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Seasonal spore production, germination and fungicide resistance shifts of *Cercospora beticola* in commercial sugar beet fields.

Cercospora leaf spot (CLS) caused by *Cercospora beticola* (Cb) is the most important foliar sugarbeet disease. Management includes cultural practices, resistant varieties and timely fungicide applications. Disease prediction models monitor conditions for disease spread and fungicide application after CLS is present, but do not include spore production and germination that may be important for predicting protective fungicide application prior to disease appearance. Laboratory experiments indicate spore germination begins in two hours at 10°C, is higher in free water and increases with time and temperature. At low temperatures, spores from fungicide resistant isolates tend to have lower germination rates compared to fungicide sensitive isolates. Cb spores were detected in commercial sugar beet fields annually from 2021 - 2024 before emergence using Spornado spore traps and PCR testing. Seasonal testing showed changes in fungicide resistance to pyraclostrobin. We conclude that forecasting models for CLS should include spore detection and early wetness conditions and adjusted to recommend fungicide applications earlier in the growing season before infection by Cb.