# Shimon Rachmilevitch May 2020

# CURRICULUM VITAE

• Personal details

Name: Shimon Rachmilevitch

Date and place of birth: June 19th 1970, New York, USA

Address: Albert Katz Department of Dryland Biotechnologies, French Associates Institute for Agriculture and Biotechnology of Drylands, Blaustein Institutes for Desert Research, Ben -Gurion University of the Negev, Sede Boqer Campus 84990 Israel

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• Education

B.Sc. - 1993-1996, The Hebrew University of Jerusalem, Biology.

M.Sc. - 1997-1998, The Hebrew University of Jerusalem, Plant Sciences.

Name of advisor: Prof. Joe Gale.

Title of thesis: Effects of the K/T boundary atmosphere on C3 and C4 plants.

Ph.D. - 1999-2003, The Hebrew University of Jerusalem, Plant Sciences.

Name of advisor: Prof. Joe Gale.

Title of thesis: Acclimation of plants to stress: Implications for respiration, photosynthesis and stress.

• Employment History

Since 2019: Full Professor

2014-2019:  Associate Professor

2017-2018: Visiting Associate Professor within the College of Agriculture and Life Sciences at Cornell University.

2012: Tenured, The Jacob Blaustein Institute for Desert Research, Ben-Gurion University of the Negev.

2011-2014: Senior Lecturer, The Jacob Blaustein Institute for Desert Research, Ben-Gurion University of the Negev.

2007-2011: Lecturer, The Jacob Blaustein Institute for Desert Research, Ben-Gurion University of the Negev.

2008: Visiting Professor, Harvard University.

2006-2007: Visiting Scientist, Department of Organismic and Evolutionary Biology, Harvard University.

2004-2006: Visiting Scientist, Department of Plant Biology & Pathology, Rutgers State University of New Jersey.

2003-2004: Post-Doc Research Associate, Department of Vegetable Crops, UC Davis.

1997-2002: Teaching assistant, Hebrew University of Jerusalem: Introduction to Plant Sciences, Israel’s vegetation, Plant Anatomy of desert plants.

• Professional Activities

1. Positions in academic administration (Departmental, Faculty and University)

2016-present: Director of Root of the Matter - The root zone knowledge center for leveraging modern agriculture..

2015-2017: Director of the French Associates Institute for Agriculture and Biotechnology of Drylands.

2013-2015: Head of Teaching committee - French Associates Institute for Agriculture and Biotechnology of Drylands, Albert Katz International School, Ben-Gurion University of the Negev.

2013- 2015: Organizer and head of four week international course for Chinese and Indian students, sponsored by the Israeli Council for Higher Education.

2009-2012: Teaching committee - French Associates Institute for Agriculture and Biotechnology of Drylands, Albert Katz International School, Ben-Gurion University of the Negev.

1. Professional functions outside Universities/Institutions

2007–present: Israeli Plant Science Society Council.

2012-2016: STREESS COST, Representative of Israel.

2015-present: Chair of the Israeli Plant Science Society.

1. Editor

Ecophysiological Aspects of the Rhizosphere, Special issue editor in Frontiers in Plant Science (2013).

Plants Coping with Abiotic and Biotic Stresses: A Tale of Diligent Management, Special issue editor in BioMed Research International (2014).

1. Ad-hoc reviewer for journals

2005-present: Scientific manuscript reviewer for: Physiologia Plantarum, Plant Cell and Environment, Photosynthetica, Plos One, Frontiers in Plant Science, Annals of Botany, Water, Nature Communications, Plant and Soil.

1. Membership in professional/scientific societies

2002-present: American Society of Plant Biologists.

2005-present: Crop Science Society of America.

2009-present: Israel Society for Plant Biology.

• Educational activities

(a) Courses taught

1. Plant ecophysiology and Stress indicators: Methods, instrumentation and research.
2. Carbon metabolism in plants.
3. Institutes noon- Window to the research at the Institutes for Desert Research (organizer 2008/9).
4. Climate change, convergence of disciplines – concentrated course (summer 2010 and 2012).
5. Guided reading-plant ecophysiology.
6. Student seminar.
7. Summer course for students from China and India: Plant Soil Atmosphere Continuum in respect to agriculture in arid regions.

(b) Research students

2008-2009: Eitan Amiel, M.Sc. student.

2009-2011: Avital Yosef, M.Sc. student.

2009-2011: Amber Hill, M.Sc. student.

2011-2013: Jiangsan Zhao, M.Sc. student.

2009-2013: Amir Eppel, Ph.D. student.

2009-2013: Oren Shelef, Ph.D. student.

2009-2015: Uri Hochberg, M.Sc. and Ph.D. student.

2012-2014: Endale Geta, M.Sc. student (in collaboration with Dr. Naftali Lazarovitch).

2013- 2015: Brian Hoefgen, M.Sc. student.

2014- 2016: Chunping Miao, M.Sc. student (in collaboration with Prof. Jonathan Ephrath).

2014- 2016: Hila Gil, M.Sc. student (in collaboration with Dr. Gilboa Arye).

2011-2017: Sivan Isaacson, Ph.D. student (in collaboration with Prof's. Jonathan Ephrath and Dan Blumberg).

2011-2016: Tal Rapaport, Ph.D. student (in collaboration with Prof. Arnon Karnieli).

2012-2018: Amber Hill, Ph.D. student.

2013-2018: Moti Shomron, Ph.D. student.

2013-2018: Itay Hacohen, Ph.D. student.

2013- 2017: Amnon Cochavi, Ph.D. student (in collaboration with Prof's. Jonathan Ephrath and Hanan Eizenberg).

2014-2018: Moses Kwame Aidoo, Ph.D. student (in collaboration with Dr. Naftali Lazarovitch and Prof. Aaron Fait).

2014-2016: Mengqi Zhang, M.Sc. student (in collaboration with Dr. Phyllis Weintraub).

2014-2016: Asal Kattel, M.Sc. student (in collaboration with Prof. Jonathan Ephrath)

2014-2018: Jhon Okoth, Ph.D. student (in collaboration with Dr. Naftali Lazarovitch and Dr. Uri Yermiyahu).

2015-2017: Amjad Hijazen, M.Sc. student.

2015-2017: Shachar Pinkovitch, M.Sc. student (in collaboration with Prof. Arnon Karnieli).

2016-2018: Yoav Shavit, M.Sc. student (in collaboration with Prof. Arnon Karnieli).

2016-2018: Nitsan Bar-Shmuel, M.Sc. student (in collaboration with Dr. Michal Segoli).

2017-present: Naomi Waldman Shmuel, M.Sc. student (in collaboration with Prof. Naftali Lazarovitch).

2018-present: Sophie Obersteiner, M.Sc. student.

2018-present: Petar Jovanovic, Ph.D. student (in collaboration with Dr. Ran Erel ARO).

2018-present: Wen Lingling, Ph.D. student (in collaboration with Prof. Aaron Fait).

2019-present: Yaniv Lupo, Ph.D. student.

2019-present: Aviad Perri, Ph.D. student (in collaboration with Dr. Uri Hochberg).

2019-present: Mihal Blaschkauer, Ph.D. student (in collaboration with Dr. Vered Tzin).

2020-Present: Sharon Chemweno, M.Sc. student.

2020-Present: Kakarla Prashant, M.Sc. student.

(c) Visitors and Post Docs

2008: Dr. Ina Meier, Post-Doctoral scholar (in collaboration with Prof. Jonathan Ephrath).

2009-2012: Dr. Boris Rewald, Post-Doctoral fellow (in collaboration with Prof. Jonathan Ephrath).

2010: Prof. Michelle Holbrook (Harvard University).

2011-2012: Dr. Volkan Oral, Post-Doctoral fellow (in collaboration with Prof. Jonathan Ephrath).

2012-2013: Dr. Sikander Pal, Post-Doctoral fellow.

2014-2017: Dr. Inga Dirks, Post-Doctoral fellow.

2015-2016: Dr. Reut Berger-Tal, Post-Doctoral fellow.

2016-2018: Dr. Michal Meir, Post-Doctoral fellow.

2016-2018: Dr. Daniela Jerszurki, Post-Doctoral fellow (in collaboration with Prof. Naftali Lazarovitch).

2017-2018: Prof. Juliana Lichston, visiting Prof. on sabbatical.

2018-present: Dr. Timur Yergaliyev Post-Doctoral fellow (in collaboration with Dr. Amir Szitenberg).

2019-present: Dr. Natali DeFalco Post-Doctoral fellow.

2020: Sonia singh, visiting scholar (Ph.D. student).

• Awards, Citations, Honors, Fellowships

(a) Honors, Citation Awards

1997-2002: Teaching Assistant scholarship, Hebrew University of Jerusalem.

1999: The Alexandra Poljakof-Meiber excellence award.

2000-2002: The Hebrew University of Jerusalem traveling fellowship.

2005: Peter Selmer Loft Memorial Scholarship.

2009-2014: Incumbent Sonnenfeldt-Goldman Career Development Chair for Desert Research.

2012: Toronto award for excellence in research.

(b) Fellowships

2003-2004: BARD Post-Doctoral fellowship

• Scientific Publications

H index: 27 in ISI, 29 in google scholar

Total number of citations: 2057 in ISI, 3210 in google scholar

Total number of citations (without self-citations): 1880 in ISI

1. Book chapters
2. [Lieman-Hurwitz](http://www.springerlink.com/content/?Author=Judy+Lieman-Hurwitz) JT,  [Asipov](http://www.springerlink.com/content/?Author=Leonid+Asipov) LC, [Rachmilevitch](http://www.springerlink.com/content/?Author=Shimon+Rachmilevitch) SS, [Marcus](http://www.springerlink.com/content/?Author=Yehouda+Marcus) YC, and [Kaplan](http://www.springerlink.com/content/?Author=Aaron+Kaplan) API (2005) Expression of cyanobacterial ictB in higher plants enhanced photosynthesis and growth. *In* Plant responses to air pollution and global change. Springer, New York, USA.
3. Rachmilevitch SPD, DaCosta MS, and Huang BPI (2006) Physiological and Biochemical Indicators for Stress Tolerance, *in* Plant environment interactions. Editor Bingru Huang. CRC Press, New York, USA.
4. Rewald BPD, Eppel AS, Shelef OS, Hill AS, Degu AS, Friedjung AS and Rachmilevitch SPI (2011) Life at the dry edge – Plants adaptations to hot deserts, *in* Life at extremes: Environments, organisms and strategies for survival, Editor Elanor M. Bell. CAB International, UK.
5. Rewald BPD, Shelef OS, Ephrath JEPI and Rachmilevitch SPI (2013) Adaptive plasticity of salt-stressed root systems. *In* Ecophysiology and responses of plants under salt stress, Editors Ahmad, P., Azooz, M.M. & Prasad, M.N.V. Springer, New York, USA.
6. Refereed articles and refereed letters in scientific journals (Ranking according to ISI)
7. Rachmilevitch SS, Reuveni JC, Pearcy RWC and Gale JPI (1999) A high level of oxygen, as occurred toward the end of the Cretaceous period, increases leaf diffusion conductance. *Journal of Experimental Botany* 50 (335): 869-872.

(IF 6.305, JR 14/228, Plant Sciences, Citations 5, Q1).

1. Gale JPI, Rachmilevitch SS, Reuveni JC and Volokita MC (2001) The high oxygen atmosphere toward the end-Cretaceous, a possible contributing factor to the K/T boundary extinctions and to the emergence of C4 species. *Journal of Experimental Botany* 52 (357): 801-809.

(IF 6.305, JR 14/228, Plant Sciences, Citations 9, Q1).

1. Mittler RPI, Merquiol ES, Hallak-Herr ES, Rachmilevitch SS, Kaplan AC and Cohen MT (2001) Living under a “dormant” canopy: a molecular acclimation mechanism of the desert plant *Retama raetam*. *Plant Journal* 25 (4): 407-416.

(IF 6.467, JR 11/228, Plant Sciences, Citations 97, Q1).

1. Rizhsky LS, Hallak-Herr ES, Van Breusegem FC, Rachmilevitch SS, Barr JEC, Rodermel SC, Inze DC and Mittler RPI (2002) Double antisense plants lacking ascorbate peroxidase and catalase are less sensitive to oxidative stress than single antisense plants lacking ascorbate peroxidase or catalase. *Plant Journal* 32 (3): 329-342.

(IF 6.467, JR 11/228, Plant Sciences, Citations 215, Q1).

1. Merquiol ES, Pneuli LS, Cohen MT, Simovitch MS, Rachmilevitch SS, Goloubinoff PC, Kaplan AC and Mittler RPI (2002) Seasonal and diurnal variations in gene expression in the desert legume Retama raetam. *Plant Cell and Environment* 25 (12): 1627-1638.

(IF 6.026, JR 13/228, Plant Sciences, Citations 13, Q1).

1. Angert AS, Rachmilevitch SS, Barkan ET and Luz BPI (2003) Effects of photorespiration, the cytochrome pathway, and the alternative pathway on the triple isotopic composition of atmospheric O2. *Global Biogeochemical cycles* 17 (1): 1030-1044.

(IF 6.004, JR 8/196 Geosciences, Citations 64, Q1).

1. Lieman-Hurwitz JT, Rachmilevitch SPD, Mittler RC, Marcus YC and Kaplan API (2003) Enhanced photosynthesis and growth of transgenic *Arabidopsis* and tobacco plants that express a gene involved in HCO3- accumulation in cyanobacteria. *Plant Biotechnology* *Journal* 1: 43-50.

(IF 6.792, JR 9/228, Plant Sciences, Citations 61, Q1).

1. Rachmilevitch SPD, Cousins ABPD and Bloom AJPI (2004) Nitrate assimilation in plant shoots depends on photorespiration. *Proc. Natl. Acad. Sci. USA* 101 (31): 11506-11510.

(IF 10.6, JR 7/69, Multidisciplinary Sciences, Citations 179, Q1).

1. Levy MPD, Rachmilevitch SPD and Abel SPI (2005) Transient Agrobacterium-mediated gene expression in the *Arabidopsis* hydroponics root system for subcellular localization studies. *Plant Molecular Biology Reporter* 3 (2): 1-6.

(IF 1.897, JR 105/228, Plant Sciences, Citations 9, Q2).

1. Govrin EMS, Rachmilevitch SS, Tiwari BSPD, Solomon MT and Levine API (2006) An elicitor from *Botrytis cinerea* Induces the hypersensitive response in *Arabidopsis thaliana* and other plants and promotes the gray mold disease. *Phytopathology* 96 (3): 299-307.

(IF 3.67, JR 40/228, Plant Sciences, Citations 70, Q1).

1. Rachmilevitch SPD, Lambers HC and Huang BPI (2006) Root respiratory characteristics associated with pant adaptation to high soil temperature for geothermal and turf-type *Agrostis* species. *Journal of Experimental Botany* 57 (3): 623-631.

(IF 6.305, JR 14/228, Plant Sciences, Citations 45, Q1).

1. Rachmilevitch SPD, Huang BPI and Lambers HPI (2006) Assimilation and allocation of carbon and nitrogen of thermal and non-thermal *Agrostis* species in response to high soil temperature. *New Phytologist* 70 (3): 479-490.

(IF 7.33, JR 9/212, Plant Sciences, Citations 42, Q1).

# Rachmilevitch SPD, Xu YS, Gonzalez-Meler MAC, Huang BPI and Lambers HC (2007) Cytochrome and alternative pathway activity in roots of thermal and non-thermal *Agrostis* species in response to high soil temperature. *Physiologia Plantarum* 129: 163-174.

# (IF 3.315 48/228, Plant Sciences, Citations 38, Q1).

1. Rachmilevitch SPD, Lambers HC and Huang BPI (2008) Short-term and long-term root respiratory acclimation to elevated temperatures associated with root thermotolerance for two *Agrostis* grass species. *Journal of Experimental Botany* 59 (14): 3803-3809.

(IF 6.305, JR 14/228, Plant Sciences, Citations 17, Q1)

## TencerYC, Idan GC, StromMC, Nusinow UC, BanetDC, CohenEC, Schröder PC, Shelef OS, Rachmilevitch SC, Soares IC, Gross AC and Golan-Goldhirsh API (2009) Establishment of a constructed wetland in extreme dryland. [Environmental Science and Pollution Research](http://www.springerlink.com/content/112851/?p=32288df80c5c4b82bd8a4a5cd0cf4136&pi=0). 16 (7): 862-875.

## (IF 3.208, JR 91/251 Environmental Sciences, Citations 11, Q2).

## Damari-Weissler HS, Rachamilevitch SC, Aloni RC, GermanMAC, Cohen SC, Zwieniecki MAC, Holbrook NMC and Granot DPI (2009) LeFRK2 is required for phloem and xylem differentiation and the transport of both sugar and water. Planta 230 (4): 795-805.

## (IF 3.408 JR 45/228, Plant Sciences, Citations 29, Q1).

1. Shelef OS, Lazarovitch NC, Rewald BPD, Golan-Goldhirsh AC and Rachmilevitch SPI (2010) Root halotropism? salinity effects on Bassia indica Roots. *Plant Biosystems* 144 (2): 471-478.

(IF 1.39, JR 110/228, Plant Sciences, Citations 23, Q2).

## Gendler TT, Gutterman YPI and Rachmilevitch SPI (2010) Survival of Schismus arabicus seedlings exposed to desiccation depends on annual periodicity. Planta 231: 1475-1482.

## (IF 3.408, JR 45/228, Plant Sciences, Citations 7, Q1).

1. Rewald BPD, Rachmilevitch SPI and Ephrath, YPI (2011) Salt stress effects on root systems of two mature olive cultivars. *Acta Horticoltura*e 888: 109-128.

(Appears in ISI without IF, Citations 7).

1. Rewald BPD, Ephrath YPI and Rachmilevitch SPI (2011) A root is a root is a root? Water uptake rates of root orders. *Plant Cell and Environment* 34: 33-42.

(IF 6.026, JR 13/228, Plant Sciences, Citations 64, Q1).

1. **Rewald B**PD**,** Rachmilevitch SC, McCue MDPD and Ephrath, J.E. PI (2011) Influence of saline drip-irrigation on fine root and sap-flow densities of two mature olive varieties. *Environmental and Experimental Botany*: 72: 107–114.

(IF 4.614, JR 29/228, Plant Sciences, Citations 17, Q1).

## Shelef OS, Golan-Goldhirsh AC and Rachmilevitch SPI (2012) Physiological parameters of plants as indicators of water quality in a constructed wetland. [Environmental Science and Pollution Research](http://www.springerlink.com/content/112851/?p=32288df80c5c4b82bd8a4a5cd0cf4136&pi=0) 18:1234–1242.

## (3.208, JR 91/251, Environmental Sciences, Citations 9, Q2).

1. Bloom AJPI, Rubio JSPD, Randeall LT, Rachmilevitch SC, Cousins ABC and Carlisle EAPD (2012) CO2 enrichment inhibits shoot nitrate assimilation in C3 but not C4 plants and slows growth under nitrate in C3 plants. *Ecology* 93(2):355-67.

(IF 5.46, JR 27/165, Ecology, Citations 66, Q1).

1. Huang BPI, Rachmilevitch SC and Jichen XuS (2012) Root carbon and protein metabolism associated with heat tolerance. *Journal of Experimental Botany* 63(9):3455-65.

(IF 6.305, JR 14/228, Plant Sciences, Citations 45, Q1).

1. Rewald BPD, Gendler TT, Raveh EC, Ephrath JEPI and Rachmilevitch SPI (2012) Phenotypic plasticity and salt accumulation among root orders of salt-stressed *Citrus* trees. *Journal of Experimental Botany* 63: 2717-2727.

(IF 6.305, JR 14/228, Plant Sciences, Citations 32, Q1).

1. RewaldBPD, Meinen CS, Trockenbrodt MC, Ephrath JEC and Rachmilevitch SPI (2012) Root taxa identification in plant mixtures – Current techniques and future challenges. *Plant and Soil* 359: 165-182.

(IF 3.761, JR 12/89, Agronomy, Citations 37, Q1).

1. Amiel ES, Ofir RC, Dudai NC, Soloway EC, Rabinsky TT and Rachmilevitch SPI (2012) *β – Caryophyllene*, a compound isolated from the biblical balm of Gilead (*Commiphora gileadensis*) is a selective apoptosis inducer for tumor cell lines. *Evidence-based Complementary and Alternative Medicine*, Article ID 872394, 8 pages, doi:10.1155/2012/872394.

(IF 2.328, JR 10/27, Integrative and Complementary Medicine, Citations 38, Q2).

1. Shelef OS, Gross AC and Rachmilevitch SPI (2012) The use of Bassia indica for salt phytoremediation in constructed wetlands. *Water Research* 46(13): 3967-3976.

(IF 8.424, JR 1/91, Water Resources, Citations 49, Q1).

1. Hochberg US, Degu AS, Fait API and Rachmilevitch SPI (2012) Near isohydric grapevine cultivar displays higher photosynthetic efficiency and photorespiration rates under drought stress as compared with near anisohydric grapevine cultivar. *Physiologia Plantarum* 147: 443–452.

(IF 3.315, 48/228, Plant Sciences, Citations 50, Q1).

1. Eppel AS, Keren NC, Salomon ES, Volis SC and Rachmilevitch SPI (2013) The response of *Hordeum spontaneum* desert ecotype to drought and excessive light intensity is characterized by induction of O2 dependent photochemical activity and anthocyanin accumulation. *Plant Science* 201: 74-80.

(IF 4.064, JR 28/228, Plant Sciences, Citations 7, Q1).

1. Pongrac PPD, Vogel-Mikuš KC, Regvar MC, Kaligarič MC, Vavpetič PV, Kelemen M, Grlj NC, Shelef OS, Rachmilevitch SC and Pelicon PPI (2013) On the distribution and evaluation of Na, Mg and Cl in leaves of selected halophytes. *Nuclear Instruments and Methods in Physics Research Section B, Beam Interactions with materials and Atoms* 306: 144–149.

(IF 1.255, JR 19/34, Nuclear Science & Technology, Citations 6, Q3).

1. Shelef OS, Gross AC and Rachmilevitch SPI (2013) Role of plants in a constructed wetland: current and new perspectives. *Water* 5(2):405-419.

(IF 2.791, JR 29/91, Water Resources, Citations 75, Q2).

1. Meier ICPD, AngertAC, Falik OC, Shelef OS and Rachmilevitch SPI (2013) Increased root oxygen uptake in pea plants discriminating against non-self neighbors. *Planta* 238: 577-586.

(IF 3.408, JR 45/228, Plant Sciences, Citations 12, Q1).

1. Hill AS, Rewald BPD and Rachmilevitch SPI (2013) Belowground dynamics in two olive varieties as affected by saline irrigation. *Scientia Horticulturae* 162: 313-319.

(IF 2.315 JR 5/36, Horticulture, Citations 8, Q1).

1. Shelef OS, Helman YC, Behar APD, Friedman AC and Rachmilevitch SPI (2013) Tri-Party Underground Symbiosis between a Weevil, Bacteria and a Desert Plant. *PLOS One* 8(11) e76588.

(IF 3.337 JR 24/69, Mutidisciplinary Sciences, Citations 10, Q2).

1. Yosef-Friedjung AS, Choudhary SPPD, Dudai NC and Rachmilevitch SPI (2013) Physiological conjunction of allelochemicals and desert plants *PLOS One*. 8)12) e81580.

(IF 3.337, JR 24/69, Multidisciplinary Sciences, Citations 7, Q2).

1. Hochberg US, Degu AS, Toubiana DS, Gendler TT, Nikoloski ZC, Rachmilevitch SC and Fait API (2013) Metabolite profiling and network analysis reveals coordinated changes in grapevine water stress response. *BMC Plant Biology* 13(1): 184-189.

(IF 4.311, JR 30/228, Plant Sciences, Citations 79, Q1).

1. Rewald BPI, Godbold DLPI, Falik OPI and Rachmilevitch SPI (2014) Root and rhizosphere processes-high time to dig deeper. *Front. Plant Sci.* doi: 10.3389/fpls.2014.00278. (editorial).

(IF 4.291, JR 20/212, Plant Sciences, Citations 2, Q1).

1. Eppel AS, Shaked RT, Eshel GS, Barak SC and Rachmilevitch SPI (2014) Low induction of non-photochemical quenching and high photochemical efficiency in the annual desert plant *Anastatica hierochuntica*. *Physiologia Plantarum* 151(4) 544-558.

(IF 3.315, JR 48/228, Plant Sciences, Citations 8, Q1).

1. Rapaport tS, Hochberg US, RachmilevitchSPI, Karnieli API (2014) The Effect of Differential Growth Rates across Plants on Spectral Predictions of Physiological Parameters. *PLOS One* 9(2)e88930.

(IF 2.806, JR 15/64, Mutidisciplinary Sciences, Citations 16, Q1).

1. Freedman AS, Gross AC, Shelef OS, Rachmilevitch SC, and Arnon SPI (2014)

Salt uptake and evapotranspiration under arid conditions in horizontal subsurface flow constructed wetland planted with halophytes. *Ecological Engineering.* 70: 282-286.

(IF 3.617, JR, 77/251, Environmental Sciences, Citations 20, Q2).

1. Degu AS, Hochberg US, Sikron N T, Venturini LC, Buson GC, Ghan RC, Plaschkes IC, Batushansky AS, Chalifa-Caspi V C, Mattivi F C, Delledonne M C, Pezzotti M C, Rachmilevitch SC, Cramer GRC and Fait API (2014) [Metabolite and transcript profiling of berry skin during fruit development elucidates differential regulation between Cabernet Sauvignon and Shiraz cultivars at branching points in the polyphenol pathway](http://www.biomedcentral.com/1471-2229/14/188). BMC Plant Biology **14**: 188.

(IF 4.311, JR 30/228, Plant Sciences, Citations 60, Q1).

1. Hochberg US, Degu AS, Gendler T T Fait API and Rachmilevitch SPI (2015) The variability in the xylem architecture of grapevine petiole and its contribution to hydraulic differences. *Functional Plant Biology* 42(4): 357-365.

(IF 2.682, JR 73/228, Plant Sciences, Citations 14, Q2).

1. Hochberg US, Degu AS, Cramer GC, Rachmilevitch SC and Fait API (2015) Cultivar specific metabolic changes in Shiraz and Cabernet Sauvignon in relation to deficit irrigation and hydraulic behavior. *Plant Physiol and Biochemistry* 88: 42-52.

(IF 3.607, JR 38/228, Plant Sciences, Citations 27, Q1).

1. Hill AS, Shelef OT, Dawson TC and Rachmilevitch SPI (2015) The Role of Dew for Negev Desert Plants. *Oecologia* 178(2) 317-327. (Highlighted student paper).

(IF 3.323, JR 52/165, Ecology, Citations 32, Q2).

1. [Rouached H](http://apps.webofknowledge.com/OneClickSearch.do?product=UA&search_mode=OneClickSearch&excludeEventConfig=ExcludeIfFromFullRecPage&SID=V1rx2GE2uCfD8cDxyVy&field=AU&value=Rouached%2C+Hatem)C, [Sikander](http://apps.webofknowledge.com/OneClickSearch.do?product=UA&search_mode=OneClickSearch&excludeEventConfig=ExcludeIfFromFullRecPage&SID=V1rx2GE2uCfD8cDxyVy&field=AU&value=Pal%2C+Sikander) PC, [Rachmilevitch SC,](http://apps.webofknowledge.com/OneClickSearch.do?product=UA&search_mode=OneClickSearch&excludeEventConfig=ExcludeIfFromFullRecPage&SID=V1rx2GE2uCfD8cDxyVy&field=AU&value=Rachmilevitch%2C+Shimon) [Libault M](http://apps.webofknowledge.com/OneClickSearch.do?product=UA&search_mode=OneClickSearch&excludeEventConfig=ExcludeIfFromFullRecPage&SID=V1rx2GE2uCfD8cDxyVy&field=AU&value=Libault%2C+Marc)C and [Lam-Son P](http://apps.webofknowledge.com/OneClickSearch.do?product=UA&search_mode=OneClickSearch&excludeEventConfig=ExcludeIfFromFullRecPage&SID=V1rx2GE2uCfD8cDxyVy&field=AU&value=Tran%2C+Lam-Son+Phan)PI (2015) Plants coping abiotic and biotic stresses: a tale of diligent management. *BioMed research international* doi: 10.1155/2015/754754. (editorial).

(IF 2.885, JR 94/162, Biotechnology and applied microbiology, Citations 6, Q3).

1. Rubio-Asensio JSPD Rachmilevitch SC and Bloom AJPI (2015) Responses of Arabidopsis and wheat to rising CO2 depend on nitrogen source and nighttime CO2 levels. *Plant Physiology* 168(1) 156-163.

(IF 7.024, JR 10/228, Plant Sciences, Citations 27, Q1).

1. Rachmilevitch SC, Cohen IS and Huang BPI (2015) Carbon Allocation Patterns into Proteins and Lipids Associated with Superior Tolerance of Perennial Grass to High Soil Temperature. *Crop Science* 55 (5), 2262-2269.

(IF 1.908, JR 94/89, Agronomy, Citations 6, Q2).

1. Rapaport TS, Hochberg US, Karnieli API and Rachmilevitch SPI (2015) Combining leaf physiology, hyperspectral imaging and partial least squares-regression (PLS-R) for grapevine water status assessment. *ISPRS Journal of Photogrammetry and Remote Sensing* 109, 88-97.   
   (IF 7.856, JR 1/50, Geography Physical, Citations 33, Q1).
2. Hochberg US, Batushansky AS, Degu AS, Rachmilevitch SPI and Fait API (2015) Metabolic and physiological responses of Shiraz and Cabernet Sauvignon   
   (Vitis vinifera L.) to elevated temperatures. *International Journal of Molecular Sciences* 16 (10), 24276-24294.

(IF 4.331, JR 46/172, Chemistry, Citations 26, Q2).

1. Yehoshua SBC, Rachmilevitch SPI, Amiel ES, Ofir RC, Dudai NC and Soloway EC (2015) Revival of the extinct balm of gilead in Israel: studying its anti-cancer activity. *Acta Horticulturae* 1088 509-514.

(Appears in ISI without IF, Citations 1)

1. Shelef OC, Stavi IC, Zduril PC and Rachmilevitch SPI (2016) Land-use change, a case study from southern Italy: General implications for agricultural-subsidy policies. *Land Degradation & Development* 27(4) 868-870.

(IF 4.866, JR 5/35, Soil Science, Citations 13, Q1).

1. Eppel AS and Rachmilevitch SPI (2016) Photosynthesis and photo-protective response of the annual desert plant *Anastatica  hierochuntica* in response to drought. *Photosynthetica* 54 (1) 143-147.

(IF 2.669, JR 72/228, Plant Sciences, Citations 1, Q2).

1. Shelef OS, Guy OC, Soloway EC, Kam MC, Degen AAC and Rachmilevitch SPI (2016) Domestication of plants for sustainable agriculture in drylands – experience from the Negev desert*. Arid Land Research and Management* 30(2) 209-228.

(IF 1.205, JR 30/35, Soil Science, Citations 4, Q4).

1. Stein OS, Damari-Weissler HS, Secchi FPD, Rachamilevitch SC, German MC, Yeselson YS, Amir RS, Schaffer AS, Holbrook MC, Aloni RC, Zwieniecki MC and Granot DPI (2016) The tomato plastidic fructokinase SlFRK3 plays a role in xylem development. *New Phytologist*. 209 1484-1495.

(IF 7.33, JR 9/212, Plant Sciences, Citations 14, Q1).

1. Shelef OS, Gendler TT, Gutterman YC and Rachmilevitch SPI (2016) Low water availability and salinity effects on seedling viability of Bassia indica compared to B. iranica and B. prostrata (Chenopodiaceae). *Seed Science Research* 26 (1) 77-83.

(IF 1.855, JR 126/228, Plant Sciences, Citations 2, Q3).

1. Dirks IPD, Raviv BS, Shelef OS, Hilll AS, Eppel AS, Aidoo MKS, Hoefgen BS, Rapaport TS, Gil HS, Geta ES, Kochavi AS, Cohen IS and Rachmilevitch SPI (2016) Green roofs - What can we learn from desert plants? *Israel Journal of Ecology & Evolution* 62 (1-2), 58-67.

(IF 0.773, JR 139/165 Ecology, Citations 6, Q4).

1. Hochberb US, Albuquerque CC, Rachmilevitch SPI, Cochard HC, David-Schwartz RC, Brodersen CC, McElrone AC and Windt CWPI (2016) Grapevine petioles are more sensitive to drought induced embolism than stems: evidence from in vivo MRI and microCT observations of hydraulic vulnerability segmentation. *Plant Cell and Environment* 36 1886-1894.

(IF 6.026, JR 13/228, Plant Sciences, Citations 35, Q1).

1. Seidel SHPD, Rachmilevitch SC, Schitze NC and Lazarovitch NPI (2016) Modelling the impact of drought and heat stress on common bean with two different photosynthesis model approaches. *Environmental Modelling & Software* 81 111-121. (IF 5.096, JR 13/106, Computer science, interdisciplinary applications, Citations 7, Q1).
2. Aidoo MKS, BdolachES, FaitAPI, Lazarovitch NPI and Rachmilevitch SPI (2016) Tolerance to high soil temperature in foxtail millet (*Setaria italica* L.) is related to shoot and root growth and metabolism. *Plant Physiology and Biochemistry* 106 73-8

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1. Shelef OS, Pongrac PPD, Primoz PC, Pelicon PC, Vavpetic PC, Keleman MC, Seifan MC, Rewald BC and Rachmilevitch SPI (2016) Insights into root structure and function of Bassia indica: water redistribution and element dispersion*. Functional Plant Biology* 43(7) 620-631.

(IF 2.682, JR 73/228 Plant Sciences, Citations 3, Q2).

1. Pal SPD, Zhao JS, Khan APD, Yadav NPD, Batushansky AS, Barak SC, Rewald BC, Fait API, Lazarovitch NPI, and Rachmilevitch SPI (2016) Paclobutrazol induces tolerance in tomato to deficit irrigation through diversified effects on plant morphology, physiology and metabolism. *Scientific Reports* 6 39321.

(IF 4.525, JR 15/69, Multidisciplinary Sciences, Citations 12, Q1).

1. Eshel GS, Shaked RT, Kazachkova YS, Khan AS, Eppel AS,Cisneros AS, Acuna TT,Gutterman YC, Tel-Zur NC, Rachmilevitch SC, Fait AC and Barak SPI (2017) Anastatica hierochuntica, an Arabidopsis Desert Relative, is Tolerant to Multiple Abiotic Stresses and Exhibits Species-Specific and Common Stress Tolerance Strategies with its Halophytic Relative, Eutrema (Thellungiella) salsugineum. *Frontiers in Plant Science* 7 1992.

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1. Hochberg US, Degu AS, Fait API and Rachmilevitch SPI (2017) Grapevines hydraulic diversity- a critical consideration for irrigation management. *Acta Horticulturae* 1150 443-447. Proceeding of the VIII International Symposium on Irrigation of Horticultural Crops.

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1. Hochberg US, DeguAS, RachmilevitchSC, CramerGC, FaitAPI (2017) Water deficit on whole plant physiology, molecular processes and grape berry quality. *Acta Horticulturae* 1157 239-254. Proceeding of the IX international symposium on grapevine physiology and biotechnology.

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1. Aidoo KS, Sherman TC, Lazarovitch NPI, Fait API and Rachmilevich SPI (2017) A bell pepper cultivar tolerant to chilling enhanced nitrogen allocation and stress-related metabolite accumulation in the roots in response to low root zone temperature. *Physiologia Plantarum* 161(2) 196-210.

(IF 3.315, JR 48/228, Plant Sciences, Citations 6, Q1).

1. Cochavi AS, Rapaport TS, Gendler TT,Karnieli AC, Eizenberg HPI, Rachmilevitch SPI and Ephrath JEPI (2017) Recognition of Orobanche cumana below-ground parasitism through physiological and hyper spectral measurements in sunflower (*Helianthus annuus* L.). *Frontiers in Plant Science* 8: 909 [doi.org/10.3389/fpls.2017.00909](https://doi.org/10.3389/fpls.2017.00909)

(IF 4.855, JR 20/228, Plant Sciences, Citations 7, Q1).

1. Aidoo KS, Sherman TC, Ephrath JC, Fait API, Rachmilevitch SPI and Lazarovitch NPI (2017) Grafting as a method to increase tolerance response of bell pepper to extreme temperatures. *Vadose zone Journal* 17(1) doi:10.2136/vzj2017.01.0006.

(IF 2.839, JR 11/91, Water resources, Citations 6, Q1).

1. Rapaport TS, Hochberg US, Cochavi AS, Karnieli API and Rachmilevitch SPI (2017) The potential of the spectral ‘water balance index’ (WABI) for crop irrigation scheduling. *New phytologist* 216(3): 741-757.

(IF 8.344, JR 8/228, Plant Sciences, citations 4, Q1).

1. Isaacson Ss, Ephrath JEc, Rachmilevitch SC, Maman SC, Ginat HC and Blumberg DGPI (2017) Long and short-term population dynamics of acacia trees via remote sensing and spatial analysis: Case study in the southern Negev Desert. *Remote sensing of environment* 198 95-104.

(IF 8.791, JR 2/30, Remote Sensing, citations 4, Q1).

1. Jiangsan ZS, Rewald Bc Lazarovitch NPI and Rachmilevitch SPI. (2017) Plasticity of biomass allometry and root traits of two tomato cultivars under deficit irrigation × chemically-induced drought hardening by Paclobutrazol. *Irrigation Science* 35 6 501-514.

(IF 2.671, JR 17/89, Agronomy, citations 1, Q1).

1. Bar-Shmuel Ns, Rogovin Es, Rachmilevitch SCO, Friedman ALCO, Shelef OCO, Hoffman IT, Rosenberg TT, Behar ACO, Shavit RPD, Meng FPD and Segoli MPI (2018) Tripartite symbiosis of plant-weevil-bacteria is a widespread phenomenon in the Negev Desert. *Scientific Reports* 8, Article number: 2420. doi:10.1038/s41598-018-20828-w

(IF 4.525, JR 15/69, Multidisciplinary sciences, Citations 2, Q1).

1. Stavi IPI, Rachmilevitch SPI and Yizhaq HPI (2018) Small‐scale Geodiversity Regulates Functioning, Connectivity, and Productivity of Shrubby, Semi‐arid Rangelands. *Land* *Degradation & Development* 29(2): 205–209.

(IF 4.866, JR, 5/35, Soil Science, Citations 15, Q1).

1. Cochavi As, Ephrath JPI, Eizenberg HPI and Rachmilevitch SPI (2018) Phelipanche aegyptiaca parasitism impairs salinity tolerance in young leaves of tomato. *Physiologia Plantarum* 164(2): 191-201.

(IF 3.315, JR 48/228, Plant Sciences, Citations 0, Q1).

1. Pincovici Ss, Cochavi As, KarnieliAPI, EphrathJC and Rachmilevitch SPI (2018)Source-sink relations of sunflower plants as affected by a parasite modifies carbon allocations and leaf traits. *Plant Science* 271: 100-107.

(IF 4.064 JR 28/228, Plant Sciences, Citations 4, Q1).

1. Zhou KS, Jerszurki DPD, Rachmilevitch SPI, Jhonathan EphrathPI (2018) Effects of photoselective netting on root growth and development of young grafted orange trees. *Scientia Horticulturae* 238: 272-280.

(IF 2.315 JR 5/36, Horticulture, Citations 5, Q1).

1. Cohen IS, Rapaport TS, Berger-Tal RT and Rachmilevitch SPI (2018) The effects of elevated CO2 and nitrogen nutrition on root dynamics. *Plant Science* 272: 294-300.

(IF 4.064 JR 28/228, Plant Sciences, Citations 5, Q1).

1. Stavi IPI, Rachmilevitch SC and Yizhaq HPI (2018) Geodiversity decreases shrub mortality and increases ecosystem tolerance to droughts and climate change. *Earth Surface Processes and Landforms* 43: 2808-2817.

(IF 4.326, JR 37/196, Geosciences, Multidisciplinary, Citations 4, Q1).

1. Omondi JOS, Lazarovitch NC, Rachmilevitch SC, Boahen SC, Ntawuruhunga PC, Sokolowski ES, and Yermiyahu UPI (2018) Nutrient use efficiency and harvest index of cassava decline as fertigation solution concentration increases. *Journal of Plant Nutrition and Soil Science* 181(5): 644-654.

(IF 2.664 JR 22/89, Agronomy, Citations 2, Q1).

1. Cochavi AS, Rachmilevitch SPI and Bel GPI (2019) The effect of irrigation regimes on plum (*Prunus cerasifera*) root system development dynamics. *Plant Biosystems* 153(4): 529-537.

(IF 1.39 JR 110/228, Plant Sciences, Citations 1, Q2).

1. Aidoo Ms, Sherman Tc, Lazarovitch NPI, Fait API and Rachmilevitch SPI (2019) Physiology and metabolism of grafted bell pepper in response to low root-zone temperature. *Functional Plant Biology* 46(4): 339-349.

(IF 2.682 JR 73/228, Plant Sciences, Citations 1, Q2).

1. Cohen Is, Rapaport Ts, Chalifa-Caspi VC and Rachmilevitch SPI (2019) Synergistic effects of abiotic stresses in plants: a case study of nitrogen limitation and saturating light intensity in Arabidopsis thaliana. *Physiologia Plantarum* 165(4):755-767.

(IF 3.315, JR 48/228, Plant Sciences, Citations 1, Q1).

1. Stavi IPI, Rachmilevitch SPI and Yizhaq HC (2019) Geodiversity effects on soil quality and geo-ecosystem functioning in drylands. *Catena* 176: 372-380.

(IF 4.149 JR 31/196, Geosciences, Citations 2, Q1).

1. Dirks IPD, Köhler JS, Rachmilevitch SPI and Meier ICPI (2019) The phosphorus economy of Mediterranean oak saplings under global change. *Frontiers in Plant Science* 10: 405.

(IF 4.855, JR 20/228, Plant Sciences, Citations 0, Q1).

(IF 3.52, JR 4/57, Agriculture, Citations 4, Q1).

1. Shelef OC. Summerfield LT, Lev-Yadun SC, Villamarin-Cortez SC, Roy SadehC, Herrmann IC and Rachmilevitch SPI (2019) Thermal benefits from white variegation of *Silybum marianum* leaves. *Frontiers in Plant Science* 10: 688.

(IF 4.855, JR 20/228, Plant Sciences, Citations 1, Q1).

1. Cohen IS, Halpern MS, Yermiyahu UC, Bar-Tal AC, Gendler TT, and Rachmilevitch SPI (2019) CO2 and nitrogen interaction alters root anatomy, morphology, nitrogen partitioning and photosynthetic acclimation of tomato plants. *Planta* 250 (5), 1423-1432.

## (IF 3.408, JR 45/228, Plant Sciences, Citations 0, Q1).

1. Omondi JOS, Lazarovitch NC, Rachmilevitch SC,Yermiyahu UPI and Sperling OC (2019) High nitrogen availability limits photosynthesis and compromises carbohydratecarbohydrate allocation to storage in roots of Manihot esculenta Crantz***.*** *Frontiers in Plant Science* 10: 1041.

(IF 4.855, JR 20/228, Plant Sciences, Citations 0, Q1).

1. Omondi JOS, Lazarovitch NC, Rachmilevitch SC andYermiyahu UPI (2019) Phosphorus affects storage root yield of cassava through root numbers. *Journal of Plant Nutrition* 42 (17), 2070-2079.

(IF 0.864, JR 189/228, Plant Sciences, Citations 0, Q4).

1. Herrmann IC, Bdolach ES, Montekyo YC, Rachmilevitch SC, Townsend PAC and Karnieli API (2020) Assessment of maize yield and phenology by drone-mounted superspectral camera. *Precision Agriculture* 21:51-76.

(IF 3.52, JR 4/57 Agriculture, Citations 4, Q1).

1. Omondi JOS, Lazarovitch NC, Rachmilevitch SC, Kukew TC,Yermiyahu UPI, and Yasuor HC (2019) Potassium and storage root development: focusing on photosynthesis, metabolites and soluble carbohydrates in cassava***.*** *Physiologia Plantarum* accepted (December 2019).

(IF 3.315, JR 48/228, Plant Sciences, Citations 0, Q1).

1. Jerszurki DPD, Sperling OC, Parthasarathi TC, Lichston JEC, Yaaran AC, Moshelion MC, Rachmilevitch SPI and Lazarovitch NPI (2020) Wide vessels sustain marginal transpiration flux and does not optimize inefficient gas exchange activity under impaired hydraulic control and salinity. *Physiologia Plantarum* accepted (April 2020).

(IF 3.315, JR 48/228, Plant Sciences, Citations 0, Q1).

1. Yergaliyev TPD, Alexander-Shani RC, Dimerets HC, Pivonia SC, Bird DC, Rachmilevitch SC and Szitenberg API (2020) The bacterial community structure dynamics in *Meloidogyne incognita* infected roots and its role in worm-microbiome interactions. *MSphere* accepted (May 2020).

(IF 4.473, JR 30/133, Microbology, Citations 0, Q1).

1. Omondi JOS, Lazarovitch NC, Rachmilevitch SC, Boahen SC, Ntawuruhunga PC, Sokolowski EC and Yermiyahu UPI (2020) Optimizing root yield of cassava under fertigation and the masked effect of atmospheric temperature. *Journal of the Science of Food and* *Agriculture* accepted (May 2020).

(IF 2.733, JR 9/57, Agriculture, Citations 0, Q1).

\* The function of each author of an article is as follows: Principal InvestigatorPI, studentS, post-doctoral fellowPD, co-researcherC, technician/laboratory assistantT

\*\*Data Sources/Date: Citations, IF (5 year) & Rank - JCR, 1.5.2020

(c) Scientific reports and technical papers

1. Rachmilevitch S (1999) Plants and Dinosaurs. *National Geographic* (Hebrew edition, the Israeli point).

2. Shelef O, Rachmilevitch S (2014) A plant, a beetle and a bacteria meet. *Galileo* (in Hebrew).

3. Shelef O, Dag A, and Rachmilevitch S (2014) Preservation of olive trees. *Ecology and Environment* (in Hebrew).

• Patents

1. U.S. Patent no. 02720425-IL0200250 entitled "Enhancing inorganic carbon fixation by photosynthetic organisms". Inventors: Kaplan A, Lieman-Hurwitz J, Rachmilevitch S, Mittler R, Bonfil D and Schatz D.
2. U.S. Patent no. 20050108790 entitled “Plants characterized by enhanced growth and methods and nucleic acid constructs”. **Inventors:** Kaplan A, Lieman-Hurwitz J, Asipov L, Schatz D, Mittler R, Rachmilevitch S and Bonfil D.

• Lectures and Presentations at Meetings and Invited Seminars

November 2008: MARD scientific symposium. Oral and poster presentations (Amman, Jordan).

February 2009: Annual meeting of the Israeli Society of Plant Sciences. Poster presentations (Rechovot, Israel).

March 2009: The Dahlia Greidinger International Symposium. Oral presentation (Haifa, Israel).

March 2009: Faculty of Agriculture, Hebrew University of Jerusalem. Departmental seminar.

June 2009: The Even Ari annual meeting, Institutes for Desert Research, Ben Gurion University of the Negev. Oral presentation.

September 2009: Rootrap, International Symposium on Root Research, " Oral and poster presentations (Vienna, Austria).

November 2009: Dept. of Plant Sciences, Tel Aviv University, Departmental seminar.

November 2009: Dept. of Plant Sciences, Hebrew University of Jerusalem. Departmental seminar.

November 2009: Dept. of Ecology of Drylands, Institutes for Desert Research, Ben Gurion University of the Negev. Departmental seminar.

April 2010: Dept. of Plant Sciences, Weizmann Institute. Departmental seminar.

August 2010: International Symposium on Woody Roots ". Oral and poster presentations (Victoria, BC, Canada).

August 2010: Annual meeting of the Ecological Society of America. Poster presentation. (Pittsburgh, USA).

August 2010: Annual meeting of the American Society of Plant Biology. Poster presentation. (Montreal, Canada).

September 2010: Annual meeting of the Society for Medicinal Plant and Natural Product Research. Poster presentation. Yosef-Friedjung A, Rachmilevitch S, Dudai N, [The cultivation of medicinal desert plants](http://apps.isiknowledge.com/full_record.do?product=UA&search_mode=GeneralSearch&qid=1&SID=Q1GFcJ564oFhpk2LnLP&page=1&doc=2&colname=WOS&cacheurlFromRightClick=no). *Planta Medica* 76(12) 1204-1204.

(Berlin Germany).

November 2010: The third International conference on desertification, Institutes for Desert Research, Ben Gurion University of the Negev. Oral and poster presentations

December 2010: Dept. Of Earth Sciences, Hebrew University of Jerusalem. Departmental seminar.

October 2011: Annual meeting of the Crop Science Society of America. Oral and poster presentations (San Antonio, USA).

October 2011: CAREX conference on life in extreme environments. Oral presentation (Dublin, Ireland).

November 2011: OliveBioTeq International conference for olive tree and olive products. Oral presentation (Chania Crete, Greece).

February 2012: GADASH annual meeting (Rechovot, Israel).

March 2012: Dept. of Plant sciences, Volcani ARO, Institute seminar.

March 2012: WWPR2012, International Water Association, Wastewater purification and reuse. Oral presentation (Crete, Greece).

December 2012: Key note speaker at the Alexandra Poljakof-Meiber and Alfred Meier excellence awards ceremony. Hebrew University of Jerusalem.

September 2013: The Even Ari annual meeting, Automated methods for continuous measurements in agriculture and forestry (Sede Boqer, Israel).

October 2013: The Entomological Society of Israel meeting (Oranim, Israel).

October 2013: Dept. of Ecology of Drylands, Institutes for Desert Research, Ben Gurion University of the Negev. Departmental seminar.

April 2013:The 9th International Symposium on Grapevine Physiology and Biotechnology (La Serena, Chile).

May 2014: Dept. of Physics, Institutes for Desert Research, Ben Gurion University of the Negev. Departmental seminar.

December 2014: Newe Yaar, ARO center, Institute seminar.

June 2015: Rhizospere 4, Mastricht, Netherlands. Oral and Poster presentations.

November 2015: Agricultural Research Organization, Volcani Center. Departmental seminar.

October 2015: Brazilian Society for Plant sciences, Iguacu, Brazil. Keynote Invited speaker.

December 2015: Tel Aviv University, Department of Plant Sciences, Departmental seminar.

January 2016: Hebrew University, Givaat Ram, Department of Plant Sciences, Departmental seminar.

April 2016: Plant Biology Annual meeting, Austin, Texas.

November 2016: 6th national Biodiesel conference of Brazil, Key note speaker.

May 2017: CropSym – Crop abiotic stress, Hebrew University, Rechovot, Invited speaker.

October 2017: BESS- Biogeochemistry and Environment and Sustainability, Cornell University, Invited speaker.

Feb 2018: Cornell University, Horticulture section seminar.

Feb 2018: Bighamton University, Biology department seminar.

May 2018: Rutgers University, Invited Speaker.

June 2018: GRC – Salt and stress in Plants, New Hampshire.

January 2019: ARO Volcani center, Stomata meeting in memory of Shmuel moreshet, Invited speaker.

December 2019: World Forum for Education International Innovation and Creativity

Bengaluru, India, Invited speaker.

December 2019: Migal, Plant Sciences departmental seminar

January 2019: ARO Volcani center, Soil Sciences Institute seminar

January 2020: Tel Aviv University, Plant Sciences departmental seminar

• Research Grants

1. 2007-2010: Studying grasses collected from along the climatic gradient. PiI. EC-FP7 International Reintegration Grant ($100,000).
2. 2010-2012: A multidisciplinary study on grapevines including plant physiology, metabolic profiling, and spectroscopy. PiI (in collaboration with Dr. Aaron Fait and Prof. Arnon Karnieli). Israel Ministry of Agriculture ($130,000).
3. 2010-2012: Detection, characterization and quantifying the physiological damage mechanism of [*Orobanche cumana*](http://www.farmalierganes.com/Otrospdf/publica/Orobanchaceae%20Index.htm#Orobanche_cumana) *Wallr.* and *Phelipanche aegyptiaca (Pers.)*. Co-PI (in Collaboration with Prof. Dan Blumberg and Prof. Jonathan Ephrath) Israel Ministry of Agriculture ($80,000).
4. 2010: The role of Actara as a growth regulator. PI (in collaboration with Dr. Natali Lazarovitch) Syngenta ($35,000).
5. 2009-2011: Co-PI (in Collaboration with Dr. Orna Reizman). The role of the forest gap on recolnaziation of oak seedlings. KKL ($25,000).
6. 2010: New scientist equipment grant. PI. ISF ($54,000).
7. 2011-2012: Salt phytoremediation. PI (in collaboration with Dr. Shai Arnon) Koshland Grant ($40,000).
8. 2011: Towards improved Grapes Nutrition and defense. (in collaboration with Dr. Aaron Fait) Jewish Fund for the Future ($25,000).
9. 2010-2012: A multidisciplinary study on grapevines including plant physiology, metabolic profiling, and spectroscopy. PI (in collaboration with Dr. Aaron Fait and Prof. Arnon Karnieli) Israel Ministry of Agriculture ($130,000).
10. 2010-2014: The role of dew in desert plants. PI. ISF ($230,000).
11. 2012-2013: The role of root orders in trees. Koshland Grant (in collaboration with Dr. Golan Bell) ($40,000).
12. 2011-2013: The role of pesticides as growth regulators. PI (in collaboration with Dr. Naftali Lazarovitch and Dr. Aaron Fait) Syngenta ($460,000).
13. 2012-2013: Salt phytoremediation with Bassia indica. PI (in collaboration with Prof. Amit Gross) ICA ($20,000).
14. 2012-2013: Salt Phytoremediation. RCF ($25,000).
15. 2013: ISF Workshop organization grant ($15,000).
16. 2013: Examining the agricultural potential of a novel newly designed aeroponics system. (in collaboration with Dr. Naftali Lazarovitch) Rubanenko fund ($20,0000).
17. 2013-2016: Developing new tools for winevine growth assessment. (in collaboration with and Prof. Arnon Karnieli) Israel Ministry of Agriculture ($160,000).
18. 2014: Effect of root zone temperatures in bell peppers. (in collaboration with Dr. Naftali Lazarovitch) Syngenta ($150,000).
19. 2014-2016: The phosphorus nutrition of European beech and Palestine oak under a future warmer and drier climate: experiments and transect studies. (in collaboration with Dr. Ina Meier) Niedersachsen-Israeli Research Cooperation Program. ($335,000).
20. 2014: Effect of low root zone temperature on plant carbon budget. Evogene ($15,000).
21. 2014: The effect of root architecture on whole plant tolerance in tomato. Rootility ($15,000).
22. 2014-2015: Climate change effects on tomato’s roots. Frances and Elias Margolin trust ($40,000).
23. 2014-2015: Do neighboring plants interfere with stress tolerance ability? Koshalnd fund. ($40,000).
24. 2015-2016: Tri part symbiosis, Koshland Grant (in collaboration with Dr. Michal Segoli) ($40,000).
25. 2015-2018: Geodiversity effects on the physiology and viability of shrublands in semi arid regions (in collaboration with Dr. Ilan Stavi). ISF. (225,000$).
26. 2016: A New Tool for Deficit Irrigation (in collaboration with Prof. Arnon Karnieli). ICA (45,000$).
27. 2016-2022: Center of knowledge – The root zone, a leverage for modern agriculture. Ministries of Economy and Agriculture. (Coordinator of a 25 researchers’ collaboration). (5,000,000$).
28. 2018: Abiotic and biotic interactions in the rhizosphere – three day international workshop. ISF (20,000$).
29. 2018-2020: The fate of Velum in drip irrigated soils. Bayer (PI in collaboration with Gilboa Arye and Zeev Ronen)(385,000 Euro).
30. 2020: Development probiotics to improve wheat tolerance to changing environments. Jewish Fund for the Future (In collaboration with Vered Tzin) (20,000$).

• Present Academic Activities

1. The role rootsctocks play in abiotic stress tolerance of vegetable crops.
2. Multidisciplinary study on grapevines including plant physiology, metabolic profiling, and spectroscopy (In collaboration with Dr. Aaron Fait and Prof. Arnon Karnieli).
3. Photochemical acclimation and adaptation mechanisms of desert plants.
4. The role of dew in desert plants.
5. The fate of nematicides in plant and soils.

* Books and articles to be published

a) Publications submitted

Grafting tomato (*Solanum lycopersicum*) onto varied rootstock Improves chill tolerance in chill sensitive tomatoes Itay Cohen, Asal Kattal, Reut Berger Tal, Jhonathan Efrath and Shimon Rachmilevitch.

Optimizing root yield of cassava under fertigation and the masked effect of atmospheric temperature Omondi, J.O., Yermiyahu, U., Rachmilevitch, S., Boahen, S., Ntawuruhunga, P. Sokolowski, E and Lazarovitch, N.

(b) In preparation

# Root dynamics of two grapevine cultivars grafted onto the same rootstock

Brian Hoefgen, Uri Hochberg, Jhonathan Ephrath and Shimon Rachmilevitch.

Dew and desert plants – how does it work? Amber Hill and Shimon Rachmilevitch.

* Additional activities

1. Reviewer of manuscripts

Plant cell and Environment, Photosyntetica, Physiologia Plantarum, [Environmental Science and Pollution Research](http://www.springerlink.com/content/112851/?p=32288df80c5c4b82bd8a4a5cd0cf4136&pi=0), Plant Breeding, Crop Science, Israeli Journal of Plant Sciences, Planta.

1. Reviewr of research proposals

ISF, BARD, BSF, GIF, Ministry of Agriculture.

1. Reviewer of Ph.D. and M.Sc. thesis

BGU, HUJI, Technion, University of Western Australia.

1. Organizer of conferences and meetings
2. Israeli Society of Plant Sciences, Sede Boqer, Israel (2011).
3. Israeli Society of Plant Sciences, Bet Dagan, Israel (2013).
4. The Israeli meeting of academic research in wine-vines, Sede Boqer, Israel (2013).
5. The Even Ari annual meeting, Automated methods for continuous measurements in agriculture and forestry (September 8-11, 2013).
6. Gracious, The Italy Israel wine-vine conference (October 29-31, 2014).
7. Israeli Society of Plant Sciences, Rechovot, Israel (2015).
8. Israli Society of Plant Sciences, Tel Aviv, Israel (2016).
9. International Society of Root Research, Yearim Hotel, Israel (July 2018)
10. Israeli Society of Plant Sciences, Sede Boqer, Israel (2019).
11. Drylands, Deserts and Desertification (DDD) conference, Chair (2020)
12. Organizer of International courses

Organizer and head of an annual four weeks summer course for students from China and India: Plant Soil Atmosphere Continuum in respect to agriculture in arid regions. Sede Boqer, Israel (2013, 2014, 2015).

* Research synopsis and activities

The overall goal of the research in my lab is to explore adaptation and acclimation mechanisms of plants to the desert environment in both natural and agriculture vegetation. Understanding tolerance mechanisms of plants grown in desert environments is invaluable for increasing the genetic pool of tolerant plants for agriculture and for maintaining biodiversity in natural ecosystems. A main focus of the research is the root system. Specifically, my research is to explore the unique tolerance mechanisms of carbon metabolism, photochemistry, hydraulics and anatomy and the interaction between these mechanisms, of both roots and shoots that enable plants to prosper in drylands. The lab takes the advantage of its location in the desert and studies the surrounding natural and agricultural ecosystems. Studies in the lab span from basic (the role of dew, geodiversity, photosynthesis and photoprotection) to applied (root-scion interaction, wine vine acclimation and adaptation) research. Thus, the research material includes different species, from trees such as citrus and oaks to annuals such as barley and millet, local natural species such *as Artemisia siberi, Salsola inermis* and *Anastatica hierochuntica* and agricultural crops such as wine vine, tomato and bell peppers. The specific research projects try to address the main goal as stated above and include:

**Root physiology and root stock-scion interaction in arid regions** – Studying the belowground interactions became an important research area in the lab. The knowledge of our lab attracted through the years many different companies including Syngenta, Bayer, Rootility, Evogen and Netafim and was one of the main reasons for receiving the funding for Root of the matter. Our findings span from Carbon budgeting for tolerance to abiotic stress (Rachmilevitch et al., 2008 and Aiddo et al., 2016), to the effects of salinity on olives (Hill et al., 2013), novel roles of root orders Rewald et al., 2011 and 2012), identification of root taxa (Rewald et al., 2012), effects of salinity on ion distributions (Pongrac et al., 2013), the importance of grafting in arid regions (Aidoo et al., 2016 and 2017).

**Desert plants adaptations** - Understanding tolerance mechanisms of plants grown in desert environments is invaluable for increasing the genetic pool of tolerant plants for agriculture and for maintaining biodiversity in natural ecosystems. We found novel mechanisms and characteristics in local desert plants including anti-cancerous properties in the biblical Balm of Gilead (Amiel et al., 2012), allelopathy and herbicide traits of oil from desert plants (Yosef-Friedjung et al., 2013), a novel concept of annual periodicity (Gendler et al., 2010), halotropism – first report on root attraction to salt (Shelef et al., 2010), novel tri-party symbiosis between a weevil, bacteria and a desert annual (Shelef et al., 2013), novel high light adaptations in annual desert plants (Eppel et al., 2013 and 2014), new uses of desert plant in constructed wetlands (Shelef et al., 2012 and 2013). In addition, we were the first to find empirical evidence for the role of dew in plants (Hill et al., 2015). These findings had a big impact within the religious community in Israel and indicated the importance of absorption of dew to the water relations, physiology and drought tolerance of desert plants. Understanding the importance of dew for plants has high cultural and religious importance in Judaism and will have a major impact on ecology, agriculture, and basic physiology.

**Wine vines** - are an important local crop and an important model for plant hydraulics. The physiological and metabolic responses of grapevine (*Vitis vinifera*) cultivars to arid environement are tested in field and controlled conditions. The results up to now revealed coordinated changes of the hydraulics with metabolom and physiology (Hochberg et al., 2013) and showed different anatomy and architecture in different root stocks (Hochberg et al., 2015) which led to different vulnerabilities (Hochberg et al., 2016) and had effects on fruit and wine quality (Degu et al., 2014). All these helped us develop a novel irrigation regime based on remote sensing (Rapaport et al., 2017).

**The fate of nematicides in plant and soils** - Velum prime is an insecticide/nematicide from Bayer Crop Science, that promotes early season crop establishment by preventing nematode and insect damage and enhancing root health. The formulation contains the active ingredient fluopyram. This compound is non-volatile and active against both fungi and nematodes. The compound is moderately mobile with a leaching potential and high persistence. The overall objective of the study is to understand and enable efficient and safe application of Velum in soils using drip irrigation. The work includes calibration and identification of degradation and uptake mechanisms and adsorption/desorption behavior and employing the insights from the above, under field conditions.

* Teaching statement

During the last years I have developed and taught several courses related to sustainable agriculture, whole plant ecophysiology and climate change. All the courses I taught during this period were in in English within the Albert Katz International school for desert studies. The courses included Plant ecophysiology and Stress indicators: Methods, instrumentation and research, Carbon metabolism in plants, guided reading in plant ecophysiology and a graduate student seminar. I have also organized a concentrated course on Climate change, convergence of disciplines. In 2013 I have initiated, managed and taught an international workshop for students mainly from China and India: Plant Soil Atmosphere Continuum in respect to agriculture in arid regions. This was a four-week workshop that took place during the summers of 2013-2015 and had close to 25 students each year. Since 2016 the workshop changed its name to Sustainable Agriculture in Arid Regions and is led by another faculty member, however I continued to contribute both in teaching and managing the course. Over the years I had students from over 30 different countries including USA, China, India, Jordan, Germany, Switzerland, Brazil, Kenya, Ethiopia, Russia and more. This experience led me to understand the specific interests of students from different backgrounds. It made me not only a better teacher and person but also enabled me to learn about agricultural ecosystems world-wide. My teaching experience included undergraduate and graduate courses, M.Sc. and PhD student’s guidance, and development of courses as a teaching committee chair and as an institute director. In my teaching, I put emphasis on open discussions, critic and independent thinking, accuracy of statements and on seeing my audience. Over the years I have learnt the importance of a clear presentation and the power of giving attention to your audience.