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Effects of drought-stressed rubber plants on the development and reproduction of *Oligonychus biharensis* and *Eotetranychus sexmaculatus**

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The spider mites, *Oligonychus biharensis* and *Eotetranychus sexmaculatus*, are two major pests of rubber trees which are very important tropical crop in China (Liu *et al*. 2022). They normally caused more serious damages in drought seasons and various species showed differences in infestation severity (Wang *et al.* 2019; Liu *et al*. 2022). This study aims to understand the effects of drought stress on the occurrence of the spider mites by measuring the development and reproductive characteristics of *O. biharensis* and *E. sexmaculatus* on high (30%≤W<40%), moderate (40%≤W<50%), mild (50%≤W<60%) drought-stressed and control plants (60%≤W<80%) under the conditions of 30±1°C, 75±5%RH and 14L:10D photoperiod in artificial climate chambers. The data (based on 100 replicates for each species) were analyzed using the age-stage, two-sex life table method. The results showed that drought-stress shortened the developmental durations but increased the female fecundity as well as adult longevity of both mite species. On high drought-stressed plants, the pre-adult durations of *O. biharensis* and *E. sexmaculatus* were the shortest (8.05 d and 8.96 d), while the fecundity of *O. biharensis* and *E. sexmaculatus* females were the highest (26.71 and 21.44 per individual), and the longevity of *O. biharensis* and *E. sexmaculatus* adults were the longest (females were 9.60 d and 11.75 d, males were 15.93 d and 7.42 d). Life-table analysis results indicated that the intrinsic rate of increase (γ) value of *O. biharensis* and *E. sexmaculatus* on high drought-stressed plants were the highest, which were 0.232 and 0.182, respectively, and the doubling time of *O. biharensis* and *E. sexmaculatus* population on high drought-stressed plants were the shortest (2.99 d and 3.81 d). The population dynamics of *O. biharensis* and *E. sexmaculatus* was simulated and projected with TIMING-MS Chart software, showing the fastest population growth rate on high drought-stressed plants and the slowest on control plants. After 40 days, the predicted population of *O. biharensis* and *E. sexmaculatus* on high drought-stressed plants were 20 and 8 times of those on control plants, respectively. The population growth ability of *O. biharensis* was higher than that of *E. sexmaculatus* on same degree drought-stressed plants. It could be concluded that drought-stressed rubber plants were beneficial to the development and reproduction of *O. biharensis* and *E. sexmaculatus* and drought-stressed rubber trees exerted more stimulation on *O. biharensis* than on *E. sexmaculatus*.

Keywords: Drought stres, *Eotetranychus sexmaculatus*, *Oligonychus biharensis*, age-stage, two-sex life table, development and reproduction

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