(T6) Generation. Über die gesamte Entwicklung bis hin zum 10 Tage alten Käfer wurden die Tiere einzeln gehalten und täglich ad libitum mit *Sitobion avenae* Fabr. versorgt. Im Rahmen der Untersuchung wurden die Entwicklungsdauer, die Schlupfgewichte der Käfer sowie die Lebendgewichte und die Fettkörpergehalte der 10 Tage alten Käfer erfasst.

Hinsichtlich der Entwicklungsdauer in der erhöhten Temperaturstufe T3 ergaben sich nur geringere Unterschieden zwischen den Tieren aus T0 und T6. Die Unterschiede zwischen den Entwicklungszeiten der Männchen und Weibchen beider Arten waren minimal. Wie sich schon in vorhergehenden Untersuchungen zu Kurzzeiteffekten der Temperatur zeigte, prägten die Tiere aus T0 höhere Schlupf- und Lebendgewichte (10. d) aus, wobei die Männchen beider Varianten deutlich geringere Gewichte aufwiesen. Beispielsweise waren die Weibchen aus T6 in T3 mit 42,3 mg etwa 6,5 mg leichter als die Weibchen aus T0 mit 48,8 mg. Die Analyse der Fettkörpergehalte der 10 Tage alten Käfer ergab erstaunlich ähnliche Ergebnisse. Die Männchen beider Varianten, aus T0 und T6, entwickelten unter T3 einen mittleren Fettkörpergehalt von 103,7 µg Triglyceride/mg Trockenmasse. Die Weibchen beider Varianten prägten mit 54,4 µg Triglyceride/mg Trockenmasse (T0) und 60,0 µg Triglyceride/mg Trockenmasse (T6) in T3 geringere Fettkörpergehalte als die Männchen aus. Als Ursache für die verringerten Fettkörpergehalte der weiblichen Tiere wird ein zusätzlicher Ernergieverbrauch in der reproduktiven Phase vermutet. Studien von Seagraves (2009) und Beenakkers (1985) bestätigen dies.

Die vorliegende Untersuchung ergab nur hinsichtlich der Körpergewichte Langzeiteffekte unterschiedlicher Temperaturen. Tiere, die über mehrere Generationen „normale" Temperaturen (T0) erfahren haben, prägten in der mittleren, erhöhten Temperaturstufe (T3) deutlich höhere Gewichte aus als Tiere, die über mehrere Generationen unter „stark erhöhten" Temperaturbedingungen (T6) gezüchtet wurden.

(DPG, AK Populationsdynamik und Epidemiologie)

10) Population development of the lupine aphid Macrosiphum albifrons on different genotypes of the narrowleaf lupine *Lupinus angustifolius*.

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Lupines are agricultural valuable crop species due to the high protein content in the seeds, the ability to fix nitrogen with the help of symbiotic bacteria, and due to its deep root system being ameliorative for the soil structure. Plant and seeds of most lupine species contain toxic metabolites like chinolizidine alkaloids which are poisonous for herbivores and also for humans and animals. To enhance the use of lupine seeds for human nutrition and animal feed, at the beginning of the last century varieties with low alkaloid content were developed resulting in a loss of their natural defense against herbivores like aphids. Aphids reduce the amount of assimilates by feeding on the phloem, inhibit the plant growth and are also vectors of different plant viruses. *Lupinus* spec. are host plants fot many different aphids, but most important is the lupine aphid *Macrosiphum albifrons*. *M. albifrons* is originated from North-America, known in Europe since 1981 and is well adapted to the alkaloids of Lupinus. With the tendency to enlarge the cultivation of sweet lupines in Germany it is necessary to investigate how the alkaloid content of lupine plants influences aphid development.

To get information on this, the aphid population development of *M. albifrons* on the sweet variety "Boregine" with low alkaloid content was compared to that on the alkaloid rich varieties "Azuro" and "PSG Ostsaat Blaue". As parameters for the development, the weight growth of the larvae, the pre-reproduction time, longevity and the number of new born larvae per day were estimated. On the basis of these data life table parameters were calculated, i.e. net reproduction rate, the intrinsic rate of population increase, mean generation time, population doubling time and finite rate of population increase. The mean growth of the larvae as mg/day, pre-reproduction time and all life table parameters showed that the sweet lupine variety "Boregine" was significantly more suitable for the aphid population than the bitter lupines. Among those "Azuro" was less suitable than "PSG Ostsaat Blaue". These results indicate that a reduction of the alkaloid content leads to a better aphid population development. Therefore, an important goal of lupine breeding is the development of varieties having a with low alkaloid content in the seeds but a satisfactory amount of alkaloids in leaves and stems to suppress the aphid population development.

(DPG, AK Populationsdynamik und Epidemiologie)

11) Efficiency of different strains of *Habrobracon hebetor* against some storage *insects Plodia interpunctella* and *Ephestia kuehniella* in the laboratory

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Storage insects such *Plodia interpunctella* (Hübner) and *Ephestia kuehniella* (Zeller) are often in warehouses. It is preferred to use biological control measures for controlling these insects, i.e. the antagonists. Nowadays, the well-known method is using *Trichogramma* wasps (This egg parasitoid lays its eggs into moth eggs, so they mortify). In this study, we tested an alternative method, the larval parasitoid *Habrobracon* hebetor (Say). Three different strain-origins were evaluated, from Germany, Spain and Egypt. The longevity of *H. hebetor*, the paralyzing & parasitisation rates, also cocoons building, emergence rate and survival of the F1-generation were investigated. These experiments were conducted in Petri dishes in the laboratory, separated for each strain-origin. Three different host variants were used: The first, five *Plodia* larvae, the second, five *Ephestia* larvae and the third, three *Plodia* plus three *Ephestia;* one *H. hebetor* female was added for each Petri dish which was inspected daily. Three replicated were use for each treatment.

Mean of longevity of *H. hebetor* German-strain female was 6.7 days, the Spanish 8.1 days and the longest one was the Egyptian strain to 11.4 days. The parasitoid longevity on *Plodia*- and *Ephestia* Petri dishes was similar, but *Ephestia* is slightly longer with 8 days than *Plodia* (7 days). The average of paralyzing rate by *H. hebetor* was 12.5% on German strain and 25% on Spanish origin; while it was 39.1% on Egyptian strain. Later, these damaged larvae were died. The parasitism rates by *H. hebetor* Spanish line were 40.1% on all different hosts and by German strain were only 21.9% and it reached to 26.1% by the Egyptian one. Generally, cocoons were formed in a high number but the hatching rate was low (19.6%). In the German strain, wasp *H. hebetor* formed 31 cocoons, but only 5 individuals emerged out (emergence rate was 16.13%). While the emergence rate was 18.1% in the Spanish line (116 cocoons were built and 21 wasps emerged). The best emergence rate was recorded by the Egyptian strain, it reached to 25.0% (72 cocoons were produced and 18 adults hatched out). The survival of the F1-generation was 3.6 days for the German line and 3.3 days for