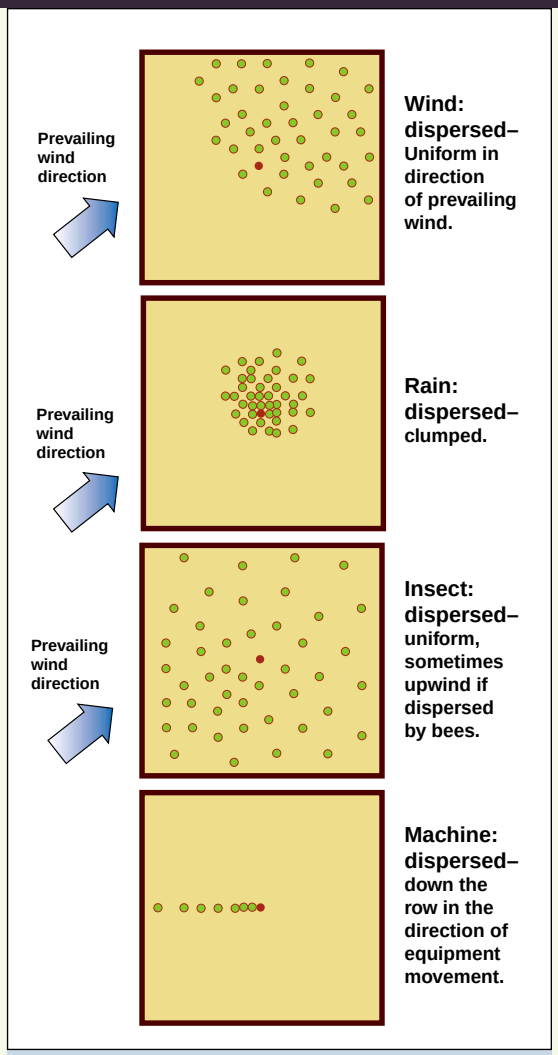
by ascospores are typically more numerous downwind from a source. Fruit infection caused by bee-dispersed conidia tends to be more severe upwind, because bees tend to fly upwind while foraging. In some cases, soilborne pathogens can be dispersed by wind-blown soil.

Rain or overhead irrigation can splash fungal spores and bacteria from plant surfaces or wash them off in runoff water. Splash droplets can be thrown more than a meter from the point of splash, but most travel only a few centimeters. Soilborne pathogens are often dispersed by water flowing through soil.

Dispersal distances are usually smaller for rain splash-dispersed pathogens than for windborne pathogens, except in the case of wind-driven rain or splash droplets that form aerosols in the wind. Rain-dispersed pathogens also tend to spread more readily along the rows than across rows because the distances between plants are smaller. Some pathogens use both tactics. The grape black rot fungus uses windborne ascospores produced on fruit mummies to get from the ground into the canopy. Then conidia produced on leaf lesions are splashed by rain to the developing fruit. The dispersal mechanisms of insects are similar to those of pathogens, but wind has greater impact and rain has less.

Pathogens can also be dispersed by farm equipment. For example, blueberry mechanical harvesting machines have been shown to move the blueberry aphid and the shoestring virus it transmits from infected to uninfected plants down the row. Washing the harvester between fields is a simple way to reduce transfer of this virus from field to field.



How pathogens are dispersed. Disease distribution in a field varies with method of pathogen dispersal from a diseased source plant. Above, red dots indicate location of source plant; green dots indicate locations of infected plants.

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This aerial view of a blueberry field indicates that machinery spread blueberry shoestring virus down the rows.