

Or Shapira

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PROFESSIONAL EXPERIENCE

2023-2024 - Research associate at Shamir Research Institute

2020-2023 - Postdoc position at Volcani Institute Newe-Yaar Department of fruit trees under the supervision of Dr. Tamar Azoulay-Shamer

2016 –2019 Chief Agronomist at Cropx

2013-2014 Consultant for the Indian states of Gujarat and Rajasthan in banana and date palm cultivation (Mashav, Sinadco)

2008-2012 Banana and Date Palm researcher (applied research) at Northern R&D, Migal, Kiryat Shmona, Israel.

2006-2008 Date Palm researcher at Zemach Nisyonot Agricultural Experiment Station, Jordan Valley, Israel (part time). Researcher of the spectral characteristics of milk at S.A.E, Afikim, Israel (part time).

1990 -1997 Banana grower and farm manager at Kibbutz Afikim Jordan valley ISRAEL.

ACADEMIC EDUCATION

2020-2023 – Postdoc position at Volcani Institute Newe-Yaar Department of fruit trees under the supervision of Dr. Tamar Azoulay-Shamer

2014-2016– Post Doc at the Ecosystem Center MBI, working with Dr. Zoe Cardon on algal photoprotection and desiccation tolerance.

2014 – Post doc at the Robert H. Smith Institute of Plant Science and Genetics in Agriculture, The Hebrew University of Jerusalem, Israel. Working on the mechanism of stomatal oscillations in banana leaves and their relation to leaf hydraulics.

2001-2014 Ph.D. At the Robert H. Smith Institute of Plant Science and Genetics in Agriculture, The Hebrew University of Jerusalem, Israel. Title of thesis: "Mechanisms of Salt

Compartmentalization and Salt Exclusion in Banana Plants (*Musa Cavendishi* c.v. Grand Nain)".
Supervisors: Profs. Amnon Schwartz and Uri Shani.

1997-2000 B.Sc with distinction in agriculture at the Robert H. Smith Faculty of Agriculture,
Food and Environment, Hebrew University of Jerusalem.

PARTICIPATION IN INTERNATIONAL CONGRESSES

2016 Multiscale Plant Vascular Biology, Gordon Research Conference, Newry Maine, USA.
Poster presentation I: "Stomatal control banana style: What's the wrong way response hiding?".
Or Shapira, Yotam Zait and Amnon Schwartz, Edward Rastetter and Zoe Cardon.

Poster presentation II: "Linking stomatal movements to leaf hydraulics:
The effect of blue light on stomatal oscillations". **Or Shapira**, Yotam Zait and Amnon Schwartz.

2016 Harvard Plant Biology Symposium, Harvard, USA. Poster presentation. "Stomatal Control
Banana Style: What's the Wrong way response Hiding?". **Or Shapira**, Yotam Zait and Amnon
Schwartz, Edward Rastetter and Zoe Cardon.

2015 Harvard Plant Biology Symposium, Harvard, USA. Poster presentation. "The effect of
blue light on stomatal oscillations in banana leaves". **Or Shapira**, Yotam Zait and Amnon
Schwartz.

2015 32nd Eastern Regional Photosynthesis Conference, Woods Hole, USA. Poster presentation
I "Photosynthetic response upon rehydration after desiccation is habitat-dependent among species
of the algal genus *Scenedesmus*". L. Peredo, Elena, **Shapira, Or**, Thomas, Suzanne and Cardon
Zoe.

Poster presentation II. “Photosynthetic capacity persists during multiple desiccation/rehydration cycles in green algae subjected to slow, but not fast, desiccation”. Cardon, Zoe , L. Peredo, Elena , Thomas, Suzanne , **Shapira, Or** and Bruce, Doug.

2010 International Horticulture Congress 2010, Lisbon, Portugal. Invited speaker; "Banana production in the semi-arid subtropics under continuous water shortage: use of screen houses and irrigating with recycled wastewater". **Or Shapira** , Anat Lowengart-Aycicegi , Emanuel Lahav, Amnon Schwartz and Yair Israeli.

2006 XVII International Meeting of the Association for the Cooperation in the Research on Banana in the Caribbean and Tropical America, Joinville, Brazil. Oral presentation; "The Role of Guttation in Cleaning the Banana Leaf Xylem Vessels from Excess Boron. **Or Shapira** , Uri Shani , Yair Israeli and Amnon Schwartz.

TEACHING AND TRAINING EXPERIENCE

2000-2006 Teaching assistance in the following courses (in the Robert H. Smith Faculty of Agriculture, Food and Environment, the Hebrew University of Jerusalem): “Introduction to Plant Science” (undergraduate), “Plant Physiology” (undergraduate), and “Environmental Effects on Photosynthesis and Transpiration” (graduate).

2003 10 day visit to Professor Ulrich Zimmerman`s lab in the university of Wurzburg. Training using the root xylem pressure probe under the supervision of Dr. Lars Wegner.

Unpublished scientific accomplishments

(1) During my PhD. I have shown that the high requirement of Banana plants for irrigation water depends on the mechanism of salt leaching from the roots of the plant to the soil with an emphasis on sodium re-translocation in the phloem (manuscript in preparation).

AWARDS AND SCHOLARSHIPS

1997-1998 Deans list and prize.

1998-1999 Deans list and prize.

2004 Minerva long term fellowship with Professor Ulrich Zimmerman. (Declined by me due to family reasons).

2006 A “whole organism” scholarship given by the Israeli ministry of Agriculture.

During my studies I received a scholarship for the Bachelor and Masters degrees (1997-2002) from the Israeli Fruit Growers Association. The name of the program was “Future Leadership in Agriculture.

Major research grants

2009 - Evaluating the relationship between water economy and production capacity of date palm trees. Grant number 704-0002-09, Chief Scientist of the Ministry of Agriculture. Principle investigator **Or Shapira**. 35k \$ a year for 3 years.

2010 - Irrigation thresh holds in date palms. Grant number 704-004-10. Chief Scientist of the Ministry of Agriculture. Principle investigator **Or Shapira**. 63k \$ a year for 2 years.

LIST OF PUBLICATION Or Shapira

Peer Reviewed Journals

Shapira O., Khadka S., Shani U., Israeli Y. and Schwartz A. (2009) Functional anatomy controls ion distribution in banana leaves: significance of Na⁺ seclusion at the leaf margins. *Plant, Cell and Environment*, 32, 476–485.

Zimmermann U., Ruger S., **Shapira O.**, Vesthoff M., Wegner LH., Reus R., Gessner P., Zimmermann G., Israeli Y., Zhou A., Schwartz A., Bamberg E. and Zimmermann D. (2010) Effects of environmental parameters and irrigation on the turgor pressure of banana plants measured using the non-invasive, online monitoring leaf patch clamp pressure probe. *Plant Biology*, 12, 424-436.

Silber A., Israeli Y., Levi M., Keinan A., **Shapira O.**, Chudi G., Golan A., Noy m., Levkovitch I and Assouline S. (2012) Response of ‘Hass’ avocado trees to irrigation management and root constraint. *Agricultural Water Management*, 104, 95–103.

Sperling O, **Shapira O.**, Cohen S, Tripler E, Schwartz A, Lazarovitch N (2012) Estimating sap flux densities in date palm trees using the heat dissipation method and weighing lysimeters. *Tree Physiology*, 32, 1171–1178.

Shapira O., Shani U., Israeli Y. and Schwartz A. (2013) Salt stress aggravates boron toxicity symptoms in banana leaves by impairing guttation. *Plant, Cell and Environment*, 36, 275-287.

Sperling O., Lazarovitch N., Schwartz A. and **Shapira O.** (2013) Effects of high salinity irrigation on growth, gas-exchange, and photoprotection in date palms (*Phoenix dactylifera* L., cv. Medjool). *Environmental and Experimental Botany*, 99, 100-109.

Cooper A., **Shapira O.**, Zaidan S., Moshe Y., Zangy E and Osem y. (2014) Oak restoration in water-limited pine plantations: interactive effects of overstory light interception and water availability on understory oak performance. *European Journal of Forest Research*, 133, (4) 661-670.

Sperling O., **Shapira O.**, Tripler E., Schwartz A. and Lazarovich N. (2014) A model for computing date palm water requirements as affected by salinity. *Irrigation Science*, 32, (5) 341-350.

Pirkner M., Tanny J., **Shapira O.**, Teitel M., Cohen S., Shahak Y. and Israeli Y. (2014) The effect of screen type on crop micro-climate, reference evapotranspiration and yield of a greenhouse banana plantation. *Scientia Horticulturae*, 180, 32-39

Sperling O., **Shapira O.**, Schwartz A. and Lazarovich N. (2014) Direct in vivo evidence of immense stem water exploitation in irrigated date palms. *Journal of Experimental Botany*, 66, (1) 333-338.

Erel R., Yermiyahu U., Ben-Gal A., Dag A., **Shapira O.** and Schwartz A. (2015) Modification of non-stomatal limitation and photoprotection due to K and Na nutrition of olive trees. *Journal of Plant Physiology*, 177, 1-10.

Paudel I., Shaviv A., Bernstein N., Heuer B., **Shapira O.**, Lukyanov V., Bar-Tal A., Rotbart N., Efrath Y and Cohen S. (2015) Lower leaf gas-exchange and higher photorespiration of treated wastewater irrigated Citrus trees is modulated by soil type and climate. *Physiologia Plantarum*
DOI: 10.1111/ppl.12399

Zait, Y., **Shapira, O.**, & Schwartz, A. (2017) The effect of blue light on stomatal oscillations and leaf turgor pressure in banana leaves. *Plant, Cell & Environment*. DOI: 10.1111/pce.12907

Shapira O., Chernoiivanov S., Neuberger I., Levy S. and Rubinovich L. (2021) Physiological Characterization of Young ‘Hass’ Avocado Plant Leaves Following Exposure to High Temperatures and Low Light Intensity. *Plants* 10, 1562. <https://doi.org/10.3390/plants10081562>

Silber, A., Goldberg, T., **Shapira, O.**, & Hochberg, U. (2022). Nitrogen uptake and macronutrients distribution in mango (*Mangifera indica* L. cv. Keitt) trees. *Plant Physiology and Biochemistry*, 181, 23-32..

Alon, E., **Shapira, O.**, Azoulay-Shemer, T., & Rubinovich, L. (2022). Shading Nets Reduce Canopy Temperature and Improve Photosynthetic Performance in ‘Pinkerton’ Avocado Trees during Extreme Heat Events. *Agronomy*, 12(6), 1360.

Trainin T, Brukental H, **Shapira O**, Attia Z, Tiwari V, Hatib K, Gal S, Zemach H, Belausov E, Charuvi D, Holland D, Azoulay-Shemer T. (2022) Physiological characterization of the wild almond *Prunus arabica* stem photosynthetic capability. *Front Plant Sci.* 29;13:941504. doi: 10.3389/fpls.2022.941504.

Azoulay-Shemer T, Schulze S, Nissan-Roda D, Bosmans K, **Shapira O**, Weckwerth P, Zamora O, Yarmolinsky D, Trainin T, Kollist H, Huffaker A, Rappel WJ, Schroeder JI. A role for ethylene

signaling and biosynthesis in regulating and accelerating CO₂ - and abscisic acid-mediated stomatal movements in Arabidopsis. *New Phytol.* 2023 Jun;238(6):2460-2475. doi: 10.1111/nph.18918. Epub 2023 Apr 13. PMID: 36994603.

Silber, A., **Shapira, O.**, Sperling, O. et al. The Seasonal Dynamics of Mango's Water Uptake in Respect to Nitrogen Fertilization. *J Soil Sci Plant Nutr* 23, 2247–2257 (2023). <https://doi.org/10.1007/s42729-023-01176-9>

Haque, M. I., **Shapira, O.**, Attia, Z., Cohen, Y., Charuvi, D., & Azoulay-Shemer, T. (2024). Induction of stomatal opening following a night-chilling event alleviates physiological damage in mango trees. *Plant Physiology and Biochemistry*, 206, 108221.

Shapira, O., Hochberg, U., McAdam, S., Azoulay-Shemer, T., Brodersen, C. R., Holbrook, N. M., & Zait, Y. (2023). Wind speed affects the rate and kinetics of stomatal conductance. Accepted for publication in the *Plant Journal*

Publications in Hebrew

Shapira O., Shomer I. and Schwartz A. (2012) Mineral content and rate of evaporation of date palm fruits in relation to fruit skin separation. *Alon Hanotea* 66 22-32

Zait Y., **Shapira O.** and Schwartz A. (2014) Effect of screen house protection on water and energy balance of banana leaves. *Alon Hanotea* 68 32-36

Publications in English

Israeli Y., Zohar C., Arzi A., Nameri N., **Shapira O.** and Levi Y. (2002) Growing banana under shade screens as a mean of saving irrigation water: preliminary results. Memoirs of the XV Acorbat International Meeting, 384-389.

PATENTS

Katz G., **Shapira O.**, Lemberskiy-Kuzin L., Pinsky N. (2011) System and method for online analysis and sorting of milk coagulation properties. US 8072596 B2.