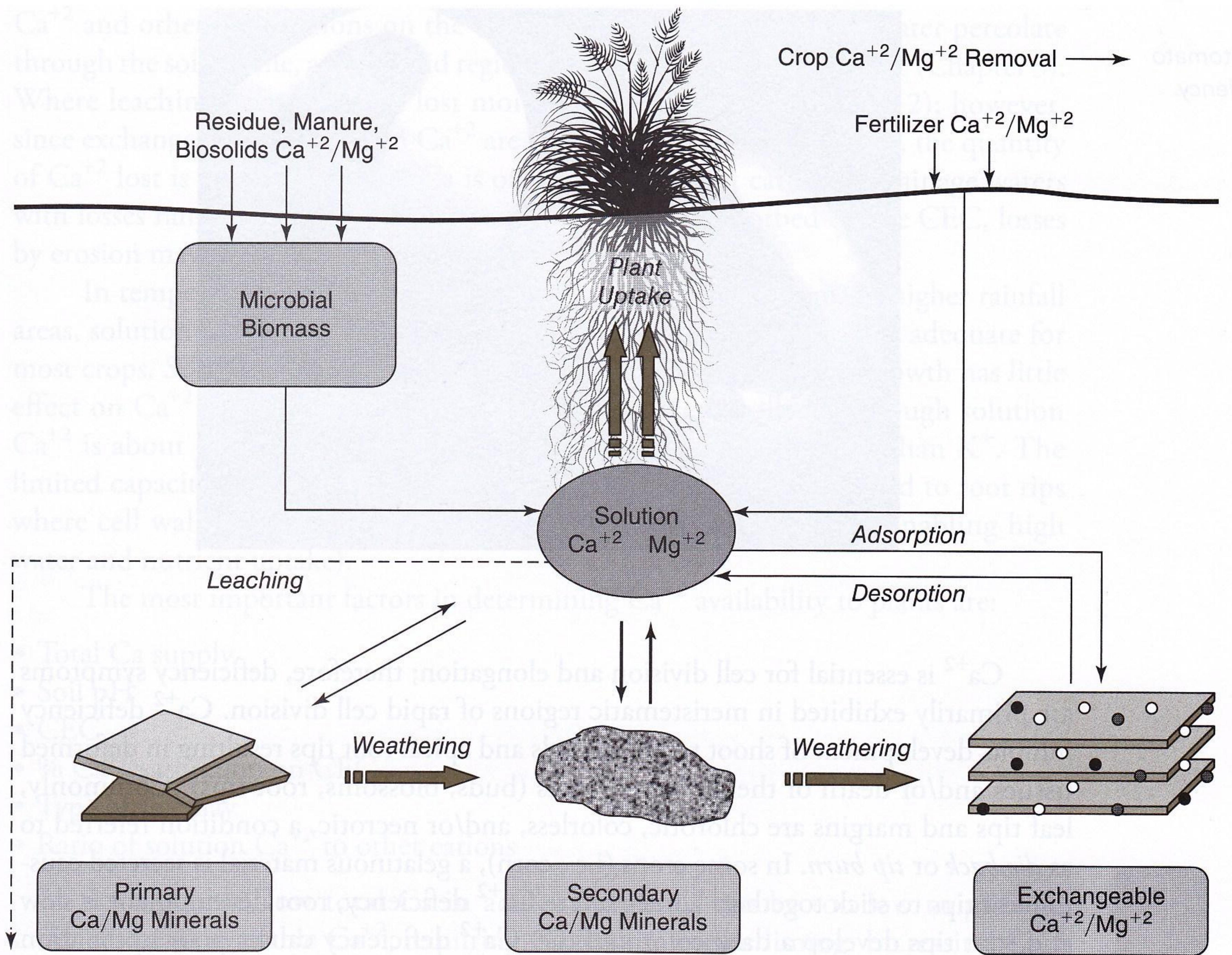


Calcium and magnesium cycle in soil



In acid, humid-region soils, Ca^{+2} and Al^{3+} dominate the CEC, while in neutral and calcareous soils Ca^{+2} occupies the majority of exchange sites. As with any other cation, exchangeable and solution Ca^{+2} are in equilibrium and provide the majority of plant available Ca^{+2} . If solution Ca^{+2} is decreased by leaching or plant uptake, Ca^{+2} will desorb from the CEC to resupply solution Ca^{+2} . Other soluble cations replace the desorbed Ca^{+2} , or calcium minerals dissolve to provide additional exchangeable and solution Ca^{+2} . Conversely, if solution Ca^{+2} is increased, the equilibrium shifts in the opposite direction, with adsorption of Ca^{+2} on the CEC. The fate of solution Ca^{+2} is less complex than that of K^{+} , due to K fixation and release reactions. Ca^{+2} may be:

- 1) adsorbed to CEC,
- 2) absorbed by plants and microorganisms,
- 3) leached in drainage water, or
- 4) reprecipitated as a secondary Ca compound, dominantly in arid climates.