Aphids as Crop Pests
Edited by H.F. van Emden and R. Harrington.

This book of contributed articles by 68 leading aphid researchers is the most complete gathering of current aphid knowledge since the three volume work entitled “Aphids: Their Biology, Natural Enemies and Control” published in 1987 through 1989 (Minks and Harrewijn, 1987). The current editors, H. F. van Emden and R. Harrington, state that they have concentrated on applied aspects of aphidology and not sought to match the coverage on morphology, physiology, and ecology found in the earlier volumes. However, the new book offers a considerable and contemporary presentation of aphid biology and ecology that is useful to develop integrated pest management (IPM) systems for various crops. For example, Chapter 1 covers taxonomic issues on aphid species of greatest agricultural importance (pea and bean aphids, cotton/melon aphid, green citrus aphid, wheat aphid, mustard aphid, potato aphid, peach aphid, corn leaf aphid, bird-cherry-oat aphid, greenbug, grain aphid, and spotted alfalfa and clover aphids). Chapter 2 covers population genetics and molecular markers as applied to studies of clones, life cycles, adaptation to host plants, insecticide resistance, migration, and geographic colonization. Chapter 3 on life cycles and polymorphism describes the complex reproductive stages and alternation of host plants of many aphids. Host–plant selection and discrimination as well as penetration feeding are covered in Chapter 4, including a discussion of how to control aphid feeding. Chapter 5 covers nongenetic during the summer. The pheromones when infesting crop plants return to their alternate host species (e.g., autumn. Aphids also use an alarm pheromone (nesene) that is released by an individual as a predator that causes the rest of the colony, related members, to disperse and thereby return to their alternate host species (usually a tree) in the autumn. Aphids also use an alarm pheromone that is released by an individual as a predator that causes the rest of the colony, related members, to disperse and thereby escape. Chapter 11 focuses on aphids’ coping mechanisms to stressors such as poor plant quality or insecticides. Aphid population dynamics and various mathematical modeling approaches are discussed in Chapter 12. Feeding injuries inflicted (e.g., senescence, stunting, chlorosis, defoliating) are covered in Chapter 13. In addition, discusses the modulating effects of injury influences such as drought, soil nutrients, elevated CO₂, as well as moderating factors such as plant microbial symbionts, and formed plant resistance. Another type of virus transmission by aphids among its chapter 14), which adds another dimension of aphids. Control of aphids is emphasized. chemical control, 16 on cultural control, 17 on host plant resistance, 18 on biological control, and forecasting of aphid outbreaks. Chapter 19 on history and philosophy of IPM and then chapters on case studies of aphid management approaches by aphids.