

Supplement 1. F-0 diapause in long-term constancy and in late-season conditions

In rather scattered and partly exploratory experiments at 20°C on *C. hastulatum* from 58°N (many details unpublished, but see Norling, 1984a) and also *A. viridis* from 55°N (Norling, 1971), it was often observed that when F-0 was entered after a long time in constant photoperiods, diapauses were relatively weak, or even non-existent in *A. viridis*. In particular, this happened after a diapause in F-1 (see also the extended discussion in Supplement 2 on the present *A. juncea* data in Figure 7).

In *C. hastulatum*, F-0 duration was then mostly about one month, twice the time-constrained non-diapause duration (cf. Supplement 3), mainly studied in long and short days (LD 19.3:4.7 and 13:11) on overwintering small larvae. The short-day experiments might have displayed an element of anomalously slow pre-emergence development. In *A. viridis*, with a non-diapause F-0 duration of about a month, such unexpected fast F-0 development was observed mainly at LD 14.5:9.5 and 16:8, few diapausing larvae reaching F-0 at 13:11 or 19.5:4.5 during the experiments.

In contrast, during recently attained short days in late-season experiments (mainly LD 13:11), diapause in F-0 was intense, often with stadium durations at 20°C of c. 100 days in *C. hastulatum* and more in *A. viridis*. Here F-0 was reached from seemingly non-diapause fast regulatory or long-day diapausing F-1. This intense F-0 diapause could also be induced at an intermediate photoperiod (LD 16:11), then acting as short days. This is different from autumn – spring collected larvae, where 16:8 successively produced a weak long-day effect of pre-emergence development.