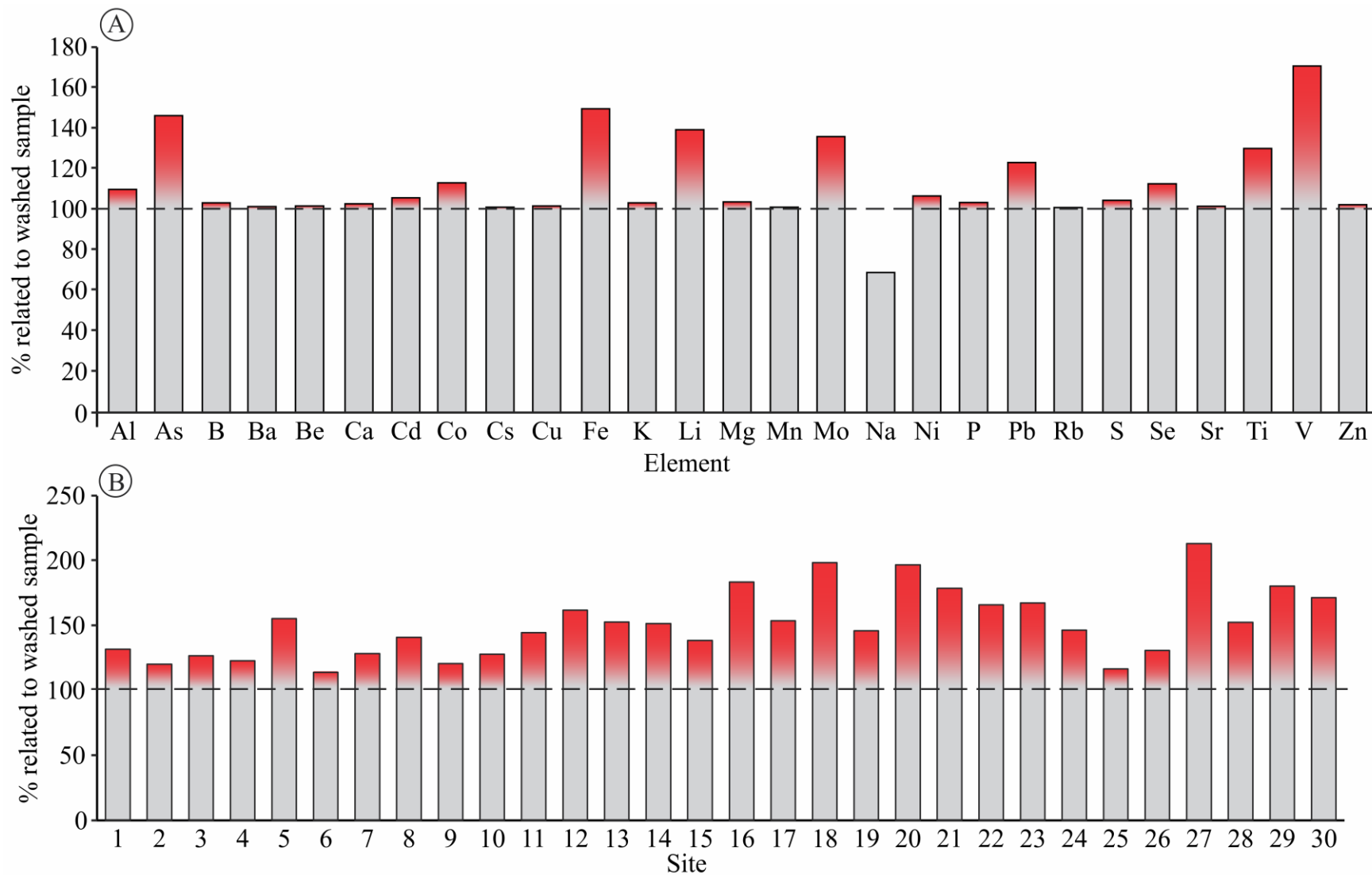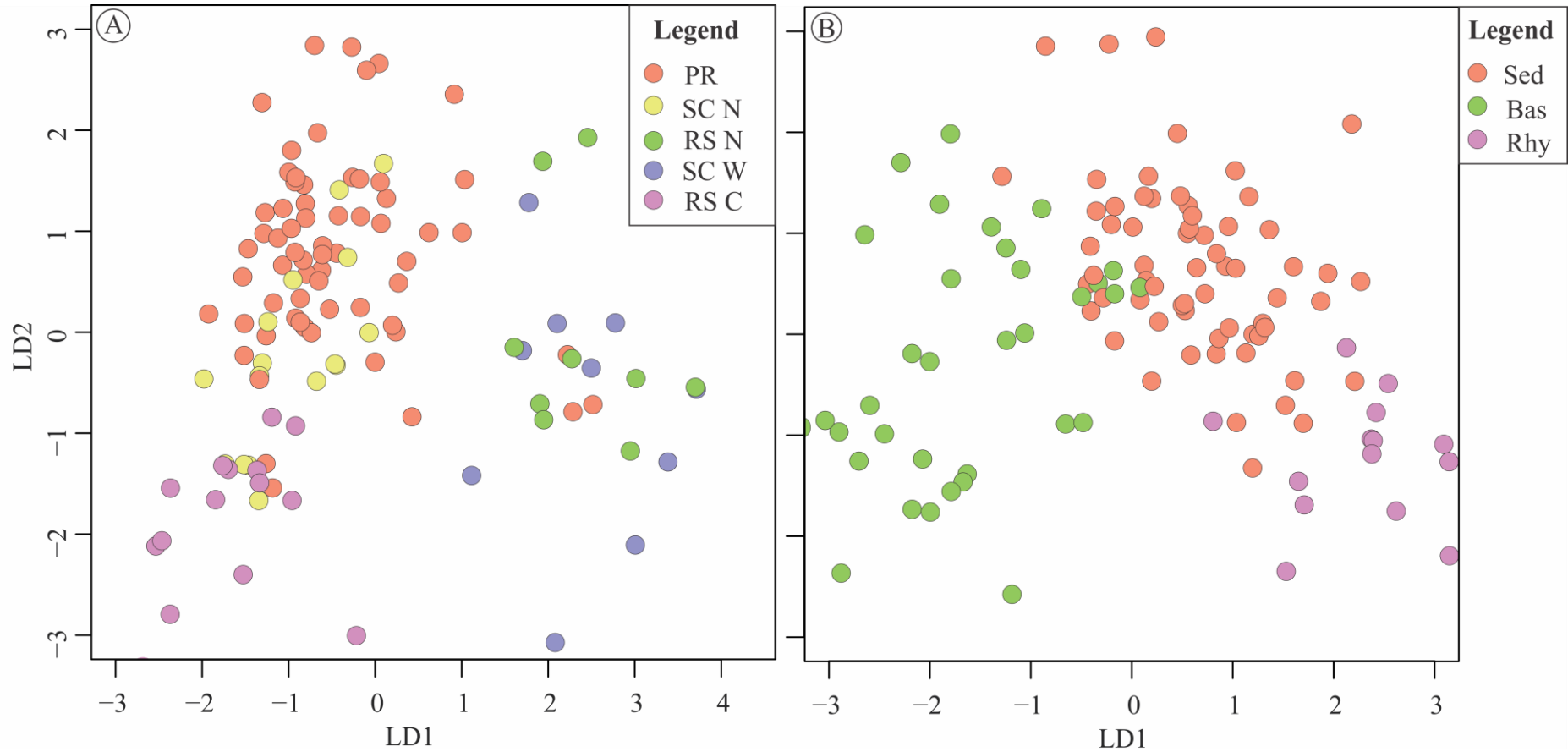Figure 1. Site locations of yerba mate and soil sampling in the states of Paraná (PR), Santa Catarina (SC), and Rio Grande do Sul (RS), southern Brazil.

Figure 2. Relative elemental concentrations of washed yerba mate leaves (A) and Fe contamination (B) from 30 sites in southern Brazil.
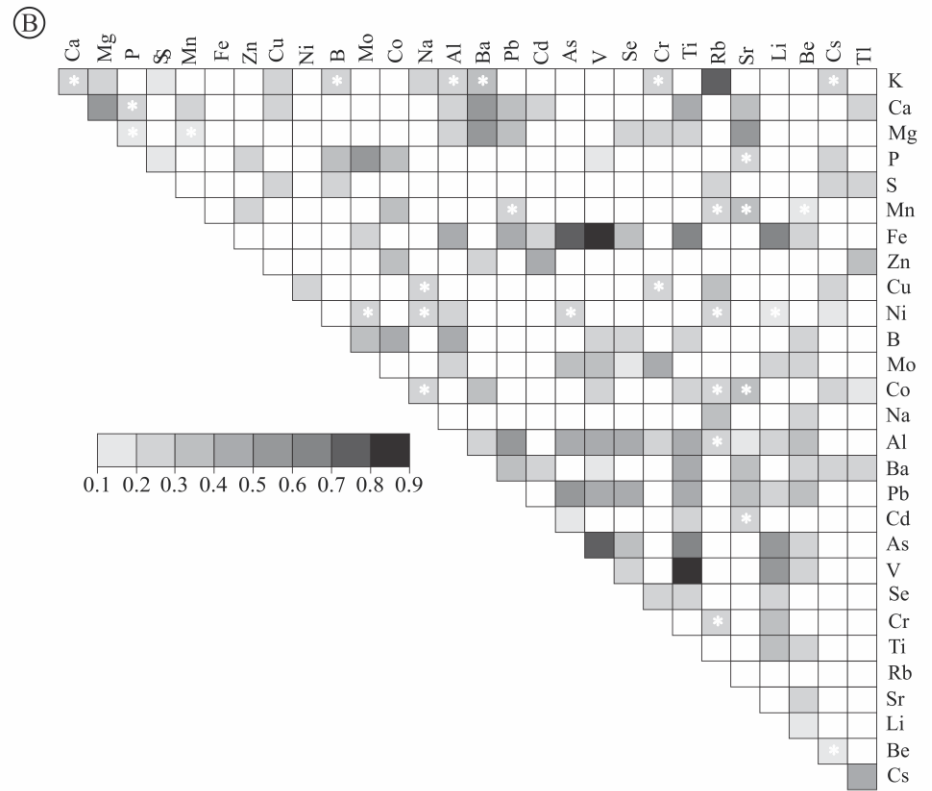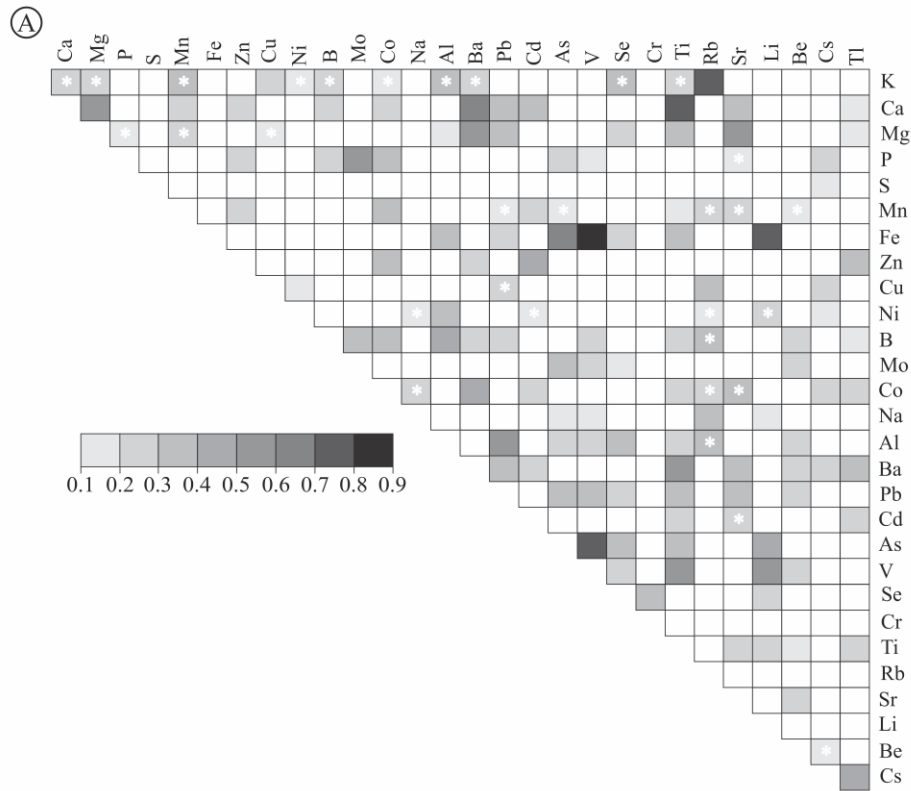
Figure 3. Linear Discriminant Analysis of sampled regions (A) and soil parent material (B) according to Mn, P, Co, Ni, Mg, Al, Fe, K, Na, Ca, and Ba concentrations in yerba mate leaves. PR = Paraná; SC N= Santa Catarina, Northern; RS N= Rio Grande do Sul, Northern; SC W= Santa Catarina, Western; RS C= Rio Grande do Sul, Central. Sed = Sedimentary; Bas = Basalt; Rhy = Rhyolite/Rhyodacite.

Figure 4. Matrix correlations among elemental concentrations for washed (A) and unwashed (B) yerba mate leaf samples from 30 sites in southern Brazil.
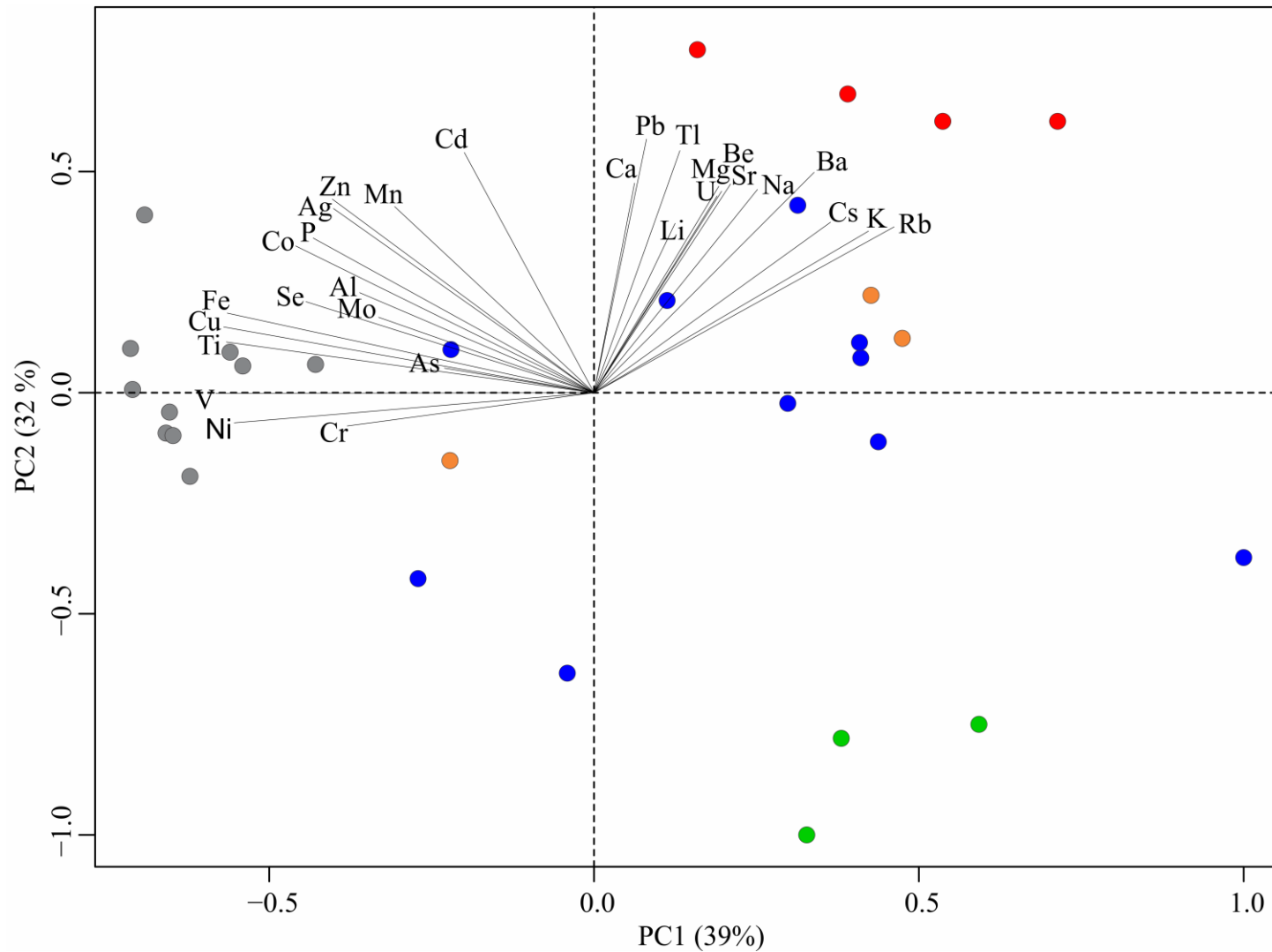
Figure 5. Principal Component Analysis of pseudototal soil elements. Grey = Basalt; Red = Rhyolite/Rhyodacite; Green = Sandstone; Blue= Sediment – claystone; Orange= Shale.