



meatup FORUM

**For the latest in red meat research and development
Northam, WA – 12 August 2026**

L.PDS.2612

Liver Biopsy to Assess Micromineral Levels in Cattle

Enoch Bergman DVM
Swans Veterinary Services
ASHEEP & BEEF



MLA's PDS Program

The program aims to increase the rate of adoption of key management practices and technologies that improve business profitability, productivity and sustainability through livestock producers pursuing new skills, management practices and in local livestock production systems.





ASHEEP
& BEEF



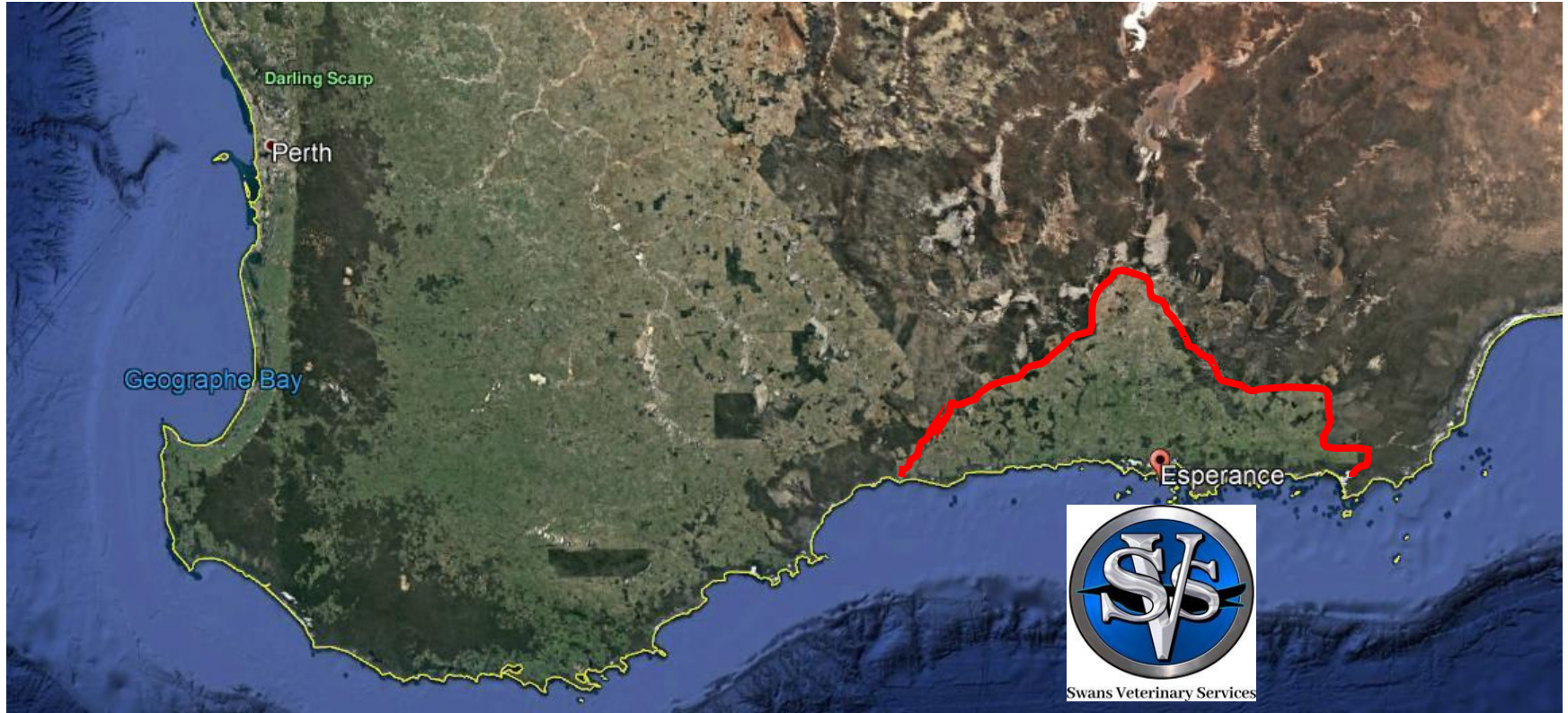


- 2024 Sites
- Low to Medium Rainfall Zone <500mm
- Diaman2ti Bladder Clover – Leigh
 - RM4 Vetch – Mark & Liv Waller, Cond
 - RM4 / Resina Vetch mix – Mark & Liv
 - Barenbrug annual / perennial mix – Leigh
 - Pengilly, Cascade
- High Rainfall Zone >500mm
- RM4 Vetch – Simon Fowler, Cond
 - Ryegrass / Barley / Balsaia Mix – Leigh

Swans Veterinary Services



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Liver Biopsy to Assess Micromineral Levels in Cattle

Micromineral Status

- Microminerals necessary for cellular function
 - Growth
 - Immune Function
 - Reproduction
 - Directly
 - Indirectly
- Western Australia is renowned for deficiencies
 - Copper
 - Cobalt
 - Selenium









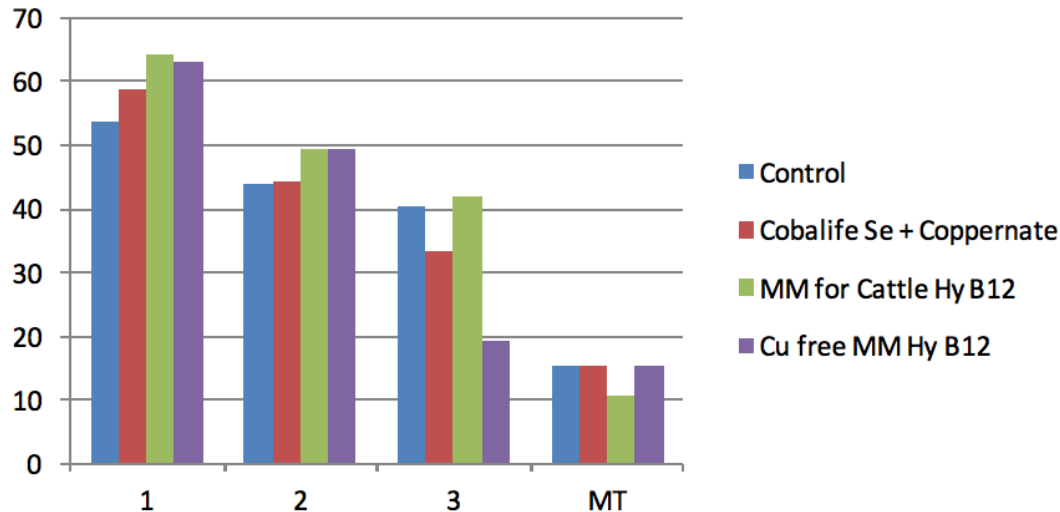
Micromineral Supplementation

- Myriad of Routes of Administration
 - Injections
 - Drenches
 - Water Supplements
 - Bullets
 - Licks
 - Blocks
 - Paddock Fertilization

Percentage of cattle on any one day conceiving to AI

treatment	1	2	3	MT	N=
Control	53.7	44.0	40.5	15.4	162
<u>Cobalife Se + Coppernate</u>	58.8	44.3	33.3	15.3	170
MM for Cattle Hy B12	64.4	49.2	41.9	10.5	171
Cu free MM Hy B12	63.0	49.2	19.4	15.2	165

Percentage of cattle on any one day
conceiving to AI



Lithium Heparin – Micromineral Assay

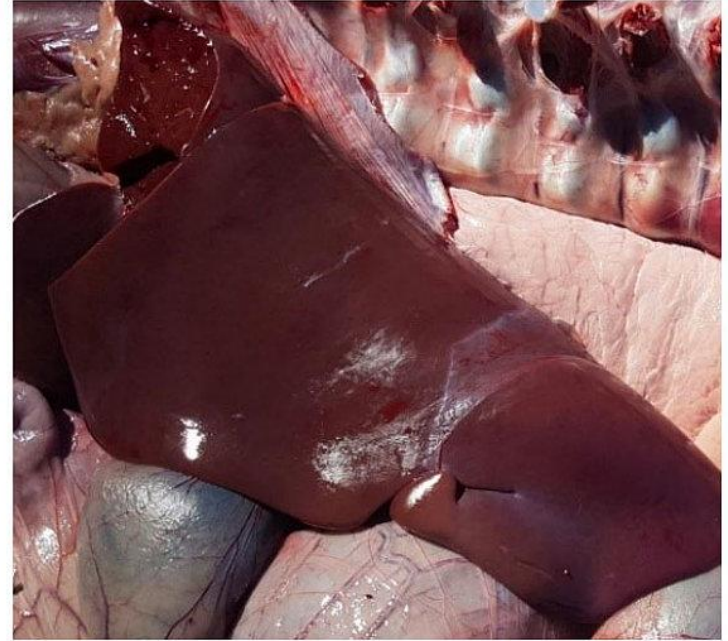
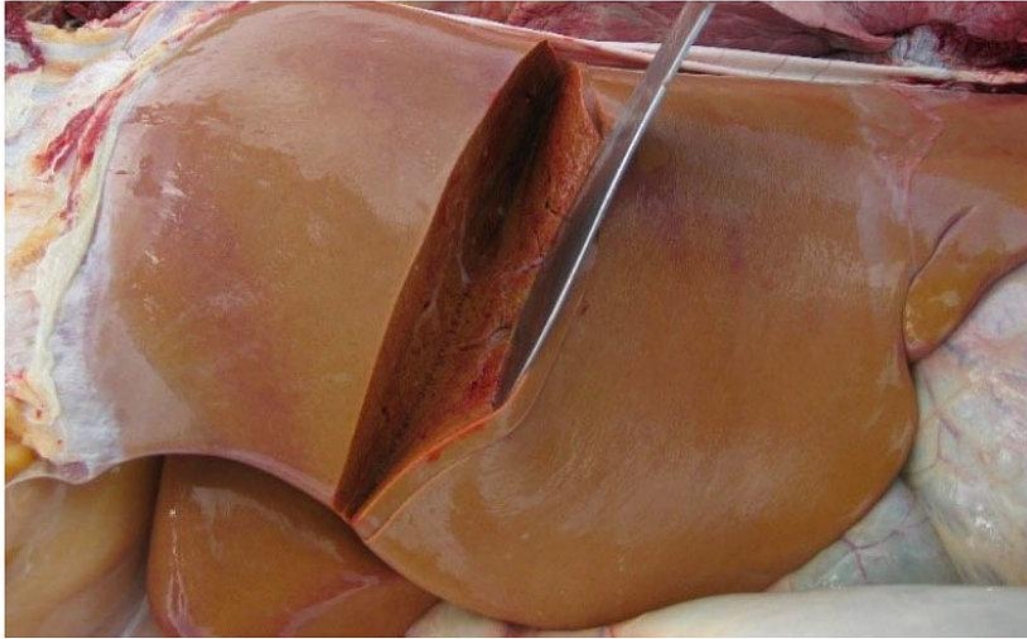




Carburetor



Liver Sampling – Straight from the fuel tank!

















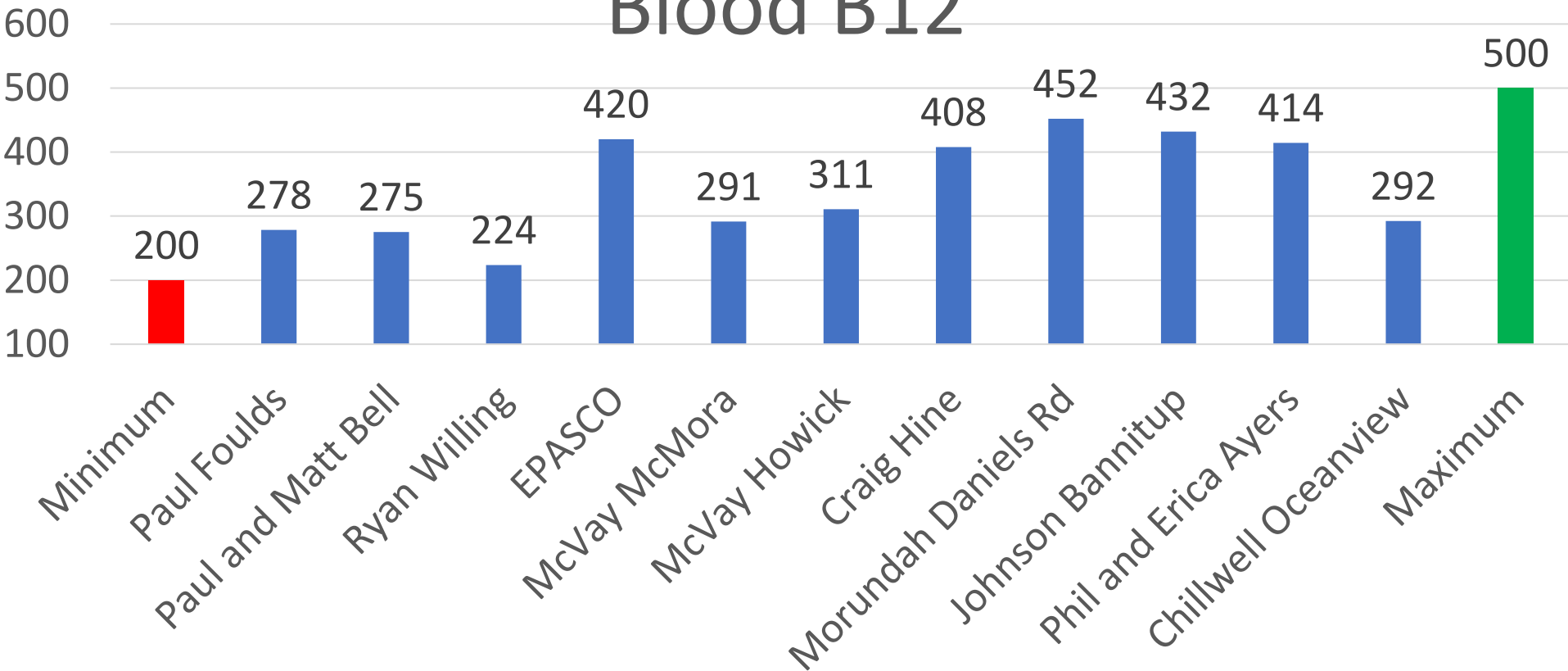




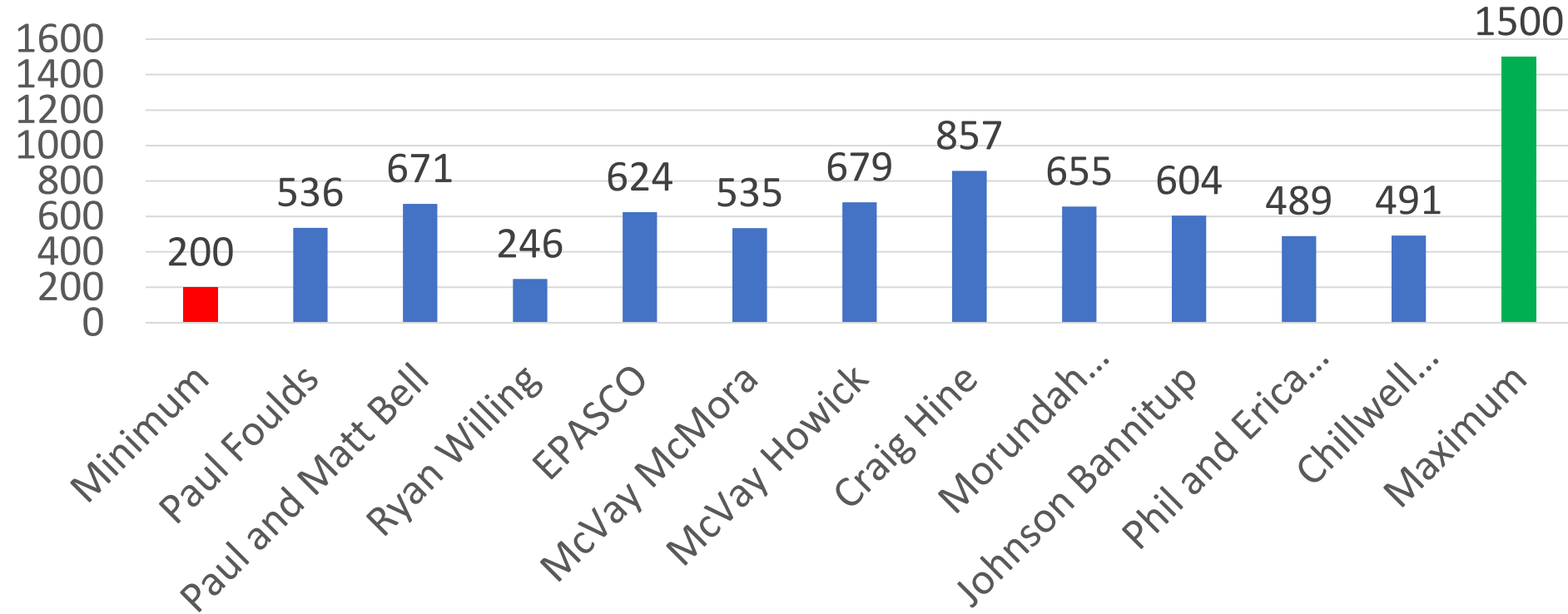
Client Reporting

TEST:	Copper(LIV)	B12(LIV)	GSHPx(LIV)	Copper(Blood)	B12(Blood)	GSHPX(Blood)
NORMAL RANGE:	0.08-2.09	200-1500	3.0-25.0	9.0-20.0	200-500	40-300
UNITS:	mmol/kg	nmol/kg	U/g	umol/L	pmol/L	umol/L
	wet wt	wet wt	wet wt			
<u>Paul Foulds</u>	0.48	535.95	9.29	17.50	278.46	111.33
1	0.91	495	10.4	20.0	229	118
3	0.36	508	6.5	19.2	330	102
28	0.43	731	9.6	18.8	242	105
35	0.52	578	9.7	17.0	303	103
58	0.35	384	9.8	13.3	280	123
163	0.32	520	9.7	16.6	286	118
<u>Paul and Matt Bell</u>	0.10	670.95	1.13	12.03	275.22	24.64
1	0.06	393	0.8	8.9	304	29
2	0.15	506	0.8	11.1	338	13
3	0.10	791	0.4	14.8	273	29
4	0.09	465	0.4	15.5	235	16
5	0.12	1478	4.1	10.4	240	31
6	0.06	392	0.2	11.5	262	30

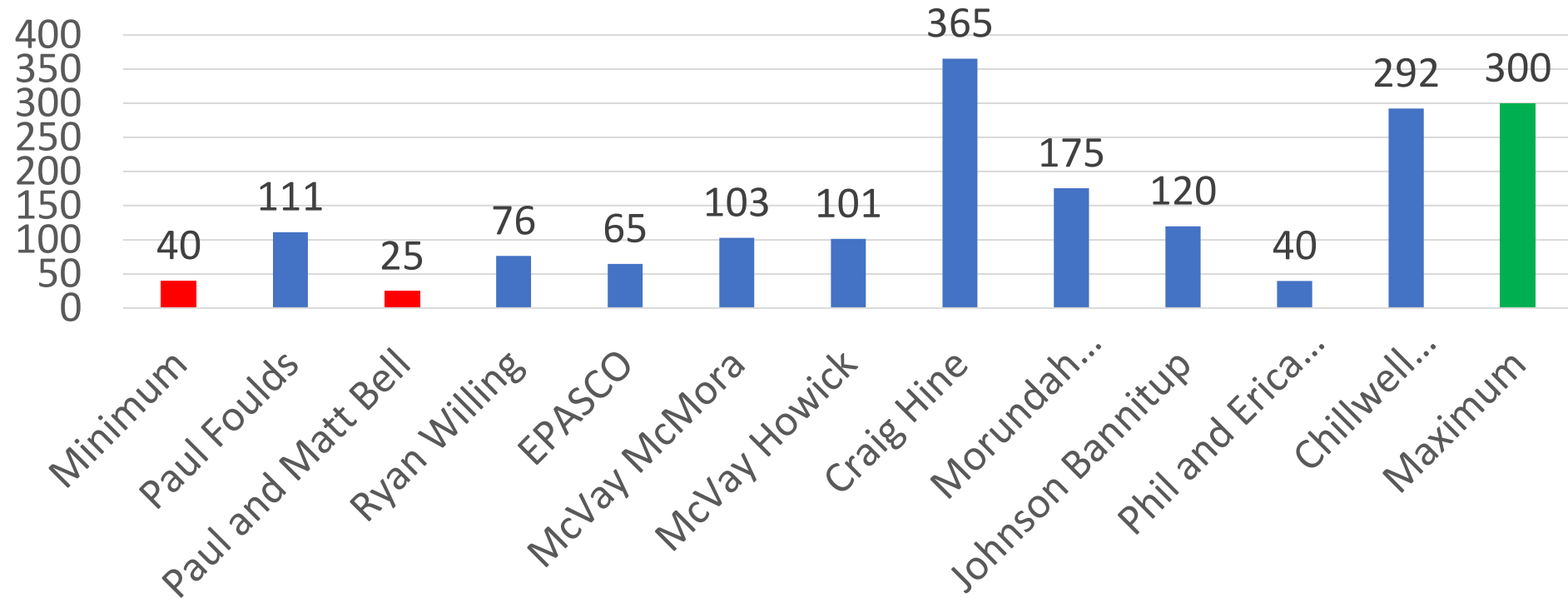
Blood B12



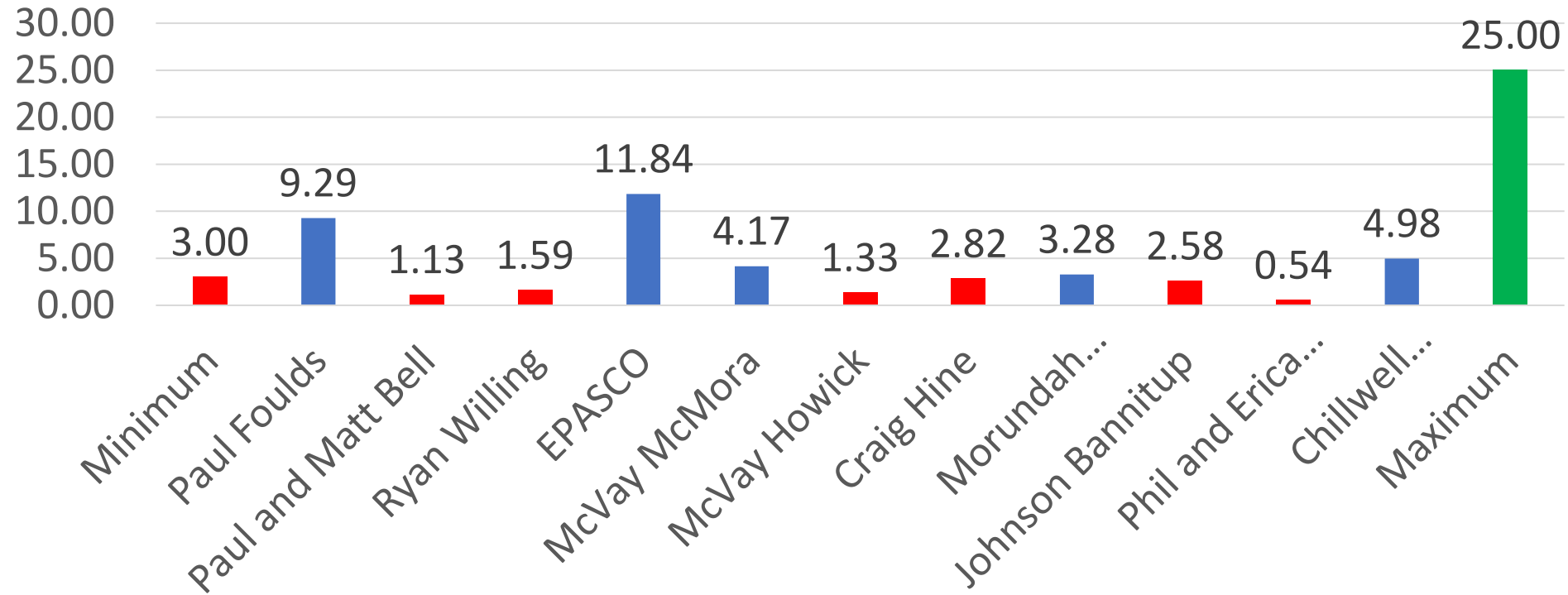
Liver B12



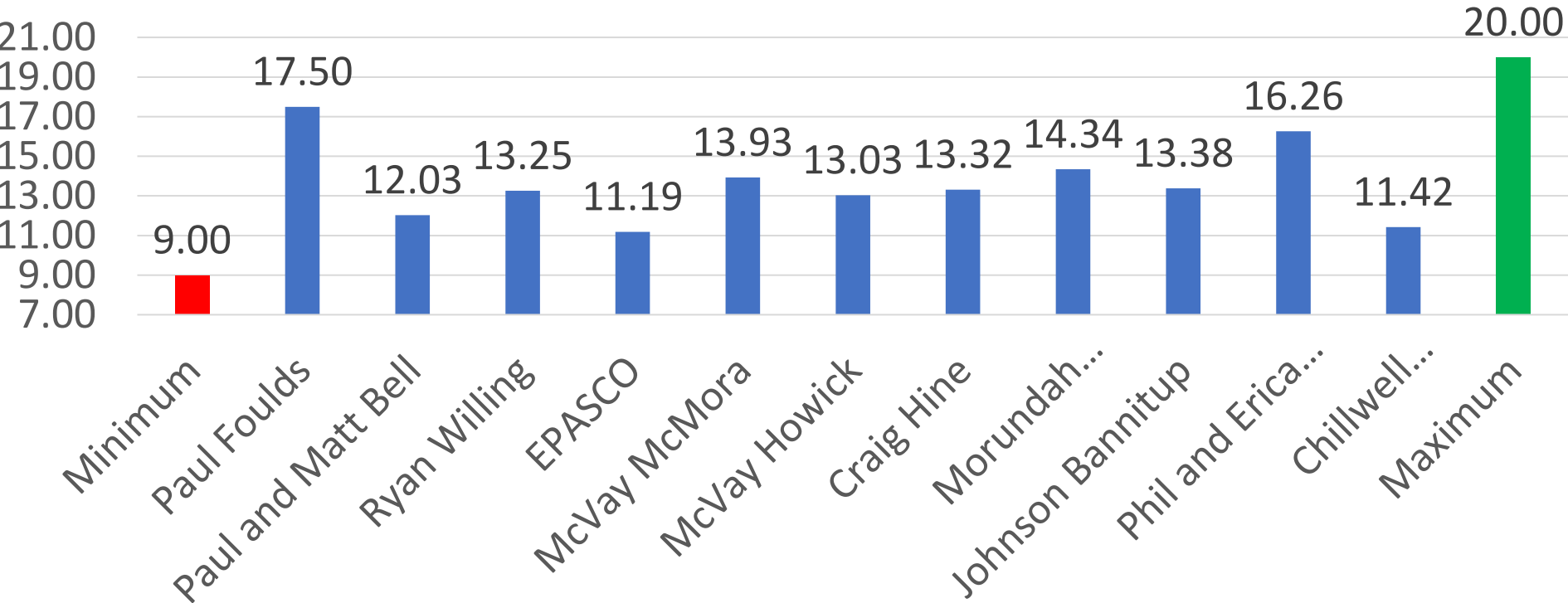
Blood Selenium



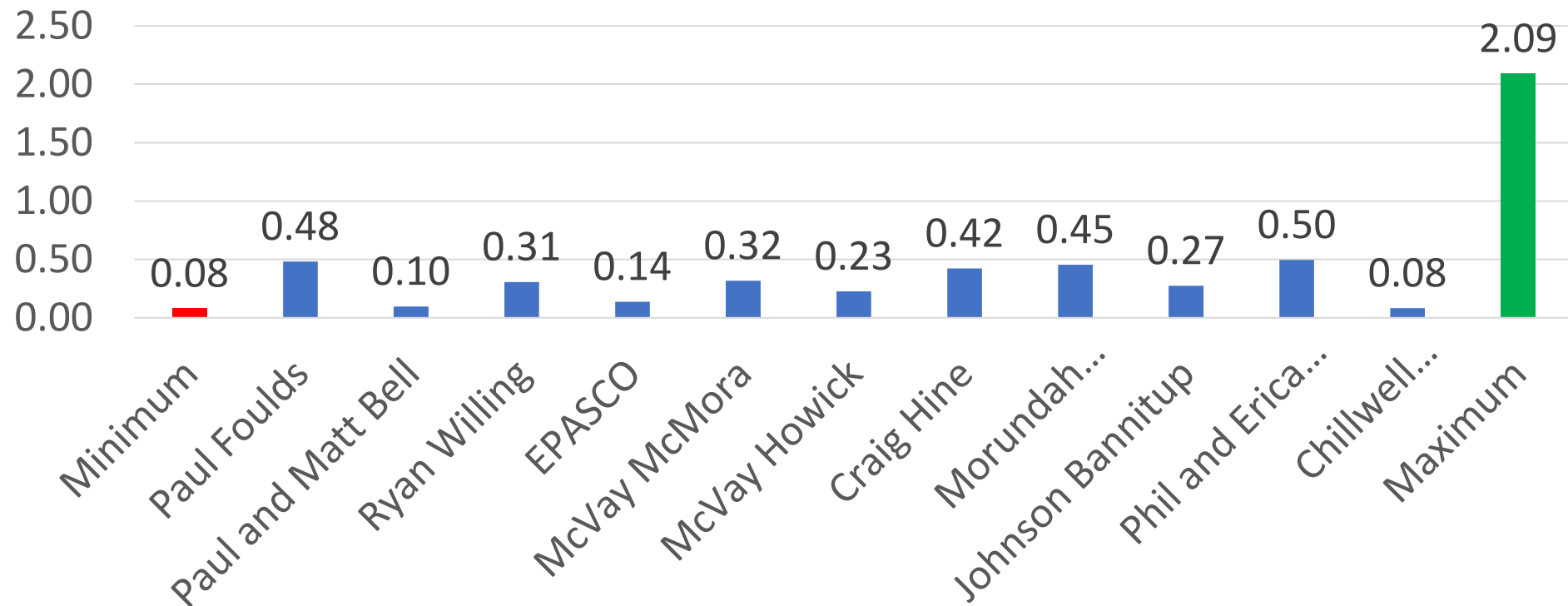
Liver Selenium



Blood Copper

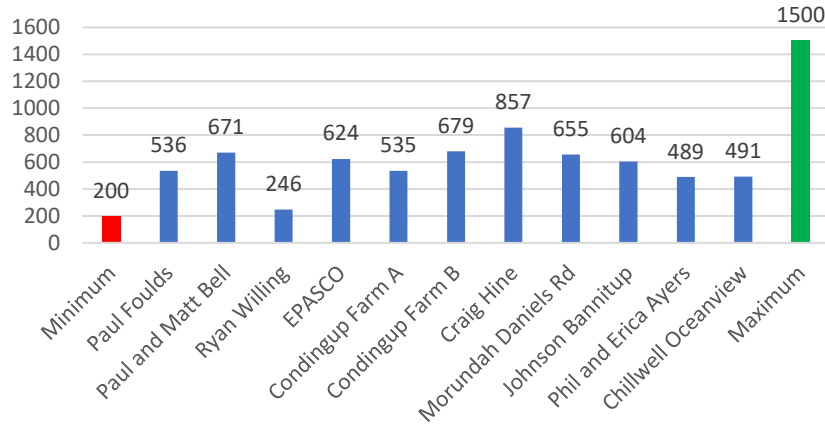


Liver Copper

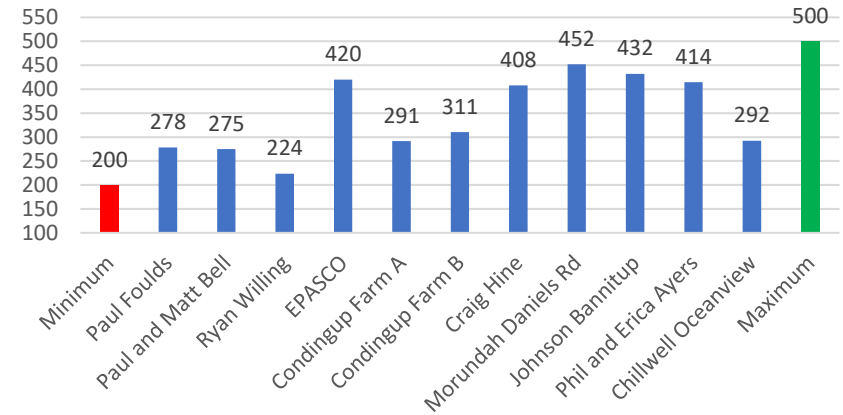


Cobalt (B12) Analysis

Liver B12

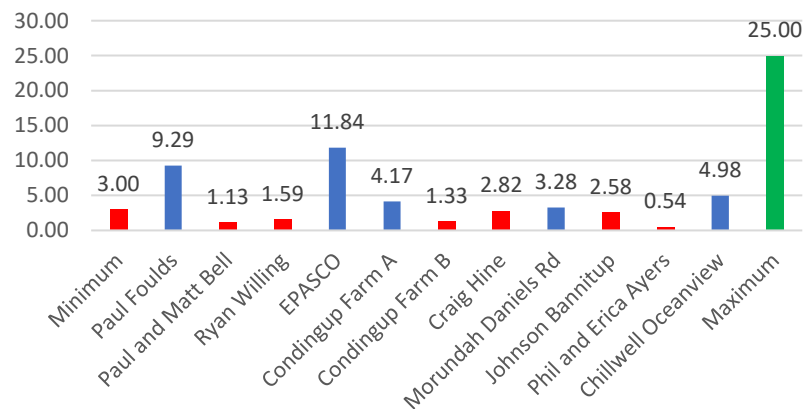


Blood B12

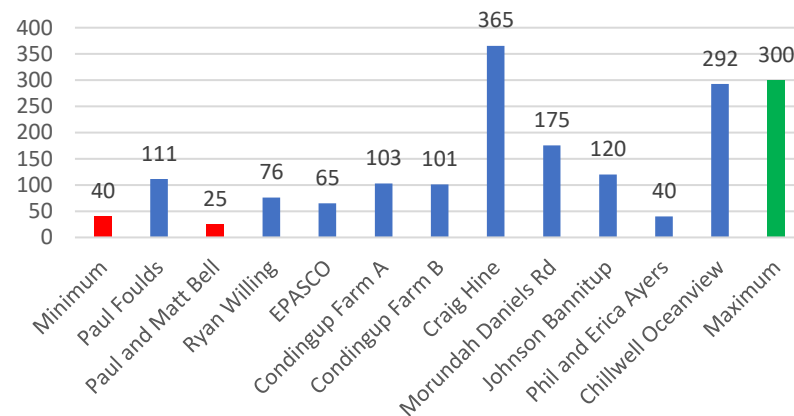


Selenium Analysis (GSHPx)

Liver Selenium

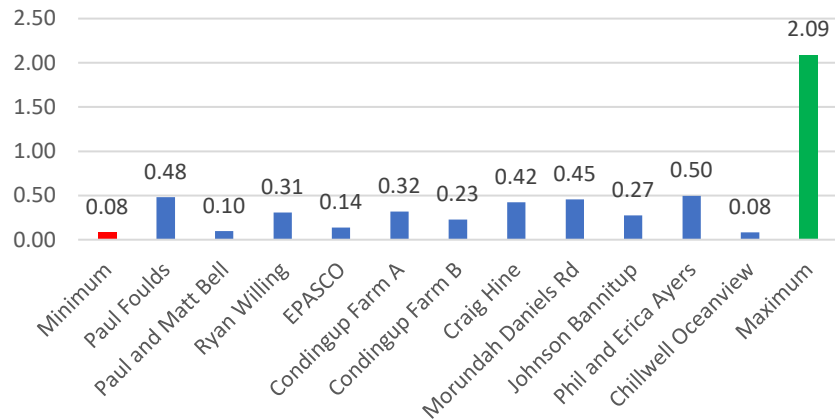


Blood Selenium

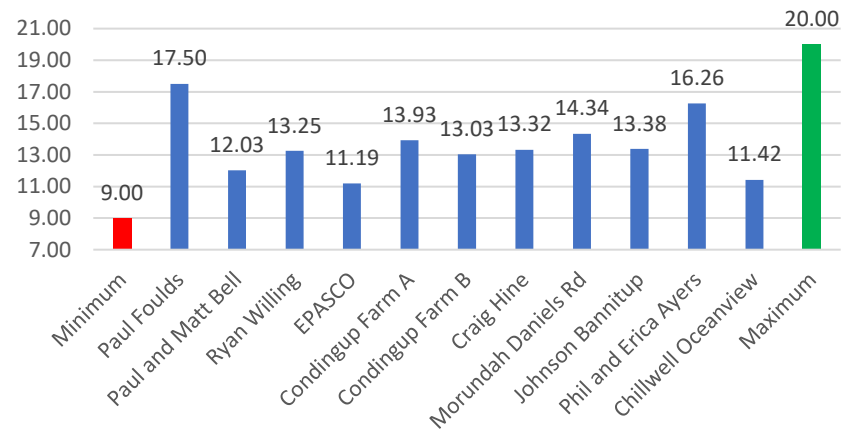


Copper Analysis

Liver Copper



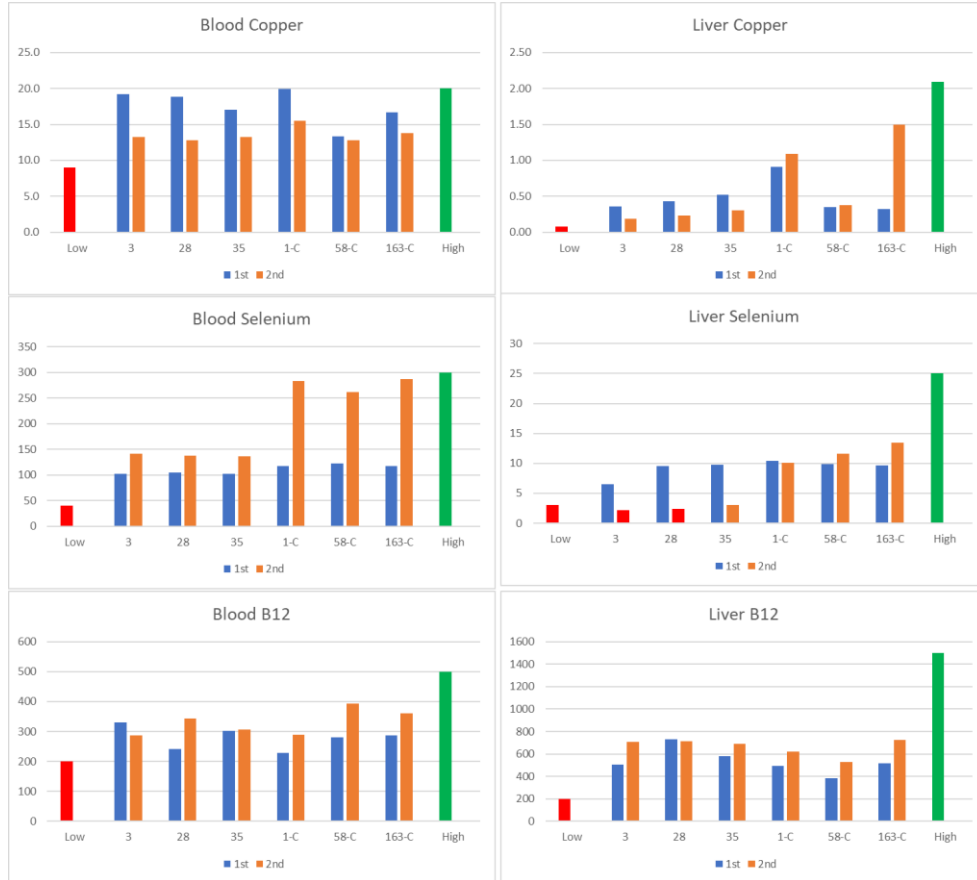
Blood Copper



Epasco Cosecure



Foulds Cosecure

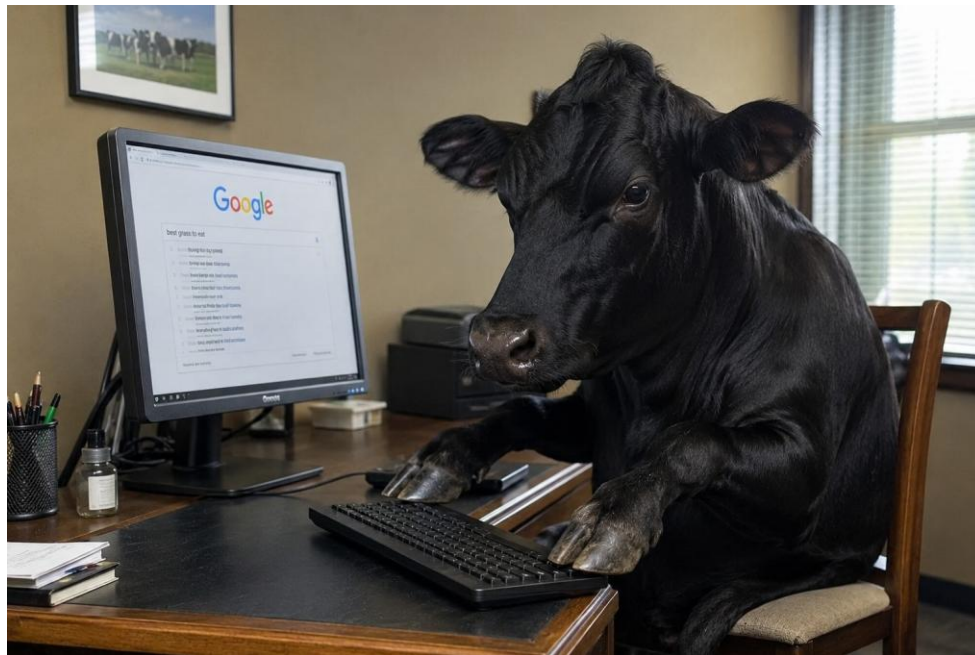


Take home messages

- Liver Tissue Provides an Excellent Analysis of Individual Animal Storage of Copper and Selenium
- Collecting Liver Biopsy Samples is Both Safe and Ethical
- Some Laboratory Services can Analyze Very Small Liver Samples
- Collected Samples can be Banked and Shipped in Batches
- Micromineral Analysis can be used to Assess and Guide Supplementation Protocols

MLA and relevant tools and resources

- Use Dr. Google!
 - ASHEEP and BEEF
 - MLA PDS
 - Regional Laboratory Services
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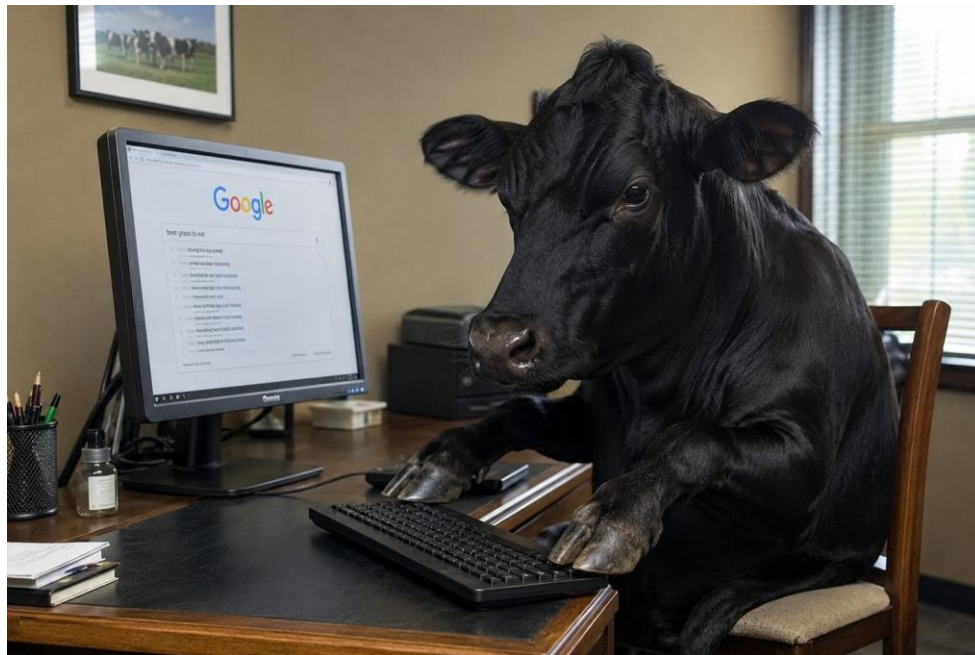
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 - Like and Subscribe
 - Hit that Bell!



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Thank You!



Enoch the Cow Vet

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So.... I am incredibly lucky to spend almost all of my working life with Australian cows and ...more

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Question Time!



