Lime requirements (LR) of 26 acid agricultural soils were estimated using the following buffer methods: Shoemaker-McLean-Pratt single buffer (SMP-SB), SMP double buffer (SMP-DB), Mehlich buffer method for crops with high LR (MEHLICH I), and Mehlich buffer methods for crops with low LR (MEHLICH II). The LR were determined to three pH targets (6.5, 6.0 and 5.5). The LR values were then evaluated through regression analysis using LR values obtained by the $Ca(OH)_2$ titration (for the 6.5 pH target) and moist $CaCO_3$-incubation (for the 6.0 and 5.5 pH targets) as reference methods. All the buffer methods were well correlated with the reference methods but the SMP-DB gave the best results for both high and low LR soils, and was particularly impressive at the lowest pH target.