

# Morteza Taki

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Dr. Morteza Taki was born in 17 June 1986 in Shahreza City, Isfahan province, Iran. He received his PhD degree in Agricultural Mechanization Engineering from University of Tabriz, Iran, in Febrebery 2016. He is "Assistant Professors" in Agricultural Sciences and Natural Resources University of Khuzestan, Iran. His main research interests are Solar energy and Artificial Intelligence in agriculture, life cycle assessment, sustainability, modeling and optimization of energy in agricultural systems.

## Personal web page

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## Academic Appointment

Appointments	Duration	Academic Center
Reviewer: Journal of Cleaner Production	From 2013	Elsevier Publication
Reviewer: Energy	From 2014	Elsevier Publication
Reviewer: Renewable Energy	From 2013	Elsevier Publication
Reviewer: Journal of Biosystems Engineering	From 2015	University of Tehran
Reviewer: Science of Total Environment	From 2013	Elsevier Publication
Reviewer: Journal of Agricultural Machinery	From 2015	Ferdowsi University of Mashhad
Reviewer: Sustainable energy technologies and assessment	From 2016	Elsevier Publication
Reviewer: Energy conversion and management	From 2016	Elsevier Publication
Reviewer: Information processing in agriculture	From 2016	Elsevier Publication
Reviewer: Renewable and sustainable energy reviews	From 2015	Elsevier Publication
Reviewer: International journal of refrigeration	From 2017	Elsevier Publication
Reviewer: Environmental and sustainability indicator	From 2018	Elsevier Publication

## Education

- Ph.D: Agricultural Mechanization Engineering (Energy), University of Tabriz, Iran (2005-2009).
- M.Sc: Agricultural Mechanization Engineering (Energy), University of Tabriz, Iran (2009-2011).
- B.Sc: Agricultural Mechanization Engineering, Agricultural Sciences and Natural Resources University of Khuzestan, Iran (2012-2016).

## Current Teaching

Course Title	Degree	Levels	Credits
Greenhouse Technology and Management	Horticultural Sciences	M.Sc.	2
Greenhouse Management	Agricultural Mechanization Engineering	Ph.D.	2
Renewable Energy Resources	Agricultural Mechanization Engineering	BSc.	3
Principle of Energy Management	Agricultural Mechanization Engineering	BSc.	3
Principle of Simulation	Agricultural Mechanization Engineering	BSc.	3
Operational Research	Agricultural Mechanization Engineering	BSc.	3
Solar Thermal Systems	Agricultural Mechanization Engineering	BSc.	3
Energy from Non-Fossil Fuels	Agricultural Mechanization Engineering	Ph.D.	2
Energy systems modeling	Agricultural Mechanization Engineering	M.Sc.	2

## Areas of Specialization and Research Interests

- Renewable Energies, recycling, exergy and environment in agriculture
- Artificial intelligent and its application in agriculture
- Simulation-modeling, controlling and energy management in greenhouse
- Soft Computing
- Heat Transfer
- Greenhouse Solar Dryers

## Thesis (Supervisor)

1. Prediction the inside environment variables and energy exchange in an even-span glass greenhouse with artificial neural network and multiple linear regression models (MSc. Thesis).
2. Analysis of energy flow consumption of greenhouse rose production by parametric and non-parametric methods (MSc. Thesis).
3. Management parameters trade-off in terms of time-cost-quality and multi-objective optimization of energy-economic- environmental in production chain of onion crop (Ph.D. Thesis).
4. Application of data envelopment analysis under uncertainty for evaluation and improvement of energy efficiency for kiwi fruit in Mazandaran province (MSc. Thesis).
5. Modeling and assessment of energy flow in a special uneven-span greenhouse using mathematical equations (MSc. Thesis).
6. Evaluation of different scenarios of municipal solid waste management using Life Cycle Assessment (LCA). (Ph.D. Thesis).
7. Management parameters equilibrium of time-cost-quality and multi-objective optimization of energy- economic-environmental in production chain of onion of Isfahan province. (Ph.D. Thesis).

## Thesis (Advisor)

1. Optimization of energy flow in rice production and its impact on the mitigation of greenhouse gas emissions (case study: Fars Province) (MSc. Thesis).
2. Technical, economic and environmental development and evaluation of a smart irrigation system in agriculture (Ph.D. Thesis).
3. Design, fabrication and evaluation of a floor heating system in a nominated poultry house using biogas digester (MSc. Thesis).
4. Evaluating the energy efficiency of greenhouse sweet pepper to determine best type of structures among the existing structures. (case study: Tiran and Karvan township - Isfahan) (MSc. Thesis).
5. Prediction the inside variables in a conventional greenhouse and proposing an intelligent model for controlling them. Case study: Jiroft City (Ph.D. Thesis).
6. Evaluating the energy efficiency and energy flow of aapple gardens by data envelopment analysis (case study: Aligudarz township- Lorestan Province (MSc. Thesis).
7. Evaluation of the energy pattern and efficiency of maize production by data envelopment analysis (Case study: Shahrekord city) (MSc. Thesis).
8. Investigation the energy flow and its efficiency in fish farms of Charmahal and Bakhtiati Province using data envelopment analysis technique (MSc. Thesis).
9. Assessment of energy and economic indicators and environmental impacts of apple production in Semirrom region (MSc. Thesis).

## Selected Publication

### A. Journals Papers

1. **Taki M**, Ajabshirchi Y, Mahmoudi A. 2012. Prediction of output energy for wheat production using artificial neural networks in Esfahan province of Iran. *Journal of Agricultural Technology* 8(4), pp.1229-1242.
2. Abdi R, **Taki M**, Akbarpour M. 2012. An Analysis of Energy input-output and Emissions of Greenhouse Gases from Agricultural Productions. *International Journal of Natural and Engineering Sciences* 6 (3).
3. **Taki M**, Mahmoudi A, Ghasemi-Mobtaker H, Rahbari H. 2012. Energy consumption and modeling of output energy with multilayer feed-forward neural network for corn silage in Iran. *Agricultural Engineering International: CIGR Journal* 14(4), pp.93-101.
4. Ghasemi-Mobtaker H, **Taki M**, Salehi M, Zarei E. 2013. Application of non-parametric method to improve energy productivity and CO<sub>2</sub> emission for barley production in Iran. *Agricultural Engineering International: CIGR Journal* 15(4), pp.84-93.

5. Abdi R, **Taki M**, Jalali A. 2013. Study on energy use pattern, optimization of energy consumption and CO<sub>2</sub> emission for greenhouse tomato production. *International Journal of Natural and Engineering Sciences* 7(1), pp.044-052.
6. **Taki M**, Abdi R, Akbarpour M, Ghasemi-Mobtaker H. 2013. Energy inputs – yield relationship and sensitivity analysis for tomato greenhouse production in Iran. *Agricultural Engineering International: CIGR Journal* 15(1), pp.59-67.
7. **Taki M**, Ajabshirchi Y, Ranjbar S.F, Rohani A, Matloobi M. 2016. Comparison between heat transfer, multiple linear regression and MLP neural network to estimate energy lost in semi-solar greenhouse- New structure. *Energy and buildings* 110, pp.314-329. **Q<sub>1</sub>**
8. **Taki M**, Ajabshirchi Y, Ranjbar S.F, Rohani A, Matloobi M. 2016. Modeling and experimental validation of heat transfer and energy consumption in an innovative greenhouse structure. *Information processing in agriculture* 3(3), pp.157-174.
9. **Taki M**, Ajabshirchi Y, Ranjbar S.F, Rohani A, Matloobi M. 2016. \_Application of Artificial Neural Network and multiple regression models to predict some inside environment variables in semi-solar greenhouse. *Agricultural Engineering International: CIGR Journal* 18(3), pp.29-43.
10. Ghasemi-Mobtaker H, Ajabshirchi Y, Ranjbar S.F, Matloobi M, **Taki M**. 2016. Estimation of Monthly Mean Daily Global Solar Radiation in Tabriz Using Empirical Models and Artificial Neural Networks. *Journal of Renewable Energy and Environment* 3(3), pp.21-30.
11. Rohani A, **Taki M**, Abdollahpour M. 2018. A novel soft computing model (Gaussian process regression with K-fold cross validation) for daily and monthly solar radiation forecasting (Part: I). *Renewable Energy* 115, pp.411-422. **Q<sub>1</sub>**
12. **Taki M**, Rohani A, Soheili-Fard F, Abdeshahi A. 2018. Assessment of energy consumption and modeling of output energy for wheat production by neural network (MLP and RBF) and Gaussian process regression (GPR) models. *Journal of cleaner production* 172, pp.3028-3041. **Q<sub>1</sub>**
13. **Taki M**, Rohani A, Rahmati-Junaidabad M. 2018. Solar thermal simulation and applications in greenhouse. *Information processing in agriculture* 5(1), pp.83-113.
14. Bolandnazar E, Rohani A, **Taki M**. 2020. Energy consumption forecasting in agriculture by artificial intelligence and mathematical models. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects* 42(13).
15. Yildizhan H, **Taki M**. 2018. Assessment of tomato production process by cumulative exergy consumption approach in greenhouse and open field conditions: Case study of Turkey. *Energy* 156, pp.401-408. **Q<sub>1</sub>**
16. **Taki M**, Abdanan-Mehdizadeh S, Rohani A, Rahnama M, Rahmati-Junaidabad M. 2018. Applied machine learning in greenhouse simulation; new application and analysis. *Information processing in agriculture* 5(2), pp.253-268.
17. **Taki M**, Soheili-Fard F, Rohani A, Chen G, Yildizhan H. 2018. Life cycle assessment to compare the environmental impacts of different wheat production systems. *Journal of cleaner production* 197, pp.195-207. **Q<sub>1</sub>**
18. **Taki M**, Rohani A, Yildizhan H, Farhadi R. 2019. Energy-exergy modeling of solar radiation with most influencing input parameters. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects* 41(17), pp.2128-2144.
19. Rahnama M, Kazemi N, Godarzi B, **Taki M**. 2019. Geothermal energy for heating and cooling in agricultural greenhouses. *Agricultural Engineering International: CIGR Journal* 20(4), pp.97-107.
20. Rohani A, **Taki M**, Bahrami G. 2019. Application of artificial intelligence for separation of live and dead rainbow trout fish eggs. *Artificial Intelligence in Agriculture* 1, pp.27-34.
21. **Taki M**, Yildizhan H. 2018. Evaluation the sustainable energy applications for fruit and vegetable productions processes; case study: Greenhouse cucumber production. *Journal of Cleaner Production* 199, pp.164-172. **Q<sub>1</sub>**
22. Yildizhan H, **Taki M**. 2019. Sustainable management and conservation of resources for different wheat production processes; cumulative exergy consumption approach. *International Journal of Exergy* 28(4), pp.404-422.
23. Hematian A, Ajabshirchi Y, Ranjbar S.F, **Taki M**. 2019. An experimental analysis of a solar-assisted heat pump (SAHP) system for heating a semi solar greenhouse. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects* pp.1-21.
24. Naderi S.A, Lotfalian-Dehkordi, A, **Taki M**. 2019. Energy and environmental evaluation of greenhouse bell pepper production with life cycle assessment approach. *Environmental and Sustainability Indicators* 3, p.100011.
25. Naderi S, Ghasemi-Nejad M, **Taki M**. 2020. Measuring the energy and environmental indices for apple (production and storage) by life cycle assessment (case study: Semirom county, Isfahan, Iran). *Environmental and Sustainability Indicators* p.100034.
26. Amini Sh, **Taki M**, Rohani A. 2020. Applied improved RBF neural network model for predicting the broiler output energies. *Applied Soft Computing* 87, p.106006. **Q<sub>1</sub>**
27. Bolandnazar E, Sadrnia H, Rohani A, **Taki M**. 2020. Prediction of Temperature in a Greenhouse Covered with Polyethylene Plastic Using Artificial Neural Networks, Case Study: Jiroft Region. *Biosystems Engineering* 125-137.

28. Farhadi R, **Taki M**. 2020. The energy gain reduction due to shadow inside a flat-plate solar collector. *Renewable Energy* 147, pp.730-740. **Q1**
29. Farhadi R, **Taki M**, Abdanan-Mehdizadeh, S. 2020. An algorithm and a flexible Fortran code for the computation of solar energy reception on a curved surface. *Sustainable Energy Technologies and Assessments* 42, p.100883. **Q1**
30. Soheili-fard F, **Taki M**, van Zelm R. 2020. Impact of energy flow optimization on the mitigation of environmental consequences and costs in greenhouse cucumber production. *Environmental Science and Pollution Research* pp.1-13.
31. Mostashari-Rad F, Ghasemi-Mobtaker H, **Taki M**, Ghahderijani, M, Kaab, A, Chau, K.W, Nabavi-Pelesaraei A. 2020. Exergoenvironmental damages assessment of horticultural crops using ReCiPe2016 and cumulative exergy demand frameworks. *Journal of Cleaner Production* 278, p.123788. **Q1**
32. Rastegar H, Lotfalian-Dehkordi A, Abedi A, **Taki M**. 2020. Application of Data Envelopment Analysis (DEA) In Order to Reduction of Consumption Inputs in Silage Corn production in the Shahrekord County. *Biosystems Engineering* 51.
33. Mardani-Najafabadi M, **Taki M**. 2020. Robust data envelopment analysis with Monte Carlo simulation model for optimization the energy consumption in agriculture. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects* pp.1-15.
34. Soheili-fard F, Marzban A, Ghasemi-Nejad M, **Taki M**, van Zelm R. 2020. Chemical footprint of pesticides used in citrus orchards based on canopy deposition and off-target losses. *Science of The Total Environment* p.139118. **Q1**
35. Abdeslahi A, **Taki M**, Golabi M.R, Haddad M. 2013. Evaluation of energy efficiency of wheat crop by data analysis method (Case study: Mahyar plain of Shahreza city). *Journal of Agricultural Economics, University of Tehran* 7(4). (In Persian)
36. **Taki M**, Ajabshirchi Y, Abdi R, Akbarpour M. 2012. Energy efficiency analysis of greenhouse cucumber crop by data envelopment analysis Case study (Shahreza city - Isfahan province). *Journal of Agricultural Machinery, Ferdowsi University of Mashhad* 2(1). (In Persian)
37. Ajabshirchi Y, **Taki M**, Abdi R, Ghobadifar A. 2011. Investigation of energy efficiency in rainfed wheat cultivation by data envelopment analysis technique (Case study: Silakhor plain). *Journal of Agricultural Machinery, Ferdowsi University of Mashhad* 1(2). (In Persian)
38. **Taki M**, Ajabshirchi Y, Ghobadifar A. 2016. Presenting a non-parametric mathematical model in order to optimize the amount of energy consumed and greenhouse gas emissions in irrigated wheat cultivation. *Journal of Economics and Environment, Tehran Science and Research Branch* 18(2). (In Persian)
39. **Taki M**, Ajabshirchi Y. Familiarity with different types of solar chasers. 2011. *Promotional Scientific Journal of Energy Scientific Association* 9. (In Persian)
40. **Taki M**, Ajabshirchi Y, Ranjbar S.F, Rohani A, Matloobi M. 2016. Evaluation of Mathematical Models of Heat Transfer and Multiple Regression in Predicting Internal Variables of Semi-Solar Greenhouse. *Journal of Agricultural Machinery, Ferdowsi University of Mashhad* 7(1). (In Persian)
41. **Taki M**, Ajabshirchi Y, Ranjbar S.F, Rohani A, Matloobi M. 2016. Prediction of Indoor Air Humidity and Soil Temperature in a Semi-Solar Greenhouse Equipped with a North Cement Wall, Case Study: Tabriz. *Journal of Mechanization, University of Tabriz* 3(1). (In Persian)
42. Pirdayeh Sh, Abdi R, Ghasemi M, Rostami S, **Taki M**. 2016. Carrot product mechanization project planning with CPM and PERT networking techniques. Tabriz. *Journal of Mechanization, University of Tabriz* 3(1). (In Persian)
43. Abdanan-Mehdizadeh S, **Taki M**, Salari S, Amraei S, Ahmadi Z. 2020. Control of environmental parameters of poultry with the help of a small mobile robot to improve the conditions of laying hens. *Mechanical research of agricultural machines* 9. (In Persian)
44. Naderi S.A, Lotfalian-Dehkordi A, **Taki M**. 2019. Selection of the best type of structure for greenhouse bell pepper cultivation by data envelopment analysis method. *Mechanical research of agricultural machines* 8. (In Persian)
45. Hamdani M, **Taki M**, Rahnama M, Rouhani A, Rahmati-Junaidabad M. 2020. Prediction of internal variables of a specially structured glass double-sided greenhouse using neural network models (MLP and RBF). *Agricultural Machinery* 10. (In Persian).
46. **Taki M**, Rohani A, Yildizhan H. 2021. Application of machine learning for solar radiation modeling. *Theoretical and Applied Climatology*. <https://doi.org/10.1007/s00704-020-03484-x>. **Q2**.
47. Yildizhan H, **Taki M**, Ozilgen M, Gorjian S. 2021. Renewable energy utilization in apple production process: A thermodynamic approach. *Sustainable Energy Technologies and Assessments* 43: 100956. **Q1**.
48. Farhadi R, **Taki M**. 2021. Determination of the Proper Distance between the Absorber Plate and One-layer Cover in Flat-plate Solar Collectors Using Numerical Method. *Agricultural Machinery* 10. (In Persian). [10.22059/ijbse.2020.299552.665292](https://doi.org/10.22059/ijbse.2020.299552.665292)

## **B. Conference Papers**

- Bashiri A, Ajabshirchi Y, **Taki M**. 2016. Investigating the effect of appendages and double glazing on the thermal efficiency of solar air collector. Second National Conference on Mechanization and New Technologies in Agriculture, Iran.
- Taki M**, Rezaei E, Samadi Z, Bagholizadeh F, Ghazi-Asgar S. 2014. Types of conventional solar water heaters in Iran and their structure. National Conference on Energy Efficiency in Science and Engineering, Iran.
- Taki M**, Dabbagh G, Bagholizadeh F, Rezaei E, Cheraghpooran Y, Ghazi-Asgar S. 2014. Investigating the use of conventional solar water heaters in order to provide part of the heat needs of Islamic Azad University, Shahreza city. Fourth Annual National Conference on Clean Energy, Iran.
- Akbarpour-Ghiasi R, Etefagh M, Sadeghi V, Ajabshirchi Y, **Taki M**. 2014, June. Prediction of a diesel engine exhaust gases physical properties with artificial neural network. In 2014 IEEE International Symposium on Innovations in Intelligent Systems and Applications (INISTA) Proceedings (pp. 304-308). IEEE.
- Farhadi R, **Taki M**. 2018. Investigation of factors affecting the formation of shadows in a flat panel solar collector. The first national conference on agricultural and environmental sciences in Iran, Iran.
- Hamdani M, **Taki M**, Rahnama M, Rouhani A, Rahmati-Junaidabad M. 2019. Simulation of internal conditions and study of energy flow of a semi-double glass greenhouse with artificial intelligence and mathematical model. Twelfth National Congress of Mechanical Biosystems Engineering and Mechanization, Iran.
- Behzadipour F, Ghasemi-Nejad M, Abdanan-Mehdizadeh S, **Taki M**. 2019. Recent advances in crop stress detection. Twelfth National Congress of Mechanical Biosystems Engineering and Mechanization, Iran.
- Hamdani M, **Taki M**, Rahnama M, Rouhani A, Rahmati-Junaidabad M. 2018. Modeling temperature, humidity and calculating the amount of energy exchange between the internal components of a double-sided glass greenhouse using multiple linear regression. The first national conference on agricultural and environmental sciences in Iran, Iran.
- Zalqi A.H, Lotfalian-Dehkordi A, Abedi A, **Taki M**, 2019. Investigation of energy consumption flow and yield in apple crop production (Case study: Aligudarz city, Lorestan province). 7th National Conference on Applied Research in Agricultural Sciences, Iran.
- Rastegar H, Lotfalian-Dehkordi A, Abedi A, **Taki M**. 2019. Evaluation of energy indicators in fodder corn production system of Shahrekord city. 7th National Conference on Applied Research in Agricultural Sciences, Iran.

### Award

- Top rank (8<sup>th</sup>) in the national master's exam. (National Organization of Educational Testing). 2009. Iran.
- Member of the Talent Office. University of Tabriz. 2009-2011. Iran.
- Top student. University of Tabriz. 2015-2017. Iran.

### Books

S.J. Tabatabaei, M. Taki. 2016. Greenhouse- Design and construction. Shahed University publication. Pp.446.