

**PATHOGENICITY OF THE HAPLOID PROGENY CULTURES FROM
CROSSES BETWEEN CULTURES OF *ERYSIPHE GRAMINIS*
F. SP. *TRITICI* AND *ERYSIPHE GRAMINIS* F. SP.
AGROPYRI. (PRELIMINARY NOTE)**

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Hiura (1962) found that hybridization occurred between different form species of *Erysiphe graminis*, but he did not succeed in germination of the ascospores derived from those crosses.

This paper reports that haploid progeny cultures from crossing between *Erysiphe graminis* f. sp. *tritici* and f. sp. *agropyri* have been obtained, and some of them are virulent on both wheat and quackgrass.

MATERIALS AND RESULTS

The parent cultures of *Erysiphe graminis* f. sp. *tritici* and f. sp. *agropyri* used in this study were collected at Kurashiki. 3 wheat varieties, Little Club, Norin 52 and Shibu-shirazu, and *Agropyron semicostatum* Nees. were used as the host plants. Crosses were made on both hosts of wheat and quackgrass. The methods of crossing, isolation and inoculation were similar to those published in 1964 (Hiura 1964).

Pathogenicity of the 101 haploid progeny cultures from crosses between *E. graminis* f. sp. *tritici* and f. sp. *agropyri* on seedlings of wheat and quackgrass are shown in Table 1.

TABLE 1
Pathogenicity of the haploid progeny cultures from crosses between cultures of *Erysiphe graminis* f. sp. *tritici* and *Erysiphe graminis* f. sp. *agropyri* on seedlings of wheat and quackgrass

| Host on which crosses were made | Host on which progeny cultures were obtained | Observed number of haploid progeny cultures | | | Total |
|---------------------------------|--|---|-------------------------------|-------------------------------|-------|
| | | V* on wheat V on quackgrass | V on wheat A on quackgrass | A on wheat V on quackgrass | |
| Quackgrass | Wheat | 5 | 12 | | 17 |
| Wheat | Wheat | 16 | 57 | | 73 |
| Wheat | Quackgrass | 3 | | 8 | 11 |

* V=virulent, A=avirulent.

17 progeny cultures were obtained by inoculation on seedlings of wheat with ascospores which discharged from the cleistothecia produced on quackgrass by interform crossing. Of the 17 cultures on wheat, 5 were virulent on seedlings of quackgrass, and 12 were avirulent on the seedlings. 73 progeny cultures

were obtained by inoculation on seedlings of wheat with ascospores which discharged from the cleistothecia produced on wheat by interform crossing. Of the 73 cultures on wheat, 16 were virulent on seedlings of quackgrass, and 57 were avirulent on the seedlings. 11 progeny cultures were obtained by inoculation on seedlings of quackgrass with ascospores which discharged from the cleistothecia produced on wheat by interform crossing. Of the 11 cultures on quackgrass, 3 were virulent on seedlings of wheat, and 8 were virulent on only quackgrass seedlings.

Results presented demonstrate that new physiologic races which are virulent on both wheat and quackgrass may evolve by crossing between *E. graminis* f. sp. *tritici* and f. sp. *agropyri*. However, the progeny cultures which were virulent on seedlings of both wheat and quackgrass were all intermediately virulent or avirulent on adult plants of those hosts. In general, the progeny cultures which could attack adult plants of wheat or quackgrass were virulent on seedling of wheat or quackgrass only, respectively.

It is considered that this fact is the most interesting problem in relation to the host specialization of those form species.

LITERATURE CITED

- Hiura, U. 1962. Hybridization between varieties of *Erysiphe graminis*. *Phytopathology* 52 : 664-666.
- Hiura, U. 1964. Genetics of host-parasite interaction in barley mildew. *Ber. Ohara Inst. landwirts Biol.* 12 : 121-129