



## Lettuce Seed Test: A Sensitive Test to Detect Phytotoxic Levels of Fumigants in Soil <sup>1</sup>

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Most soil fumigants are toxic to plants as well as to the pests we use them to control. They usually are applied long before planting, to avoid injuring new seeds or transplants. However, soil moisture, temperature, organic matter and clay content, and application methods can all influence the wait between fumigant application and safe planting. The test described here provides a simple way to determine if fumigant vapors are sufficiently gone from treated soil to be able to plant safely.

### Materials

- At least four one-pint clear glass canning jars with caps and rubber gaskets. One jar is needed for each soil sample to be tested.
- Lettuce seed (cress or radish may be substituted); use fresh seed which will germinate readily.
- Squares of absorbent cotton, 1 inch x 1 inch; one is needed for each jar.

### Procedure

1. Fill 2 or more jars 3/4 full with fumigated soil, and cap tightly. Take soil **from the depth at which the chemical was applied, at or very near an application point**. In an uneven field, sample the lowest spots in the fumigated area. If soil is dry when sampled, moisten it in the jar and recap immediately.
2. Fill 2 jars 3/4 full with soil from untreated areas; moisten if necessary, as for soil from fumigated areas. Cap the jars. These are the untreated "controls."
3. Soak seed 1/2 hr in water at room temperature.
4. For each jar of soil to be tested, dip an absorbent cotton square in water and drain off the excess water. Do not squeeze the cotton, because that will remove too much water.
5. Place 10 to 15 pre-soaked seeds on top of each wet cotton square or roll moist cotton in a generous supply of the seed, so many stick to the cotton.

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6. Remove the cap from each jar, quickly place a wet cotton square on top of the soil with the seeds on top of the cotton, not touching the soil, and **re-cap each immediately**, so it is open as little as possible.
7. Leave jars at room temperature in an area with indirect daylight, **not in the dark**, but also not in direct sunlight that can over-heat their contents.
8. Examine the jars after two (2) days. If seeds in the jars of untreated soil ("controls") are germinating but seeds with treated soil are not, there is still too much fumigant in the soil. Light cultivation can accelerate escape of fumes. If germination in all jars is good and equal, it should be safe to plant. If there was no germination in samples of either soil, the seeds probably were not viable, and the test is useless.