

Part I: CURRICULUM VITAE

1. Personal

Department of Entomology
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Dates	Description
1958	Born in Mexico City, Mexico
1990	Immigration to Israel

2. University Education and Additional Training

Dates	Description
1979– 1982	B.Sc. in Biology at Hebrew University of Jerusalem, Israel
1982 – 1985	M.Sc. in Zoology at Hebrew University of Jerusalem, Israel Title of thesis: Energetic balance of the adult Mediterranean Fruit Fly, <i>Ceratitis capitata</i> (Wiedmann), fed on sucrose solutions. Supervision by: Prof. Rachel Galun
1985 – 1990	Ph.D. in Entomology at UC Berkeley, U.S.A. Title of thesis: Comparative ecology of monocrop and polycrop coffee systems in Veracruz, Mexico. Supervision by: Prof. Miguel Altieri.
2000	Sabbatical leave at Institute of Biochemistry, Campomar Foundation, University of Buenos Aires with Dr. Luis Quesada-Allue Research subject: lipid, glycogen and protein patterns during metamorphosis of the Mediterranean fruit fly
2016	Sabbatical leave at Instituto de Ecología (INECOL), Xalapa, Veracruz, México. With Dr. Martin Aluja Research subject: Nutritional compensation mechanisms during development of fruit flies

3. Positions Held and Academic Status

Dates	Description
1989-1990	Research Scientist at the Instituto de Ecología A.C., Department of Ecology and Animal Behavior, Xalapa. Mexico.
1990-to date	Research Scientist at the ARO, The Volcani Center, Institute of Plant Protection. Israel.

2007	Promoted to Senior Scientist (Rank A)
2008-2011	Head, Department of Entomology
2016	Promoted to Senior Scientist (Rank A+)

4. Training / Teaching Experience

A. Academic Contribution:

Dates	Description
1988	Lecturer at the National Research Institute on Biotic Resources (INIREB), Graduate Program, Xalapa, Mexico Title of the course: Human Ecology (45 hrs.)
1988	Lecturer at the National Research Institute on Biotic Resources (INIREB), Graduate Program, Xalapa, Mexico Title of the course: Economics of Natural Resources (45 hrs.)
1993-1996	Lecturer at the Center for Rural-Urban Studies, International Courses, Rehovot, Israel Title of the course: Environmental Ecology and Regional Development (15 hrs.)

B. Guidance of M.Sc. Students:

Graduation date	Name	Title of thesis	Guidance with
1992	*Mr. Nisao Ogata	Ecology and phenology of myxomycetes in a tropical forest of the State of Veracruz	Dr. Victor Rico-Gray
1995	*Ms. Hadass Cohen	Studies on the woolly apple aphid, <i>Eriosoma lanigerum</i> and its parasitoid <i>Aphelinus mali</i> : a further step towards integrated pest management in apple orchards	Prof. David Rosen
1995	*Ms. Nili Pinhassi	Studies on the phenology of the olive scale, <i>Parlatoria oleae</i> (Colvee), and development of a phenological model for predicting emergence of crawlers in spring	Prof. David Rosen
1996	*Mr. Nimrod Israeli	Spatial and temporal distribution patterns of Mediterranean fruit fly [<i>Ceratitis capitata</i> (Wiedemann)] populations in heterogeneous landscapes	Prof. Boaz Yuval
2007	*Ms. Malkie Spodolek	Injury and population assessment tools for the Eucalyptus gall wasp <i>Ophelimus maskelli</i> (Ashmead)	Prof. Zvika Mendel
2008	*Ms. Tamar Zur	Individual ingestion patterns in adult <i>Dacus ciliatus</i> and the effect of social interactions on resource management	Prof. Boaz Yuval
2012	*Mr. Izhar Engelhard	Geoclimatic ecology of the olive fly	Prof. Boaz Yuval
2014	*Ms. Rossana Castro	The development of Postharvest Quarantine Treatments for Peppers <i>Capsicum annuum</i> and Melons <i>Cucumis melo</i> against fruit flies (<i>Ceratitis capitata</i> and <i>Dacus ciliatus</i>)	Prof. Elazar Fallik

*under my direct supervision

C. Guidance of Ph.D. Students:

Graduation date	Name	Title of thesis	Guidance with
2018	*Mr. Moshe Blum	Signal processing of satellite data in agriculture bi-trophic systems	Prof. Itamar Lanski and Prof. Shlomo Brener

*under my direct supervision

D. Post-Docs and Visiting Scientists:

Dates	Name	Research subject
2008	Dr. Polychronis Rempoulakis	Dispersal ability of sterile olive fly in desert-like environments
2012-2014	Dr. Polychronis Rempoulakis	Development of the Sterile Insect Technique for the Ethiopian Fruit Fly
2018	Dr. Moshe Blum	Use of Satellite Data (modis) on insect population dynamics modelling

E. Organization of Courses

Dates	Duration	Place	Title
1991	3 weeks	Shfayim, Israel (CINADCO)	International Workshop on Agroecology

5. Activity in Scientific and Agricultural Committees

A. International:

Dates	Description and role
2001-2004	Research Coordinated Project (RCP), International Atomic Energy Agency (IAEA), on “Quality Assurance in Mass-Reared and Released Fruit Flies for the use in SIT Programmes”; Member
2005-2009	Research Coordinated Project (RCP), International Atomic Energy Agency (IAEA), on “Development of Mass-Rearing for New World <i>Anastrepha</i> and Asian <i>Bactrocera</i> (MR)”; Member
2010-2011	Sub-Regional (Jordan-Palestine-Israel) Technical Cooperation (TC) Project of the International Atomic Energy Agency (IAEA) on “Control of the Mediterranean Fruit Fly and the Olive Fruit Fly”: Member
2011	Research Founding Program “Thallis”, Greek Ministry of Education and Religious Affairs: Evaluator.
2011	Macquaire University Research Fellowship Program. Australia. Evaluator.
2005-2012	Steering Committee of TEAM (Tephritidae of Europe, Africa and the Middle East) Founder and Member

B. National:

Dates	Description and role
1998	Professional Committee to evaluate recommendations of “Shpigel Committee” on the effects of air spraying against the Medfly upon bee-hives. Ministry of Agriculture, General Director’s Office; Member
1998	Ph.D. Follow-up Committee, Hadass Cohen; Hebrew University of Jerusalem, faculty of Agriculture and Rural development; Member
2002	Follow-up Committee on the importation of sting-less bees in order to enhance pollination of avocado trees. Plant Protection and Inspection Services, PPIS, Ministry of Agriculture and Rural development; Member
2002-2005	Committee on the Regulation of Pesticide Utilization (“Pesticide Efficacy”), PPIS, Ministry of Agriculture and Rural development; Member
2007	Ph.D. Follow-up Committee, Avishai Cohen; Technion- Israel Institute of Technology, Haifa, Israel; Member
2007-2013	The Chief Scientist Research Proposal Evaluation Committee, “Substitution of Pesticides in Agriculture”; Member

6. Contribution to the Scientific Community

A. International:

Dates	Description
1998	Consultant to the International Atomic Energy Agency (IAEA) Entomology Laboratories, at Seibersdorf, Austria (July 21-31), on development of a system to modulate and monitor lipid content in Medfly genetic sexing strains
1999	Consultant to the International Atomic Energy Agency (IAEA) Entomology Laboratories, at Seibersdorf, Austria (July 7-23), on lipid quantification as a quality parameter for reared Medflies using an ELISA reader
2004	Consultant to the International Atomic Energy Agency (IAEA) Entomology Laboratories, at Seibersdorf, Austria (Sept. 20-28), on the effects that the packaging of fruit fly pupae has on the radiation environment
2006	Organizer of COST group OC-2006-43 on Invasive Fruit Flies (IFF): a multidisciplinary approach to assess the risk potential of fruit flies (6 th short listed by Food and Agriculture Domain Committee)
2006	Consultant to the University of Thessaly, Laboratory of Entomology, at New Ionia, Greece (Dec. 13-22) on the establishment of laboratory systems for energetic studies on fruit flies
2007	Consultant to the Instituto de Ecologia, A.C., Laboratory of Animal Behavior, at Xalapa, Veracruz, Mexico (April) on the establishment of laboratory systems for energetic studies on fruit flies
2008	Co-Organizer and Scientific Chairperson of the 1 st Meeting of TEAM (Working group on Tephritidae from Europe, Africa and the Middle East); Place: Palma de Mallorca, Balears Islands, Spain (Apr. 7-8) (c.a. 140 participants)
2011	Consultant to the Ministry of Agriculture, Mexico, SENASICA (Plant Protection and Inspection Services), on studies on the invasion of fruit flies to California, USA, and effects upon MOSCAMED National Program of Mexico

2012	Co-Organizer of the 2 nd Meeting of TEAM (Working group on Tephritidae from Europe, Africa and the Middle East); Place: Kolimbari, Crete, Greece (July 3-6) (c.a. 130 participants)
2014	Invited Scientific Visit (IAEA) to the Ministry of Agriculture, Republic of Mauritius (March)
2015	Organizer Workshop on Making Spraying Easier and More Effective; Location ARO, Israel (July 8) (ca. 60 local participants and invited foreign experts from Greece, Spain and Italy)
2015	Organizer FruitFlyNet Consortium Meeting (Israel-Greece-Italy-Spain-Jordan); Location ARO, Israel (July 9-10)
2015	Co-Organizer International Organization of Biological Control (IOBC) Meeting on Pheromones and Other Semio-Chemicals in Integrated Production; Location: Jerusalem, Israel (Nov. 8-13) (ca. 70 participants)
2015	Organizer Session on Fruit and Vinegar Flies Trapping and Attraction. IOBC Meeting on Pheromones and Other Semio-chemicals in Integrated Production; Location: Jerusalem, Israel (Nov. 11)
2018	Member Scientific Committee 8 th IOBC-WPES meeting on Integrated Protection of Olive Crops,; Location: Florence, Italy, (June 11-14)

B. National:

Dates	Description
2015	Organizer Workshop on the application of LAS concepts in melon cultivation in the Arava; EinYahav (May 7) (ca. 50 participants)

C. Editorial responsibilities:

Dates	Description
2008	Guest Editor , Special Issue, the Journal of Applied Entomology
2014	Reviewer PhD Dissertation of Mrs. Toulassi Atiama-Nurbel on the “Response of Female <i>Bactrocera cucurbitae</i> (Diptera, Tephritidae) to fruit-host volatiles” Universite de la Reunion, France
2016	Reviewer PhD Dissertation of Mr. Carlos Andres Pascacio Villafan on the “Nutritional Biology of a Frugivorous Fly: Applications and Theory Related to Rearing with Artificial Diets” Instituto de Ecologia, Mexico
2017	Review Editor , Editorial Board of Population and Evolutionary Dynamics in Frontiers in Ecology and Evolution
2017	Reviewer PhD Dissertation of Mr. Sohel Ahmad on the “Adaptation to laboratory conditions, improvements in mass rearing methodologies and pre-zygotic and post-zygotic isolation studies on the olive fruit fly <i>Bactrocera oleae</i> (Rossi) (Diptera: Tephritidae) in relation with the application of the sterile insect technique (SIT) for area-wide pest management” University of Vienna, Austria
2019	Reviewer PhD Dissertation of Mr. Pasquale Calabrese on the “Development of attractant and an automatic trap for the monitoring of the Olive fruit fly, <i>Bactrocera oleae</i> (Gmelin, 1790) (Diptera: Tephritidae). University Degli Studi del Molise, Italy

7. Active Participation in Meetings

A. International:

Date	Title of the Meeting	Place	Role
1992	The XIX International Congress of Entomology	Beijing, China	Speaker
1994	The VII International Symposium of Scale Insect Studies	Beit-Dagan, Israel	Speaker
1996	The XX International Congress of Entomology	Firenze, Italy	Speaker
2000	The XXI International Congress of Entomology	Iguassu, Brazil	Poster
2001	2 nd Research Coordinated Meeting (RCM) on Quality Assurance in Mass-Reared and Released Fruit Flies for the use in SIT Programmes	Mendoza, Argentina	Invited Speaker, full reimbursement
2002	The 6 th International Symposium on Fruit Flies of Economic Importance	Stellenboch, South Africa	Speaker
2003	3 rd Research Coordinated Meeting (RCM) on Quality Assurance in Mass-Reared and Released Fruit Flies for the use in SIT Programmes	Perth, Australia	Invited Speaker, full reimbursement
2004	5 th Meeting of the Working Group on Fruit Flies of the Western Hemisphere	Ft. Lauderdale, USA	Panel Session Chair & speaker
2004	4 th Research Coordinated Meeting (RCM) on Quality Assurance in Mass-Reared and Released Fruit Flies for the use in SIT Programmes	Tapachula, Mexico	Invited Speaker, full reimbursement
2005	Rostock European Exploratory Workshop on Ageing and Longevity in Wild Medfly populations	Rostock, Germany	Invited Speaker, full reimbursement
2005	1 st Research Coordinated Meeting (RCM) on Development of Mass-Rearing for New World <i>Anastrepha</i> and Asian <i>Bactrocera</i>	Manila, Phillipines	Invited Speaker, full reimbursement
2005	11 PanHellenic Congress of Entomology	Karditza, Greece	Invited Speaker, full reimbursement
2006	2 nd Research Coordinated Meeting (RCM) on Development of Mass-Rearing for New World <i>Anastrepha</i> and Asian <i>Bactrocera</i>	Salvador Bahia, Brazil	Invited Speaker, full reimbursement
2006	The Joint 7 th International Symposium on Fruit Flies of Economic Importance	Salvador Bahia, Brazil	speaker
2008	3 rd Research Coordinated Meeting (RCM) on Development of Mass-Rearing for New World <i>Anastrepha</i> and Asian <i>Bactrocera</i>	Valencia, Spain	Invited Speaker, full reimbursement
2008	1 st Meeting of the Working Group of Tephritidae from Europe Africa and the Middle East	Majorca, Spain	Speaker, Poster
2009	4 th Research Coordinated Meeting (RCM) on Development of Mass-Rearing for New World <i>Anastrepha</i> and Asian <i>Bactrocera</i>	Pereybere, Mauritius	Invited Speaker, full reimbursement
2010	IAEA Sub-Regional Meeting on the Control of the Mediterranean Fruit Fly and the Olive Fruit Fly	Dead Sea, Jordan	Invited Speaker, full reimbursement
2011	IAEA Sub-Regional Meeting on the Control of the Mediterranean Fruit Fly and the Olive Fruit Fly	Vienna, Austria	Invited Speaker, full reimbursement
2012	Workshop on Strategies to Control the Olive Fly, SAGARPA, Ministry of Agriculture, Mexico	Mexico City, Mexico	Invited Speaker
2012	2nd Meeting of the Working Group of Tephritidae from Europe Africa and the Middle East	Kolimbari, Greece	Speaker, Poster
2012	3 rd International Workshop on Regional Control of	Nazareth, Israel	Invited speaker

Olive Pest for Palestinian Farmers, NICCOD			
2013	Pacific Branch Entomological Society of America Annual Meeting	Lake Tahoe, USA	Speaker, Poster
2014	Workshop on a Location Awareness System for Fruit Fly Monitoring and Pest Management Control	Athens, Greece	Invited Speaker full reimbursement
2014	CIRAD-Reunion Workshop on Chemical Ecology of Fruit Flies	Saint Pierre, Reunion, France	Invited Speaker full reimbursement
2015	Workshop on a New Location Awareness System for Pest Management: the case of the olive fly, medfly and cherry fruit fly	Volos, Greece	Invited Speaker full reimbursement
2015	FruitFlyNet workshop on Making Spraying Easier and More Effective, Beit Dagan	Volcani Ctr, Israel	Speaker
2015	PanHellenic Entomological Congress	Heraklion, Crete, Greece	Invited Keynote Speaker, partial reimbursement
2015	International Organization of Biological Control (IOBC) International Meeting on Pheromones and other Semio-chemicals in Integrated Production	Jerusalem, Israel	Speaker and Session Chair
2016	9 th Meeting of the Tephritidae Workers of the Western Hemisphere	Buenos Aires, Argentine	Invited Keynote Speaker
2017	“Series of Seminar of Distinguished Scholars”, University of Thessaly, Dept. of Agriculture, Crop Production and Rural Environment	Volos, Greece	Invited Speaker, partial reimbursement
2018	Hand-on Workshop in Electron Beam Irradiation Technologies	Texas A & M University, College Station, USA	Participant
2018	8 th IOBC-WPES meeting on Integrated Protection of Olive Crops	Florence, Italy	Scientific Committee and Participant

B. National:

Date	Title of the Meeting	Role
2008	Annual Meeting of Olive Growers in Israel, Beit-Dagan	Invited Speaker
2010	1 st Workshop on Regional Control of Olive Pest for Palestinian Farmers, Nippon International Cooperation for Community Development (NICCOD), St. Gerosimos Monastery	Invited Speaker
2011	2 nd Workshop on Regional Control of Olive Pest for Palestinian Farmers, Nippon International Cooperation for Community Development (NICCOD), Nazareth	Invited Speaker
2012	3 rd Workshop on Regional Control of Olive Pest for Palestinian Farmers, Nippon International Cooperation for Community Development (NICCOD), Nazareth	Invited Speaker
2013	Annual Meeting of the Extension Services of the Ministry of Agriculture, Beit Dagan	Invited Speaker
2013	Annual Meeting of Olive Growers in Israel, Beit Dagan	Invited Speaker

8. Research Grants

A. International Competitive Grants:

Year	Granting Source	Duration (years)	Role*	Title (short)	Budget (US \$ / year)	
					Total	Researcher
1995	C DFA	3	CI	Physiol., genet. geograph. Correlates to dispersal and overwintering of the Medfly	56,000	4,000
2000	IAEA Research Grant	4	PI	Lipid, protein and glycogen content in Medfly reared on defined diets	5,200	5,200
2005	IAEA Research Grant	5	PI	Development of rearing techniques for <i>Dacus ciliatus</i>	5,800	5,800
2006	IAEA Research Grant	3	PI	Assessment of the sexual compatibility of wild olive flies from Israel with laboratory mass-reared flies	6,300	6,300
2013	ENPI-CBC-Med Framework, EU Grant	2	LPI	Location-aware system for fruit fly monitoring and pest management control	998,000	235,000
2018	IAEA Research Grant	2	PI	Development of automatic real-time surveillance systems for early-warning of <i>Bactrocera</i> invading species	12,000 Euro	12,000 Euro
2019	H2020-SFS-2018-2	4	LPI	In-Silico boosted, pest prevention and off-season IPM against new and emerging fruit flies ('OFF-Season' FF-IPM)	6,004,252 Euro	563,863 Euro

*PI = Principal Investigator; LPI= Local Principal Investigator; CI = Cooperating Investigator

B. National Competitive Grants:

Year	Granting Source	Duration (years)	Role*	Title (short)	Budget (US \$ / year)	
					Total	Researcher
1993	Chief Sci.	1	PI	Leafhopper communities in vineyards	11,000	11,000
1994	Chief Sci.	3	PI	Biological control of the olive scale	17,000	17,000
1999	Chief Sci.	3	PI	Development of an action program for the control of an exotic fruit fly	19,000	9,000
2002	Chief Sci.	3	PI	Development of an action program for the control of an exotic fruit fly; continuation	24,000	16,000
2006	Mrs. Erlich Trust	2	PI	Development of a lure and kill system for <i>Dacus ciliatus</i>	40,000	14,000
2007	Chief Sci.	3	PI	Pilot test on the release of sterile olive fly to reduce damage	56,000	26,000

2009	Chief Sci.	3	PI	Development of a lure and kill system for <i>Dacus ciliatus</i>	30,000	10,000
2009	Chief Sci.	3	CI	Development of quarantine treatments for sweet pepper	23,000	5,000
2012	Chief Sci.	3	PI	Applications of the sterility principle to control the fruit fly <i>Dacus ciliatus</i>	39,000	31,000
2014	Chief Sci.	2	PI	Characterization and identification of the pheromone system of <i>Bactrocera zonata</i>	61,000	25,000
2014	Chief Sci. Excellency- Center	3	CI	Avoidance of chill injury formation	280,000	8,000

*PI = Principal Investigator; LPI= Local Principal Investigator; CI = Cooperating Investigator

C. Other Funds:

Year	Granting Source	Duration (years)	Role*	Title (short)	Budget (US \$ / year)	
					Total	Researcher
1991	Chief Sci.	3	PI	Biological control of the olive scale	10,000	10,000
1992	Fruit Growers Assoc.	1	PI	Leafhopper communities in vineyards	8,000	8,000
1992	Fruit Growers Assoc.	1	PI	Identification of fruit damage in cherries	2,000	2,000
1993	Marketing Board of Ornamental Plants	1	PI	Biology of the Narcissus bulb fly	5,000	5,000
1996	Citrus Marketing Board	1	PI	PCR-RAPD to study the population genetics of the Medfly	10,000	10,000
1997	Clean Arava R&D	2	PI	Development of an SIT Program for an exotic pest	19,000	19,000
1999	Clean Arava R&D	3	PI	Research on an exotic pest	47,000	47,000
2002	Clean Arava R&D	1	PI	Research on an exotic pest	20,000	20,000
2003	PPIS	1	PI	Research on an exotic pest	11,000	11,000
2003	Tama Plastic Industries	1	PI	Medfly behavior under plastic	2,000	2,000
2005	Marketing Board of Olive	2	PI	Pilot test on the release of sterile olive fly	4,500	4,500
2005	Head ARO Fund	2	PI	Application of SIT for the olive fly	3,000	3,000
2007	TC-IAEA (adminstr. PPIS)	2	CI	Feasibility Pilot Study to Investigate the Application of the SIT Concept for OFF	100,000 in equipment	30,000 in equipment an scientific visits

2009	TC-IAEA (adminstr. PPIS)	3	CI	Strengthening the capacity to use the sterile insect technique for the OFF	113,000 in equipment	7,000 in equipment
2009	NICCOD	3	PI	Olive pest control in the West Bank	21,000	21,000
2012	TC-IAEA (adminstr. PPIS)	2	PI	Improvement of artificial mass-rearing systems for the Ethiopian fruit fly, <i>Dacus ciliatus</i>	49,000 in equipment	49,000 in equipment

*PI = Principal Investigator; LPI= Local Principal Investigator; CI = Cooperating Investigator

9. Awards

Dates	Description
2016	Honorary Visiting Scientist INECOL (National Institute of Ecology, Mexico)
2018	Member Mexican National Scientists Foundation

Part II: LIST OF PUBLICATIONS

<u>Marks:</u>	
S	Student or post-doc under my supervision
*	Equal contribution

1. Articles in Reviewed Journals

1. **Nestel, D.**, Galun, R. and Friedman, S. (1985).

Long-term regulation of sucrose intake by the adult Mediterranean Fruit Fly *Ceratitidis capitata* (Wiedmann).

Journal of Insect Physiology, **31**(7): 533-536. (IF 2.379; Entomology, Rank 7/87)

2. **Nestel, D.**, Galun, R. and Friedman, S. (1986).

Energetic balance of the irradiated adult of *Ceratitidis capitata* (Wied.) (Diptera: Tephritidae).

Folia Entomologica Mexicana, **70**: 75-85.

3. **Nestel, D.** and Dickschen, F. (1990).

The foraging kinetics of ground ant communities in different Mexican coffee agroecosystems.

Oecologia, **84**: 58-63. (IF 3.011; Ecology, Rank 37/136)

4. **Nestel, D.** and Altieri, M.A. (1992).

The weed communities of Mexican coffee agroecosystem: Effect of management upon plant biomass and species composition.

Acta Oecologica, **13**: 715-726. (IF 1.621; Ecology, Rank 82/136)

5. **Nestel, D.**, Dickschen, F. and Altieri, M.A. (1993).

Diversity patterns of soil macro-Coleoptera in Mexican shaded and unshaded coffee agroecosystems: an indication of habitat perturbation.

Biodiversity and Conservation, **2**: 70-78. (IF 2.264; Ecology, Rank 60/136)

6. Mendel, Z.*, **Nestel, D.*** and Gafni, R. (1994).

Examination of the origin of the Israeli population of *Matsucoccus josephi* (Homoptera: Matsucoccidae) using Random Amplified Polymorphic DNA-polymerase Chain Reaction.

Annals of the Entomological Society of America, **87**: 165-169. (IF 1.196; Entomology, Rank 36/87)

7. **Nestel, D.**, Dickschen, F. and Altieri, M.A. (1994).

- Seasonal and spatial population loads of a tropical insect: the case of the coffee leaf-miner in Mexico.
Ecological Entomology, **19**: 159-167. (IF 1.954; Entomology, Rank 17/87)
8. Ogata, N.^S, **Nestel, D.**, Rico-Gray, V. and Guzman, G. (1994).
 The cited myxomycetes of Mexico.
Acta Botanica (Mexico), **27**: 39-51. (In Spanish). (IF 0.305; Plant Sciences, Rank 180/197)
 9. Ben-Yakir, D.* , **Nestel, D.***, Ben-Herzel, H., Grossman, M., Benyaminy, H. and Chen, M. (1995).
 Postdiapause development and spring emergence of the European Corn Borer, *Ostrinia nubilalis*, in Israel.
Phytoparasitica, **23**: 205-215.
 10. **Nestel, D.**, Cohen, H., Saphir, N., Klein, M. and Mendel, Z. (1995).
 Spatial distribution of scale insects: A comparative study using Taylor's "Power Law".
Environmental Entomology, **24**: 506-512. (IF 1.314; Entomology, Rank 34/87)
 11. **Nestel, D.** and Klein, M. (1995).
 Geostatistical analysis of leafhopper (Homoptera: Cicadellidae) colonization and spread in deciduous orchards.
Environmental Entomology, **24**: 1032-1039. (IF 1.314; Entomology, Rank 34/87)
 12. **Nestel, D.**, Pinhassi, N., Reuveni, H., Oppenheim, D. and Rosen, D. (1995).
 Development of a predictive phenological model for the spring generation of the olive scale *Parlatoria oleae* (Colvee), in Israel: Preliminary results.
Israel Journal of Entomology, **29**: 227-235.
 13. Mendel, Z.* , Assael, F., Saphir, N., Zehavi, A. and **Nestel, D.*** (1995).
 The role of *Matsucoccus josephi* Bodenheimer et Harpaz (Homoptera: Margarodidae) and drought in the early stages of natural regeneration after fire in Aleppo pine forest in Israel.
Israel Journal of Entomology, **29**: 169-177.
 14. **Nestel, D.** (1995).
 Coffee in Mexico: International market, agricultural landscape and ecology.
Ecological Economics, **15**: 165-178. (IF 2.855; Ecology, Rank 42/136)
 15. Jacome, I.* , Aluja, M.* , Liedo, P. and **Nestel, D.*** (1995).
 The influence of adult diet and age on lipid reserves in the tropical fruit fly *Anastrepha serpentina* (Diptera: Tephritidae).
Journal of Insect Physiology, **41**: 1079-1086. (IF 2.379; Entomology, Rank 7/87)
 16. Glazer, I.* , Kozodoi, E., Salame, L. and **Nestel, D.*** (1996).
 Spatial and temporal occurrence of natural populations of *Heterorhabditis* spp. (Nematoda: Rhabditidae) in a semiarid region.
Biological Control, **6**: 130-136. (IF 1.917; Entomology, Rank 20/87)

17. Pinhassi, N.^S, **Nestel, D.** and Rosen, D. (1996).
Oviposition and emergence of olive scale (Homoptera: Diaspididae) crawlers: a regional degree-day forecasting model.
Environmental Entomology, **25**: 1-6. (IF 1.314; Entomology, Rank 34/87)
18. Ogata, N.^S, Rico-Gray, V. and **Nestel, D.** (1996).
Abundance, richness and diversity of myxomycetes in a Neotropical forest ravine.
Biotropica, **28**: 627-635. (IF 2.351; Ecology, Rank 57/136)
19. Cohen, H.^S, Horowitz, A.R., **Nestel, D.** and Rosen, D. (1996).
Susceptibility of the woolly apple aphid, *Aphelinus mali* (Hym.: Aphelinidae), to common pesticides used in apple orchards in Israel.
Entomophaga **41**: 225-233.
20. Israely, N.^S, Yuval, B., Kitron, U. and **Nestel, D.** (1997).
Population fluctuations of adult Mediterranean fruit flies (Diptera: Tephritidae) in a Mediterranean heterogeneous agricultural region.
Environmental Entomology **26**: 1263-1269. (IF 1.314, Entomology; Rank 34/87)
21. Mendel, Z.* , Ben-Yehuda, S., Marcus, R. and **Nestel, D.*** (1997).
Distribution and extent of damage by *Scolytus spp.* to stone and pome fruit orchards in Israel.
Insect Science and Applications **17**: 175-181.
22. Mendel, Z., Assael, F., Saphir, N., Zehavi, A., **Nestel, D.** and Schiller, G. (1997).
Seedling mortality in regeneration of Aleppo pine following fire and attack by the scale insect *Matsucoccus josephi*.
International Journal of Wildland Fire **7**: 327-333. (IF 2.322; Forestry, Rank 7/62)
23. Antignus, Y., **Nestel, D.**, Cohen, S. & Lapidot, M. (2001).
Ultraviolet-deficient greenhouse environment affects whitefly attraction and flight-behavior.
Environmental Entomology **30**: 394-399. (IF 1.314; Entomology, Rank 34/87)
24. Efron, D.* , **Nestel, D.*** . & Glazer, I.* (2001)
Spatial analysis of entomopathogenic nematodes and insect hosts in a citrus grove in a semi-arid region.
Environmental Entomology **30**: 254-261. (IF 1.314; Entomology, Rank 34/87)
25. Curuk, S., Ananthakrishnan, G., Singer, S., Xia, X., Elman, C., **Nestel, D.**, Cetiner, S. & Gaba, V. (2003).
Regeneration In vitro from the hypocotyls of Cucumis species produces almost exclusively diploid shoots, and does not requires light.
HortScience **38**: 105-109. (IF 0.938; Horticulture, Rank 12/32)
26. **Nestel, D.**, Tolmasky, D., Rabossi, A. & Quesada-Allue, L. (2003).
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Allowed Patents and Registered Cultivars

Part III: DESCRIPTION OF MAJOR ACHIEVEMENTS

Since the last promotion I continued work on the implementation of SIT to control the olive fly (together with Bio-Fly and the National Jewish Fund [KKL] department of orchards management) (1-44, 1-50, 2-1). I also collaborated with colleagues in the Palestinian Authority on the implementation of Mass-Trapping technology to control the olive fly, and on the ecology of the olive fly. The collaboration lead to the development and application of low-cost, labor-intensive, home-made mass-trapping devices to control the olive fly in impoverished regions, and enhance the production of organic oil for export (1-49). It also helped to establish links with scientific and farmers' organizations in Palestine (through workshops and seminars), and to promote dialogue on common problems of plant protection for the two places. This project was financed indirectly by the Japanese Ministry of Foreign Affairs through a Japanese NGO, NICCOD, working in Palestine. Results on the Ecology of the olive fly derived from this and other projects are being used, in conjunction with colleagues from Bar Ilan University, in the development of forecasting models driven by satellites-generated thermal data (1-37, 1-44, 1-46, 1-48, 1-54, 1-55). We expect to be able to forecast population trends with a geographic precision and in areas where no meteorological stations are available. During this period I also collaborated with the Dept. of Post-Harvest treatments of the ARO on the evaluation of cold treatments to eliminate the Medfly from export peppers. The results and post-harvest protocols (1-45, 1-58, 5-19) lead to small scale experimental shipments to the USA during 2014, which are expected to be incremented during 2015. In addition, in order to pursue the future application of SIT against the Ethiopian Fruit-fly (E-fly), my current research includes studies on the fly's nutrition and cytogenetics (1-39, 1-41, 1-51, 1-52), mass-rearing systems, induction of sterility (1-53, 1-56, 1-57), adult attraction to plant volatiles (1-38), and the identification and characterization of sexual pheromone (in progress). These studies have been technically and financially supported partially by the Technical Cooperation (TC) Department of the International Atomic Energy Agency (IAEA), and are being pursued in collaboration with scientist in the Department of Entomology of the ARO. Finally, I am currently participating and coordinating the ARO group in a multidisciplinary project financed by the EU (ENPI-CBCMED). The project is developing and testing warning systems to control fruit flies in the Mediterranean basin. The ARO multidisciplinary group is developing innovative wire-less electronic-traps for monitoring fruit flies and early-warning decision-support systems (DSS) to respond to the treat of invasive fruit flies (4-21).

I have also been invited to participate in meetings organized by the IAEA (covered expenses) with the Palestinians and Jordanians in Jordan and Vienna, Austria, to pursue common policies in the control of established fruit flies and to discuss on the approaches to be taken to contain invading species of fruit flies. I have also been invited (covered expenses) to laboratories in Greece, Mexico and Austria (IAEA) to collaborate and establish laboratory systems to explore the nutritional physiology of fruit flies (1-40, 1-42, 1-43). I was part of the TEAM (Tephritidae of Europe, Africa and the Middle East working group) founding group and steering committee (2005-2012), and the scientific chairperson for the 1st TEAM meeting (April 2008) in Majorca, Spain, and part of the organizing committee for the 2nd TEAM meeting (July 2012) in Crete. Recently, I was part of the Organizing Committee of the International Meeting on Pheromones sponsored by the IOBC and held in Jerusalem in December 2015. In this meeting I organized a special symposium on fruit flies that included several European colleagues. I was also invited as key-note speaker to the Greek Entomological Society meeting in Crete (October, 2015) and to the international meeting of the Tephritidae Working Group of the Western Hemisphere (October 2016) (Partial coverage of expenses). Additionally, an invited review to the Journal of Insect Physiology on resource allocation, nutritional compensation and development in holometabolous insects, and a chapter reviewing olive fly control strategies during the last 60 years and its link to policy and economics were published during the last year. During most of 2016, I was in a sabbatical leave at the National Institute of Ecology of Mexico.

1. Contribution to Agricultural and/or Environmental Sciences

Nutritional Physiology in Fruit Flies and its Applications to the Sterile Insect Technique

1. The interconnection between diet, energy-reserves and performance of adult sterile fruit flies:

The investigation of larval and adult diet components, and their effect upon fly quality, is an important element in mass-production of sterile fruit flies for SIT. My studies have provided an insight on the effect of larval-diet components upon the energetic reserves and quality of emerging reared flies (1-29, 1-35), and the effect of adult diets on the patterns of nutritional reserves of different fruit fly species (1-1, 1-2, 1-15, 1-51, 1-52, 1-57). This information is being used to improve diets and reduce production costs in mass-rearing facilities. In addition, the interconnection between energy reserves and quality of produced sterile flies was investigated further in projects and consultations supported by the IAEA (6-2, 6-7, 6-8). Recently we also investigated the combined effect of diet and egg-laying host availability on the reproductive and metabolic patterns of the Mexfly (1-42), and the effects of protein upon reproduction and survival of the South American fruit fly (1-43) and the E-fly (1-51).

2. Determination of energy-metabolite patterns during metamorphosis and ageing: The pathway of energy metabolites during metamorphosis and adult life in the Medfly, and diapause in the cherry fruit fly, were assessed (1-26, 1-32, 1-40).
3. Respiratory patterns in the Medfly pupae: These studies inquired on the respiratory pattern of Medfly pupae (1-33, 1-34). The results helped improve irradiation protocols in mass-production facilities.
4. Development of a system to measure individual phagostimulation, intake and pesticide toxicity in fruit flies: This study developed a simple technique (the PUB) to follow the intake patterns of individual flies of stomach poison (spinosad) (1-30). Since the previous promotion, we used the PUB to follow individual intake of nutrients by the E-Fly and the South American fruit fly (1-39, 1-43)

Landscape Ecology of Pest Insects

1. Landscape ecology of insect-pests and other organisms, and its relevance for pest control: Insect spatial patterns, and the environmental factors molding them, were investigated for several insect pests (1-7, 1-10, 1-11, 1-12, 1-16, 1-17, 1-18, 1-20, 1-21, 1-24, 1-27, 1-28, 1-37, 1-46, 3-2, 5-7, 5-10, 5-11, 5-14, 6-4, 6-6, 6-9). These early studies were innovative to the field of insect ecology since they were within the first studies applying spatial autocorrelation statistics to describe insect dispersion in space (1-11). These studies served to develop pest control strategies and tools (1-11, 1-12, 1-17, 1-46, 3-2, 5-8). Since the previous promotion I also conducted studies on the dispersion patterns of sterile olive fly as a preliminary step to determine a release strategy for sterile flies (1-44). A few years ago, I summarized the use of landscape ecology on pest control (3-2).
2. The development of degree-day (D.D) forecasting models for: the olive scale and the European corn-borer (1-9, 1-12, 1-17, 5-8).
3. Biogeography and population genetics of *Matsucoccus josephi* and *Lymantria dispar* (1-6, 6-3).
4. The possible role of fruit flies as vectors of human pathogens: This study proved under laboratory conditions that fruit flies (Tephritidae) can carry human pathogens and infest fresh fruit (1-31).
5. Attraction systems and cytogenetics: Since the previous promotion, we initiated studies on the attraction behavior of the olive fly (1-47) and the E- fly (1-38) using novel automatic analytical systems and electro-physiology. We also analyzed the cytogenetic of the E- fly (1-41).

2. Achievements in Applied Research

(Specifying major contribution to agriculture and/or the environment in Israel and abroad)

Orchards

1. Fruit Flies: The landscape ecology and hibernation strategies of the Medfly in hilly Israeli orchards was investigated during the late 90's (1-20, 5-10, 5-11, 5-14, 6-4, 6-6). These studies provided information on the environmental factors driving the Medfly and helped improve our understanding on trapping strategies and tools for monitoring fruit flies. In addition, tools for mechanical control of the Medfly for organic orchards were tested (5-5, 5-12, 5-13). In early 2000 we tested Mass-Trapping strategies to control the olive fly in Israel (5-15, 5-16). This initial project leads to the commercial application of the concept in the Negev. Since the last promotion I coordinate a pilot project evaluating the utilization of sterile olive flies in arid regions (1-44, 1-50, 1-1), and the use of Mass-trapping against the olive fly in Palestine (1-49). Recently, we adapted a function to determine olive-canopy temperature from satellite-generated data (1-48). This function will be used in population dynamic models of the olive fly (1-54, 1-55).

2. Other insect pests: The study of the toxicology of the main parasitoid of the woolly apple aphid and of resistant rootstocks provided basic information for the establishment of IPM systems in Israeli orchards (1-19, 5-9). A phenological model to control the emerging overwintering crawlers of the olive scale, *Parlatoria oleae*, was developed for Northern Israel (1-10, 1-12, 1-17, 5-8). A "belt-spray" strategy to curtail the immigration to orchards of leafhoppers during spring was tested (1-11, 3-2).

Field and Green-House Crops

1. Fruit Flies: During the late 90's an action program was set to contain the E- fly in the Arava region. This program helped contain the fly for more than 10 years, allowing exports of peppers from the region to continue (an average of \$100 million/year of fruit exports from the Arava). Since the last promotion we are working in the improvement of monitoring systems, developing lure and kill tools, and establishing the infrastructure for the future application of SIT against this pest (1-56, 1-57). An addition activity includes the establishment of protocols to provide evidence on the effect of post-harvest cold treatments against the Medfly in peppers (1-45, 1-58, 5-19), and the E- fly in melons. This study already demonstrated the effectiveness of cold treatments on peppers and is helping in opening new markets (e.g., Japan) for Israeli peppers.