

**TABLE 3. GUIDELINES FOR EVALUATING SOLUBLE AND ADSORBED CATIONS IN SOILS**

Concern	Parameter	Chemical Symbol	Low When Less Than or Equal to:	High When Greater Than or Equal to:
Soluble Cations Ratios (12)	Soluble K %	NA	10%	– (13)
	Soluble Mg %	NA	19%	–
	Soluble Ca %	NA	55%	–
	Soluble Na %	NA	--	7%
Adsorbed Cation Ratios or Base Saturation (14,15,16)	K Base Saturation	NA	3%	10%
	Mg Base Saturation	NA	10%	20%
	Ca Base Saturation	NA	60%	80%
	Na Base Saturation or ESP (17)	NA	5%	15%
	H Base Saturation	NA	--	5%
	Al Base Saturation	NA	--	20%

12. Soluble cation ratios impacts cation uptake by grapevine roots

13. A dash (–) indicates there are no known guidelines currently available or that guidelines are not necessary because problems are not known to exist.

14. Adsorbed cation ratios affects the degree of soil aggregation versus the degree of soil particle deflocculation

15. Adsorbed cation effects on soil particle aggregation:  $K > Ca > Mg > Na \gg H$ .

16. Adsorbed cation ratio normally infers mineral nutrient balances only in acid soils.

17. The ratio of adsorbed Na or the Na base saturation is sometimes called the exchangeable sodium percentage (ESP).