

How Downy Mildew Spores Are Monitored

Spore traps (Figure 1) are placed in the several sites in Michigan counties for the field season. Each trap operates by continuously pulling in air and all associated particles (spores, pollen, dust, etc.) and impacting them onto sticky tape on a reel inside the trap.

The reel inside the spore trap must be changed every 7 days. At that time a new reel is placed in the trap, and the reel with the spores is brought back to the lab where it is processed.

Processing of one spore trap reel takes approximately 4 hours. The tape on the reel is removed and placed onto a cutting block (Figure 2A). Tapes from one reel are cut into 7 pieces that represent 24 hours and each hour is marked (Figure 2B). Each 24-hour section of tape is put onto a microscope slide (Figure 2C) and stained. A cover slip is applied, sealed to the slide (Figure 2D), and allowed to dry.

Once the slides are prepared, they are placed under the microscope and the entire tape is examined for downy mildew spores (Figure 2E). Spores (Figure 2F) are counted and logged into a data sheet under the specific hour of the specific day that they were in the air around that particular spore trap. Counting one reel of slides takes 1-2 days.

Downy mildew spores will be concentrated in areas where the disease is established. It is impossible to know where the first outbreak of downy mildew within any particular county may occur. A new infection may not register high spore counts, initially. Also if a new infection is not located near the spore trap, the spores will not be picked up by the trap until the disease becomes more widespread.



Figure 1. Spore trap in a cucurbit field.

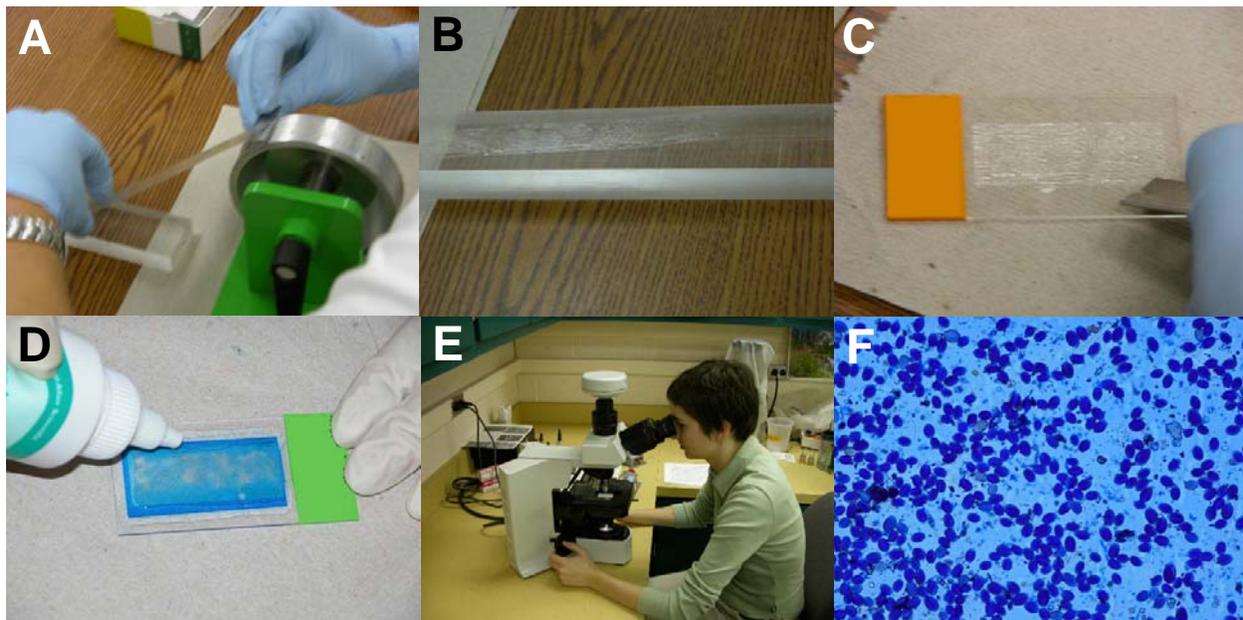


Figure 2. Preparing tapes and counting spores. A, tape is removed from the reel and placed on the cutting block. B, tape is cut into 24-hour pieces and each hour is marked. C, each 24-hour section is placed onto a slide and stained. D, the cover slip is sealed to the microscope slide. E, each slide is examined and all downy mildew spores are counted. F, downy mildew spores on a microscope slide at 100x.