

Influence of Climatic Factors on the Formation of Symptoms of *Ramularia collo-cygni*

H. Formayer, H. Huss and H. Kromp-Kolb

The purpose of this Austrian study was to gather information about the meteorological conditions during the developing phase of the barley spot disease "Sprenkelkrankheit" in Middle Europe. Investigations about the distribution of this disease in Austria by Huss show a clear separation between infected and non infected areas (Fig1). Especially the dry areas in the East and Northeast of Austria show no infection.

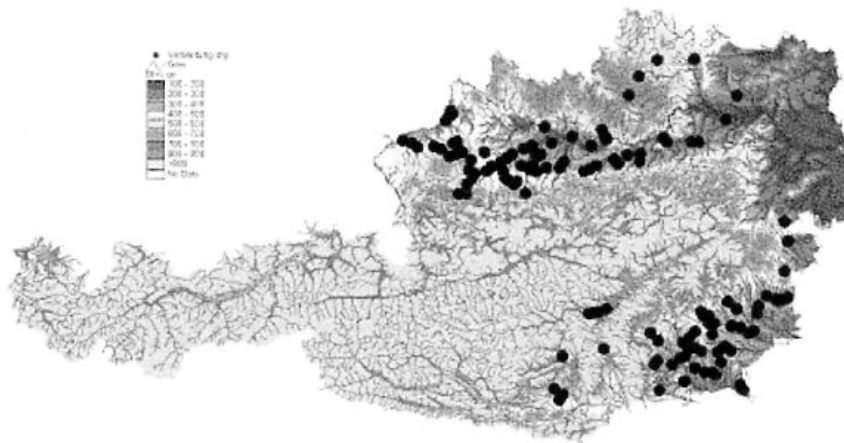


Fig 1. Distribution of *Ramularia c.c.* on barley in Austria: black dots mark locations with medium and strong appearance of *Ramularia collo-cygni*.

In 2000 and 2001 strong infections of barley with spots caused by *Ramularia collo-cygni* could be observed at Lambach (Upper Austria). In 2000 these infections started 10 days earlier than in 2001. This could not be related to the meteorological conditions during the symptom developing phase, because the weather was quite different during these two years (Fig 2). But there is a strong relation to the barley development stage. In both years about two and a half weeks after the "head emergence" stage the spots occurred on the top two leaves (Fig 2).

A further purpose of this study was to investigate the causes of this disease. In Bavaria the theory has been advanced that these spots are abiotic and are caused

by solar radiation (Obst and Baumer, 1998). Huss and other researchers believe that the disease is caused by the fungus *Ramularia collo-cygni* (Huss and Sachs, 1998; Salamati, 2001). To test these theories an experiment was set up in a polyethylene tunnel in 2001. Within this tunnel the radiation was reduced by about 50 percent. Additionally one part of the plant pots were put into a closed room during the night, so no leaf wetting caused by dew was possible. The conclusion of this experiment is that radiation intensity has no effect on the "Sprenkelkrankheit" in Austria. We found that the key factor of this disease is the leaf wetness as is typical for fungal diseases.

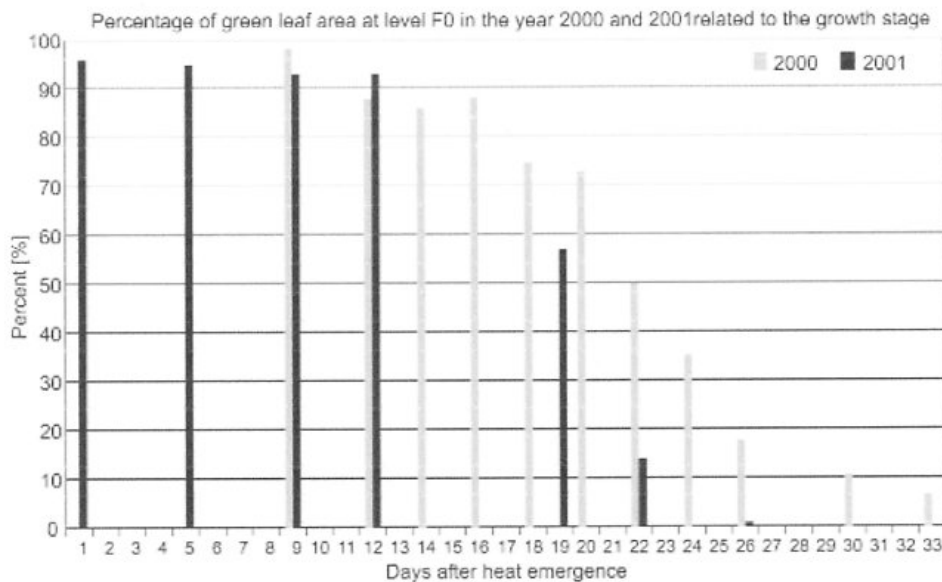


Fig 2. Development of barley spots in the years 2000 and 2001 as a function of the developing stage of barley.

REFERENCES

- Formayer H, Huss H, Eckhardt S, Gerersdorfer T, and Kromp-Kolb H, 2002. Die prenkelnkrankheit auf der Gerste: Untersuchung der meteorologischen Ursachen der Krankheit insbesondere der Entwicklung des Pilzes *Ramularia collo-cygni*. Endbericht des Forschungsprojektes Nr. 1223 des *BMLFUW Austria*.
- Huss H, and Sachs E, 1998. *Ramularia*-Blattflecken-oder Sprenkelkrankheit der Gerste.-*Der Pflanzenarzt* 51(11-12): pp 15-18.
- Obst A, and Baumer M, 1998. Nichtparasitär bedingte Blattverbräunungen an Gerste und anderen Getreidearten - Ursachen und Abwehrmaßnahmen. - *Getreide Magazin* 4, 56-61.
- Salamati S, 2001. Spraglefleck på bygg. - *Grønn Forskning* 17: 1-9.