

研究论文

枣园间种牧草对节肢动物群落营养层与优势功能团的影响

师光禄<sup>1, 2</sup>, 常宝山<sup>3</sup>, 黄敏佳<sup>1</sup>, 刘素琪<sup>1</sup>, 苗振旺<sup>4</sup>, 曹挥<sup>1</sup>, 赵莉蕻<sup>5</sup>, 李登科<sup>6</sup>

- 1.山西农业大学,山西 太谷 030800
- 2.北京市农业应用新技术重点实验室,北京 102206
- 3.山西省晋城市森林病虫害防治检疫站, 晋城 048000
- 4.山西省森林病虫害防治检疫站,太原 030012
- 5.中国科学院动物研究所,北京 100080
- 6.山西省农科院,太原 030000

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**摘要** 为了有效地管理枣树害虫, 2004年在太谷地区对4种不同处理的间作牧草枣园的生态群落变化进行了系统的调查研究, 结果表明: 种草综合防治园的物种数显著大于( $p<0.05$ )种草常规防治园, 在枣树发育后期, 种草常规防治园的物种数显著大于( $p<0.05$ )未种草常规防治园; 种草枣园基位物种的优势功能团均显著( $p<0.05$ )小于未种草常规防治园, 而中位物种与顶位物种的优势功能团均显著( $p<0.05$ )大于未种草常规防治园; 枣树不同发育期, 种草常规防治园的基位物种与中位物种的平均丰盛度大于未种草常规防治园, 顶位物种是种草综合防治园的平均丰盛度是种草常规防治园和未种草常规防治园的2倍, 并且种草常规防治园大于未种草常规防治园; 就害虫平均丰盛度与天敌平均丰盛度之差而言, 未种草常规防治园大于种草常规防治园, 种草不防治园大于种草综合防治园; 多样性指数是: 种草综合防治园>种草不防治园>种草常规防治园>未种草常规防治园。综合分析表明, 种草枣园的中性节肢动物和次要害虫在害虫与天敌的营养链中起到了重要的调控作用。

**关键词** 枣草间作; 节肢动物群落; 营养层; 功能团; 丰富度; 多样性

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The structure and seasonal dynamics of nutritional classes and dominant functional guilds of arthropod community at jujube fields intercropped with herbage

SHI Guang-Lu<sup>1, 2</sup>, CHANG Bao-Shan<sup>3</sup>, HUANG Min-Jia<sup>1</sup>, LIU Su-Qi<sup>1</sup>, MIAO Zhen-Wang<sup>4</sup>, CAO Hui<sup>1</sup>, ZHAO Li-Lin<sup>5</sup>, LI Deng-Ke<sup>6</sup>

- 1. Shanxi Agricultural University, Taiyu 030800, China;
- 2. Key Laboratory of New Technology of Agricultural Application of Beijing, Beijing 102206, China;
- 3. Jincheng Forest diseases and insect pests control station of Shanxi province, jincheng 048000, China;
- 4. Forest diseases and insect pests control station of Shanxi province, Taiyuan 030012, China;
- 5. Institute of Zoology, Chinese Academy of Science, Beijing 100080, China;
- 6. Shanxi Agricultural Academy of Science, Taiyuan 030000, China

**Abstract** To understand the ecological impacts on natural enemies of the target pests and non-target arthropods at jujube fields, a systematic survey was made at the four different treatment of jujube fields located 2.5 km west of Taigu (112°8'E, 38°9'N, 780 m elevation), Shanxi Province in 2004. Trees were 10 years old and in full fruit production, with a height of 5 m and a shading-degree of 0.4~0.6°. In each of the four experimental sites, five trees were chosen according to the chessboard sampling method to monitor the population dynamics of the arthropods. The trees were monitored every 10 days from March 10th to September 30th. For each treatment was replicated three times. The non-target insect pests, natural enemies and neutral arthropods were distinguished, based on their trophic relationships, as well as taxonomy. Species abundance, species dominance and community diversity indices were used to analyze and compare the seasonal trends.

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· <a href="#">常宝山</a>	
· <a href="#">黄敏佳</a>	
· <a href="#">刘素琪</a>	

ds of different functional groups in the four experimental fields. The systematic survey showed that more species were observed at integrated pest management jujube field intercropped with herbage than conventional management jujube field intercropped with herbage. In later period of jujube development, more species were observed at conventional management jujube field intercropped with herbage than conventional management jujube field without herbage. Significantly fewer ( $p < 0.05$ ) dominant functional groups of basal species were at jujube field intercropped with herbage than that of conventional management jujube field without herbage. Significantly more ( $p < 0.05$ ) dominant functional groups of intermediate and top species were at jujube field intercropped with herbage than that of conventional management jujube field without herbage. In different developing stages of jujube trees, significantly higher ( $p < 0.05$ ) average abundance of basal and intermediate species were at conventional management jujube field intercropped with herbage than that of conventional management without herbage. The average abundance of top species in integrated pest management jujube field intercropped with herbage was twice as much as that of conventional management jujube field both with and without herbage. Significantly higher ( $p < 0.05$ ) average abundance of top species was at conventional management jujube field intercropped with herbage than that of conventional management jujube field without herbage. The ratio of insect pests to natural enemies were that conventional management jujube field without herbage was significantly bigger ( $p < 0.05$ ) than conventional management jujube field intercropped with herbage. Non-management jujube field with herbage was significantly bigger ( $p < 0.05$ ) than integrated pest management jujube field intercropped with herbage. Significantly bigger ( $p < 0.05$ ) diversity indices were from integrated pest management jujube field intercropped with herbage than from non-management jujube field with herbage. The latter diversity indices were significantly bigger ( $p < 0.05$ ) than that of conventional management jujube field intercropped with herbage. Diversity indices of conventional management jujube field without herbage were smallest ( $p < 0.05$ ) at the jujube fields of four different treatments. Biodiversity and seasonal dynamics of functional groups abundance indicated that the neutral arthropods and secondary pests played an important role in regulating food chain of insect pests and natural enemies.

**Key words** [jujube field intercropped with herbage](#) [arthropod community](#) [nutritional classes](#) [functional groups](#) [abundance](#) [diversity](#)

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通讯作者 师光禄 [glshi@126.com](mailto:glshi@126.com)