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**POSSIBLE IMPACT OF CLIMATE CHANGE ON THE OCCURRENCE AND THE EPIDEMIC DEVELOPMENT OF CERCOSPORA LEAF SPOT DISEASE IN SOUTHWEST GERMANY**

**ABSTRACT**

The possible impact of climate change on the occurrence and the epidemic development of Cercospora leaf spot disease (CLS) in sugar beets was analyzed using the forecasting models CERCBET1. In practical use, CERCBET1 projects the day of the year when 1% (T1), 50% (T50) and 100% (T100) of the fields in a region are potentially infested by CLS. If CERCBET1 projects the attainment of T50, the fungicidal strategy is being simulated and recommended by CERCBET3 on the basis of three-day weather forecast data of the German Weather Service.

In this study CERCBET1 was used as a model on the impact of climate change driven by REMO (REgional MOdel) climate projection data as input. The possible impact of climate change on the occurrence of CLS was studied in three time windows: a baseline period 'B' (1971-2000), a medium-term period 'K' (2021-2050) and a long-term period 'L' (2071-2100). Moreover, the ontogenesis of the sugar beet plants was simulated with the aid of a leaf-growth model simulating the leaf formation in early growth stages. The simulation results were compared in order to draw conclusions on whether CLS would potentially occur in a different leaf stage. The date of completion of the 20- and 40-leaf stage (B20 and B40) was examined.

The comparison of the time windows B and K indicates that T1 has an earlier occurrence of 4 days, T50 of 5.7 days, and T100 of 7 days. In period L, T1 is reached 20.9 days, T50 23.9 days, and T100 27.5 days earlier than in period B. The leaf-growth-stages shift slightly less forward than the CLS occurrence. For period L, B20 is projected 9.5 days and B40 14 days earlier than in period B. An increasing number of fungicide applications could be one consequence.