

ARASH GHALE

Agroecologist, Ph.D.

E-mail : arash.ghalegolab@yahoo.com . Phone : (802) 734-5561

Employment History:

February 2022-Present

Director of Research

Rodale Institute-Pocono Organic Center, Blakeslee, PA

March 2022-Present

Adjunct Assistant Professor

University of Vermont, Burlington VT

2020-2022

Faculty Research Associate

University of Vermont, Burlington VT

2017-2022

Investigator and co-director

North American Center for Saffron Research and Development, University of Vermont, Burlington VT

Consultant

OXUS Consulting Group LLC, USAID/Afghanistan, Competitiveness of Export-Oriented Businesses Activity (ACEBA)

2015-2019

Postdoc Research Associate

University of Vermont, Burlington VT

Education:

Ferdowsi University of Mashhad, Iran	Ph.D.	2010 – 2015	Agroecology
Shahid Beheshti University, Tehran, Iran	M.S.	2008 – 2010	Agroecology
Azad University, Karaj, Iran	B.A	2003 – 2007	Agronomy/Plant Breeding

Specific Expertise, Research Focus and Grower Outreach Activities:

- Production in greenhouse and high tunnel settings
- Corm production and selection techniques
- Saffron compound extraction and quality analysis using nuclear magnetic resonance (NMR)
- Soil fertility for maximizing crops yields

- Biological and chemical control of corm/bulb pests (bulb mites, moles and voles, rabbits)
- Author or co-author of 10 grower factsheets on saffron production and harvesting
- Frequent invited speaker at grower conferences
- Co-organizer for 5 international conferences
- Co-founder of the North American Center for Saffron Research and Development
- Frequent contributor to Saffronnet (saffron-focused listserv)
- Preparation of reports for extramural projects for federal and state grants.

Teaching Experience:

- Co-instructor – UVM-CDAE 273: Project Management and Development
- Instructor - Sustainable agriculture at the Payam-Noor University, Iran.

Awards, Memberships, Certificates & skills:

- Member of the National Postdoctoral Association USA.
- Full computer literacy in word processing, spreadsheet, and graphic presentation package.
- Expert in statistical and graphical software.
- Ranked 15th among 50,000 participants in the nationwide MSc entrance exam, 2008 (Iran).

Publications and Factsheets: 2010-Present

- Ghalehgolabbehbahani, A., O. Vestrheim, M. Skinner, J. Li & S. Schneebeli. 2022. Nuclear Magnetic Resonance-Based Quality Assessment of Vermont-Grown Saffron (*Crocus sativus* L.)-Optimal Drying Conditions and Mechanistic Implication. ACS Food Science & Technology. <https://pubs.acs.org/doi/pdf/10.1021/acsfoodscitech.1c00404>
- Parker, L.B., M. Skinner, A. Ghalehgolabbehbahani, N.C. Rosberg, C.F. Sullivan and D. Tobi. 2022. Greenhouse Heating Efficiency Through Soap Bubble Insulation. Energy Efficiency. Under review.
- Ghalehgolabbehbahani, A., C. Frank Sullivan, A. Davari, B.L. Parker, A. Razavi, M. Skinner. 2022. Evaluation of the entomopathogenic fungus *Metarhizium brunneum* and the predatory mite *Stratiolaelaps scimitus* against *Rhizoglyphus robini* under laboratory conditions. . Exp Appl Acarol. <https://doi.org/10.1007/s10493-022-00719-6>
- Sullivan C.F., Ghalehgolabbehbahani A., Parker B.L., Skinner M. 2022. Mortality of various-age larval winter ticks, *Dermacentor albipictus*, following surface contact with commercial mycoacaricides. Experimental Parasitology. <https://doi.org/10.1016/j.exppara.2022.108292>
- Davari, A., B.L. Parker, C. Frank Sullivan, A. Ghalehgolabbehbahani, M. Skinner. 2021. Biological control of Western flower thrips (WFT), *Frankliniella occidentalis* using a self-sustaining granular fungal treatment. Bulletin of Entomological Research. <https://doi.org/10.1017/S0007485321000365>
- Ghalehgolabbehbahani, A., B.L. Parker & M. Skinner. Saffron and Solar Farms: A Win/Win for the Environment and Agriculture. 2021. North American Center for Saffron Research and Development. Burlington, VT. <https://www.uvm.edu/~saffron/Resources/PeckSolarReport2020.pdf>
- Ghalehgolabbehbahani, A., M. Skinner., B.L. Parker., A. Razavi., P. Reese & A. Davari. 2020.

A standardized method for rearing *Rhizoglyphus robini* (Astigmata: Acaridae). J. of Plant Disease and Protection. <https://doi.org/10.1007/s41348-020-00381-3>

- Koocheki, A., M. Nassiri., A. Ghalehgolabbebahani, S. Moinaldini & A. Davari. 2019. Evaluation of intactness trend for crop species diversity in North, Central (Razavi) and South Khorasan Prov. (Iran) during 1983-2008. J. of Agroecology. 11:155-170 (In Persian, abs. in English).
- Skinner, M., A. Ghalehgolabbebahani & B.L. Parker. 2018. Harvesting and Processing Saffron Flowers. UVM North American Center for Saffron Research and Development. Burlington, VT.
- Skinner, M., B.L. Parker & A. Ghalehgolabbebahani. 2018. Summer Sampling of Your Saffron Bed for Corm Survival. UVM North Amer. Ctr for Saffron Research & Devel. Burlington, VT.
- Parker, B.L., M. Skinner, A. Razavi & A. Ghalehgolabbebahani. 2018. How to Balance your Saffron. UVM North American Center for Saffron Research and Development. Burlington, VT.
- Skinner, M. B.L. Parker & A. Ghalehgolabbebahani. 2018. Saffron: A Golden Opportunity for Diversified Farmers. UVM North Amer. Center for Saffron Research & Devel. Burlington, VT.
- Skinner, M. B.L. Parker & A. Ghalehgolabbebahani. 2018. Saffron: Saffron Production: Planting Depth and Density of Saffron Corms. UVM North Amer. Ctr for Saffron Research & Development. Burlington, VT.
- Skinner, M., B.L. Parker, C.F. Sullivan, A. Ghalehgolabbebahani & P. Reese. 2018. Survey of Needs and Priorities for Saffron Research and Development. Burlington, VT.
- Skinner, M., B.L. Parker & A. Ghalehgolabbebahani. 2017. Saffron: A Good Fit for New England? Proc. 2017 New England Vegetable and Fruit Conference, 12 Dec. 2017. pp. 118-120.
- Skinner, M., B.L. Parker & A. Ghalehgolabbebahani 2017. Where can you order saffron corms. UVM North American Center for Saffron Research and Development. Burlington, VT.
- Ghalehgolabbebahani, A., M. Mahallati, R. Keshavarz, A. Alipour & H. Safa. 2014. Agrobiodiversity assessment using Rare Faction method: A case study of Shahre Rey, South of Tehran, Iran. J. Agroecology. Ferdowsi Univ. of Mashhad, Iran. 6:199-208. (In Persian, abs. in English).
- Ghalehgolabbebahani, A., K. Khoshbakht, A. Davari, L. Tabrizi & H. Veisi. 2013. A comparative assessment of agrobiodiversity indices in farms, gardens and home gardens; Case study of Jajrood basin (East of Tehran Prov.). J. Agroecology. 5: 161-168. (In Persian, abs. in English).
- Davari, A., K. Khoshbakht, A. Ghalehgolabbebahani & H. Veisi. 2013. Assessing the influence of socio-economic factors on vegetable diversity: The Case of Varamin County, Iran. Int. Academic Journals, Intern. Agric. Sci. 3(3):198-212.
- Alipour, A., Veisi, H., Darijani, F., Mirbagheri, B., Ghalehgolabbebahani, A. 2012. Study and determination of energy consumption to produce conventional rice of Gilan Province. Res. in Agric. Eng. 3: 99-106.
- Falahpoor, F., A. Aminghafoori, M. Bannayan, & A. Ghalehgolabbebahani. 2012. The environmental impact assessment of cereals (wheat and barley) production using life cycle assessment (LCA) methodology in Khorasan Province, Iran. Environment, Development and Sustainability (ENVI). Springer. 14: 979-992.
- Ghalehgolabbebahani, A., K. Khoshbakht, A. Davari & A. Alipour. 2012. Assessing the

effect of socio-economic factors on agrobiodiversity in home gardens of Jajrood in Tehran Province, Iran. *Advances in Environ. Biol.* 6(5): 1708-1715.

- Alipour, A., A. Davari & A. Ghalehgolabbehbahani 2011. Analysis of the current energy consumption status in rice agroecosystems in Mazandaran and Guilan. A case study: Babolsar Province. 1st National Conf. on Strategies for Achieving Sustainable Agriculture. CIVILICA Encyclopedia of Civil Engineering. http://www.civilica.com/paper-CAAMSA01-CAAMSA01_086.html. (In Persian)
- Ghalehgolabbehbahani, A., A. Davari, & K. Khosbakht. 2011. Assessment of the role of home gardens in development of underutilized plant species: *Eleagnus angustifolia* (Oleaster) cultivation in Damavand (Iran) as a case study. *Crops for the Future Symp.* 2011 in Malaysia, Oral presentation.
- Davari, A., Khosbakht, K., Ghalehgolabbehbahani, A., Veisi, H. 2010. A qualitative assessment of diversity and factors leading to genetic erosion of vegetables: the case of Varamin (Iran). *J. of Envir. Sci. Shahid Beheshti Univ. Pub.* 1(2): 52-60. (In Persian, abstract in English).

Conferences, Presentations and Workshops: 2017-Present

- Ghalehgolabbehbahani, A., M. Skinner. 2022. Saffron In Solar Arrays: A Win/Win Strategy. 6th Annual Saffron Workshop, North American Center for Saffron Research and Development, UVM. (Oral Presentation; Attendees: 87)
- Ghalehgolabbehbahani, A. 2022. Saffron Enterprise Budget. 6th Annual Saffron Workshop, North American Center for Saffron Research and Development, UVM. (Oral Presentation; Attendees: 75)
- Ghalehgolabbehbahani, A., M. Skinner & S. Schneebeli. 2021. Post harvest handling, dehydration methods and saffron quality. University of Vermont, Burlington, VT USA.
- Ghalehgolabbehbahani, A., M. Skinner & B.L. Parker. 2021. Step by step instruction to establish a saffron field. University of Vermont, Burlington, VT USA.
- Ghalehgolabbehbahani, A., M. Skinner & B.L. Parker. 2021. An Introduction to saffron (*Crocus sativus*). The 4th annual saffron workshop. University of Vermont, Burlington, VT USA.
- Ghalehgolabbehbahani, A., M. Skinner., B.L. Parker & P. Reese. 2020. Saffron Production in VT ecosystem. 2020 Vermont Vegetable and Grower Webinar Series. <http://www.uvm.edu/vtvegandberry/Webinars2020.html>
- Speaker and trainer at the 4th annual saffron workshops. Saffron: Perfecting Production and Market Opportunities. March 2020. The University of Vermont, Burlington VT.
- Ghalehgolabbehbahani, A., M. Skinner & B.L. Parker. 2020. Saffron: A High Value Crop for Increasing Farm Revenues. Mid-Atlantic fruit and Vegetable Convention, Hershey PA. https://www.pvga.org/wp-content/uploads/2020/11/PVGA_ConvBklt2020_txt_COLOR_Digital-Book.pdf
- Skinner, M. & A. Ghalehgolabbehbahani. 2019. Saffron: The Next Best Thing for Crop Diversification. New England Vegetable and Fruit, Manchester NH.
- Ghalehgolabbehbahani, A. & M. Skinner. 2019. A Golden Opportunity for Diversified Farmers. Maine Organic Farmers and Gardeners Organization Farmer to Farmer Conference. 4 Nov. 2019.
- Ghalehgolabbehbahani, A. 2019. Saffron: Vermont's New Gold Rush. OLLI at UVM. October 28, 2019. University of Vermont. 50 participants

- Ghalehgolabbehbahani, A. 2019. UVM Saffron Tour: Your Golden Opportunity. OLLI at UVM. October 31, 2019. University of Vermont. 25 participants
- Ghalehgolabbehbahani, A. 2019. UVM Saffron Tour. Shelburne/Charlotte Garden Club. October 8, 2019. University of Vermont. 12 participants
- Ghalehgolabbehbahani, A. 2019. UVM Saffron Tour. UVM Horticulture Research Center Farm Tour. September 2019. University of Vermont. 15 participants
- Speaker and trainer at the third annual saffron workshops. Saffron: Production Progress and Market Promise, a Workshop for Growers, Marketers and Researchers. March 2019. Univ. of VT, Burlington VT.
- Skinner, M., A. Ghalehgolabbehbahani & B.L. Parker. 2019. Saffron: A Golden Opportunity for Home Gardeners & Diversified Farmers. September 2019. Grantham NH Garden Club. 25 participants
- Skinner, M., A. Ghalehgolabbehbahani & B.L. Parker. 2019. Saffron: A Golden Opportunity for Diversified Farmers. August 2019. Penn State Ag Progress Days. 150 participants
- Parker, B.L. M. Skinner & A. Ghalehgolabbehbahani. 2019. Saffron Solar: A Win/Win Partnership. Saffron: Production Progress and Market Promise; A Win/Win for the Environment and Agriculture. Workshop, 15 March 2019. Burlington, VT. 150 attendees. <https://www.uvm.edu/~saffron/Workshops/Saffron%20Workshop%202019/Saffron%20&%20Solar%20-%20Arash%20Ghalehgolabbehbahani.pdf>
- Parker, B.L. 2019. Grower-to-Grower Session. Saffron: Production Progress and Market Promise. Workshop. 15 March 2019. Burlington, VT. 150 attendees.
- Skinner, M., A. Ghalehgolabbehbahani & B.L. Parker. 2019. What does the Future Hold. Saffron: Production Progress and Market Promise. Workshop. 15 March 2019. Burlington, VT. 150 attendees.
- Skinner, M., B.L. Parker, C.F. Sullivan, A. Ghalehgolabbehbahani & P. Reese. 2019. Survey of Needs and Priorities for Saffron Research and Development. UVM North American Center for Saffron Research and Development. Burlington, VT.
- UVM North American Center for Saffron Research and Development. Burlington, VT.
- Skinner, M., A. Ghalehgolabbehbahani, C. Cantrell & B.L. Parker. 2018. Saffron: A Golden Opportunity for Small Diversified Farmers. Herb Society of America, 1 June 2018, Tarrytown, NY. 200 attendees.
- Skinner, M., A. Ghalehgolabbehbahani & B.L. Parker. 2018. Saffron: From Production to Processing. Workshop. 16 March 2018. Burlington, VT. 110 attendees.
- Ghalehgolabbehbahani, A. 2018. Saffron Biology and Production in Cold Climates. Saffron: From Production to Processing. Workshop. 16 March 2018. Burlington, VT. 110 attendees.
- Ghalehgolabbehbahani, A., H. Rotteveel & K. Mirza. 2018. Drying and storing saffron. Saffron: From Production to Processing. Workshop. 16 March 2018. Burlington, VT. 110 attendees.
- Ghalehgolabbehbahani, A. 2018. Saffron Research Update. VT Greenhouse IPM Workshop. 19 Jan 2018. Burlington, VT. 55 attendees.
- Rubin, J., H. Huber, A. Ghalehgolabbehbahani, S.V Hook, A. Dorr & J. Gorres. 2018. Mycoremediation strategies for watershed health. Soc. for Ecol. Restoration (SER) New England Conference; New Haven, CT; 2018.
- Skinner, M., B.L. Parker & A. Ghalehgolabbehbahani. 2017. Saffron: A Good Fit for New England. 2017 New England Veg. & Fruit Conf., 12 Dec. 2017, Manchester, NH. 125 attendees.

- Norouzian, A., A. Ghalehgolabbehbahani & A. Alipour. 2012. Assessment of the effect of two different species of mycorrhiza and biofertilizer on yield and corm size of Saffron (*Crocus Sativus L.*). 4th International Saffron Symp. “Advances in Saffron Biology, Technology and Trade”. October 2012.
- Alipour, A., A. Davari & A. Ghalehgolabbehbahani. 2011. Analysis of the current energy consumption status in rice agroecosystems in Mazandaran and Guilan. A case study: Babolsar province. 1st National Conf. on Strategies for achieving sustainable agriculture. CIVILICA Encyclopedia of Civil Engineering. (In Persian).
- Ghalehgolabbehbahani, A., A. Davari & K. Khosbakht. 2011. Assessment the role of home gardens in development of underutilized plant species: *Eleagnus angustifolia* (Oleaster) cultivation in Damavand (Iran) as a case study. Crops for the Future Symposium 2011 in Malaysia, Oral presentation.

Media coverage: 2016-Present

My research projects have been mentioned in more than 100 local, national, and international news media outlets:

2022: https://www.wfmz.com/news/area/poconos-coal/new-rodale-institute-pocono-organics-research-center-aims-to-increase-regenerative-organic-farming-in-pa/article_bec55758-b6c2-11ec-a1af-6f03400bd6db.html

2022: [Reading Eagle: Berks-based Rodale Institute launches new regional resource center \(yahoo.com\)](#)

2022: [Hemp Research Dollars Flowing in 2022 \(letstalkhemp.com\)](#)

2021: [Business of Agriculture: A delicate flower thrives in wintery Vermont - Enterprise \(vnews.com\)](#)

2021: [Business of Agriculture: A delicate flower thrives in wintery Vermont - Enterprise \(vnews.com\)](#)

- Saffron blooming season in Vermont. UVM Across the Fence: January 2020
- Saffron: A Golden Opportunity for Diversified Growers. UVM Across the Fence: April 2019
- Saffron taking root in North America. Farm Show. 2019. Vol. 43(3)
- UVM Researchers Sow Seeds for World's Most Lucrative Spice: Saffron. Seven Days. K. Picard, March 2019
- Saffron ~ Vegetable Gold in the Cold. Country Folks Grower East. C. Llewellyn, March 2019
- Could the world's most expensive spice help farmers in Vermont? BBC News. January 2017
- A Spice Grows in Burlington: Small farmers in Vermont could benefit from research that discovered how to grow an exotic and lucrative spice during the winters. Inside Science. P. Gwynne, January 2017
- Could saffron be the next big thing for Vermont? My NBC 5. J. Harriger, February 2017
- Saffron growers look to get a foothold in the US. The Seattle Times. L. Rathke, March 2017
- Saffron: Vermont's next cash crop? St. Albans Messenger. J. Lehman, March 2017
- Saffron or Algae Blooms? Green Mountain Daily. S. Prent, March 2017
- Why Saffron Farming is Blooming in Unlikely Places. OZY News. O. Miltner, November 2017
- Horticulturist experiments with growing exotic spice in Charlotte greenhouses. The Citizen. C. Evans, November 2017

- Vermont Agency of Agriculture Grants Over \$254K to Benefit Specialty Crop Producers. K. Sweet. Agriview, December 2017. P. 9
- Can saffron make it as a Vt. Cash Crop? A. Stein, Rutland Herald, December 2017
- Rare saffron could thrive in VT, prof says. Burlington Free Press. J.B. Baird, November 2016
- Exotic spice saffron grown successfully in Vermont. Washington Times. Assoc. Press Nov. 2016
- Growing Saffron in Vermont? UVM Researcher Tests Plant's Viability. Vermont Public Radio. L. McCrear, December 2016
- Researcher Studies the Possibility of Growing Saffron in Vermont. UVM Food Feed. E. Houskeeper, December 2016

Involvement with Saffronnet: 2017-2021

Website: <http://www.uvm.edu/~saffron/>

Over the past several years, growers across the US have expressed interest in cultivating saffron as a high value crop to diversify their crop production. An internet list (Saffronnet) was established by the North American Saffron Center in March 2017, and now has over 800 subscribers from across the US and Canada, and several Asian, European and African countries. The purpose of the list is to encourage exchange of information among researchers and growers worldwide to support the emerging saffron North American industry.

Tasks on Saffronnet include:

- Direct connection with growers through Saffronnet and respond to several enquiries about saffron and how to begin growing this crop.
- Communication with other scientists and researchers through Saffronnet to ensure that saffron growers receive correct guidance.

New initiatives:

- Agrivoltaic system- This initiative presents the first use of vertical bi-facial solar arrays in the US.
- Develop and design unmanned air vehicles (UAVs) to reduce the impact of pests in Vermont agroecosystems.
- Contribution as Co-author in writing grants and dollars generating: 2015- Present

Year	Funding Prog.	Subject matter	PI	Co PIs	Cooperators	Funding level	Decision Date
2022	NE-SARE	IPM/UV-LIGHT	AG			\$28,000	Pending
2022	NIFA-SCRI	Saffron CO-Cropping	MS	AG		\$2,000,000	Pending
2021	AFRI	Canada Geese	AG	SM, MS	MD, BLP	\$300,000	Not Funded
2020	Hatch	Saffron	MS	BLP/AG	---	\$43,000	Funded in full
2020	VAOA Specialty Crops	Saffron	BLP	MS/AG	---	\$40,000	Funded in full
2020	Peck Electric	Saffron Solar	MS	BLP/AG	---	\$20,000	Funded in full
2019	Jeonbuk Nat. Univ.	Fungi/Farm Hanong	BLP	MS	AG	\$60,000	Funded in full

2018	AFRI Full proposal	Saffron quality etc.	SS	MS	AG	\$180,830	Funded in full
2017	Hatch	Saffron	MS	BLP	---	\$64,500	Funded in full
2017	VDOA Specialty Crops	Saffron	BLP	MS	---	\$30,000	Funded in full
2016	Saffron	Brigham Farm	MS	BLP	---	\$70,000	Funded in full
2016	Herb Soc. Of Amer	Saffron Quality	MS	---	---	\$5,000	Funded in full
2015	Saffron	Brigham Farm	MS	BLP	---	\$75,194	Funded in full