Guide to nutrient deficiencies in Grassland depending on soil factors and plant / animal symptoms & suggested treatments

Nutrient	Soil Factors	Soil Analysis	Visual Symptoms	Soil treatments	Comments
			(Plants/ Animals)		
Sulphur (S)	Light textured soils / low soil	Poor Indicator	Slight yellowing of youngest	Grazing apply 15–20 kg S/ha	Apply S as part of fertiliser
	organic matter most responsive	Plant analysis	leaf / no leaf necrosis	as compound fertiliser	blend or Urea + S or CAN +S
	Responses lower on heavy soils	best		between March to May	
Magnesium	High soil pH / High soil K / Light	Good Indicator	Interveinal chlorosis of	Animal treatment / Cal Mg /	Apply based on soil test
(Mg)	textured soils/ cold soils/ soil		older leaves /"beading"	Magnesium limestone /	level. Magnesium
	compaction / drought		effect of chlorophyll on leaf	Magnesium sulphate	limestone very effective at
				(Kieserite)	correcting low Mg soils
Copper	Low or high soil pH / Light	Poor Indicator	III thrift & scour in cattle	Apply copper sulphate 20 -	Tight grazing & soil
(Cu)	textured soils / Soils over granite	Plant analysis	Sway back in sheep	40kg/ha at reseeding time &	ingestion reduces Cu
	or sandstone / Peaty soils / High	better with S &	Bone deformity in horses	incorporate.	availability. Address at
	Mo	Mo levels			reseeding (last 5 -10 yrs)
Cobalt (Co)	High soil pH. Typically granite &	Good Indicator	Pine & poor thrift in sheep	Apply 3kg/ha of cobalt	At normal pH treatment last
	sandstone soils. High total Mn		Total Mn >600mg/kg can	sulphate to 10-20% of	4 years. On high pH soils
	can reduce Co availability on	Test for total	reduce plant Co uptake.	pasture & spray on	treat annually.
	soils with adequate Co levels	Mn	· ·	Alternatively Drench / bolus	,
	·	0 11 11 1		,	
Zinc	Light textured soils with high soil	Good Indicator	Reduced grass emergence /	Apply 5kg/ha zinc sulphate	Where Zn levels are low
(Zn)	pH (>7.0) + P (>15ppm) or Low	(Deficiency	stunted grass growth	Remove livestock for 3 wks	delay treatment of land
	soil (<6.0) / High organic matter	occurs at	Poor hoof & hair growth in	after treatment	until housing as it can
	soils. Clay soils with high Mg can	<0.6mg/l EDTA)	cattle & wool in sheep	Treatment will give up to 15	reduce Cu availability in soil
	fix Zn			years control	
Selenium	Soils in Meath, Limerick &	Poor indicator	Causes still births &	Pasture treatment	Soil testing can be used for
(Se)	Tipperary have excess Se.	Herbage more	retention of after births in	Oral application in feeds /	Se toxicity - >3 mg/kg is
	Deficiency mainly occurs on	reliable.	livestock	mineral licks	toxic.
	sandstone soils of Munster &	Deficiency	Poor conception rates &	Fertiliser fortified with Se	Se toxicity causes loss of
	clear-water limestone's of west	occurs at <0.1	embryonic mortality		hair & poor hoof
	Munster & east Galway	mg/kg	common.		development