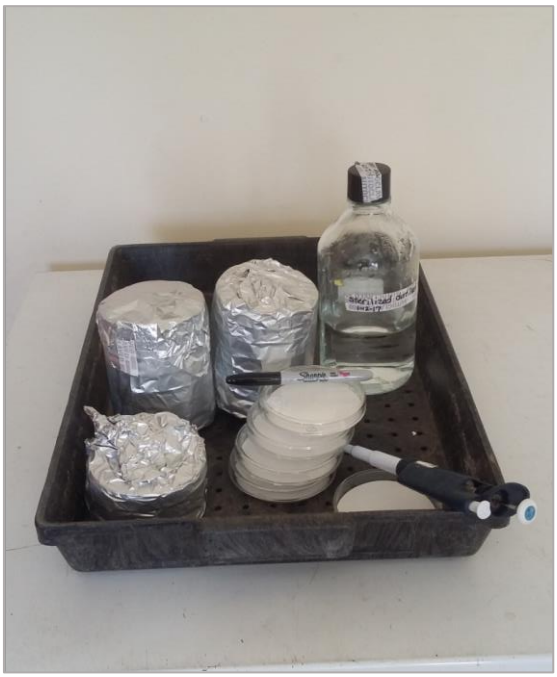
Petri plate botanical seed germination protocol

Specification of particular brand names below does not imply an endorsement by USDA that they are necessarily superior to other comparable products

Rotting of seeds and fungal growth can be a problem if there are many dead seeds that decompose because there is a lot of contamination on the seed coat (for example, because seeds were extracted from rotting fruit). Otherwise, satisfactory results can be obtained with some basic preliminary disinfection steps. If necessary, however, seeds and tools can be sterilized *per se* and germination scored under a sterile hood. The disadvantage of petri plate germination is that it is not necessarily relevant to the way most germplasm users sprout seeds. But the advantage is that it allows monitoring of the time course of germination, and also allows tight control and optimization of the germination environment.

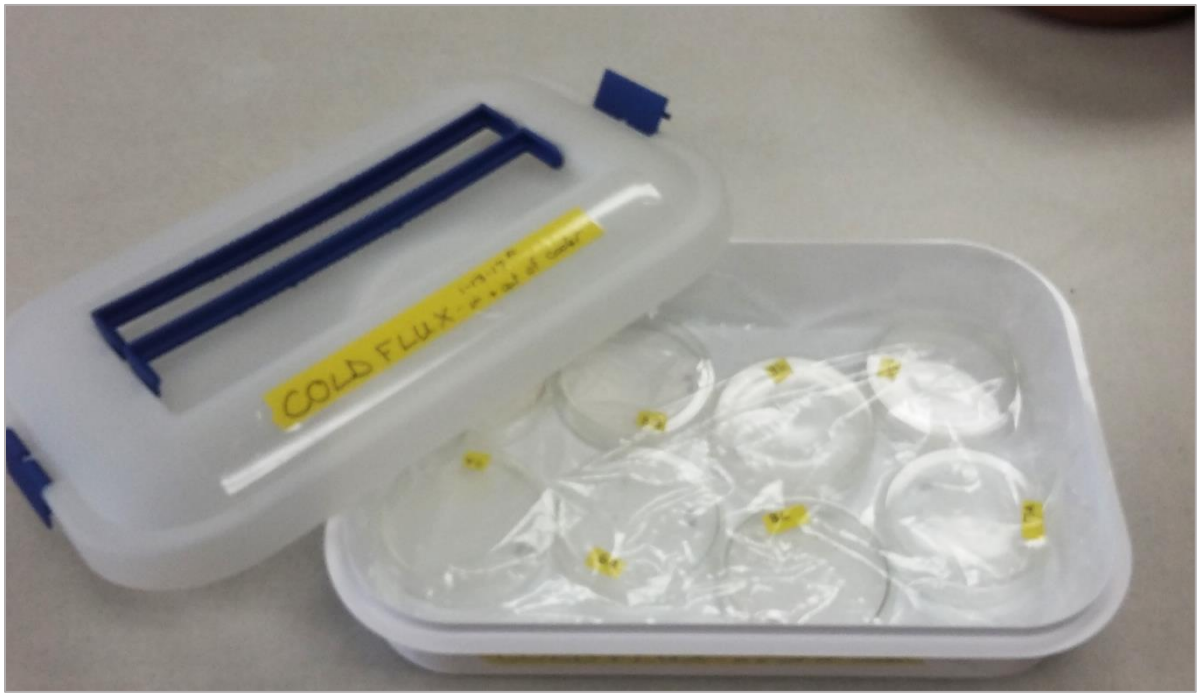


1. Autoclave 9 cm glass petri plates, filter papers, and distilled water.

2. If needed, surface sterilize seeds and treat with GA_3 (see Seed sowing tech page). Seeds per plate can vary according needs of the experiment, but 50 may be considered a standard. We do not have data on crowd effects of germination in petri plates, but in pots of similar surface area in the greenhouse, similar germination results are seen for most seedlots whether 25, 50, or 100 seeds are applied.

3. Apply just enough of a uniform amount of water that will moisten filter papers.

4. Place in a semi-sealed container (e.g., plastic cake-carrier shown) with plastic overlay to minimize moisture loss. Containers also facilitate keeping reps and treatments separate. Plates may be more reliably sealed individually with, e.g., Parafilm®, but that is usually impractical if sprouted seeds are removed as they germinate, e.g., every one or two days. Standard environment is uniform room temperature, with boxes in the dark. Add water if filter paper becomes dry.



5. Generally, one will want to count and remove individual seeds when they have definitely sprouted, e.g., when the root has emerged ~1mm. Otherwise, large seedlings in the plate may obstruct and inhibit unbiased germination of the remaining seeds, and the seed coat of already-germinated seeds may be confused with an ungerminated seed. If the experiment is not completely sterile, one can at least minimize contamination by using sterilized tweezers to remove the sprouted seeds, and open plates in a clean (dust free) area. Most potato seedlots exhibit a burst of germination such that adequate characterization of the time course of germination through this period requires daily scoring.