

Abstract

Fruit decay caused by fungal pathogens is one of the most important quality problems in sweet cherry production. The objectives of the present work were to investigate important sources of inoculum throughout the growing season and to study effects of different orchard management methods on disease incidence of sweet cherry fruits at harvest.

Three different methods of protecting trees by water impermeable polyethylene sheets 3-4 weeks prior to harvest were compared to uncovered trees. Covering decreased fruit decay and type of cover influenced microclimate in the trees and fruit quality (Paper I). Such covering was also tested as a replacement of fungicide applications during fruit development. No negative effects on fruit quality or yield were found after extended periods of covering. Covers mounted at different times in the season and kept on during wet periods throughout the harvest period, (i) from time of flowering, (ii) from 5-6 weeks prior to harvest, (iii) from 3-4 weeks prior to harvest, replaced 3-5, 1-2, or 0-1 fungicide sprays, respectively. Thus, protective tree covering can be used both as a supplement to and a replacement of fungicide applications (Paper II).

The mean attack of fungal diseases on non-abscised aborted and normal developing (sound) fruits were 53 and 7%, respectively, after 7 days incubation. This strongly indicates that such fruits can be important inoculum sources in sweet cherry trees (Paper III).

Inoculum of *Monilinia laxa* from overwintering sites (mummified fruits, blighted spurs and blossoms) was present during the entire growing season. Infected plant parts left on the ground ceased to produce spores of *M. laxa* much earlier than plant parts still attached to the trees (Paper IV).

Minute fractures affecting the outer cuticle and occasionally outer epidermal cells (cuticular fractures) appearing on the fruits close to harvest promoted postharvest fruit decay, when inoculated with *M. laxa* or *Botrytis cinerea* (Paper V).