

PATHOGENICITY OF THE ISOLATED BACTERIAL CULTURE ON NATURAL HOST PLANTS

When testing a bacterial culture for pathogenicity, it is important that the same plant species and cultivar from which the bacterial culture is isolated is used. The young vigorously growing plants or shoots should be selected for inoculation. It is advisable to keep the plants before and after inoculation under high humidity in a moist chamber.

In carrying out inoculations by any method, check/control plants (treated in a similar way as of the test plant, but only with sterile water) should be maintained. The check plants should be treated first and then the test plant inoculated. This avoids chances of contamination and the labor involved in sterilization of instruments used for inoculation, which is necessary if the test plant is inoculated first.

Material Required Hypodermic syringe, cotton, atomizer or plastic sprayer, vacuum pump, dissection needle, razor blade, carborandum powder, test bacterial suspension, tags, incubation humidity chamber, and soon.

Procedure Preparation of bacterial inoculums for inoculation on/in plant: Suspend a 24–48 hour young bacterial growth in about 25–30 ml of sterile water. This bacterial suspension is used for inoculation purposes in the desired plant parts. Only freshly prepared bacterial suspension should be used. The inoculation may be carried out with different methods depending upon the types of symptoms to be produced

BY INFILTRATION METHOD This method consists of injecting bacterial suspension into the intercellular spaces of leaves with a 25-gauge hypodermic syringe with a five-eighths size needle. Insert the hypodermic needle gently under the epidermis on the dorsal side of the leaf. The opening face of the needle should be toward the leaf. Inject the desired amount of inoculum so that the tissue becomes water-soaked. This method can also be used for inoculation of stem and other plant parts. The method is generally used for determining the pathogenicity of leaf spot and leaf blight bacterial pathogens. The method produces pathogenicity symptoms (water soaking reaction) within a short period of time (4–5 days) as compared with other inoculation methods for producing leaf spot diseases. The method is appropriate for the inoculation of leaves with a rough texture.

BY SWAB INOCULATION METHOD

It is the best alternative for spray inoculation in case of plant parts possessing high surface tension or waxy coating that do not allow the sprayed inoculums to stick to the plant's surface. Smear the inoculum soaked in muslin cloth on the surface of the plant part to be inoculated. Incubate the plant in a humid chamber or alternatively spray it with water thrice a day for a week or until symptoms develop. The swab inoculation method is generally used for determining the pathogenicity of leaf spot and leaf blight bacterial pathogens. The method is more appropriate for the inoculation of leaves that have leaf hairs or trichomes on the plant surface.