Repeating Crumley et al (1950)

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PHYSICS

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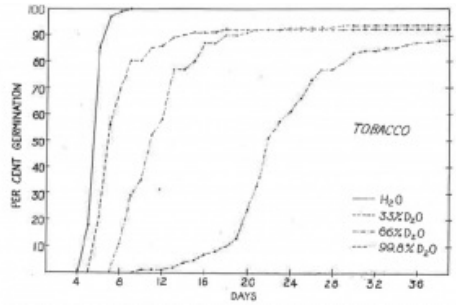
Koch asked me in a comment to replicate an experiment done in 1950 by Helen A Crumley et al demonstrating Tobacco seed growth in deuterium oxide (D2O). The experiment is rather simple (and the figure from the paper is shown below) as Crumley placed 100 seeds in differing amounts of D2O (double distilled water, 33%, 66%, and 99.8% D2O) and analyzed the growth.



INFLUENCE OF ORDINARY WATER, 33%, 66%, AND 99% DEUTERIUM OXIDE ON TOBACCO SEED GERMINATION. COUNTS MADE AT DAILY INTERVALS FOR 39 DAYS. (FROM CRUMLEY, FIG 3)

So here I am planning the experiment. I will change some things from their experiment. First they placed the seeds on wet cloths (paper towels?), and I will submerge the seeds in the water amounts they used. They also used a variety of plant species (tobacco, clover, radish, Kentucky bluegrass), where I will just use tobacco seeds (but I will try two different species). Finally they talk about their results in terms of percent germination, but it isn't clear from the paper if they mean number of plants that have exhibited germination, or if they are referring to some amount of growth exhibited by each plant. I will look for both possibilities and report the results as I find them.

In a preliminary experiment I will submerge the plants in water in petri dishes and seal it with parafilm. I will be looking into a more airtight solution as time goes on. I also won't do 100 seeds but probably on the order of 33 seeds per sample. And in the future I will look into figuring out a way to measure the seed growth.

Original Crumley paper can be found here.