



***Aceria* (Acarina: Eriophyoidea) in Taiwan: five new species and plant abnormalities caused by sixteen species**

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Table of contents

Abstract	2
Introduction	2
Materials and methods	3
Results	3
Key to the Species of <i>Aceria</i> (Keifer, 1944) in Taiwan	3
<i>Aceria</i> found in Taiwan (R.O.C.)	4
<i>Aceria eriobotryae</i> (Keifer, 1938) (Fig. 1)	4
<i>Aceria gallae</i> T. Huang, 1996 (Fig. 2)	5
<i>Aceria kuko</i> (Kishida, 1927) (Photo 1), Amrine & Stasny, 1994	7
<i>Aceria litchii</i> (Keifer, 1943) (Photos 2, 3)	8
<i>Aceria litseae</i> (Keifer, 1972) (Fig. 3; photo 4)	9
<i>Aceria mikaniae</i> (Nalepa, 1918) (Fig. 4)	11
<i>Aceria pipturi</i> Keifer, 1966 (Fig. 5)	12
<i>Aceria pobuzii</i> Huang, 1996 (Photos 5, 6)	14
<i>Aceria roxburghiana</i> sp. nov. (Fig. 6)	15
<i>Aceria sacchari</i> Wang, 1964	16
<i>Aceria serratifoliae</i> sp. nov. (Fig. 7)	16
<i>Aceria shepherdiae</i> Keifer, 1966 (Fig. 8; photo 7)	19
<i>Aceria spicati</i> (Stebbins, 1909) (Photo 8, 9, 10, 11, 12)	20
<i>Aceria sylvestrae</i> sp. nov. (Fig. 9; photo 13)	23
<i>Aceria taiwanensis</i> sp. nov. (Fig. 10; photo 14)	24
<i>Aceria virosae</i> sp. nov. (Fig. 11; photo 15)	26
Acknowledgements	28
References	29

Abstract

In this study, 16 species of *Aceria* Keifer, 1944, including 5 new species and 4 new records, causing visible damage to plants in Taiwan, are described. They are: *Aceria litchii* (Keifer, 1943) infesting *Litchi chinensis* and *Dimocarpus longana*; *Aceria sacchari* Wang, 1964 infesting *Saccharum officinarum*; *Aceria spicati* (Stebbins, 1909) infesting *Aceria morrisonense* and *Acer kawakamii*; *Aceria kuko* (Kishida, 1927) infesting *Lycium chinense*; *Aceria pipturi* Keifer, 1966 infesting *Pipturus arborescens*; *Aceria eriobotryae* (Keifer, 1938) infesting *Eriobotrya japonica*; *Aceria litseae* (Keifer, 1972) infesting *Litsea hypophaea*; *Aceria gallae* T. Huang, 1996 infesting *Cordia dichotoma*; *Aceria pobuzii* Huang, 1996 infesting *Cordia dichotoma*; *Aceria shepherdiae* Keifer, 1966 infesting *Elaeagnus thunbergii*; *Aceria roxburghiana* **sp. nov.** infesting *Rhus chinensis roxburghiana*; *Aceria mikaniae* (Nalepa, 1918) infesting *Mikania cordata*; *Aceria virosae* **sp. nov.** infesting *Flueggea virosa*; *Aceria serratifoliae* **sp. nov.** infesting *Premna serratifolia*; *Aceria sylvestrae* **sp. nov.** infesting *Elaeocarpus sylvestris* and *Aceria taiwanensis* **sp. nov.** infesting *Vitex trifolia*. A key to the 20 species of *Aceria* in Taiwan is provided.

Key words: *Aceria*, new species, visible damage, Taiwan

Introduction

Eleven species of *Aceria* Keifer, 1944 are known from Taiwan, according to the most recent Taiwan (Republic of China) update. Based on this study, the author adds 5 new species and 4 new records of *Aceria* to the Taiwan fauna. Thus, the total number of *Aceria* species known in Taiwan becomes 20. Among them, 16 species cause visible damage to their host plants in the form of galls, erineum, and blisters.

Eriophyoid mites have been neglected in acarological studies in Taiwan because of their microscopic size and obscure nature. Besides, many species of eriophyoid mites cause no visible harm to their host plants. In the past, eriophyoid mites were called gall mites, erineum mites and bud mites in reference to the damage caused to their host plants. However, vagrant mites (which don't cause any obvious damage to the host plants) make up 43.6% of all species (1618/3708 species, Amrine: unpubl. data) of eriophyoid mites. This percentage is higher than those of gall mites (15.8%, Amrine: unpubl. data), erineum mites (11.4%, Amrine: unpubl. data) and bud mites (8.9%, Amrine: unpubl. data).

Mites are difficult to locate in the field without a high-powered magnifying glass to detect them on the leaf surface. Furthermore, the extensive damage caused by eriophyoid mites is hard to detect because there are no written guides to help researchers recognize plant abnormalities and identify their acarine causal agents in Taiwan. This study attempts to compile more complete taxonomic information and to increase knowledge of *Aceria* in Taiwan by including photographs of tissue damage caused by *Aceria*.

There are about 465 eriophyoid species known from China (Hong & Zhang 1996; Kuang *et al.* 2005; Amrine: unpubl. data), including 52 species of *Aceria*. Therefore, the ratio of *Aceria* to all other eriophyoid mite species in China is 11.2%. In other countries this ratio of *Aceria* varies considerably; ratios are: India 26.3% (127/482); Indonesia 26.3 (58/103); Thailand 2.8% (6/213); New Zealand 23.8% (30/126); Australia 26.9% (14/52); Europe 26.8% (270/1009); the U.S.A. 27.9% (210/776); Cuba 45.5% (15/33); Brazil 21.6% (25/116); South Africa 28.9% (63/218) (De Lillo & Amrine 2003; Manson 1984; Fauna Europaea: <http://www.faunaeur.org>; Baker *et al.* 1996; Torre & Martínez 2004). In Taiwan (including this study), the ratio is 11.3% (21/185). Worldwide the ratio is 24.3% (921/3782, including synonyms; Amrine & Stasny 1994; De Lillo & Amrine 2003; Amrine: unpubl. data). Thus, the ratio of *Aceria* in Taiwan is lower than the world's average, and lower than other south-east Asian tropical areas, like India & Indonesia. The author offers three assumptions to explain this fact. First, many species of *Aceria*, described and undescribed, are yet to be found in Taiwan. Second, the ratio of *Aceria* that cause apparent symptoms is near 80%, but the ratio may be lower if vagrant species have not been found. Third, some species of *Aceria* may be synonyms of other species. For example, distortions caused during the preparation of slides or due to developmental alternate forms (deutonymes) or to special physiological conditions of the mites (Huang 2001b).