> 100
Liver selenium "	2673	-
Liver B12	459	-
Liver Zinc	355	-

( No reference values available for selenium, B12 or Zinc in deer)

Given the results, the trial was reversed with 850 stags being treated with Copper and 150 controls. In addition all stags were weighed for midwinter bodyweight.

Herbage samples were taken as part of the concurrent trial in progress feeding the medicated nuts. They showed a ppm for Zinc of 15 ( normal value 25 ). This value was lowest of several trial farms . Blood Zinc was also considered low at 9.59 ( deficiency <7 ) so an in - line dispenser was installed ( Dosatron 8000 ) and after a calculation of requirements, 0.5 kg /day of Zinc sulphate monohydrate was metered in to the mainline water system.

The replacement weaner hinds and stags were also being grazed on Property one. On 16.09/91 these were liver biopsied and blood tested for copper.

<u>SAMPLE</u>	<u>AVERAGE</u>	<u>NORMAL VALUE</u>
Serum ferroxidase(iu/l)	15	16 - 27
Liver copper(umol/kg)	226.3	>100

No copper supplementation was administered.

It was approximately one month since copper dosing. Upon inspection the stags still appeared poor with no obvious improvement. The weaners were judged as average.

On 1/10/91 ten mixed age stags were blood tested of copper. They showed an average serum ferroxidase of 17 ( normal range 16-27) having a previous average level of 5.4.

Egg per gram and dictyocaulus counts were done on faecal samples of 10 mixed age stags, weaner hinds and weaner stags.

	<u>E.P.G</u>	<u>DICTYOCAULUS</u>
Mixed age stags	-	+
Weaner stags	-	+
Weaner hinds	-	++

In addition a sample of weaners were weighed.

	<u>WEIGHT KGS</u>		
	15/07/91	1/10/91	INCREASE
9 month hinds	49	53.1	+4.1
9 month stags	54.4	66.9	+ 12.5 ,

The weight gains were considered adequate.

Only benzimidazole drenches had been used on the farm. Groups of weaners were drenched with either Syanthic mini dose ( Coopers) or Ivomec Oral ( M.S.D.) and epg determinations done 10 days post drench. All eggs were negative.

Spring pasture samples were taken showing a copper level of 6ppm ( normal range 5 - 20 ).

Zinc sulphate had been administered via water supply for two months. Blood samples were taken from stags showing an average level of 13.31 ( previously 9.59).

Develvetting season came and went. Data was collected on every stag develveted.

Namely:

- \* TAG No.
- \* DATE DEVELVETED
- \* WEIGHT OF ANTLER
- \* DIAMETER OF ANTLER
- \* LENGTH
- \* No. OF POINTS
- \* GRADE
- \* ASSESSMENT
- \* RANKING
- \* MID WINTER WEIGHT

In total:

685 stags were treated with copper  
 21 stags were treated with copper + B12  
 16 stags were treated with B12  
 95 stags were involved in the medicated nut trial  
 139 stags were run as controls  
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 956 total

The results are summarised in the following tables:

<u>AGE</u>	<u>AVERAGE WGT CONTROLS.</u>	<u>AVERAGE WGT CU. TREATED</u>	<u>DIFFERENCE CONTROL/TREATED</u>	
2 YR.	0.8 kg	0.86 kg	+ 0.06 kg	+ 7.5%
3 YR	1.26 kg	1.38 kg	+ 0.12 kg	+ 9.5%
4 YR	1.58 kg	1.74 kg	+ 0.16 kg	+ 10.1%
5 YR	2.3 kg	2.15 kg	- 0.15 kg	- 3%
6 YR	1.95 kg	2.24 kg	+ 0.29 kg	+ 14.8%
7 YR	2.07 kg	2.19 kg	+ 0.12 kg	+ 5%
8 YR	2.33 kg	2.65 kg	+ .32 kg	= 13%

All age groups except 5 year old stags showed an increase in velvet weight. There was only 4 control animals in the 5 year old stags, one of which cut 3.0 kgs of velvet which distorted the true average of the controls.

The Copper + B12 group were + 10% above herd average.  
 The B12 group were -16% below herd average.

An interesting finding occurred when gradings were compared.

<u>AGE</u>	<u>GRADES OF TREATED</u>					<u>GRADES OF CONTROLS</u>				
	A	B	C	D	E	A	B	C	D	E
M/A STAGS	20%	52%	22%	4%	-	6%	46%	30%	16%	-
4 YR OLD	-	15%	41%	37%	4%	-	3.5%	27%	65%	3%
3 YR OLD	-	7%	24%	50%	15%	-	5%	11%	76%	5%

A marked improvement in grading was seen in the treated group.

It is difficult to translate the increased weight improved grading in to monetary terms. The velvet cheque was \$ 306,000. All velvet was sold at one tender price. The cost of the copper supplementation was \$1750. The increase in return for the exercise is put at approximately \$30,000.

The stag mob was again blood sampled on 23/1/92. The average serum ferroxidase level was 11 ( normal 16 - 27 ). Serum zinc levels had risen to 20 from 13.31.

On 28/05/92 the yearling hinds were sampled for copper. They averaged 382.50 umol/l liver copper and 17 iu/l for blood ferroxidase. This was the same group that was sampled on 16/9/91 and had liver readings of 226.3 and ferroxidase of 15. No copper supplementation has been ever given to this group.

### CONCLUSIONS

1. It is difficult to assess bodyweight by eyeball only. Although the medicated nut trial stags appeared far heavier than the main mob, on weighing there was no significant difference.
2. Older stags do not do well on winter crop due to teeth wear.
3. The smaller the mob size the better that stags come through winter.
4. Vitamin B12 supplementation to stags with serum levels greater than 125 pmol/l has no effect on velvet production.
5. Copper supplementation at 10 grams twice yearly in January and mid winter on deficient farms will improve velvet weight and production.