BARD Approved Projects Years 2022 - 2025

IS-5563-23 R 5460	**Watching Weeds from Space: Very High-Resolution Satellite Imagery and Artificial Intelligence for Large Scale Mapping of Arable Weeds** *L. Blank: ARO, Min. Ag. ,* ***M.B. Mesgaran: UC, Davis***	Approved: $310,000 *Agricultural Innovation & Engineering Technologies*
IS-5565-23	**Smart monitoring and acoustic spray system for precision crop stress management in controlled environment** ***A.H. Horesh: ARO, Min. Ag.*** *, S. Sankaran: U WA State , H. Vitoshkin: ARO, Min. Ag. , M. Sacks: Min. Agr. , R.J. McGee: USDA, ARS*	Approved: $310,000 *Agricultural Innovation & Engineering Technologies*
IS-5567-23 R 5468	**Blocking viral ion channels to curb animal coronavirus morbidity** *I. Arkin: U Hebrew , G. Whittaker: U Cornell , D.G. Diel: U Cornell*	Approved: $310,000 *Animal Health and Invasive Species*
IS-5568-23	**In vitro assessment of random peptide mixtures-loaded nanocarriers for animal intestinal infection prevention** *Z. Hayouka: U Hebrew , D. Rodrigues: U Clemson*	Approved: $309,000 *Animal Health and Invasive Species*
IS-5571-23	**Design and implementation of microbiomes for high feed efficiency low methane emitting ruminants** *I. Mizrahi: U Ben Gurion , O. Cordero: MIT*	Approved: $310,000 *Animal Production*
IS-5573-23	**Improving avocado pollination by wild pollinators** *Y. Mandelik: U Hebrew , N.M. Williams: UC, Davis , A. Dag: ARO, Min. Ag. , G.W. Frankie: UC, Berkeley*	Approved: $305,000 *Animal Production*
IS-5583-23	**Individual coating of entomopathogenic nematodes based on Pickering emulsions: A novel formulation for biopesticides** *G. Mechrez: ARO, Min. Ag. , D. Shapiro-Ilan: USDA, ARS , D. Ment: ARO, Min. Ag.*	Approved: $309,000 *Crop Health and Invasive Species*
IS-5587-23 R 5521	**Identifying *Xylella fastidiosa*-resistant almond genotypes and unraveling its genetic basis** *O. Bahar: ARO, Min. Ag. , R.P.P. Almeida: UC, Berkeley , L. De La Fuente: U Auburn , D. Holland: ARO, Min. Ag.*	Approved: $310,000 *Crop Health and Invasive Species*
US-5589-23	**Manipulating sugar sensing in sternorrhynchan insects to block transmission of phloem-limited pathogens** *K.E.M. Mauck: UC, Riverside , J. Bohbot: U Hebrew , S. Morin: U Hebrew*	Approved: $310,000 *Crop Health and Invasive Species*
IS-5590-23	**Enabling sustainable control of fruit-fly agricultural pests using CRISPR-editing of selectable phenotypes** *A Papathanos: U Hebrew , A.M. Handler: USDA, ARS ,* ***G. Pines: ARO, Min. Ag.***	Approved: $310,000 *Crop Health and Invasive Species*

BARD Approved Projects Years 2022 - 2025

IS-5594-23 R 5484	**Isolation and functional characterization of novel disease resistance genes from *Aegilops longissima*** *A. Minz-Dub: U Tel Aviv , S. Wegulo: U Nebraska , A. Sharon: U Tel Aviv , I. Mayrose: U Tel Aviv*	Approved: $300,000 *Crop Health and Invasive Species*
IS-5595-23 R 5493	**Copper Oxide Nanoparticle Embedded Super Absorbing Biopolymers to Enhance Nutrient Supply and Growth of Infected Lettuce and Tomato** ***I. Zucker: U Tel Aviv*** *, B. Xing: U Mass , S. Richter: U Tel Aviv*	Approved: $310,000 *Crop Health and Invasive Species*
IS-5596-23	**Identifying virus interacting proteins in whiteflies and a clay-based RNA interference approach for whitefly and virus management** *M. Ghanim: ARO, Min. Ag. , B. Srinivasan: U Georgia , S. Ghosh: U Georgia*	Approved: $310,000 *Crop Health and Invasive Species*
IS-5598-23	**Developing tools for propagating climate-changes-resistant trees by novel ways of promoting adventitious root formation** *E. Sadot: ARO, Min. Ag. , C.J. Staiger: U Purdue , R. Weinstain: U Tel Aviv*	Approved: $310,000 *Crop Production*
IS-5605-23 RC 5292 5517	**Uncoupling postharvest browning and aroma chemotype in sweet basil using gene editing** ***I. Gonda: ARO, Min. Ag.*** *, D. Di: U Rutgers ,* ***I. Maoz: ARO, Min. Ag.*** *, M.A. Lawton: U Rutgers , E. Simon: U Rutgers*	Approved: $310,000 *Crop Production*
IS-5606-23 R 5527	**Identifying Genetic and Molecular Mechanisms for Stem-Rot Control in Peanut** *R. Hovav: ARO, Min. Ag. , P. Ozias-Akins: U Georgia , T. Brenneman: U Georgia , Y. Chu: U Georgia , P Clevenger: HudsonAlpha Inst. for Biotechnology*	Approved: $310,000 *Crop Production*
IS-5608-23	**Uncovering the genomic and biomechanical architecture of spring wheat lodging resistance** *R. Ben-David: ARO, Min. Ag. , D.J. Robertson: U Idaho*	Approved: $310,000 *Crop Production*
IS-5616-23 R 5541	**Enhancing nitrogen use efficiency in wheat by coupling pre-season soil macro-variability and in-season crop micro-variability** ***I. Herrmann: U Hebrew*** *, R. Lollato: Kansas State U , R. Ben-David: ARO, Min. Ag. , R. Khosla: U WA State , D. Mandal: Kansas State U , J. Siegfried: Kansas State U*	Approved: $310,000 *Environment/Water/Renewable Resources*
IS-5625-23 R 5539	**Harnessing the root microbiome of wild grass populations from the Israeli aridity gradient for boosting wheat growth and drought-resilience** ***E. Korenblum: ARO, Min. Ag.*** *, K. Zengler: UC, San Diego*	Approved: $310,000 *Environment/Water/Renewable Resources*
IS-5628-23	**Risk assessment platform to reduce ESBL-producing *Enterobacteriaceae* infections associated with consumption of treated wastewater irrigated produce** *E. Cytryn: ARO, Min. Ag. , K. Hamilton: U Arizona St.*	Approved: $310,000 *Food Product-Safety, Security, Quality*

BARD Approved Projects Years 2022 - 2025

IS-5629-23	**Fungal polyketide lactones mediate fungi-bacteria interactions: offering a new mode for post-harvest disease management by enzymatic biotransformation** *L. Jurnou-Afriat: U Tel Aviv , N.P. Keller: U Wisconsin*	Approved: $310,000 *Food Product-Safety, Security, Quality*
IS-5632-23	**Elucidating the role of branched-chain decarboxylase in the biosynthesis of flavor volatiles and quality in tomato fruits** *I. Maoz: ARO, Min. Ag. , J. Giovannoni: Boyce Thompson , I. Gonda: ARO, Min. Ag.*	Approved: $310,000 *Food Product-Safety, Security, Quality*
US-5634-24 C 5231	**The economics of circular bioeconomy: The case of aquaculture and mariculture, polyculture, and resilience** *D. Zilberman: UC, Berkeley , R. Palatnik: Yezreel Valley College , G. Hochman: U Illinois , A. Golberg: U Tel Aviv*	Approved: $310,000 *Agric Economics and Rural Development*
IS-5636-24	**Combining radiative transfer models and artificial intelligence for early detection of broomrape infestations in processing tomatoes** *H. Eizenberg: ARO, Min. Ag. , A. Pourreza: UC, Davis , R.N. Lati: ARO, Min. Ag. ,* ***M.B. Mesgaran: UC, Davis***	Approved: $310,000 *Agricultural Innovation & Engineering Technologies*
US-5638-24	**Role of colostrum fat in the initiation of PPAR signaling in muscle of neonatal dairy goats and the relationship to long term production** *T. Casey: U Purdue , N. Argov-Argaman: U Hebrew , S.J Mabjeesh: U Hebrew , C. Ferreira: U Purdue*	Approved: $309,000 *Animal Production*
IS-5644-24 R 5566	**The effect of Juvenile hormone on virus activity in bees** *H.Y. Shpigler: ARO, Min. Ag. , A. G. Dolezal: U Illinois*	Approved: $310,000 *Animal Health and Invasive Species*
IS-5653-24	**From agricultural waste to resource: expanding the reuse of plant waste thought BSFL for fish and crop production** *D. Zilberg: U Ben Gurion , N.P. Romano: USDA, ARS , S. Penno-Winters: Arava-Tamar R&D , I. Khozin-Goldberg: U Ben Gurion , S. Gu: Virginia State Uni. , M. Kissinger: U Ben Gurion*	Approved: $305,000 *Aquaculture*
IS-5658-24 C 5393	**Dissecting cytonuclear variation for accelerated grain stability breeding in barley** *E. Fridman: ARO, Min. Ag. , D. Koenig: UC, Riverside , C. Diepenbrock: UC, Davis*	Approved: $308,000 *Crop Production*
IS-5663-24 R 5603	**Cloning of the wheat leaf rust resistance gene LrAK and its functional characterisation** *H. Sela: U Haifa , C. Hirsch: U Minnesota , A. Distelfeld: U Haifa , P. Olivera Firpo: U Minnesota*	Approved: $310,000 *Crop Production*
IS-5666-24P	**Creation and validation of a digital twin model for improving almond production** *T. Paz-Kagan: U Ben Gurion , L. Wang: U Oklahoma St. , P.H. Brown: UC, Davis , S. Baram: ARO, Min. Ag. , O. Sperling: ARO, Min. Ag.*	Approved: $600,000 *Crop Production*

BARD Approved Projects Years 2022 - 2025

IS-5672-24	**Optimizing rodent pest control: Unraveling vole feeding preferences for effective crop protection** *M. Charter: U Haifa , A. Shiels: USDA-APHIS*	Approved: $310,000 *Crop Health and Invasive Species*
IS-5678-24 R 5593	**Optimizing strategies for the containment of invasive insect pests** *A. Lampert: U Hebrew , T.M. Poland: USDA-FS , A.M. Liebhold: USDA-FS*	Approved: $283,000 *Crop Health and Invasive Species*
US-5680-24P	**Identifying effective treatments of Xylella fastidiosa-infected grapevines using a platform that mimics the conditions in the plant** *B. Momeni: Boston College , Y. Soen: Weizmann Inst. , L. De La Fuente: U Auburn*	Approved: $600,000 *Crop Health and Invasive Species*
IS-5681-24	**Identification of DNA variations associated with herbicide resistance in rice CYTOCHROMEP450 genes** *A. Mosquna: U Hebrew , S. Cutler: UC, Riverside*	Approved: $310,000 *Crop Health and Invasive Species*
US-5682-24	**Understanding terpene synthase catalytic specificity toward improving pathogen defense mechanisms in maize** *P. Zerbe: UC, Davis , D.T. Major: U Bar Ilan*	Approved: $310,000 *Crop Health and Invasive Species*
IS-5684-24 C 5038	**ABA as a regulator of sucrose metabolism during endodormancy of potato tuber** *D. Eshel: ARO, Min. Ag. , J. Jiang: U Michigan St.*	Approved: $310,000 *Food Product-Safety, Security, Quality*
IS-5694-24	**Tillage-induced soil structure and water saturation impact on porewater oxygen and redox conditions: Controls for nutrient availability and water quality** ***O. Borgman: MIGAL R&D** , V. Morales: UC, Davis*	Approved: $300,000 *Environment/Water/Renewable Resources*
IS-5698-24	**Mapping wetting, salinity and root uptake patterns below intercropping plantations with noninvasive tools and physics-constrained machine-learning techniques** ***Z. Moreno: ARO, Min. Ag.** , **G. Osterman: USDA, ARS** , S.P. Friedman: ARO, Min. Ag. , S. Cohen: ARO, Min. Ag. , T. Azoulay-Shemer: ARO, Min. Ag. , A.J. McElrone: USDA, ARS*	Approved: $310,000 *Environment/Water/Renewable Resources*
US-5700-24	**Integrated agricultural biomass fast pyrolysis with advanced oxidative pyrolysis wastewater treatment** *C. Ellison: USDA, ARS , R. Boxman: U Tel Aviv , C.A. Mullen: USDA, ARS , Y. Gerchman: U Haifa , H. Mamane: U Tel Aviv , M. Parkansky: U Tel Aviv*	Approved: $310,000 *Environment/Water/Renewable Resources*

BARD Approved Projects Years 2022 - 2025

IS-5705-24 C 5046	**Reducing unpredictability in soil amendments: an integrative platform for the engineering of root-associated microbiomes** *S. Freilich: ARO, Min. Ag. ,* ***T. Somera: USDA, ARS*** *, E. Korenblum: ARO, Min. Ag.*	Approved: $310,000 *Environment/Water/Renewable Resources*
IS-5713-25	**Plant-level precise drip irrigation using passive valves actuated wirelessly by mobile robots** *R. Linker: Ecogen Europe , S.G. Vougioukas: UC, Davis , V. Alchanatis: ARO, Min. Ag. , A.J. McElrone: USDA, ARS*	Approved: $310,000 *Agricultural Innovation & Engineering Technologies*
IS-5717-25 R 5635	**Development and application of a mobile platform for full CANopy Spectral Crop ANalysis (CAN-SCAN)** *O. Kira: U Ben Gurion , J. Stutz: UC, Los Angeles*	Approved: $310,000 *Agricultural Innovation & Engineering Technologies*
IS-5721-25 RC 5242 5643	**Developing identified compounds to inhibit bacterial survival on surfaces for use in poultry production** *E. Mills: U Hebrew , E.M. Petersen: U E Tenn State*	Approved: $310,000 *Animal Health and Invasive Species*
IS-5722-25	**Cellular responses in the udder during ketosis in dairy cows** *N.Y. Shpigel: U Hebrew , R.C. Hovey: UC, Davis*	Approved: $310,000 *Animal Health and Invasive Species*
IS-5730-25F	**Setting the foundation for optimized use of recombinant Interferon-Tau in pregnancy and health in cattle** *M. Ehrlich: U Tel Aviv , A. Ealy: Virginia Tech*	Approved: $100,000 *Animal Production*
IS-5741-25 C 5499	**Decoding the role of *Clavibacter* effector proteases: Key regulators of plant immunity and determinants of host range** ***Doron Teper: ARO, Min. Ag.*** *, G.L. Coaker: UC, Davis*	Approved: $310,000 *Crop Health and Invasive Species*
IS-5743-25P 0	**Leveraging cutting-edge molecular tools, bioinformatics and synthetic chemistry for the discovery of novel antifungal plant protection compounds** *O. Frenkel: ARO, Min. Ag. , S.F. Brady: U Rockefeller , D. Minz: ARO, Min. Ag. , E. Cytryn: ARO, Min. Ag.*	Approved: $600,000 *Crop Health and Invasive Species*
US-5748-25	**Exploiting complementary bacterial killing systems for crop protection** *D. Baltrus: U Arizona , D. Salomon: U Tel Aviv*	Approved: $308,000 *Crop Health and Invasive Species*
US-5752-25P	**Host determinants of virus host range: From systems biology identification to validation and virus control in crops** *X.F. Wang: Virginia Tech , M. Schuldiner: Weizmann Inst.*	Approved: $600,000 *Crop Health and Invasive Species*

BARD Approved Projects Years 2022 - 2025

IS-5753-25 R 5659	**Deciphering VOC-mediated long-distance signaling in orange carrot** *M. Ibdah: ARO, Min. Ag. , N. Doudareva: U Purdue*	Approved: $310,000 *Crop Production*
IS-5760-25	**Contribution of maternal- and seed-derived autophagy to maize seed development** *T. Avin-Wittenberg: U Hebrew , D. Bassham: U Iowa St.*	Approved: $310,000 *Crop Production*
IS-5762-25 R 5661	**Using genetic modifications to find the chemical, structural, transcriptional, andmechanical determinants of tomato crop protection** ***H. Cohen: ARO, Min. Ag.** , R.E. Stark: CUNY*	Approved: $310,000 *Crop Production*
US-5767-25 R 5691	**Embedding resource recovery within hydrothermal processing of agricultural waste for closed loop recovery of nutrients, energy & water** *J.L. Goldfarb: U Cornell , R. Posmanik: Technion , J. W. Tester: U Cornell , S. Spatari: Technion , D. Kriner: U Cornell*	Approved: $310,000 *Environment/Water/Renewable Resources*
US-5768-25	**Photocatalytic conversion of methane from livestock waste into valuable chemicals using non-metal polymeric carbon nitride to promote sustainability in agriculture** *L.M. Gilbertson: U Duke , M. Shalom: U Ben Gurion*	Approved: $310,000 *Environment/Water/Renewable Resources*
IS-5774-25	**Multi-objective-controlled irrigation scheduling** ***I. Ben-Noah: ARO, Min. Ag.** , S. Guzman: U Florida , I. Kisekka: UC, Davis , **G. Conde: U Florida** , S.P. Friedman: ARO, Min. Ag.*	Approved: $310,000 *Environment/Water/Renewable Resources*
US-5778-25	**Hybrid process integrating electrodialysis and reverse osmosis for beneficial desalination of brackish water for agricultural irrigation** *M. Elimelech: U Rice , O. Nir: U Ben Gurion*	Approved: $310,000 *Environment/Water/Renewable Resources*
IS-5781-25	**Scalable mechanocatalytic nitrogen fixation for on-site fertilizer production - Towards improving accessibility and reducing greenhouse gas emissions** *C. Vogt: Technion , C. Sievers: GA Tech Res. Corp.*	Approved: $100,000 *Environment/Water/Renewable Resources*
IS-5785-25P	**Revolutionizing N in agriculture - Producing and applying N where and when it is needed** *S. Baram: ARO, Min. Ag. , X. Ye: U Tennessee, Knoxville , S. Spatari: Technion , O. Dahan: U Ben Gurion*	Approved: $600,000 *Environment/Water/Renewable Resources*
IS-5791-25F R 5685	**Self-assembly of cytoskeletal proteins as a novel approach for creating sustainable meat analogs** *Y.D Livney: Technion , R. Dominguez: U Penn , J. Cooper: Washington U at St. Louis*	Approved: $100,000 *Food Product-Safety, Security, Quality*

BARD Approved Projects Years 2022 - 2025

IS-5792-25 **Enhancing nutrition and safety of extruded pulse-based meat alternatives through protein pre-processing and food side stream Integration**

A. Shpigelman: Technion , Y. Xiong: U Kentucky

Approved: $310,000

Food Product-Safety, Security, Quality