生态学报 2006 26 (2006(05)): 1438～1443 ISSN: 1004-616x CN: 44-1063/R

研究论文

有机、无公害和普通茶园管理方式对节肢动物群落和主要害虫的影响

韩宝瑜，崔林，董文霞

中国农业科学院茶叶研究所 农业部茶叶化学工程重点开放实验室，杭州310008

收稿日期 修回日期 网络版发布日期:

摘要 2002年7月～2003年7月对皖南一块有机茶园、一块无公害茶园和一块普通茶园茶丛内、茶丛上空及地表的昆虫、蜘蛛和螨类进行了调查。在有机茶园查得20732个体，属于131种70科，无公害茶园查得42547个体，属于97种50科，普通茶园中查得35242个体，属于89种50科。在有机、无公害和普通茶园中：① 假眼小绿叶蝉个体数及其占总个体数百分率分别为5176头和25%、14049头和33%、17590头和50%；茶尺蠖个体数及其占总个体数百分率分别为340头和1.6%、13099头和30.8%、7154头和20.3%。② 蜂类、步甲类、虎甲类、瓢虫类和隐翅甲类的总种数和总个体数分别是40种和2620头、33种和1898头、以及29种和1610头；③ 天敌与害虫种数之比依次为1：0.60、1：0.64和1：0.71，个体数之比依次为1：0.84、1：3.21和1：3.17；茶尺蠖与茶尺蠖绒茧蜂个体数量之比依次为3.4：1、18.8：1和17.0：1。有机茶园中蜘蛛与叶蝉数量相关显著（$p<0.05$）。$\chi 2$测验表明，有机、无公害和普通茶园相互间物种的数量组成差异较大。结果表明，强烈的人为干预显著影响群落组成和主要害虫数量；茶园禁用农药且周围的非茶园生境中植物相丰富，将涵养天敌、减轻虫害。

关键词 有机茶园；无公害茶园；普通茶园；群落组成；田间管理方式； 生物多样性

分类号 Q958,Q968

The effect of farming methods in organic, safety, and common tea gardens on the composition of arthropod communities and the abundances of main pests

HAN Bao-Yu, CUI Lin, DONG Wen-Xia

Key Laboratory of Tea Chemical Engineering of Ministry of Agriculture； Tea Research Institute, Chinese Academy of Agricultural Sciences, Hangzhou 310008, China

Abstract

A survey of species richness and abundance of insects, mites, and spiders within or around the tea clumps from an organic tea garden, a safety tea garden, and a common tea garden was conducted in the southern Anhui Province from July of 2002 to July of 2003. A total of 20,732 individuals of 131 species belonging to 70 families from the organic tea garden, 42,547 individuals of 97 species belonging to 50 families from the safety tea garden, and 35,242 individuals of 89 species belonging to 50 families from the common tea garden were recorded. Within the organic (O), the safety (S), and the common (C) tea gardens, respectively: the relative abundances of the tea green leafhopper (Empoasca vitis Gothe) were 25% (O), 33% (S), and 50% (C); the tea geometrid (Ectropis oblique Prout) were 1.6% (O), 30.8% (S), and 20.3% (C); wasps, ground beetles, tiger beetles, ladybugs, and rove beetles were the major natural enemies in the tea gardens, with their species richness and relative abundances being 40 and 12.63% (O), 33 and 4.45% (S), and 29 and 4.57% (C); the ratios of species richness between predators to pests were 1： 0.60 (O), 1： 0.64 (S), and 1： 0.71 (C) while the ratios of abundance between predators to pests were 1： 0.84 (O), 1： 3.21 (S), and 1： 3.17 (C); the ratios of abundance between the tea geometrid and the parasite wasp Apanteles sp. were 3.4： 1 (O), 18.8： 1 (S), and 17.0： 1 (C). In the organic tea garden the abundance of spiders was significantly correlated to that of the tea green leafhopper ($p<0.05$). The $\chi 2$ tests showed that the species compositions in the organic, the safety, and the common tea gardens differed significantly from each other. These results suggest that farmin

g methods have great impacts on the community composition of arthropods and the relative abun dance of major pests and their natural enemies. A ban on the use of insecticides in the tea garden s and enrichment of plant diversity in the habitats around the tea gardens would increase and cons erve the abundance of natural enemies and consequently reduce the populations of insect pests an d their damages.

Key words organic tea garden _ safety tea garden _ common tea garden _ co mmunity composition farming method _ bioviversit

DOI

通讯作者 韩宝瑜 han-insect@263.net