

BOOK REVIEW

Harvesom R. M., Hanson L. E., Hein G. L. (Eds.).
2009. **Compendium of Beet Diseases and Pests.**
Second Edition. APS Press – The American Phyto-
pathological Society. St. Paul, Minnesota, U.S.A.
140 pp. and 308 figs. ISBN 978-0-89054-365-6.

This is the second edition of the extremely useful compendium concerning abiotic disorders, pests and pathogens of several beet species (*Beta* spp.) grown for sugar industry, animal fodder as well as fresh market. The APS Press and Editors invited 28 specialists from various countries who contributed new or revised former chapters regarding important aspects of protection of sugar beet crops during growing season and storing for industrial processing. The main feature of this book is that the text is supported with 308 color figures and 8 tables facilitating the easy absorption of the huge volume of important information.

The book contains: „Introduction“ (p. 1–5). Part I. „Biotic Disorders“ (p. 6–72). Part II „Abiotic Disorders“ (p. 73–91); Part III. “Postharvest Deterioration of Sugar Beet” (p. 92–94); Part IV. “Major Insect and Arthropod Pests” (p. 95–117). Part V. “Newly Emerging Issues Affecting Production” (p. 119–123). Part VII. “Appendix: Fungi, Bacteria, Pests and Viruses that Affect Beet” (p. 125–129); “Glossary” (p. 131–133). “Index” (p. 135–140).

In “Introduction” (p. 1–5) the reader will find valuable information on (1) “History of beet production and usage” (p. 1–2), “Botany of the beet plant” (p. 2–3) and (3) “Breeding for disease and insect resistance” (p. 3–5). as well as on history of sugar production in Europe and in the USA.

Part I “Biotic Disorders” (p. 6–72) starts with short general characteristics of bacteria, fungi, viruses, nematodes, rickettsias, oomycetes and parasitic plants, and then provides detailed information on various categories of pests grouped according to affected beet plant parts.

In chapter “Foliar diseases caused by fungi and oomycetes” (p. 7–21) the following causative agents are characterized: *Cercospora beticola*, *Ramularia beticola*, *Phoma betae*, *Alternaria alternata*, *A. brassicae*, *Rhizoctonia solani*, *Erysiphe polygoni* (syn. *E. betae*), *Peronospora farinosa* f. sp. *betae*, *Phytophthora leproides* (syn. *Urophlyctis leproides*), *Uromyces betae* (syn. *Uromyces beticola*), *Puccinia subnitens* and *Botrytis cinerea* (teleomorph *Botryotinia fuckeliana*).

In chapter “Root diseases caused by Fungi and Oomycetes” (p. 21–41) the following diseases and their causative agents are characterized: (1) seedling diseases caused by *Rhizoctonia solani*, *Aphanomyces cochlioides* and several *Pythium* species; (2) charcoal rot caused by *Macrophomina phaseolina* (= *M. phaseoli*); (3) Fusarium yellows caused by *Fusarium oxysporum* f. sp. *betae*; (4) Fusarium root rot caused by *F. oxysporum* f. sp. *radicis-betae*; (4) Phoma root rot caused by *Phoma betae*; (5) Phytophthora root rot caused by *P. cryptogea* and *P. drechsleri*; Rhizoctonia root rot and crown rot caused by *Rhizoctonia solani*; Pythium root rot caused by *Pythium aphanidermatum*; violet root rot caused by *Rhizoctonia crocorum* (syn. *R. violacea*).

and other species belonging to genera: *Verticillium*, *Rhizopus* and *Sclerotium*.

In chapter “Diseases caused by viruses and virus-like entities” (p. 41–58) the following viruses or diseases categories are characterized: (1) Viruses transmitted by fungus *Polymyxa betae*: (a) Beet necrotic yellow vein virus, (b) Beet soilborne mosaic virus; (c) Beet soilborne virus and Beet virus Q, (d) Soilborne virus complex; (2) Virus yellows complex: (a) Beet yellows; (b) Beet western yellows, (c) Beet chlorosis; (d) Beet mild yellowing, (e) Beet yellow stunt, (f) Curly top, (g) Cucumber mosaic; (h) Beet mosaic, (i) Beet leaf curl, (j) Beet savoy, (k) Lettuce infectious yellows, (l) Beet yellow vein, (m) Beet yellow net.

In chapter “Diseases caused by bacteria and mollicutes” (p. 59–72) the following diseases or pathogens are characterized: (a) Bacterial vascular necrosis and rot caused by *Pectobacterium (Erwinia) betavasculorum*; (b) Bacterial leaf spot caused by *Pseudomonas syringae* pv. *aptata*; (c) Yellow wilt caused by rickettsia-like organism; (d) Syndrome des Basses Richesses caused probably by phytoplasma; (e) Beet latent rosette; (f) Scab (*Streptomyces scabiei*); (g) Soft rot (*Pectobacterium carotovora* subsp. *carotovora*); (h) Bacterial pocket (*Pantoea agglomerans* pv. *betae*); (i) silvering disease (*Curtobacterium flaccumfaciens* pv. *betae*); (j) crown gall (*Agrobacterium tumefaciens*).

Chapter “Nematode parasites of sugar beet” (p. 64–72) contains description of seven species: (a) Sugar beet cyst nematode (*Heterodera schachtii*), (b) Root-knot nematodes (*Meloidogyne arenaria*, *M. incognita*, *M. javanica*, *M. hapla*, *M. chitwoodi*, *M. naasis*); (c) False root-knot nematodes (*Nacobbus abberans*); (d) Stem and bulb nematode and potato rot nematode (*Ditylenchus dipsaci*); (e) Clover cyst nematode (*Heterodera trifolii*); (f) Stubby-root and needle nematodes (*Trichodorus* spp. and *Paratrichodorus* spp.); (g) Other nematode parasites of beet: *Belonolaimus longicaudatus*, *B. gracilis*, *Hemicyclophora similis*, *Paratrichodorus minor*, *Pratylenchus projectus*, *P. scibneri*, *Radopholus similis*, *Rotylenchulus reniformis*, and *Tylenchorynchus dubius*.

Part II. “Abiotic Disorder” (p. 73–91) contains two chapters. In chapter “Nutritional disorders” (p. 73–80) the following disorders are described resulting from nutrients deficiencies: uniform yellowing, stunted greening, leaf scorch, growing point damage, yellowing with green veining. In chapter “Herbicide issues in beet” (p. 81–84) in large table injury symptoms due to herbicide misuse are described and are illustrated with several photos. In chapter “Other disorders” (p. 85–91) damage to beet plants caused by hail, wind, freeze and other factors are described and illustrated with several good photos.

Part III. “Postharvest Deterioration of Sugar Beet” (p. 92–94) provides information how to avoid losses due to “Storage rots: (p. 92–93), “Respiration” (p. 93–94), “Non-sucrose carbohydrate accumulation” (p. 93–94), and on “Minimizing postharvest losses” (p. 94).

Part IV. “Major Insect and Arthropod Pests” (p. 95–117) contains two chapters. In chapter “Root feeders” (p. 95–102) the following pests are characterized: sugar beet maggot (*Tetanops myopaeformis*), palestriped flea beetle (*Systema blanda*), wireworms (*Elateridae*), white grubs (*Phyllophaga* spp.), sugar beet aphid (*Pemphigus betae*), garden symphylan (*Scutigera immaculata*). In chap-

ter "Leaf and crown feeders" (p. 102–117) the following pests are characterized: sugar beet crown borer (*Hulstia undulatella*), beet petiole borer (*Cosmobaris americana*), beet webworm (*Loxostege sticticalis*), garden webworm (*Achyra runtalis*), alfalfa webworm (*Loxostege cereralis*), alfalfa looper (*Autographa californica*), several cutworms – *Euxoa auxiliaris*, *Peridroma margaritosa*, *P. saucia*, *Agrotis orthogonia*, *A. subterranea*, *A. ipsilon*, *Pseudaletia unipuncta* and many other species belonging to various orders and families of *Arthropoda*.

Part V. "Newly emerging issues affecting production" (p. 118–123) contains three chapters very important from the scientific and practical standpoint. In chapter titled "Fungicide resistance in *Cercospora beticola*" (p. 118–120) readers will find detailed information on managing fungicide resistance in *C. beticola* in Central High Plains and Red River Valley basing on forecasting system and proper use of fungicides from various chemical groups according to Fungicide Recommendations Action Committee (FRAC). In chapter "Multiple root disease complexes"

(p. 120–121) managing a multiple root disease complex is described in which *Rhizoctonia*, *Aphanomyces*, *Fusarium* and Beet necrotic yellow vein virus are involved. The last chapter titled "New diseases of unknown importance" (p. 121–123) provides information on: (1) newly isolated *Fusarium* species which present threat for sugar beet; (2) Beet black scorch virus (BBSV) isolated in China in late 1980s and discovered in the USA in 2005.

The book contains very useful appendix titled "Fungi, Bacteria, Pests, and Viruses that Affect Beet": (p. 125–129) which contains the list of scientific and common names of: (A) 50 species of *Fungi* (p. 125–126), (B) 18 species of *Viruses*, (C) 9 species of *Bacteria*, (D) 37 species of *Nematoda*, (E) 63 species of *Insecta*; and (F) 43 host plant species among which are 16 species belonging to *Beta* genus.

The "Glossary" (p. 131–133) that contains 101 scientific terms and "Index" (p. 135–140) greatly facilitate use of this extremely valuable book which I recommend to attention of all specialists in plant protection and to all agricultural libraries.

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