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ACTA TROPICA Supplement n° 7

Pests of Crops in Warm Climates and their Control

by

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A handbook (size 17 × 24.5 cm) with about 600 photographs and hand drawings.
2 Vol. XXIV, 555 + 162 pages. Artificial leather binding. Price 210.– Swiss francs.

Every year insects cause enormous damage to food plants all over the world. This is mainly the result of agriculture tending more and more to large areas of monocultures. The growing of only a few crops in a certain area, which disturbs its biocoenosis, and the continual improvement of the quality of crops to meet market demands are some of the factors which are responsible for the increase of insect attacks and consequently the reduction of yields.

The frequency of insect appearance depends on the presence of host plants and on the prevailing climate; warm and moist climates usually favour insect development. The great number of species and individuals which make up over 70% of the animal kingdom are a constant threat to all the crops, especially in the tropics, subtropics and hot countries of the temperate zone.

The purpose of control measures is the prevention or reduction of injuries done by insects. By permitting higher yields, pest control contributes to the economy of agriculture and thus helps to solve the world's problem of nutrition.

Methodical and successful pest control must be based on a thorough knowledge of the pests and of the damage they cause. The present book is intended for partical use, presenting in as condensed a form as possible the vast quantity of information which has appeared in publications all over the world. Its purpose is to assist agriculturists in hot countries of all the continents in their fight against plant pests.

The ideas embodied in this book were developed not only in the laboratory and at the work-desk, but, in particular, during the extended visits of the author to tropical Africa and Southern States of America. It, therefore, sums up the experience acquired by the author on the spot, from observing the

mode of action of the pests in the actual plantations, by applying his extensive biological knowledge, in advising the planters, and by conducting his own practical experiments in pest-control with new methods and products. His camera was always with him and was able to record characteristic phases of damage and stages of pests: the author's own photographs, in fact, account for most of the about 600 excellent illustrations which are scattered throughout the book and which so very effectively support the text.

The first chapter gives a synopsis of the morphology, anatomy, development, and classification of insects and other pests. The second chapter enables the reader to identify and preserve them. The third and most extensive chapter describes briefly the morphology, ecology, and distribution of each pest that may be found on a crop and the damage it causes. Technical data concerning the formulation of chemical insecticides, and the construction and manipulation of application equipment are contained in the fourth chapter, which also deals with the action of insecticides on the plant, the organization and timing of phytosanitary campaigns, biological control, time of treatment, assessment of the effectiveness of chemicals and field trials, evidence of insecticidal residue on plants and stored products, and insect resistance to chemical substances. A short glossary of the terms used in the book, followed by conversion tables for weights, measures and temperature concludes this chapter.

APPENDIX

as a separate volume

2nd revised and enlarged edition

The fifth part is published as a separate appendix. It deals with control measures, precautions to be taken and advice to doctors as to therapeutical measures in case of poisoning. Since the publication of the 1st edition of the "Appendix to Pests of Crops in Warm Climates and their Control" in 1962, many new synthetic-organic compounds for general use specialized Pest Control have been developed and marketed.

The "Table of Active Ingredients" in the present edition has been compiled correspondingly and brought up-to-date. Moreover, chemosterilants, activators or synergists, repellents and rodenticides are included.

The Active Ingredients are numbered as in the 1st edition, with some exceptions. The names or synonyms of new compounds are in alphabetical order and given a decimal figure. While the sections "Precautions" and "Mixing Tables" have not been altered, the section "First Aid Measures" has been in parts.

Control methods and methods of application resulting from the rapid development of new substances with new properties have been taken into consideration as far as possible in the main section entitled "Recommendations for Control Measures".

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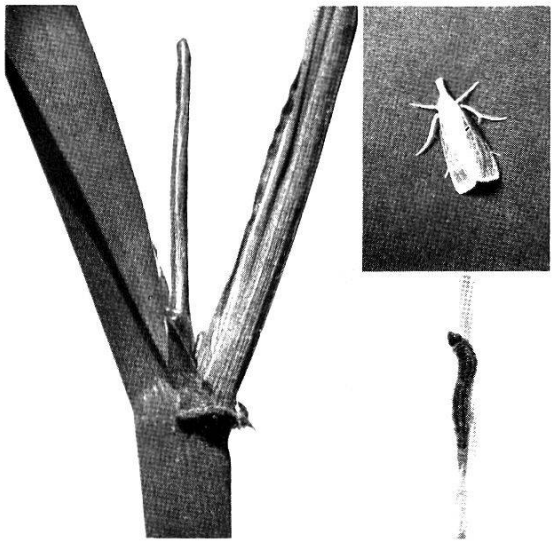

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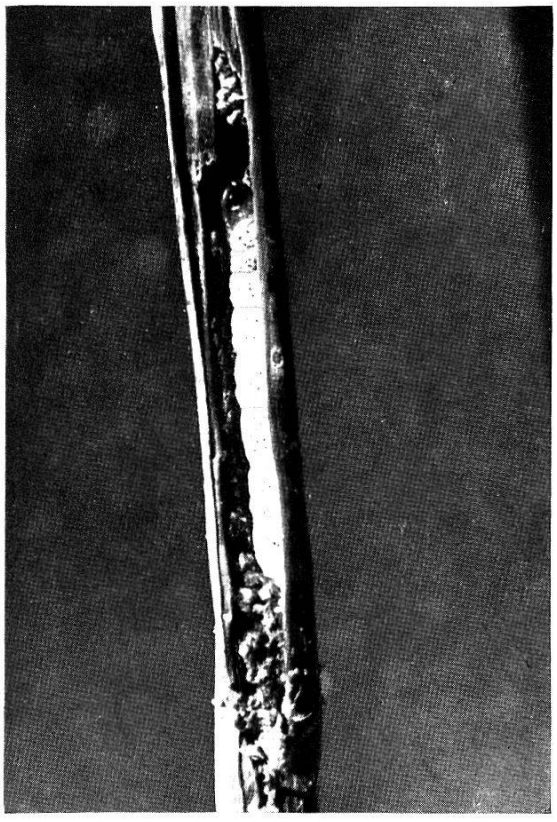
Plants with dead hearts. Leaf sheaths stained yellow; stem breaks off easily, its inside being hollowed out and filled with excrement.

Chilo suppressalis Walk.
(simplex Butl.)
Purple lined borer.

LEPIDOPTERA; *Pyralididae*

see page 135 (Maize)



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Young leaves withering. Foliage eaten away; hearts destroyed, causing death of plants. Leaf sheaths with bore-holes. Yield often greatly reduced, due to destroyed ears and withered inflorescences.

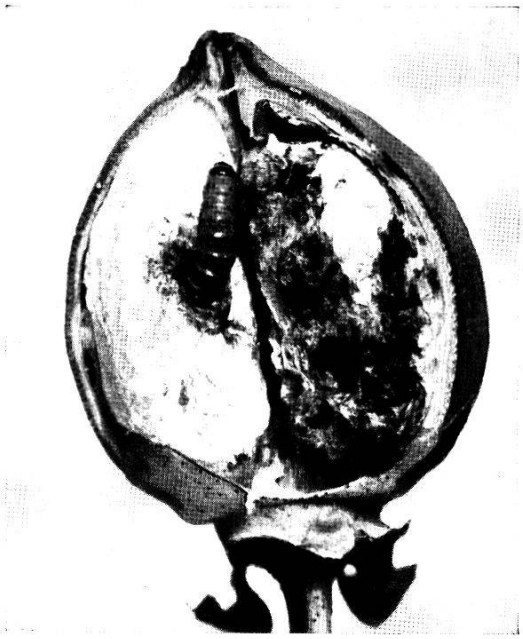
Scirpophaga innotata Walk.
White rice borer.

LEPIDOPTERA; *Pyralididae*

White moth with a wing span of 25-30 mm, which flies at night and is attracted by light (optical bait = lamp). The eggs are fixed to the underside of the leaves and the egg-clusters covered with brown fluff. The creamy-white caterpillars feed on leaves or tunnel through the leaf sheaths into the central bud. The ears of older plants are gnawed away. Several (4-5) generations each season. The insects go through diapause before they pupate.

Distribution: Indonesia, Philippine Islands

bolls



Frequent blotch mines on unopened bolls. Bore-hole 1-3 mm wide. Lint inside boll mostly destroyed. Bolls fall off. Seeds also damaged. Supervening boll-rot.

Pectinophora gossypiella Saund.
Pink bollworm.

LEPIDOPTERA; *Gelechiidae*

835

Moth with yellowish-brown to ochrous and dark spotted forewings, expanding to 15-20 mm. The hindwings are silvery. The female deposits 200-400 eggs singly under the calyx, on terminal buds and on young immature bolls. The young caterpillars are creamy to yellow, older ones have two pink transverse dorsal bands on each segment. Head and prothoracic shield are dark brown. The caterpillars bore into the bolls feeding on lint and seeds. The larval development is rapid (about 30 days). Pupation takes place inside the bolls, seeds or underground. Total time of development: 5-6 weeks. The pupal stages of the insect can be disseminated with the seeds. Several generations.

Distribution: wherever cotton is grown

Half ripe, unopened bolls show bore-holes surrounded by superficial mining. Damage similar to that caused by *P. gossypiella*. Seeds inside bolls attacked.

Argyroploce leucotreta Meyr.
False codling moth (Orange moth).

LEPIDOPTERA; *Tortricidae*

836
518

Moth with variegated brown and grey forewings, a white spot in the centre, while the hindwings are light brown to grey. They expand to 18-20 mm. Oviposition takes place on half-ripe, unopened bolls. Peak in June. Several generations.

Distribution: Africa (widespread)

1. Table of Active Ingredients. Classification of Active Ingredients

Common name or chemical name or other name used		Mode of action *	Acute oral toxicity ** DL 50 (mg/kg rats)	Use against
16.3	**Isodrin**	C, St	7–17	biting insects
16.4	**Kepone see Chlordecone**			
17	**Lindane** (gamma-BHC)	C, St, V	125	pests in stored crops
18	**Methoxychlor**	C, St	6000	insects on fruits and vegetables (similar to DDT-insecticide)
18.1	**Mirex**	C, St	235–702	biting insects
19	**Perthane**	C, St	6600	biting insects on vegetables (caterpillars) and fruit flies
19.1	**Prolan see Dilan**			
19.2	**Rothane see DDD**			
19.3	**Strobane**	C, St	200–250	biting insects
19.4	**TDE see DDD**			
20	**Telodrin** (Isobenzan)	C, St	7	biting and sucking insects; insects in soil
21	**Thiodan** (Endosulfan)	C, St	30–79	biting and sucking insects on various crops
22	**Toxaphene**	C, St	40–283	biting insects on fruits and vegetables
	Synthetic-organic insecticides: Phosphorous esters			
22.1	**Abate**	C, St	1000–3000	sucking and biting insects
22.2	**Alamos** (Slam)	C, St	> 1500	sucking and biting insects
22.3	**Aphidan**	C, St, S	86 (Mice)	sucking insects
22.4	**Azinphos(ethyl) see Ethyl-Azinphos**			
22.5	**Azinphos(methyl)** (Guthion) (Gusathion)	C, St, P	7–18	sucking and biting insects and spider mites
22.6	**Azodrin see Dimethyl phosphate of 3-hydroxy-N-methyl-cis-crotonamide**			
23	**Baitex** (Entex) (Fenthion) (Lebaycid)	C, St	200–250	fruit flies
23.1	**Bidrin see Dicrotophos**			

Pest	Product	Formulation and Dosage	Where and when to apply
824 *Anthonomus grandis*	**12 + 19.3**	**ES 25%:** 4.5 l + **ES 50%:** 4.5 l/500 l water/ha	
	12 + 22	**ES 25%:** 4.5 l + **ES 50%:** 4.5 l/500 l water/ha	
	16	**ES 20%:** 2.8 l/500 l water/ha	
	34	**ES 25%:** 1 l/500 l water/ha	
	35	**ES 50%:** 2 l/500 l water/ha	
	37	**ES 50%:** 500 cc/500 l water/ha	
	38	**ES 50%:** 1 l/500 l water/ha	
	53	**WP 80%:** 1.25 kg/500 l water/ha	
	27.1, 42	**ES 50%:** 800-1000 cc/500 l water/ha	
825 *Bucculatrix thurberiella*	**15**	**ES 50%:** 1 l/500 l water/ha	On foliage when first damage is seen
	22	**ES 50%:** 12 l/500 l water/ha	
	27	**ES 25%:** 1.5-2 l/500 l water/ha	
	37	**ES 50%:** 1.25 l/500 l water/ha	
	39	**ES 50%:** 1 l/500 l water/ha	
	53	**WP 80%:** 3 kg/500 l water/ha	
826 *Heliothis (obsoleta) zea*	**9 + 12**	**ES 25%:** 5 l + **ES 25%:** 5 l/500 l water/ha	Apply when an average of 5 small worms are found per 100 terminal buds. Repeat every 5-7 days until under control
	10 + 12	**ES 25%:** 4 l + **ES 25%:** 5 l/500 l water/ha	
	11	**ES 50%:** 3 l/500 l water/ha	
	12	**ES 25%:** 7.5 l/500 l water/ha **D 10%:** 30 kg/ha	
	12 + 19.3	**ES 25%:** 4.5 l + **ES 50%:** 4.5 l/500 l water/ha	
	12 + 22	**ES 25%:** 4.5 l + **ES 50%:** 4.5 l/500 l water/ha	
	15	**ES 50%:** 1 l/500 l water/ha	
	53	**WP 80%:** 1.5 kg/500 l water/ha	
	30.1	**ES 60%:** 1 l/500 l water/ha	
827 *Earias insulana*	**31 + 34**	**ES 25%:** 1.2 l + **ES 25%:** 3 l/500 l water/ha	do.

see also Heliothis (No. 826)

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In Vorbereitung / Articles en préparation / Articles in preparation

Brack, C. Elektronenmikroskopische Untersuchungen zum Lebenszyklus von *Trypanosoma cruzi* unter besonderer Berücksichtigung der Entwicklungsformen im Überträger *Rhodnius prolixus.*

Freyvogel, T. A., Honegger, C. G. & Maretić, Z. Zur Biologie und Giftigkeit der ostafrikanischen Vogelspinne *Pterinochilus* spec.

Hecker, H. & Aeschlimann, A. Contribution à la connaissance des symbiotes chez *Ornithodorus moubata* (Ixodoidea). Etude au microscope électronique.

Jadin, J. M. & Creemers, J. Etude de la pinocytose dans les formes en rosaces de *Leptomonas ctenocephali.*

Jadin, J, M. & Creemers, J. Ultrastructure et biologie des Toxoplasmes. III. Observations de Toxoplasmes intraérythrocytaires chez un mammifère.

Otieno, N. C. Further contributions to a knowledge of "Poroid Agarics" from the tropics: the genera *Campanella* P. Henn. and *Dictyoploca* (Mont.) Heim.

Steiger, U. Intrazelluläre Mikroorganismen bei der Waldameise im Ei-, Larven- und Puppenstadium.

Stöcklin, W. H. Kukukuku. Medical Patrol into one of the last restricted areas in the New Guinea Highlands.