Zur Morphen-Determination der Ölweiden-Huflattich-Blattlaus Capitophorus similis (Homoptera: Aphididae)

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In order to find out which factors might control the differentiation of various morphs of *Capitophorus similis* Van der Goot 1915, the animals were held in an environmental chamber under controlled constant or changing photoperiods. Some of the animals were fed on an artificial diet.

In a first set of experiments animals were reared on coltsfoot (*Tussilago farfara* L.) under long day (L:D = 16:8) or short day (L:D = 8:16) conditions at 11°, 15° and 19 °C. A second experimental set involved rearing the aphids under changing photoperiods and temperatures (L = 8 or 16, 11° oder 19 °C).

Under constant long day conditions the formation of sexual ♀♀ was prevented at all temperatures, while ♂♂ were formed at low and intermediate temperatures (11° and 15°). Under constant short day conditions, however, both sexual morphs appeared at all temperatures, although high temperature (19°) largely suppressed the short day effect. The suppression of sexual ♂ formation by high temperature was particularly strong. The percentage of oviparous ♀♀ increased with decreasing temperature. ♂♂ were formed most frequently at 15° in both types of photoperiods.

The experiments with changing photoperiods proved, that for the determination of sexual ♀♀ a continued exposure of the grandmothers to short day conditions is necessary. In our experiments the time required was from the L₁ instar to the reproduction phase of the imago. This determination is irreversible. The transfer of the determined gynoparvae (as larvae or adults) back into long day conditions induced no change. They never produced viviparvae. For the determination of the ♂♂ also a shorter exposure (of the mothers) to short day conditions is efficient. Prolonged exposure increases the male rate.

*C. similis* could be reared on an artificial diet for 2 ½ generations, that means to the L₃ instar of the F₂ generation. Under short day conditions and low temperature (L = 8, 11°C) only gynoparous and sexual forms were produced. It thus appears that the photoperiod and temperature play a dominant role in the programming of the sexual morph determination.

1 Einleitung

Daß u.a Tageslänge und Temperatur für die Steuerung des Generationswechsels bei Blattläusen verantwortlich sind, ist schon seit langem bekannt.

Untersuchungen von Marcovich [1924] ergaben, daß die Heterogonie bei *Aphis forbesi* Weed 1889 unterbleibt und durch eine permanente Parthenogenese ersetzt wird, wenn die

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