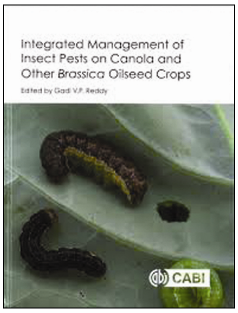

Integrated Management of Insect Pests on Canola and other Brassica Oilseed Crops. Gadi V. P. Reddy (ed.). CABI, Wallingford, Oxfordshire OX10 8DE, UK. 2017. xii + 394 pages. Price: AuD 175. ISBN: 13:978-1-78064-820-0.

Various species of *Brassica* (Brassicaceae) are relevant to humans, since they supply edible products such as vegetables, condiments and oils, as well as materials such as industrial lubricants. After Canada and China, India holds a leading position in the rapeseed – mustard economy of the world: ranked second in terms of area of cultivation and third in production. Canola, a recently developed hybrid of *Brassica*, is reported to meet one-third of edible oil needs of India[1]. The Rapeseed–Mustard Conclave held in Jaipur in early 2017 launched the 'Mustard Mission 2020' aiming to raise the production of rape–mustard seeds to 10 million tonnes by AD 2020 (ref. 2), which, obviously, refers to the production of canola. *Brassica napus* ssp. *oleifera* is the preferred biological name for canola in Australia (http://www.ogtr.gov.au/internet/ogtr/publishing.nsf/content/canola-3/$FILE/biology-canola08_2.pdf, accessed on 8 July 2017), whereas the US National Germplasm System attributes canola to five taxa (https://npgsweb.ars-grin.gov/gringlobal/taxonomydetail.aspx?7661). Use of mustard as a condiment in India over millennia is well known[3]. Mustard has been an attractive material for use as a metaphor for Tamizh poets from ancient times, because of its tininess and the characteristic but difficult-to-describe 'hot–bitter' taste ('mustardy'; see *Puranãnuru* verse 358 by Vãnmikiyãn; estimated 1st century BC)[4]. In the context of the usefulness of mustard oil in Ayûrvéda, an illuminating summary is available[5]. However, Das *et al.*[6] (Cardiological Society of India) explain the cause–effect relationship between mustard oil when used as food and the greater incidence of heart-vessel blocks among Indians.

Wild relatives of *Brassica* provide the genes, which, on integration into economically useful *Brassica* empower the receiver germplasms with the capability to resist microbial-disease agents (e.g. *Leptosphaeria maculans*, *Plasmodiophora brassicae*, *Hyaloperonospora parasitica*, *Erysiphe cruciferarum*, *Albugo candida*, and species of *Fusarium*, *Pythium* and *Alternaria*) and pestiferous arthropods, which are too long to list (>40 species of insects and 5 species of mites (Acari))[7]. Seeds of *Brassica* contain monounsaturated fatty acids, such as erucic and oleic acids: erucic acid being the dominant fatty acid. These seeds also include reasonable quantities of polyunsaturated fatty acids, such as the Ω–3–α- and Ω–6-linoleic acids, further to several saturated fatty acids. The meal cake – which remains after pressing *Brassica* seeds – when fed to laboratory animals was found to induce myocardial lipidosis. Consequently, the development of canola via selective breeding was seriously considered. Collaborating with Baldur Rosmund Stefansson, Richard Keith Downey (Agriculture Canada, Saskatchewan) pioneered the development of a 'new' variety of *Brassica* in 1961, that could be used as an oil source. This variety included low levels of erucic acid by transferring the low erucic-acid trait of the parent *Brassica* into adapted cultivars of *B. napus* and *B. campestris*. Cultivation of this new germplasm – the canola (*Can*ada+*ola* for oil; a registered trademark name of the Canadian Oil Association) – overtook the cultivation of other *Brassica* species in the 1980s. Today canola has grown to be a highly favoured oilseed crop throughout the world. Canola refers to *B. napus* and *B. campestris* lines containing <2% of erucic acid. In 1997, the erucic-acid content of 50% of the Australian canola crop was 0.3% or less of the total fatty acids[8]. Today, the cultivation of canola and *Brassica* allies (some of them being the most preferred vegetables, because of their high levels of antioxidants), such as Brussel sprouts (*B. oleracea* var. *gemmifera*), purple cabbage (*B. oleracea* var. *capitata* f. *rubra*), and cauliflower (*B. oleracea* var. *botrytis*) is widespread. Weiss *et al.*[9] provide the details of economic loss inflicted by various insects of high and low importance to canola in North America.

Against this background of the development of globally significant crops, the canola and *Brassica* allies, this book dealing with the biology, bionomics and management of insects (*sensu lato*, including the Acari) that live in canola and *Brassica* agroecosystems impresses as appropriate and timely.

This near 400-page, multi-author volume includes 25 chapters dealing with varied management strategies of insects and mites that infest canola and *Brassica* crops, inflicting significant levels of economic damage, throughout the world. Fifty plant-protection research personnel from Australia, Canada, China, Denmark, Finland, India, Iran, Mexico, Pakistan, Spain and USA have written the chapters. The diversity of authorship and nationalities indeed reinforces the topicality of the theme of this book. Early chapters deal with the management of the more damaging, specific insect taxa such as *Phytotreta*, *Ceutorhynchus obstrictus*, and *Brassicogethes viridescens* (Coleoptera), *Plutella xylostella* and *Mamestra configurata* (Lepidoptera) and *Contarinia nasturtii* (Diptera). A few others deal with the management of hemipterans and noctuids – in a collective manner – that infest canola and allies. Details of novel management tools, designs and approaches are provided in a couple of chapters. The remainder includes information on the management of canola-infesting arthropods in specific segments of North American, Western and Central Asian, and Indian biogeographical realms. Aster yellows disease induced by 'Candidatus Phytoplasma asteris' transmitted by species of Cicadellidae and Jassidae (Hemiptera), is a common and significant problem in canola cultivation: two exclusive chapters deal with this problem. These two chapters provide novel insights into the management of canola and *Brassica* agroecosystems. Two other chapters refer to the relevance of entomopathogenic fungi and nematodes in the biological management of canola- and *Brassica*-infesting arthropods. One chapter deals with insects on *Camelina* and *Crambe* (Brassicaceae, both of Mediterranean origin, but occurring in the other parts of the world). Influence and usefulness of glucosinolates in resisting and attracting insects and their relevance in trap-cropping form one other chapter. For instance, the contribution by Janet Knodel (North Dakota University, Fargo, USA), who has considered the species of *Phyllotreta* attacking canola, is a useful example, which discusses the damaging roles of specific, more-damaging insect taxa inundating the canola–*Brassica* agroecosystems. Knodel's chapter includes comprehensive information on the biology of the species of *Phyllotreta*, their hosts (*Phyllotreta* are selectively oligophagous), damage thresholds and established steps of integrated pest management (IPM). In the section on IPM, information on monitoring, chemical management, cultural management and biological management is available. The chapters on other specific insects, considered to be of high-economic significance, also include in-depth information.

Since it would be difficult to comment on every chapter included in this book, I will refer to chapters 10 and 19, selectively. Chapter 10 by Tom Royer and Kristopher Giles refers to the success story of the management of winter canola used as a rotational crop along with winter wheat in the Oklahoma–Kansas agroclimatic region in USA. This project considered the management of pestiferous insects in canola ecosystem, when local growers identified insects as the most serious problem in their farms. Royer and Giles talk extensively on how the Aphidoidea and Lepidoptera populations could be managed in canola fields by recruiting both cultural and biological management tactics. The fundamental driver of OKANOLA, they emphasize, is crop rotation, further to many other management tactics. For further details, the readers are referred to http://canola.okastate.edu. An educative and a useful chapter. Chapter 19 by Shrestha *et al.* provides an elegant summary of the effects of GM herbicide-resistant canola on various predatory and parasitic arthropods, which are important in regulating populations of the herbivorous, damaging arthropods. Between the two popular weedicides, viz. glyphosate and glufosinate, which are widely used, the authors conclude that glyphosate bears less harmful effects on the biology and population dynamics of the third-level trophic organisms, the parasitoids and predators. A useful summary by Shrestha *et al.*, given that presently the propaganda to cultivate GM crops is rising in meteoric proportions.

The editor, Gadi V. P. Reddy (Montana State University, Bozeman, USA), indicates that this book incorporates information on the integrated management of arthropods that infest and inflict damage to canola and *Brassica* productivity, and also comprehensively deals with insects and mites of high and moderate significance that live on the canola and *Brassica*. On this basis, Reddy further indicates that this volume would serve as an essential source for entomologists and other allied personnel working in the management of insect populations that affect the productivity of canola and *Brassica*. I gained a feeling that this volume largely meets those targeted purposes.

The text is easily readable and generally free of any striking error or omission. Nevertheless, I felt that some of the images used in the book (e.g. chapter 14) could have been of better quality. An articulate introduction outlining the context for the book and a synthetic conclusion identifying the existing gaps in a big-picture context were strikingly absent. IPM is one significant tactic useful in the management of biological problems in agroecosystems. In dealing with IPM tactics used in canola–*Brassica* ecosystems, this book does adequate justice. It has largely met the intended outcomes.

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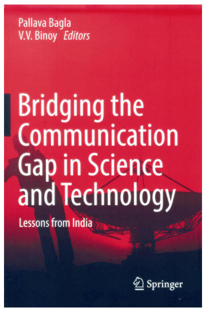

Bridging the Communication Gap in Science and Technology: Lessons from India. Pallava Bagla and V. V. Binoy (eds). Springer, Singapore. 2017. xxvi + 324 pages. ISBN: 978-981-10-1025-5 (e-book). Price: Paperback, Rs 3280.00; Kindle, Rs 1980.18; Overseas, 34,99 € | £26.99 | $39.99 | CHF 38.50.

In a country as diverse as India, with a large rural–urban divide, multiple cultures and languages and widespread activism that often blurs the borders between public good and private good, policy making, especially relating to matters dealing with science and technology, is a challenge. This was evident during 2010s in the cases of siting of nuclear power stations, genetically modified food, land acquisition for large infrastructure projects, water sharing between states and so on. Much of this has been due to inadequate public understanding of the underlying issues from a rational and scientific point of view. This calls for more public dissemination of knowledge related to science and technology (S&T) through the right forums. In this context the book under review comes as a valuable guide to the status of science communication in India, and also