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West, A.S. 24	(1966) Queen's University, Kingston, Ont., Canada
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Whitten, M.J. APX10	(1967) C.S.I.R.O. Division of Entomology, Canberra, Australia
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730, 761, 802 | (1966) Institute of Agricultural and Industrial Microbiology, Amherst, Mass., USA and Cranberry Experiment Station, East Wareham, Mass., USA

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442 | (1965) Electron Microscopy Laboratory for Applied Biology, Paris, France

5.3. SUBJECT INDEX

The reader is advised to familiarize himself with the convention used in order to extract the maximum information from the Subject Index. A notation has been adopted which conveys condensed information at a glance: the position of a radioisotope or radiation, and the symbols (/) and (,) have a special significance.

When the radioisotopes or radiations represent the cause, they precede the phenomenon reported; when used as a tool for analysing existing conditions, they follow the phenomenon studied. Combinations or comparisons of different experimental factors are indicated by linking them by the symbol (/) or (,), respectively.

The system is illustrated below, with examples drawn from the Bibliography itself.

Radioisotope	Radiation
^{32}P: growth and development: 25 (effects of ^{32}P on growth and development)	γ: ovary: 1335 (effects of γ-irradiation on organ studied) γ: behaviour (avoidance reaction): 1466 ("avoidance reaction" caused by γ-irradiation)
	x/O: life span: 1454 (-/... = additional experimental factor introduced before, during or after original treatment, in this case x-irradiation) x, chemosterilant: sterility: 1268 (-, ... = comparison between effects of different treatments)
Calligypona pellucida, migration, ^{32}P: 504 (migration is traced [not affected] by ^{32}P) carbohydrate biosynthesis, ^{3}H: 147 (biosynthesis is traced by ^{3}H)	Sitotroga cerealella (ℓ, p), development in corn kernels, x : 1705-6 (development traced [not affected] by x-rays)

Differential irradiation of the sexes, with or without mating, is indicated as in the following example:

x: ♀	x-irradiation of female, stage not specified
♀-	irradiation of female, followed by mating
♂-	irradiation of male, followed by mating
♀(♂)	irradiation of inseminated female
♀,♂	irradiation of both sexes
♀-♂	irradiation of both sexes, followed by mating
p, ♀	irradiation of female pupa

Life stages or tissues relevant to a particular animal study are indicated in brackets, whenever possible. A Glossary of the abbreviations used is given on page XV. The following symbols have also been used:

IV Roman numbers in connection with genetic effects indicate "chromosome, number IV".

QQ.2 After scientific name of insect: systematic code, referring to appropriate position in Table 1.

[PA.3] After chemical compound: insecticide code, referring to appropriate position in Table 2.

Usually, entries under any one heading in the Subject Index are listed alphabetically. Where the entries are particularly numerous, however, they tend to be listed alphabetically in groups: according to insects — animals other than insects — plants — and miscellaneous.

B

* See also BHC.

C

* See also Kalotermes.
** See Table 2, X.

* Due to the bulk of pertinent references, these have not been summarized here; the use of ^{14}C is, however, indicated for each relevant study throughout the subject index.

* See also: Hyalophora cecropia

* see also under "cattle" and Table 2.

* Southeast Asian buffalo leech, Hirudinaria manillensis.
Japanese leech, Hirudo nipponia.

* See also Aeschna sp.

Radiation:

E

* For radiation disinfestation, see under individual crops or food products.

* See also under individual species, e.g. Dacus, Ceratitis, etc.

G

* (chronic irradiation).

* For names of individual species, see under Acrididae (Table 1, H.1).

* See also Table 2, section A.

** See also under individual insecticides and Table 2.

* See also under disinfestation.

J

K

* See also bean (foliage).

** Japanese leech, Hirudo nipponia.
Southeast Asian buffalo leech, Hirudinaria manillensis.

M

* See also "corn".

* See under individual species; also Table 1, X.11, Culicidae.

* See also "amino acid requirements", "sterols", and sections 1.3.2.1. and 1.2.10.

O

[phosphorus-32]

<u>Insecticides:</u>

* See also under individual species.

Q

R

* See also under "x-rays".

* See under individual insecticides, and Table 2 (final column).

S

* See also section 1.2.9. and Bombyx mori.

* See also cholesterol.

T

* See also section I.2.6.

** Due to the bulk of pertinent references, these have not been summarized here; the use of ^{3}H is, however, indicated for each relevant study throughout the subject index.

* See also under individual species of social insects.

U

V

* See also section 3.1.6.

[x-rays]

Y

Z

6. APPENDIX

6.1. INSECT CONTROL BY RADIATION (not necessarily ionizing)

(Some selected references)

6.1.1. Electromagnetic and Sonic Energy

APX1 Dyck, W. van LA DESTRUCTION D'INSECTES DANS LE BOIS PAR IRRADIATION DIRECTE AVEC DES ONDES DECIMETRIQUES. (Destruction of insects in wood by direct irradiation with decimetric waves.) Revue Agric., Brux. 18, 7/8 (1965) 901-904.

La fréquence utilisée était 2425 MHz (longueur d'onde ~ 12,5 cm) et le chauffage ne se produit pas entre deux électrodes auxquelles on applique la tension à haute fréquence, mais par irradiation directe. Il a fallu se limiter à 120 watts de l'émetteur. Les insectes étaient en pleine activité au moment du traitement. Leur présence se traduisait par le rejet continu de vermoulure. Ce témoignage d'activité a cessé immédiatement dans le bois traité. Il ne s'était pas encore renouvelé après 8 mois alors que de nouvelles manifestations d'attaques sont perceptibles dans le même immeuble sur le bois non traité. Les résultats constatés sont encourageants. Le traitement n'exclut pas toutefois la réinfestation des boiseries.

APX2 Kadoum,* A.M., Ball, H.J., Nelson, S.O. MORPHOLOGICAL ABNORMALITIES RESULTING FROM RADIOFREQUENCY TREATMENT OF LARVAE OF Tenebrio molitor. Ann.ent.Soc.Am. 60 (1967) 889-892.

T.molitor larvae were exposed to two different RF intensities at a frequency of 39 MHz. With the electrodes in contact with the top and bottom of the polystyrene holder, an electrode voltage of 3.6 kV was used for one experiment, and 0.9 kV was used for another. Adults developing from larvae exposed at sublethal levels exhibited malformed and missing legs. The number of imaginal legs was reduced as exposure time increased. The degree of leg malformation increased when treatment was administered again during the 6th instar. Similar treatments of 5th-instar larvae did not interfere with normal imaginal leg development. Deformities most likely resulted from heat damage to the histoblasts that project into the legs of the 6th or least-instar larvae. (NSA 22:1968, 10847)

* For full initials, see APX3.

APX3 Kadoum, A.M.A.A.G. EFFECTS OF RADIO-FREQUENCY ELECTRICAL FIELDS ON THE METABOLISM OF THE YELLOW MEALWORM, Tenebrio molitor (L.). Diss.Abstr. 27B, 8 (1967) 2553.

The purpose of this research was to explore some of the biochemical changes initiated in T.molitor (L.) larvae by exposure to radio-frequency electric fields. T. molitor (L.) larvae were exposed to both continuous and pulse-modulated RF electric fields. Continuous exposures were conducted at a frequency of 39 mCi using 3.5 kV for 5.5 sec, whereas the pulse-modulated treatments were made at the same frequency at an energy level of 6.0 kV at the rate of 20 pps using a pulse width of 5 ms respectively. RF treated larvae lost significantly more weight than the starved and control larvae during the 5 d following RF exposure. The respiratory rates of RF treated larvae were significantly higher than the rates for the control insects. This increase in oxygen consumption in RF treated larvae persisted throughout the 4th day following RF treatment. The rate of incorporation of labelled amino acids into soluble protein was higher in RF treated insects as compared to control insects. An increase in $^{14}CO_2$ expired following injection of labelled amino acids was noticed in RF treated larvae during the

24-h period following treatment. T. molitor (L.) larvae tended to void excess amino acids injected into the haemocoel. The results of this work indicated that a mechanism other than general internal heating might be responsible for the death of irradiated insects. Death, it was concluded, could result from a change in the normal metabolic activity of irradiated insects as well as physical change in the waxy layer of the epicuticle. (From DA)

APX4 Nelson, S.O. ELECTROMAGNETIC AND SONIC ENERGY FOR INSECT CONTROL. Trans Am. Soc. agric. Engrs 9 (1966) 398-403.

Past accomplishments, current studies, and future possibilities for insect control using electromagnetic, sonic, and ultrasonic energy are reviewed. References (134) are included. (NSA 21:1967, 34748)

APX5 See 1771 Pest control by physical means. (Carleton, W.M. et al., 1966)
1783 New ways to control insects. (Nelson, S.O., 1966)
1789 Physical methods of insect control. (Watters, F.L., 1965)

APX6 See 1784 Electromagnetic energy. (Nelson, S.O., 1967)
1475 The responses of Drosophila melanogaster to weak electromagnetic fields. (Picton, H.D., 1964)

APX7 Vilenchik, M.M. EFFETS MAGNETIQUES EN BIOLOGIE. Usp. sovrem. Biol. 63, 1 (1967) 54-72. (In Russian)

A review paper dealing with the question whether the constant magnetic field represents a biologically active factor. The problems covered are (1) orientation effects, (2) disturbances in the reflex activity of animals in the magnetic field, (3) magnetotropisms, (4) functional-morphological disturbances observed in animals exposed to prolonged action of the magnetic field, (5) changes of radiation effects due to the magnetic field, (6) inhibition in the growth of tumours by the magnetic field, (7) and any genetic effects of the magnetic field. The great variety of biological objects discussed included some insects: Drosophila melanogaster [under (1) and (7),] and termites, flies, grasshoppers, and cockchafers [under (1)].

6.1.2. Lasers

APX8 Wilde, W.H.A. LASER EFFECTS ON TWO INSECTS. Can. Ent. 97, 1 (1965) 88-92.

The effects of a laser of 1.5 mm diameter were studied on Trogoderma versicolor and Periplaneta americana. The damage and mortality observed are described.

APX9 Wilde, W.H.A. LASER EFFECTS ON SOME PHYTOPHAGOUS ANTHROPODS AND THEIR HOSTS. Ann. ent. Soc. Am. 60 (1967) 204-207.

Low-energy ruby laser pulses of 0.6 $J/msec^2$ produced degrees of damage relative to the coloured pigmentation of certain arthropods and their plant hosts; the darker the pigmentation, the more severe the damage. Structural shape and microdistance between arthropod life stages and host surfaces were other factors affecting the degree of laser damage. Rounded surfaces reflected laser pulses more than did elliptical or flat surfaces, even when colouration was similar. Microdistances appeared to serve as insulation against residual or reflected heat from lasered host-plant areas. Two species of mites, Panonychus ulmi and Tetranychus urticae; the greenhouse white fly, Trialeurodes vaporariorum; the green peach aphid, Myzus persicae; and the pear psylla, Psylla pyricola, were used as test arthropods. The host plants were pear seedlings, alfalfa, and rye grass (Bromus sp.). (NSA 21:1967, 22760)

6.1.3. Booby Traps

APX10 Whitten, M.J., Norris, K.R. "BOOBY-TRAPPING" AS AN ALTERNATIVE TO STERILE MALES FOR INSECT CONTROL. Nature, Lond. 216 (1967) 1136.

A system is proposed in which a resistant strain, available in the field or developed in the laboratory, might be used against a susceptible strain in the field. Some experiments have already been carried

out with the Australian sheep blowfly, Lucilia cuprina. Dieldrin-resistant females (which survived 0.5 µl of 2% dieldrin applied topically to the thorax) were exposed to a susceptible strain (LD 50 < 0.005% dieldrin). Each female killed up to 100 males through contact during attempted matings. The male was less effective. – Resistant insects thus require mass rearing, sterilization, loading with the appropriate insecticide and release among susceptible populations. Another possibility is to load insects with a non-lethal topical dose of a stable chemosterilant of a type to have a sterilizing effect on the carrier and on would-be mates. A low natural density would be necessary; the adult stage should not be attracted to humans, if highly toxic insecticides are employed; behavioural characteristics should be such as to lead to frequent bodily contact between individuals. L. cuprina would fulfil these conditions.

6.2. INSECT REARING

6.2.1. Survey*

APX11 Smith, C.N. INSECT COLONIZATION AND MASS PRODUCTION. "Insect Colonization and Mass Production". Smith, C.N., Ed. New York, Academic Press. 1966, 618 p.

Recent developments in entomological research have augmented the importance of insect colonies to basic research and practical control. Control methods now in use, or foreseen for the future, such as the release of sterile males, the extensive distribution of insect pathogens, the practical use of pheromones, and the genetic manipulation of natural populations, will require the production of millions of insects per week for the control of certain economically important species. An attempt has been made to bring together the most recent information on method of rearing representative species, with emphasis on the general principles of nutrition and management that can be applied to the colonization of other species as well. Chapters are largely self-contained. Some are concerned with only a single species, selected to stand as an example of its taxonomic group, and to a lesser extent of other insects with similar nutritional and environmental requirements. Other chapters discuss rearing methods for entire groups of species that share common requirements. Extensive bibliographical material is given at the end of each chapter.

* See Table 3.

TABLE 3. SOME INSECT AND RELATED ARTHROPOD PESTS: GUIDE TO COLONIZATION AND MASS REARING *

INSECT Common Name	INSECT Scientific Name	Systematic Code	Order	Family	Class	Author(s)	Affiliation
ANIMAL PARASITES AND HAEMATOPHAGOUS ARTHROPODS							
body louse	Pediculus humanus humanus L.	O. 4	Anoplura	Pediculidae	Insecta	Cole, M. M.	Entomology Research Division, ARS, USDA, Gainesville, Fla., USA
parasitic mites							
dermanyssid mites		Ac. 4	Acarina (Mesostigmata)	Dermanyssidae	Arachnida	Audy, J. R. Lavoipierre, M. M. J.	The George Williams Hooper Foundation, University of California Medical Center, San Francisco, Calif., USA
				Macronyssidae			
				Haemogamasinae			
				Laelapinae			
chigger mites		Ac. 15	Acarina (Trombidiformes)	Trombiculidae			
itch mites		Ac. 11	Acarina (Sarcoptiformes)	Sarcoptidae			
scab mites		Ac. 9		Psoroptidae			
ticks	Argas	Ac. 2	Acarina	Argasidae	Arachnida	Gregson, J. D.	Research Station, Canada Department of Agriculture, Kamloops, British Columbia, Canada
	Rhipicephalus secundus Feldman-Muhsam	Ac. 8		Ixodidae			
	Amblyomma	Ac. 8		Ixodidae			
southern cattle tick	Boophilus microplus (Canestrini)	Ac. 8		Ixodidae			
American dog tick	Dermacentor variabilis (Say)	Ac. 8		Ixodidae			
	Hyalomma	Ac. 8		Ixodidae			
	Ixodes	Ac. 8		Ixodidae			
	Ornithodoros	Ac. 2		Argasidae			

* See reference APX. 11.

INSECT

Common Name	Scientific Name	Systematic Code	Order	Family	Class	Author(s)	Affiliation
rat flea	Xenopsylla cheopis (Rothsch.)	Y. 2	Syphonaptera	Pulicidae	Insecta	Krishnamurthy, B. S.	National Institute of Communicable Diseases, Delhi, India
common malaria mosquito	Anopheles quadrimaculatus Say	X. 11	Diptera	Culicidae	Insecta	Gahan, J. B.	Entomology Research Division, ARS, USDA, Gainesville, Fla., USA
mosquito	Culex pipiens fatigans Wied.	X. 11	Diptera	Culicidae	Insecta	de Meillon, B.	Army Mosquito Project, Smithsonian Institute, U. S. National Museum, Washington, D. C., USA
						Thomas, V.	College of Agriculture, Serdang-Selangor, Sungei Besi, P. O. Malaysia
biting midges	Culicoides	X. 7	Diptera	Ceratopogonidae	Insecta	Jones, R. H.	Entomology Research Division, ARS, USDA, Denver, Colo., USA
black flies	Simulium	X. 30	Diptera	Simuliidae	Insecta	Muirhead-Thomson, R. C.	Division of Communicable Diseases, WHO, Geneva, Switzerland
stable flies	Stomoxys calcitrans (L.)	X. 19	Diptera	Muscidae	Insecta	Jones, C. M.	Insectary, University of Nebraska, Lincoln, Nebr., USA
tsetse flies	Glossina morsitans Westwood	X. 19	Diptera	Muscidae	Insecta	Lumsden, W. H. R.	Trypanosomiasis Research Unit, Department of Animal Health, Royal (Dick) School of Veterinary Studies, University of Edinburgh, Easter Bush, Roslin, Midlothian, Edinburgh, Scotland
	Glossina spp.					Saunders, D. S.	Department of Zoology, University of Edinburgh, Easter Bush, Roslin, Midlothian, Edinburgh, Scotland
bed bugs	Cimex lectularius Linnaeus Cimex hemipterus Fabricius	Q. 5	Heteroptera	Cimicidae	Insecta	Burden, G. S.	Entomology Research Division, ARS, USDA, Gainesville, Fla., USA

INSECT Common Name	Scientific Name	Systematic Code	Order	Family	Class	Author(s)	Affiliation
reduviid bugs	Reduvius	Q.18	Heteroptera	Reduviidae	Insecta	Ryckman, R. E. Ryckman, A. E.	Department of Microbiology, School of Medicine, Graduate School, Loma Linda University, Loma Linda, Calif., USA
	Triatoma			Triatominae			
DOMESTIC AND STORED PRODUCT INSECTS							
houseflies	Musca domestica L.	X.19	Diptera	Muscidae	Insecta	Spiller, D.	Plant Diseases Division, Department of Scientific and Industrial Research, Auckland, New Zealand
cockroaches	Blattella germanica (L.)	H.2	Orthoptera	Blattidae	Insecta	Smittle, B.J.	Entomology Research Division, ARS, USDA, Gainesville, Fla., USA
	Periplaneta americana (L.)						
granary weevil	Sitophilus granarius (L.)	V.19	Coleoptera	Curculionidae	Insecta	Harein, P. K.	Department of Entomology, Fisheries, and Wildlife, University of Minnesota, St. Paul, Minn., USA.
rice weevil	Sitophilus oryzae (L.)						
corn weevil	Sitophilus zeamais (Mots.)					Soderstrom, E. L.	Stored-Products Insects Research and Development Laboratory, USDA, Savannah, Ga., USA
cadelle	Tenebroides mauritanicus (L.)	V.46		Tenebrionidae			
red flour beetle	Tribolium castaneum (Hbst)						
confused flour beetle	Tribolium confusum Duv.						
almond moth	Cadra cautella (Wlk.)	U.36	Lepidoptera	Phycitidae	Insecta	Boles, H. P.	Mid-West Grain Insects Investigations, Stored-Products Insects Branch, Marked Quality Research Division, ARS, USDA, Manhattan, Kans., USA.
Mediterranean flour moth	Anagasta kühniella Z.						
Indian meal-moth	Plodia interpunctella (Hbn.)	U.41		Pyralidae		Marzke, F. O.	Stored-Products Insects Research and Development Laboratory, Savannah, Ga., USA

INSECT Common Name	Scientific Name	Systematic Code	Order	Family	Class	Author(s)	Affiliation
PHYTOPHAGOUS INSECTS (DIETS)							
boll weevil	Anthonomus grandis Boh.	V. 19	Coleoptera	Curculionidae	Insecta	Vanderzant, E. S.	Entomology Research Division, ARS, USDA, Texas A&M University, College Station, Tex., USA
European corn borer	Pyrausta nubilalis (Hbn.)	U. 41	Lepidoptera	Pyralidae			
green peach aphid	Myzus persicae (Sulzer)	QQ. 2	Hemiptera (Homoptera)	Aphididae			
milkweed bug	Oncopeltus fasciatus (Dall.)	Q. 10	Hemiptera (Heteroptera)	Lygaeidae			
onion maggot	Hylemya antiqua Meigen	X. 18	Diptera	Anthomyiidae			
oriental fruit moth	Grapholitha molesta (Busck)	U. 33	Lepidoptera	Olethreutidae			
pink bollworm	Pectinophora gossypiella (Saund.)	U. 13	Lepidoptera	Gelechiidae			
rice stem borer	Chilo suppressalis (Wlk.)	U. 8	Lepidoptera	Crambidae			
silkworm	Bombyx mori (L.)	U. 3	Lepidoptera	Bombycidae			
southern pine beetle	Dendroctonus frontalis Zimm.	V. 42	Coleoptera	Scolytidae	Insecta	Clark, E. W.	U. S. Forest Service, Forestry Sciences Laboratory, Durham, N. C., USA.
coarse writing engraver	Ips calligraphus Germ.					Osgood, E. A., Jr.	Department of Entomology, University of Maine, Orono, Maine, USA
greater elm bark beetle	Scolytus multistriatus Marsh						
lesser elm bark beetle	Hylurgopinus rufipes Eich						

INSECT Common Name	Scientific Name	Systematic Code	Order	Family	Class	Author(s)	Affiliation
grasshoppers Egyptian -	Anacridium aegyptium L.	H,1	Orthoptera	Acrididae	Insecta	Cowan, F. T.	Entomology Research Division, ARS, USDA, Bozeman, Mont., USA
two-striped -	Melanoplus bivittatus (Say)						
migratory -	Melanoplus sanguinipes (Fabricius)						
locust African migratory -	Loc usta migra-torioides R&F						
red -	Nomadacris septemfasciata Say						
desert -	Schistocerca gregaria Forsk.						
European corn borer	Ostrinia nubilalis (Hbn.)	U. 42	Lepidoptera	Pyraustidae	Insecta	Raun, E. S.	Corn Borer Laboratory, ARS, USDA, Ankeny, Iowa, USA
codling moth	Carpocapsa pomonella (L.)	U. 33	Lepidoptera	Olethreutidae	Insecta	Hamilton, D. W. Hathaway, D. O.	Japanese Beetle Investigations, Entomology Research Division, ARS, USDA, Moorestown, N.J., USA. Entomology Research Division, ARS, USDA, Yakima, Wash., USA
pink boll-worm	Pectinophora gossy-piella (Saund.)	U. 13	Lepidoptera	Gelechiidae	Insecta	Martin, D. F.	Cotton Insect Research Branch, Entomology Research Division, ARS, USDA, Beltsville, Md., USA
corn root-worms	Diabrotica spp.	V,13	Coleoptera	Chrysomelidae	Insecta	Howe, W. L., George, B. W.	Northern Grain Insects Research Laboratory, Entomology Research Division, ARS, USDA, Brookings, S. Dak., USA
northern -	D. longicornis (Say)						
western -	D. virgifera Lec.						
southern -	D. undecimpunctata howardi Barber						

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false wireworms	Eleodes spp. Eleodes suturalis	V. 46	Coleoptera	Tenebrionidae	Insecta	Matteson, J. W.	Monsanto Company, Agricultural Division, Insecticide Chemicals Development Department, St. Louis, Miss., USA
peach tree borer	Sanninoidea exitiosa (Say)	U. 1	Lepidoptera	Aegeriidae	Insecta	Smith, E. H.	Department of Entomology, North Carolina State University, Raleigh, N. C., USA
boll weevil	Anthonomus grandis Boh.	V. 19	Coleoptera	Curculionidae	Insecta	Gast, R. T. Davich, T. B.	Boll Weevil Research Laboratory, Entomology Research Division, ARS, USDA, State College, Miss., USA
wheat stem sawfly	Cephus cinctus Nort.	W. 6	Hymenoptera	Cephidae	Insecta	Wallace, L. E.	Wheat Stem Sawfly Investigations, ARS, USDA, Bozeman, Mont., USA
Lygus bugs	Lygus hesperus Knight L. lineolarus (P. de B.) L. elisus Vanduzee	Q. 11	Hemiptera (Heteroptera)	Myridae	Insecta	Bottger, G. T.	Entomology Research Division, ARS, USDA, Tucson, Ariz., USA
aphids bean aphid potato aphid pea aphid green peach aphid greenbug	 Aphis fabae Scop. Macrosiphum euphorbiae (Thomas) Acyrthosiphon pisum (Harris) Myzus persicae (Sulzer) Schizaphis gramium (Rondani)	QQ. 2	Hemiptera (Homoptera)	Aphididae	Insecta	Harries, F. H.	Tree Fruit Research Center, Wenatchee, Wash., USA

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wooly apple aphid chrysanthemum aphid spotted alfalfa aphid	Eriosoma lanigerum (Hausmann) Macrosiphoniella sanborni (Gill.) Therioaphis maculata (Buckton)	QQ.2					
green two-spotted spider mite	Tetranychus urticae (Koch)	Ac. 14	Acarina	Tetranychidae	Insecta	Jacklin, S. W. Smith, F. F.	Entomology Research Division, ARS, USDA, Beltsville, Md., USA
coneworms	Dioryctria abietella (D. & S.) Dioryctria amatella Hulst	U. 36	Lepidoptera	Phycitidae	Insecta	Merkel, E. P. Fatzinger, C. W.	Southeastern Forest Experiment Station, Forest Service, USDA, Olustee, Fla., USA
cabbage loopers	Trichoplusia ni (Hbn.)	U. 29	Lepidoptera	Noctuidae	Insecta	Henneberry, T. J. Kishaba, A. N.	Entomology Research Division, ARS, USDA, Riverside, Calif., USA
tobacco hornworm tomato hornworm	Protoparce (Manduca) sexta (Johan.) Manduca quinquemaculata (Haworth)	U. 46	Lepidoptera	Sphingidae	Insecta	Hoffman, J. D. Lawson, F. R. Yamamoto, R.	Entomology Research Division, ARS, USDA, Oxford, N.C., USA. Entomology Research Division, ARS, USDA, Colombia, Miss., USA. Department of Entomology, North Carolina State University, Raleigh, N. C., USA
MASS REARING OF INSECTS IN TERMS OF MILLIONS							
screw-worm	Cochliomyia hominivorax (Coq.)	X. 5	Diptera	Calliphoridae	Insecta	Baumhover, A. H. Husman, C. N. Graham, A. J.	Entomology Research Division, USDA, Oxford, N. C., USA. Administrative Services, USDA, Beltsville, Md., USA. Animal Health Division, USDA, Mission, Tex., USA

INSECT Common Name	Scientific Name	Systematic Code	Order	Family	Class	Author(s)	Affiliation
fruit flies		X.35	Diptera	Tephritidae	Insecta	Steiner, L. F. Mitchell, S.	Entomology Research Division, ARS, USDA, Honolulu, Hawaii, USA
Mediterranean –	Ceratitis capitata (Wied.)						
oriental –	Dacus dorsalis Hendel						
olive –	Dacus oleae (Gmel.)						
Queensland –	Dacus tryoni (Froggat)						
melon fly	Dacus cucurbitae Coq.						
yellow fever mosquito	Aedes aegypti (L.)	X.11	Diptera	Culicidae	Insecta	Morlan, H. B.	Aedes aegypti Eradication Branch, Communicable Disease Center, Public Health Service, U.S. Department of Health, Education and Welfare, Atlanta, Ga., USA

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