Protocol for pH analysis of organic samples in 0.01 M $CaCl_2$

Materials:

1. pH meter
2. pH calibration standards
3. metal spatula
4. timer
5. 0.01 M $CaCl_2$ (FW = 147.01 g / mol)
    a. dissolve 1.4701 g $CaCl_2$ in 1.0 L

Procedure:

1. Turn on pH meter and calibrate to the range of pH expected
    a. Organic samples tend to be more acidic
2. Add 10.0 ± 0.5 g wet soil to centrifuge tube
    a. Cap/cover with parafilm and store in refrigerator until analysis
3. Add 2x the amount of 0.01 M $CaCl_2$ (20mL) to the first sample tube (*ratio 1:2)*
4. Using a clean spatula, stir soil-solution mixture for 30s
5. Allow mixture to sit undisturbed for 7.5 minutes.
    a. If analyzing multiple samples (with one person assisting), wait 2.5 minutes between mixing each sample to allow sufficient time for full pH meter analysis
6. During the wait time, you will see the soil particles settling out of solution and an aqueous layer will form over the soil particles.
7. At 7.5 minutes, submerge the whole pH bulb into the upper portion of the clear aqueous solution.
8. Record pH once it stabilizes or ten minutes after initial 30 seconds of stirring, whichever comes first. It is likely that the soil pH will drift and will not completely stabilize, especially in organic rich soils.
9. Rinse the pH probe with DI water and remove excess solution with a kim wipe.
10. Clean spatula with 70% ethanol prior to weighing and mixing next sample.
11. Rinse beaker of soil-solution into soil bucket. Remove labels and wash all materials with lab soap and rinse 3X with DI water.