

Table 3. Copper and zinc provided by daily ration of sweet feed and popular mineral and feed supplements. Values in red indicate total intake of copper and zinc from Harrison County grass hay plus supplement. Values in blue indicate mineral deficit (-) or excess (+) for mineral ratio Fe:Cu:Zn = 4:1:3. If known, iron concentration (ppm) given in column 1. Supplements ordered in terms of increasing Cu deficit.¹

Mineral Supplement	Copper (mg)	Copper Balanced ³	Deficit/ Excess	Zinc (mg)	Zinc Balanced ³	Deficit/ Excess
Grass Hay ² (2% BW)	80			200		
California Trace Plus, 142 ppm Fe, 4 oz	299			732		
	379	194	+185	932	600	+332
Grass Hay (2% BW)	80			200		
California Trace, 282 ppm Fe, 2 oz	194			503		
	274	194	+80	703	600	+103
Grass Hay (2% BW)	80			200		
VMAX, 7500 ppm Fe, 1 oz	162			487		
	242	244	-2	687	731	-44
Grass Hay (2% BW)	80			200		
Integri-Hoof, 115 ppm Fe, 3 oz	102			408		
	182	192	-10	608	600	+8
Grass Hay (2% BW)	80			200		
Farriers Formula, 1400 ppm Fe, 6 oz ⁴	92			251		
	172	190	-77	451	600	-297
Grass Hay (2% BW)	80			200		
Dumor Vitamin Gold, 2790 ppm Fe (min), 2 oz	52			283		
	132	230	-97	483	689	-205

Mineral Supplement	Copper (mg)	Copper Balanced³	Deficit/ Excess	Zinc (mg)	Zinc Balanced³	Deficit/ Excess
Grass Hay (2% BW)	80			200		
M30 , 630 ppm Fe, 1 lb ⁴	82			227		
	162	262	-100	427	676	-358
Grass Hay (2% BW)	80			200		
Oscar's Equine , 2500 ppm Fe, 1 lb ⁵	280			1468		
	360	475	-115	1668	1422	+246
Grass Hay (2% BW)	80			200		
Tribute Essential K , 900 ppm Fe (min), 1 lb	91			182		
	171	292	-121	382	877	-495
Grass Hay (2% BW)	80			200		
Accel , 3740 ppm Fe (min), 1 oz	11			37		
	91	217	-126	237	650	-413
Grass Hay (2% BW)	80			200		
Tribute Kalm 'N EZ , 500 ppm Fe, 4 lb ⁵	147			431		
	227	417	-190	631	1252	-621
Grass Hay (2% BW)	80			200		
TSC 12% Sweet Feed , 323 ppm Fe, 5 lb ⁵	70			327		
	150	374	-224	527	1121	-593

Iron concentration not provided by feed company						
Mineral Supplement	Copper (mg)	Copper Balanced ³	Deficit/ Excess	Zinc (mg)	Zinc Balanced ³	Deficit/ Excess
Grass Hay (2% BW)	80			200		
Horseshoer's Secret, 6 oz	96			289		
	176	190	-14	489	600	-111
Grass Hay (2% BW)	80			200		
Focus HF, 1.5 oz	76			245		
	156	190	-34	445	600	-155
Grass Hay (2% BW)	80			200		
Command Senior, 5 oz	60			180		
	140	190	-50	380	600	-220

¹ Feeding amounts per day obtained from product label instructions. Deficits calculated for average horse (1100 lbs) at maintenance level. Iron bioavailability was not considered.

² Grass hay has relatively low iron concentration (76 ppm) for Harrison County.

³ Fe:Cu:Zn ratio = 4:1:3. Copper and zinc concentrations exceed NRC minimum requirements (100 ppm Cu, 400 ppm Zn) after balancing (National Research Council, Nutrient Requirements of Horses, 2007). Supplementation at 150-200% minimum NRC requirement is recommended to compensate for feed testing and sampling errors and metabolic differences among horses.

⁴ Iron concentration provided by feed company.

⁵ With exception of Oscar's Equine (one bag), composite sample from three bags. Analysis by Equi-Analytical Laboratory ("As fed" or "As sampled"). TSC = Tractor Supply Company.