

STERILIZATION OF SOIL

STERILIZATION IN STEAM WITHOUT PRESSURE

For the microbes which are not destroyed by dry heat or moist heat at high temperatures, intermittent sterilization known as Tyndallization is used. The material is heated for 30 minutes in flowing steam (100°C) on each of three consecutive days, allowing it to remain at laboratory temperature between heating. This method is generally followed to sterilize soil material. This technique of sterilization facilitates the heat-resistant spores of bacteria to be killed due to successive steaming.

Procedure Keep the soil to be sterilized in an appropriate size tin box without a cover. Keep the soil contained in the tin box in the autoclave and steam it for 30 minutes. Place the soil in the autoclave and steam it again the next day. Follow the process for three consecutive days.

STERILIZATION WITH CHEMICAL VAPORS

Ethylene oxide and other gaseous vapors are important sterilizing agents. Soils of vegetable in raised bed nurseries are generally sterilized by this method.

Procedure Loosen the soil of the raised bed and add ethylene into it. Mix the soil with ethylene and cover with a plastic sheet for 6 hours so that the ethylene vapors are released and kill the germs in the soil. Remove the plastic sheet and allow the fumes to release from the soil so that traces of the ethylene are not present in the soil. Use such soils for sowing in the nursery beds.

Precautions Wear a mask, gloves, and goggles while mixing the ethylene in to the soil. Do not inhale the ethylene fumes or vapors.

STERILIZATION WITH SOLAR HEAT This is also used to sterilize soil or nursery raised bed soils under solar heat.

Procedure Loose the soil of the raised bed. Cover the soil or raised beds with black-colored polythene sheets and expose to sunlight or hot temperatures of 40°C or more. The process of heat treatment should be continued for at least five days or more to attain proper sterilization. Note: Light irrigation of the soil during sterilization process enhances the degree of sterilization due to formation of hot air steam beneath the polythene sheet.

STERILIZATION OF THE WORKING PLACE

BY UV RADIATION The working platform and the environment or space in the working platform is sterilized by UV radiation. In laminar flow benches the UV tubes are fitted for this purpose.

Procedure Clean the working platform with methylated alcohol. Put on the UV light and run it for 30 minutes to kill the germs on the working platform and inside environment. Put on the laminar air flow to circulate the sterile air in the cabinet and close the UV radiation tube. Again clean the working platform with methylated alcohol before starting the actual work under laminar air flow.

Precaution Do not work directly under UV radiation. Turn off the UV before starting your work. Do not look into the UV tube with the naked eye; this may irritate and damage your eyes.