

# Jonghan Ko

Crop Modeling & Remote Sensing — Chonnam National University

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## RESEARCH OBJECTIVE

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My research goal is to incorporate crop modeling, machine learning (deep learning), and remote sensing efforts into food security and agricultural decision support. My approach is interdisciplinary, with a focus on delivering crop modeling, machine learning, and remote sensing to develop concrete crop production technologies and improve risk management of crops under insecure conditions.

## RESEARCH INTEREST

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My research focuses on crop and ecosystem modeling, remote sensing, and machine learning (including deep learning), with complementary expertise in geospatial analysis and environmental crop physiology.

- **Crop and Ecosystem Modeling** — Development of mathematical models incorporating remote sensing data for real-time monitoring and simulation, with an emphasis on decision-support tools for precision agriculture.
- **Remote Sensing** — Application of plant canopy studies to monitor crop development and productivity, as well as to generate critical inputs for crop models.
- **Machine Learning (ML) and Deep Learning (DL)** — Creation of integrated crop modeling systems that fuse ML/DL algorithms with remote sensing frameworks to enhance predictive accuracy and scalability.
- **Geospatial Analysis** — Design of spatial models to describe and forecast the temporal and spatial dynamics of vegetation, soil properties, and agroecosystem processes.
- **Environmental Crop Physiology** — Investigation of physiological responses of crops to diverse micrometeorological conditions, informing model development and validation.

I have extensive experience in field data collection and the development and application of crop models such as RZWQM, DSSAT, and EPIC.

- **Crop Models Integrated with Remote Sensing** — Developed a cotton crop model utilizing remote sensing data, later extending it to simulate paddy rice, and spearheaded the development of a crop information delivery system to simulate spatiotemporal crop productivity using operational remote sensing platforms. These models require minimal input—leveraging actual crop growth data via remote sensing—and are well-suited for regional crop monitoring.
- **Regional Productivity Assessments under Climate Change Scenarios** — Contributed to global climate change impact studies on grain crop production through advanced crop modeling, including downscaling climate variables for cropping system models and simulating impacts of historical and projected climate change on water availability, water demand, and grain production in the U.S. Great Plains.
- **Decision Support System (DSS)** — Developed DSS tools for irrigation management under full and deficit irrigation regimes, as well as a management platform for winter wheat based on ENSO (El Niño–Southern Oscillation) forecast information, translating complex model outputs into user-friendly, actionable insights.

## EDUCATION

| Degree         | Year | Field    | Institution                                               | Details                                                                                                                   |
|----------------|------|----------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Ph.D.          | 2004 | Agronomy | Texas Tech University, Lubbock, Texas, USA                | Advisor: Dr. Stephan J. Maas.<br>Dissertation: <i>Development of a cotton crop model that uses remote sensing data.</i>   |
| M. Agriculture | 1998 | Agronomy | Kangwon National University, Chuncheon, Republic of Korea | Advisor: Dr. Yun Su Lee. Thesis: <i>Bioassay and analysis of allelopathic substances in rice (Oryza sativa L.) husks.</i> |
| B. Agriculture | 1993 | Agronomy | Kangwon National University, Chuncheon, Republic of Korea |                                                                                                                           |

## WORK EXPERIENCE

**Aug. 2010 – present · Professor** (full Professor since 2019; Assistant 2010–2014 / Associate 2014–2019), Crop Modeling & Remote Sensing, Chonnam National University, Buk-gu, Gwangju, ROK. Crop growth

monitoring: development of a regional and global crop monitoring system.

**Nov. 2009 – Aug. 2010 · Research Scientist**, Environmental Remote Sensing Lab., Kangwon National University, Chuncheon, Kangwon, ROK. Advisor: Dr. Shinku Kang. Environmental ecosystems monitoring: (1) development of a regional and global crop monitoring system, and (2) simulation of small to medium watersheds using RHESys.

**Aug. 2008 – Nov. 2009 · Research Agronomist**, USDA-ARS Ag. Sys. Res. Unit, Ft. Collins, Colorado, USA. Advisor: Dr. Lajpat R. Ahuja. Regional water assessments under climate change scenarios; downscaling of regional climate change variables in space and time for use in a cropping system model.

**Mar. 2006 – Aug. 2008 · Assistant Research Scientist**, Texas A&M AgriLife Research and Extension Center, Uvalde, Texas, USA. Advisor: Dr. Giovanni Piccinni. Crop modeling and irrigation management decision support; crop coefficient determination; crop stress physiology under limited irrigation.

**Feb. 2005 – Feb. 2006 · Post-Doctoral Research Associate**, USDA-ARS Plant Stress and Water Conservation Laboratory, Lubbock, Texas, USA. Advisor: Dr. Steve Mauget. Crop modeling for managing winter wheat based on ENSO forecast information over the Southern High Plains.

**Sep. 2004 – Jan. 2005 · Post-Doctoral Research Associate**, Texas Tech University, Lubbock, Texas, USA. Advisor: Dr. Stephan J. Maas. Crop modeling for the Yield Tracker project (USDA-CSREES funded).

**Aug. 2001 – Aug. 2004 · Research Assistant**, Texas Tech University, Lubbock, Texas, USA. Field study and development of a cotton crop model for the Yield Tracker project.

**Jul. 1992 – Jul. 2001 · Agricultural Researcher**, Kangwon Agricultural Research and Extension Services (KARES), Chuncheon, S. Korea. Field studies on lowland rice: yield forecasting, photosynthesis, seedling media, and weed studies.

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## TEACHING EXPERIENCE

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**Undergraduate:** Crop Growth Modeling (since Fall 2010); Crop Environmental Remote Sensing (since Spring 2011); Crop Field Practice (since Fall 2010); Environmental Plant Ecology (since Fall 2011); Upland Crops (Spring 2014–2021); Biometry (Spring 2011–2013); Practical Agronomy 101 (Fall 2011–2012).

**Graduate:** Advanced Crop Modeling (since Fall 2011); Advanced Crop Environmental Remote Sensing (Spring 2012–2014, 2016–2021); Specific Topics in Upland Crops (Spring 2015, 2017, 2019, Fall 2022); Advanced Crop Ecology (Spring 2012).

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## HONORS & AWARDS

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- **Editorial Contribution Award**, Springer Nature — May 29, 2025

- **Good Service Professor of the Year**, Chonnam National University — June 8, 2016
- **Superior Performance Award**, USDA Agricultural Research Service — October 26, 2009
- **A. W. Young Graduate Student Endowment Scholarship**, Texas Tech University — May 28, 2003
- **Plant and Soil Science Scholarship**, Texas Tech University — June 28, 2002
- **Good Public Servant of the Year**, Provincial Governor, Kangwon Province, Korea — Dec. 30, 2000
- **Good Research Team of the Year**, National Institute of Korean Agricultural Development, Korea — Dec. 22, 1999

## MEMBERSHIPS IN ACADEMIC SOCIETIES

- **1995 – present** · Korean Society of Crop Science
- **2005 – 2009** · American Society of Agronomy (AO3 Agroclimatology & Agronomic Modeling)
- **2010 – present** · AsiaFlux Network
- **2013 – present** · Korean Society of Remote Sensing

## RESEARCH PROJECTS

| Period                 | Project                                                                                                                         | Role       | Funder                      |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------|
| Mar. 2023 – Dec. 2024  | AI-based agricultural productivity estimation crop model development and simulation system construction research in North Korea | PI (J. Ko) | Kor. Aerospace Res. Inst.   |
| Mar. 2021 – Mar. 2026  | Formulation of a hindcast and forecast system of staple crop resources productivity based on a deep neural network approach     | PI (J. Ko) | Kor. Res. Found.            |
| Jan. 2020 – Dec. 2022  | Development of a phenotype-informative intelligent crop model to evaluate crop growth conditions remotely in real-time          | PI (J. Ko) | Kor. Agric. Develop. Admin. |
| Sept. 2019 – Aug. 2020 | Conceptual formulation of an artificial intelligence system to monitor crop growth information and predict crop yield           | PI (J. Ko) | Chonnam Nat'l Univ.         |

| Period                      | Project                                                                                                               | Role         | Funder                           |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------|--------------|----------------------------------|
| Dec. 2018<br>– Nov.<br>2020 | Simulation of crop productivity under the fields of a utility-scale agrophotovoltaic system                           | PI (J. Ko)   | Chonnam Agric. Res. & Ext. Serv. |
| Jun. 2018<br>– May 2021     | Development of a staple crop production monitoring system for Northeastern Asia using satellite images                | PI (J. Ko)   | Kor. Res. Found.                 |
| Mar. 2018<br>– Dec. 2021    | Formulation of 2-D spatial simulation techniques of barley and wheat integrating UAV and a crop model                 | PI (J. Ko)   | Kor. Agric. Develop. Admin.      |
| Mar. 2017<br>– Feb. 2018    | Development of canopy carbon assimilation and transpiration hybridized to the remote sensing-based GRAMI crop model   | PI (J. Ko)   | Chonnam Nat'l Univ.              |
| May 2016 –<br>Nov. 2018     | Determination and verification of radiometric information of absolute emittance for a multipurpose satellite          | PI (J. Ko)   | Kor. Aerospace Res. Inst.        |
| Nov. 2015<br>– Oct. 2018    | Development of a spatial information delivery system for crop growth and carbon flux based on satellite image fusion  | PI (J. Ko)   | Kor. Res. Found.                 |
| Jan. 2014 –<br>Dec. 2016    | Assessment of climate change (RCP) impact on barley productivity and cultivation region, with adaptation technologies | PI (J. Ko)   | Kor. Agric. Develop. Admin.      |
| Jun. 2013 –<br>May 2016     | Development of a photosynthetic algorithm-based crop growth model                                                     | PI (J. Ko)   | Kor. Res. Found.                 |
| May 2012 –<br>Apr. 2014     | Atmospheric correction modules for high-resolution satellite images and crop production information delivery system   | PI (J. Ko)   | Kor. Aerospace Res. Inst.        |
| May 2011 –<br>Apr. 2014     | Development of yield forecast system using remote sensing information                                                 | PI (J. Ko)   | Kor. Res. Found.                 |
| Jan. 2011 –<br>Dec. 2012    | Monitoring crop growth using Light Emitting Diode (LED)                                                               | PI (J. Ko)   | Chonnam Nat'l Univ.              |
| Feb. 2010 –<br>Feb. 2013    | Regional and Global Crop Monitoring System using MODIS                                                                | PI (S. Kang) | Kor. Agric. Develop. Admin.      |

| Period                   | Project                                                                                                                              | Role                                              | Funder                                         |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------------------------|
| Nov. 2009<br>– Feb. 2012 | Development of Forest Disaster Monitoring System                                                                                     | PI (S. Kang & J. Lee)                             | Kor. Forest Admin.                             |
| Aug. 2008<br>– Aug. 2013 | NP 216 — Agricultural System Competitiveness and Sustainability (enhanced system models and DSS tools for water-limited agriculture) | Ag. Sys. Modeler (PI: L. Ma, L.R. Ahuja, G. Dunn) | USDA-ARS                                       |
| Mar. 2006<br>– Aug. 2008 | Precision Irrigators Network: on-farm research and demonstration of irrigation scheduling tools in the Winter Garden region          | Research Scientist (PI: G. Piccinni)              | Rio Grande Basin Initiative (\$250,000 / 2 yr) |
| May 2005<br>– Feb. 2006  | Estimating the Value of Seasonal Climate Forecast Information in Managing Cold Season Forage                                         | Research Associate (PI: S. Mauget)                | USDA-ARS Plant Stress Lab (\$55,270 / 2 yr)    |
| Aug. 2001<br>– Apr. 2005 | Yield Tracker: a yield mapping and prediction information delivery system                                                            | Research Assistant (PI: S.J. Maas)                | USDA-CSREES (\$800,606 / 4 yr)                 |

## PUBLICATIONS

### Refereed Scientific Journals: career total of 92 (SCI & SCIE 67)

*[corresponding]* denotes corresponding author.

### Refereed Scientific Journals

1. Y. Kim, C. Kim, J. Ko, and J. Yeom. 2026. Bioenergy resource mapping of rice paddy fields across the Korean peninsula using MODIS satellite data and AI-based crop models. *Geo Data* 8(2), 123-136. [corresponding]
2. T. Ng, J. Ko, S. Jeong, and J. Ban. 2026. RSCM: A Bayesian remote sensing-integrated crop model software framework for yield estimation. *SoftwareX* 34(102714), 1-14. [corresponding]
3. J. Ko and C.T. Ng. 2026. VIsToLAI: A modular open-source platform for estimating the leaf area index from remote sensing-derived vegetation indices. *SoftwareX* 33(12054), 1-7. [corresponding]
4. S. Jeong and J. Ko. 2025. MODIS-based Crop Classification and Yield Maps for the Paddy Rice Regions of Interest in South and North Korea. *Geo Data* 7(4), 340-346. [corresponding]
5. S. Jeong, T. Shin, and J. Ko. 2025. MODIS-based maize vegetation indices and yield maps for the Seven US Corn Belt States. *Geo Data* 7(3), 153-159. [corresponding]

6. A. Shawon, A. Attia, J. Ko, E. Memic, R. Uptmoor, L. Kottmann, B. Hackauf, and T. Feike. 2025. Impact of calibration strategy and data on wheat simulation with the DSSAT-Nwheat model. *Agronomy J.* 117, 4(1-26).
7. J. Ko, T. Shin, J. Ban, and H. Kim. 2025. Assessing Maize Growth and Yield Using a Remote Sensing-integrated Crop Model Enhanced with Lasso and Ridge Regression. *J. Applied Remote Sens.* 19(2), 028506(1-18). [corresponding]
8. J. Kang, T. Shin, and J. Ko. 2025. Improved Deep Learning Model for Detecting Pest-Induced Feeding Damage on Soybean Leaves. *Kor. J. Crop Sci.* 70(2), 79-91. [corresponding]
9. J. Kang, T. Shin, and J. Ko. 2025. Optimized Deep Learning Model for Soybean Leaf Classification in Complex Field Environments. *Kor. J. Crop Sci.* 70(2), 68-78. [corresponding]
10. S. Kim, D. Han, Y. Lee, E. Doo, H. Oh, J. Ko, and J. Yeom. 2025. Evaluation of Cloud Mask Performance of KOMPSAT-3 Top-of-Atmosphere Reflectance Incorporating Deeplabv3+ with Resnet 101 Model. *Appl. Sci.* 15, 4339(1-16).
11. S. Jeong, J. Ko, J. Ban, T. Shin, and J. Yeom. 2024. Deep learning-enhanced remote sensing-integrated crop modeling for rice yield prediction. *Ecological Informatics* 84, 102886(1-11). [corresponding]
12. H. Ahn, J. Yu, J. Ko, J. Yeom. 2024. Enhanced Short-term Prediction of Solar Radiation Using HRNet Model with Geostationary Satellite Data. *IEEE Trans. Geosci. RS Letters* 21, 1003205(1-5).
13. J. Ko, T. Shin, J. Kang, J. Baek, and K. Lee. 2024. Combining machine learning and remote sensing-integrated crop modeling for rice and soybean crop simulation. *Frontiers in Plant Science* 15, 132069(1-12). [corresponding]
14. H. Min, H. Lee, C. Lee, W. Choi, B. Ha, H. Lee, S. Shin, K. An, D. Kim, O. Kwon, J. Ko, J. Cho, H. Kim. 2023. Climate Change and an Agronomic Journey from the Past to the Present for the Future: A Past Reference Investigation and Current Experiment (PRICE) Study. *Agronomy* 13, 2692(1-19).
15. W. Xue, J. Ko, R. Cao, and Z. Yu. 2023. Improving reliability in reconstruction of Landsat EVI seasonal trajectory over cloud-prone, fragmented and mosaic agricultural landscape. *Remote Sens.* 15, 4673(1-27).
16. T. Shin, W. Xue, and J. Ko. 2023. Construction of a new novel light-emitting diode chamber to measure net ecosystem exchange in low vegetation and validation study in grain crops. *Scientific Reports* 13, 11850(1-9). [corresponding]
17. W. Xue, D. Liu, T. Tosens, D. D. Xiong, M. Carriquí, Y. Xiong, and J. Ko. 2023. Cell wall thickness has phylogenetically consistent effects on the photosynthetic nitrogen-use efficiency of terrestrial plants. *Plant, Cell & Environment* 46, 2323-2336.
18. T. Shin, S. Jeong, and J. Ko. 2023. Development of a radiometric calibration method for multispectral images of croplands obtained with a remote-controlled aerial system. *Remote Sensing* 15, 1408(1-14). [corresponding]
19. T. Shin, J. Ko, S. Jeong, J. Kang, K. Lee, and S. Shim. 2022. Assimilation of Deep Learning and Machine Learning Schemes into a Remote Sensing-Incorporated Crop Model to Simulate Barley and Wheat Productivities. *Remote Sensing* 14, 5443(1-19). [corresponding]

20. W. Xue and J. Ko. 2022. Radiation estimation and crop growth trajectory reconstruction by novel algorithms improve MOD16 evapotranspiration predictability for global multi-site paddy rice ecosystems. *J. Hydrology* 612, 128204(1-18).
21. S. Jeong, J. Ko, T. Shin, and J. Yeom. 2022. Incorporation of machine learning and deep neural network approaches into a remote sensing-integrated crop model for the simulation of rice growth. *Scientific Reports* 22, 9030(1-10). [corresponding]
22. S. Jeong, T. Shin, J. Ban and J. Ko. 2022. Simulation of spatiotemporal variations in cotton lint yield in the Texas High Plains. *Remote Sensing* 14, 1421(1-17). [corresponding]
23. S. Jeong, J. Ko, and J. Yeom. 2022. Predicting rice yield at pixel scale through synthetic use of crop and deep learning models with satellite data in South and North Korea. *Sci. Total Environ.* 802, 149726(1-12). [corresponding]
24. J. Ryu, D. Oh, J. Ko, H. Kim, J. Yeom, J. Cho. 2022. Remote sensing-based evaluation of heat stress damage on paddy rice using NDVI and PRI measured at leaf and canopy scales. *Agronomy* 12, 1972(1-20).
25. S. Han, H. Park, T. Shin, J. Ko, W. Choi, Y. Lee, H. Bae, S. Ahn, J. Yun, and H. Kim. 2022. Effects of tillage system, sowing date, and weather course on yield of double-crop soybeans cultivated in drained paddy fields. *Agronomy* 12, 1902(1-17).
26. J. Ko, J. Cho, J. Choi, C. Yoon, K. Ahn, J. Ban, and D. Kim. 2021. Simulation of crop yields grown under agro-photovoltaic panels: a case study in Chonnam province, South Korea. *Energies* 14, 8463(1-16). [corresponding]
27. J. Choi, J. Ko, K. Ahn, S. Qaisrani, J. Ban, and D. Kim. 2021. Simulation of staple crop yields for determination of regional impacts of climate change: a case study in Chonnam Province, Republic of Korea. *Agronomy* 11, 2544(1-18). [corresponding]
28. K. Song, J. Choi, J. Jung, J. Ko, K. Lee, and S. Shim. 2021. Effects of Elevated Temperature after the Booting Stage on Physiological Characteristics and Grain Development in Wheat. *Kor. J. Crop Sci.* 66(4), 307-307.
29. W. Xue, S. Jeong, J. Ko, and J. Yeom. 2021. Contribution biophysical factors to regional variations of evapotranspiration and seasonal cooling effects in paddy rice in South Korea. *Remote Sens.* 13, 3992(1-22).
30. S. Jeong, J. Ko, and J. Yeom. 2021. The spatial data of paddy rice classification over Northeast Asia using COMS geostationary satellite. *Data of Geology, Oceanography, Space Science, Polar Science* 3(1), 18-22.
31. T. Shin, J. Ko, S. Jeong, A. Rahman, K. Lee, and S. Shim. 2021. Simulation of wheat productivity using a model integrated with proximal and remotely controlled aerial sensing information. *Frontiers in Plant Science* 12, 649660(1-14). [corresponding]
32. J. Yeom, S. Jeong, R.C. Deo, and J. Ko. 2021. Mapping rice area and yield in Northeastern Asia by incorporating a crop model with dense vegetation index profiles from a geostationary satellite. *GIScience & Remote Sensing* 58(1), 1-27. [corresponding]

33. J. Jung, Y. Lee, J. Choi, G. Song, J. Ko, K. Lee, and S. Shim. 2020. Changes in the Hyperspectral Characteristics of Wheat Plants According to N Top-dressing Rates at Various Growth Stages. *Kor. J. Crop Sci.* 65(4), 377-385.
34. A. Shawon, J. Ko, S. Jeong, T. Shin, K.-D. Lee, and S.-I. Shim. 2020. Two-dimensional simulation of barley growth and yield using a model integrated with remote-controlled aerial imagery. *Remote Sens.* 12(22), 3766(1-15). [corresponding]
35. A. Shawon, J. Ko, B. Ha, S. Jeong, D. Kim, and H. Kim. 2020. Assessment of a proximal sensing-integrated crop model for simulation of soybean growth and yield. *Remote Sens.* 12, 410(1-22). [corresponding]
36. S. Jeong, J. Ko, M. Kang, J. Yeom, C. Ng, S. Lee, Y. Lee, and H. Kim. 2020. Geographical variations in gross primary production and evapotranspiration of paddy rice in the Korean peninsula. *Sci. Total Environ.* 714, 136632(1-23). [corresponding]
37. V. Nguyen, S. Jeong, J. Ko, C. Ng, and J. Yeom. 2019. Mathematical integration of remotely-sensed information into a crop modelling process for mapping crop productivity. *Remote Sensing* 11, 2131(1-17). [corresponding]
38. D. Kim, J. Chun, and J. Ko. 2019. A hybrid approach combining the FAO-56 method and the complementary principle for predicting daily evapotranspiration on a rainfed crop field. *J. Hydrology* 577, 1123491(1-11).
39. C. Ng, J. Ko, J. Yeom, S. Jeong, G. Jeong, and M. Choi. 2019. Delineation of rice productivity projected via integration of a crop model with geostationary satellite imagery in North Korea. *K. J. Remote Sensing* 35(1), 57-81. [corresponding]
40. J. Ko, C. Ng, S. Jeong, J. Kim, B. Lee, and H. Kim. 2019. Impacts of regional climate change on barley yield and its geographical variation in South Korea. *Int. Agrophys.* 33(1), 81-96.
41. J. Yeom, S. Jeong, G. Jeong, C. Ng, R. Deo, and J. Ko. 2018. Monitoring paddy productivity in North Korea employing geostationary satellite images integrated with GRAMI-rice model. *Scientific Reports* 8, 16121(1-15). [corresponding]
42. S. Jeong, J. Ko, and J. Yeom. 2018. Nationwide Projection of Rice Yield Using a Crop Model Integrated with Geostationary Satellite Imagery: A Case Study in South Korea. *Remote Sensing* 10(10), 1665(1-27). [corresponding]
43. J. Yeom, J. Ko, J. Hwang, C. Lee, C. Choi, and S. Jeong. 2018. Updating Absolute Radiometric Characteristics for KOMPSAT-3 and KOMPSAT-3A Multispectral Imaging Sensors Using Well-Characterized Pseudo-Invariant Tarps and Microtops II. *Remote Sensing* 10(5), 697(1-20).
44. B. Nay-Htoon, W. Xue, S. Lindner, M. Cuntz, J. Ko, J. Tenhunen, C. Werner, M. Dubbert. 2018. Quantifying differences in water and carbon cycling between paddy and rainfed rice (*Oryza Sativa* L.) by flux partitioning. *PLOS One* 13(4), e0195238(1-22).
45. S. Jeong, J. Ko, J. Choi, W. Xue, and J. Yeom. 2018. Application of an Unmanned Aerial System for Monitoring Paddy Productivity. *I. J. Remote Sensing* 39(8), 2441-2462. [corresponding]

46. J. Choi, J. Ko, C.T. Ng, S. Jeong, J. Tenhunen, W. Xue, and J. Cho. 2018. Quantification of CO<sub>2</sub> fluxes in paddy rice based on the characterization and simulation of CO<sub>2</sub> assimilation approaches. *Agricultural and Forest Meteorology* 249, 348-366. [corresponding]
47. H. Kim, J. Ko, S. Jeong, J. Kim, and B. Lee. 2017. Geospatial delineation of South Korea for adjusted barley cultivation under changing climate. *J. Crop Sci. Biotechnol.* 20(5), 417-427. [corresponding]
48. W. Xue, J. Ko, C. Werner, and J. Tenhunen. 2017. A spatially hierarchical integration of close-range remote sensing, leaf structure and physiology assists in diagnosing spatiotemporal dimensions of field-scale ecosystem photosynthetic productivity. *Agricultural and Forest Meteorology* 247, 503-519.
49. J. Im, J. Ko, H.Y. Kim, and B.K. Ha. 2017. Biochemical responses of soybean (*Glycine max* L. Mer.) to proton beam irradiation. *Plant Breed. Biotech.* 5(2), 97-105.
50. W. Xue, S. Jeong, J. Ko, and J. Tenhunen. 2017. Linking canopy reflectance to crop structure and photosynthesis to capture and interpret spatiotemporal dimensions of per-field photosynthetic productivity. *Biogeosciences* 14, 1315-1332. [corresponding]
51. M. Kim, J. Ko, S. Jeong, J. Yeom, and H. Kim. 2017. Monitoring canopy growth and grain yield of paddy rice in South Korea by using the GRAMI model and high spatial resolution imagery. *GIScience & Remote Sensing* 54(4), 534-551.
52. W. Xue, S. Lindner, M. Dubbert, D. Otieno, J. Ko, H. Muraoka, C. Werner, and J. Tenhunen. 2017. Supplement understanding of the relative importance of biophysical factors in determination of photosynthetic capacity and photosynthetic productivity in rice ecosystems. *Agricultural and Forest Meteorology* 232, 550-565. [corresponding]
53. M. Kim, S. Jeong, J. Yeom, H. Kim, and J. Ko. 2016. Determination of rice canopy growth based on high resolution satellite images: a case study using RapidEye imagery in Korea. *AIMS Environmental Science* 3(4), 631-645. [corresponding]
54. W. Xue, D. Otieno, J. Ko, C. Werner, and J. Tenhunen. 2016. Conditional variations in temperature response of photosynthesis, mesophyll and stomatal control of water use in rice and winter wheat. *Field Crops Research* 199, 77-88.
55. S. Lindner, W. Xue, B. Nay-Htoon, J. Choi, Y. Ege, N. Lichtenwald, F. Fischer, J. Ko, J. Tenhunen, and D. Otieno. 2016. Canopy scale CO<sub>2</sub> exchange and productivity of transplanted paddy and direct seeded rainfed rice production systems in S. Korea. *Agricultural and Forest Meteorology* 228, 229-238.
56. T. Fu, J. Ko, G.W. Wall, P.J. Pinter Jr., B.A. Kimball, M.J. Ottman, H.-Y. Kim. 2016. Simulation of climate change impacts on grain sorghum production grown under free air CO<sub>2</sub> enrichment. *Int. Agrophys.* 30, 311-322. [corresponding]
57. S. Jeong, J. Ko, M. Kim, and J. Kim. 2016. Construction of an unmanned aerial vehicle remote sensing system for crop monitoring. *J. Applied Remote Sensing* 10(2), 026027-1-14. [corresponding]
58. W. Xue, S. Lindner, B. Nay-Htoon, M. Dubbert, D. Otieno, J. Ko, H. Muraoka, C. Werner, J. Tenhunen, P. Harley. 2016. Nutritional and developmental influences on components of rice crop light use efficiency. *Agri. Forest Meteorology* 223, 1-16.

59. W. Xue, B. N-Htoon, S. Lindner, M. Dubbert, D. Otieno, J. Ko, C. Werner, and J. Tenhunen. 2016. Soil water availability and capacity of nitrogen accumulation influence variations of intrinsic water use efficiency in rice. *J. Plant Physiol.* 193, 26-36.
50. T. Fu, B. Ha, and J. Ko. 2016. Simulation of CO<sub>2</sub> enrichment and climate change impacts on soybean production. *Int. Agrophys.* 30, 25-37. [corresponding]
61. D. Kim, K. Kim, J. Ko, and M. Kim. 2015. Focus on the Application of Crop Science and Biotechnology to Climate Change Impact Assessment and Adaptation. *J. Crop Sci. Biotechnol.* 18, 205-207.
52. J. Yeom, J. Ko, and H. Kim. 2015. Application of GOCI-derived vegetation index profiles to estimation of paddy rice yield using the GRAMI rice model. *Computers and Electronics in Agriculture* 118, 1-8.
53. J. Ko, S. Jeong, J. Yeom, H. Kim, J. Ban, and H. Kim. 2015. Simulation and mapping of rice growth and yield based on remote sensing. *J. Applied Remote Sensing* 9(1), 096067:1-17.
54. S. Jo, J. Yeom, and J. Ko. 2015. Determining canopy growth conditions of paddy rice via ground-based remote sensing. *K. J. Remote Sensing* 31(1), 11-21. [corresponding]
55. S. Jo, J. Ko, I. Eom, and S. Kang. 2015. Development of a light-emitting-diode-based bidirectional active remote-sensing system for monitoring crop growth. *I. J. Remote Sensing* 36(5), 1424-1438. [corresponding]
56. J. Ko, H.-Y. Kim, S. Jeong, J.-B. An, G. Choi, S. Kang, and J. Tenhunen. 2014. Potential impacts of climate change on paddy rice yield in mountainous highland terrains. *J. Crop Sci. Biotechnol.* 17, 117-126.
67. J. Ko and L.R. Ahuja. 2013. Global warming likely reduces crop yield and water availability of the dryland cropping systems in the U.S. Central Great Plains. *J. Crop Sci. Biotechnol.* 16, 233-242.
58. H. Kim, J. Ko, S. Kang, and J. Tenhunen. 2013. Impacts of Climate Change on paddy rice yield in a temperate climate. *Global Change Biology* 19, 548-562. [corresponding]
59. M.-S. Lee, B.-M. Kang, J.-E. Lee, W.-J. Choi, J. Ko, J.-E. Choi, K.-N. An, O.-D. Kwon, H.-G. Park, H.-R. Shin, I. Lee, J.-K. Kim, H.-Y. Kim. 2013. How do extreme wet events affect rice quality in a changing climate? *Agriculture, Ecosystems and Environment* 171, 47-54.
70. J. Ko, L. Ahuja, S. Saseendran, T. Green, L. Ma, D. Nielsen, and C. Walthall. 2012. Climate change impacts on dryland cropping systems in the Central Great Plains, USA. *Climatic Change* 111, 445-472.
71. S. Yun, B. Kang, S. Lim, W. Choi, J. Ko, S. Yoon, H. Ro, and H. Kim. 2012. Further understanding CH<sub>4</sub> emissions from a flooded rice field exposed to experimental warming with elevated [CO<sub>2</sub>]. *Agri. Forest Meteorology* 154-155, 75-83.
72. J. Lee, S. Kang, K. Jang, J. Ko, and S. Hong. 2011. The Evaluation of Meteorological Inputs retrieved from MODIS for Estimation of Gross Primary Productivity in the US Corn Belt Region. *Kor. J. Remote Sensing* 27(4), 481-494.
73. J. Ko, L. Ahuja, B. Kimball, A. Saseendran, L. Ma, T. Green, A. Ruane, G. Wall, P. Pinter, and D. Bader. 2010. Simulation of free air CO<sub>2</sub> enriched wheat growth and interactions with water, nitrogen, and temperature. *Agri. Forest Meteorology* 150, 1331-1346.

74. J. Ko, G. Piccinni, T. Marek, and T. Howell. 2009. Determination of growth-stage-specific crop coefficients (Kc) of cotton and wheat. *Agri. Water Manag.* 96(12), 1691-1697.
75. G. Piccinni, J. Ko, T. Marek, and T. Howell. 2009. Determination of growth-stage-specific crop coefficients (Kc) of maize and sorghum. *Agri. Water Manag.* 96(12), 1698-1704.
76. S. Mauget, J. Zhang, and J. Ko. 2009. The value of ENSO forecast information to dual-purpose winter wheat production in the U.S. Southern High Plains. *J. Applied Meteo. & Climato.* 48(10), 2100-2117.
77. J. Ko, G. Piccinni, and E. Steglich. 2009. Using EPIC simulation model to manage irrigated crops. *Agri. Water Manag.* 96(9), 1323-1331.
78. G. Piccinni, J. Ko, T. Marek, and D.I. Leskovar. 2009. Crop coefficients specific to multiple phenological stages of onion and spinach. *HortScience* 44(2), 421-425. [corresponding]
79. J. Ko and G. Piccinni. 2009. Characterizing leaf gas exchange responses of cotton under full and limited irrigation conditions. *Field Crops Research* 112(1), 77-89.
80. J. Ko, G. Piccinni, W. Guo, and E. Steglich. 2009. Parameterization of EPIC crop model for simulation of cotton growth in South Texas. *J. Agri. Sci.* 147(2), 169-178.
81. J. Ko and G. Piccinni. 2008. Corn yield responses under crop evapotranspiration-based irrigation management. *Agri. Water Manag.* 96(5), 799-808.
82. J. Ko and G. Piccinni. 2008. Simulation for irrigation management of corn in South Texas. *Kor. J. Crop Sci.* 53(2), 161-170.
83. S. Mauget and J. Ko. 2008. Two-tier statistical forecast method for agricultural and resource management simulations. *J. Applied Meteorology and Climatology* 47(6), 1573-1589.
84. J. Ko and S.J. Maas. 2007. Use of remotely-sensed data in cotton growth model. *Kor. J. Crop Sci.* 52(4), 393-402.
85. J. Ko, S.J. Maas, S. Mauget, G. Piccinni, and D. Wanjura. 2006. Modeling water stressed cotton growth using within-season remote sensing data. *Agron. J.* 98(6), 1600-1609.
86. J. Ko, S.J. Maas, R.J. Lascano, and D. Wanjura. 2005. Modification of the GRAMI model for cotton. *Agron. J.* 97(5), 1374-1379.
87. J. Ko, D.-h. Cho, J.-K. Ham, Y.-S. Lee, and B.-W. Lee. 2005. Analysis of rice yield differences for inland and coastal regions in South Korea. *J. Agron.* 4(3), 251-256.
88. J. Ko, S.-H. Eom, M.-J. Kim, C.-Y. Yu, and Y.-S. Lee. 2005. Allelopathy of rice husk on Barnyardgrass. *J. Agron.* 4(4), 288-292.
89. J. Ko, J.-K. Ham, Y.-B. Kim, K.-H. Kim, B.-W. Lee, and Y.-S. Lee. 2005. Chemical and physical characteristics of expanded rice husk medium on growth of rice seedling. *Kor. J. Crop Sci.* 50(2), 120-124.
90. J. Ko, D.-Y. Kim, J.-G. Sa, B.-W. Lee, and Y.-S. Lee. 2005. Effect of expanded rice husk medium on rice seedling for machine transplanting. *Kor. J. Crop Sci.* 50(1), 55-59.
91. K.-S. Kim, J.-R. Kim, H.-S. Ji, J. Ko, M.-A. Lee, D.-Y. Kim, Y.-B. Shin, and S.-U. Park. 1995. Survey of cool weather injury to rice in alpine areas of Kangwon province in 1993. *RDA J. Agricultural Sci.* 37(2), 74-89.

92. K.-S. Kim, J. Ko, J.-G. Sa, J.-S. Chang, and D.-Y. Kim. 1994. Weed flora changes in lowland rice fields in Kangwon province. *Kor. J. Weed Sci.* 14(4), 258-264.

## Book Chapters

1. J. Ko, W. Xue, and X. Li. 2026. *New insights in crop monitoring and management using remote sensing data* (Special issue reprint). MDPI, Basel, Switzerland. p. 234.
2. S. Jeong, H. Kim, J. Ko, T. Shin, and B. Lee. 2022. Use of data and models in simulating regional and geospatial variations in climate change impacts on rice and barley in the Republic of Korea. In: *Enhancing agricultural research and precision management for subsistence farming by integrating system models with experiment* (Eds. J. Timlin and S. Anapalli). John Wiley & Sons, Inc., New York, NY, USA. p. 134-154.

## Published Proceedings

1. J. Ko, T. Shin, and J. Kang. 2021. Estimation of Crop Leaf Area Index using Remote Sensing Data based on Machine Learning and Deep Learning Approaches. ISRS 2021, ROK, May 26-28. p. 455-457. (Virtual)
2. S. Qaisrani, J. Ko, J. Cho, C. Yoon, K. An, and K. Kang. 2019. Simulation of Agronomic Crops to Apply for the Evaluation of Potential Productions under Agro-photovoltaic Module Panels. ICCT 2019, Jeju, ROK, July 4-5. p. 1-2.
3. A.R. Shawon and J. Ko. 2019. Monitoring of soybean growth based on ground remote sensing and the GRAMI model. ISRS 2019, Taipei, Taiwan, April 17-19. p. 1-4.
4. S. Jeong, G. Jeong, J. Yeom, and J. Ko. 2018. Classification and monitoring of paddy fields using GOCI imageries in Northeast Asia. ISRS 2018, Pyeongchang, ROK, May 09-11.
5. A.R. Shawon, S. Jeong, and J. Ko. 2018. Parameterization of the GRAMI model for growth simulation of soybean. ISRS 2018, Pyeongchang, ROK, May 09-11.
6. S. Jeong, J. Ko, and J. Yeom. 2016. Monitoring of paddy fields and rice productivities using satellite images for South Korea. Proc. KAGIS Fall Conference 2016, Chungju, Korea, Nov. 3-4. p. 154-156.
7. J. Ko and C. Ng. 2015. Effective Linking of Crop Modeling and Remote Sensing. ITISE, Granada, Spain, July 1-3. p. 481-492.
8. J. Ko, S. Jeong, and H.-Y. Kim. 2012. Development of a crop growth simulation algorithm that uses remote sensing data. 2012 Proc. KAGIS Fall Conference, Jeju, Korea, Nov. 8-9. p. 298-299.
9. S. Jeong, J. Ko, J. Kim, J.-M. Yeom, and H.-Y. Kim. 2012. Crop information delivery system using an unmanned aerial vehicle. 2012 Proc. KAGIS Fall Conference, Jeju, Korea, Nov. 8-9. p. 296-297.
10. J. Ko, H. Kim, S. Kang, and J. Tenhunen. 2011. Simulation of Present and Potential Future Paddy Rice Yield in the Mountainous Terrain of Haeon Basin. 2011 TERRECO Science Conference, Karlsruhe Institute of Technology, Garmisch-Partenkirchen, Germany, October 2-7. p. 6.

11. J. Ko, G. Piccinni, A. Wentz, E. Steglich, T. Gerik, and T. Marek. 2007. EPIC model as a decision support system for irrigation management of crops. 28th Annual International Irrigation Show, San Diego, CA, December 9-12. p. 726-746.
12. G. Piccinni, J. Ko, A. Wentz, D. Leskovar, T. Marek, and T. Howell. 2007. Determination of crop coefficients (Kc) for irrigation management of crops. 28th Annual International Irrigation Show, San Diego, CA, December 9-12. p. 706-719.
13. S. Maas, N. Rajan, J. Ko, J. Duesterhaus, and R. Lascano. 2005. Remote sensing approach for estimating daily crop water use. 20th Biennial Workshop on Aerial Photography, Videography, and High Resolution Digital Imagery for Resource Assessment, Weslaco, Texas, October 4-6. CD-ROM.
14. S.J. Maas, S. Rajapakse, W. Guo, J. Ko, R. Lascano, and J. Booker. 2005. Relation between RADARSAT imagery and cotton field characteristics. Proc. Beltwide Cotton Conference, New Orleans, LA, January 4-7. p. 593-600.
15. S. Maas, R. Lascano, D. Cooke, C. Richardson, D. Upchurch, D. Wanjura, D. Krieg, S. Mengel, J. Ko, J. Brightbill, K. Bronson, W. Payne, C. Rush, S. Rajapakse, W. Guo, and E. Morris. 2004. Within-season estimation of evapotranspiration and soil moisture in the High Plains using YieldTracker. Proc. Conf. on High Plains Groundwater Resources, Lubbock, TX, December 7-9. p. 219-226.
16. J. Ko, Stephan J. Maas, and Y.-S. Jung. 2004. A cotton crop model able to use remotely sensed data. Proc. Kor. J. Env. Agr., Muju, Jeonju, Korea, July 1. p. 115-125.
17. S.J. Maas and J. Ko. 2004. Canopy architecture model for cotton. Proc. Beltwide Cotton Conference, San Antonio, Texas. p. 2039-2142.

## **Published Abstracts**

1. T. Shin, J. Ko, and J. Kang. 2022. Development of an Efficient Radiation Correction Method based on Incident Light for Multispectral Aerial Images. KSRS Fall meeting, Busan, ROK.
2. J. Kang, T. Shin, and J. Ko. 2022. Detecting damaged soybean leaves in synthesized images using an improved Faster R-CNN model based on deep learning. KSRS Fall meeting, Busan, ROK.
3. J. Ko, T. Shin, and J. Kang. 2022. Assimilation of Machine Learning Procedures into a Remote Sensing-Integrated Crop Model for Improving Simulation Performances of Crop Growth. 7th Int'l Conf. Agric. Sci., Food and Farming Tech., London, UK. (Virtual)
4. J. Ko, T. Shin, and J. Kang. 2021. Combining a remote sensing-integrated crop model with machine learning and deep neural network schemes: a case study for barley and wheat. KSRS Fall meeting, Gangchon, ROK. (Virtual)
5. T. Shin, J. Ko, and J. Kang. 2021. Integrating remote sensing information into a crop model to simulate corn growth and yield. KSRS Fall meeting, Gangchon, ROK. (Virtual)
6. J. Kang, T. Shin, and J. Ko. 2021. Optimized convolutional neural network (CNN) model for soybean leaf classification. KSRS Fall meeting, Gangchon, ROK. (Virtual)

7. J. Ko, T. Shin, and J. Kang. 2021. Integration of Machine Learning and Deep Neural Network Approaches into a Process-based Crop Model for Prediction of Crop Growth. Int'l E-Conference on Plant Sci. Biol., London, UK. (Virtual)
8. J. Ko, T. Shin, and S. Jeong. 2020. Monitoring Crop Growth based on an Integration of Deep Neural Network and Crop Modeling with Remote Sensing. KSRS Fall meeting, Gangchon, ROK. (Virtual)
9. J. Ko, C. Yoon, K. An, and J. Cho. 2020. Simulation of Agronomic Crop Yields grown under Agro-Photovoltaic Module Panels. KSRS Fall meeting, Gangchon, ROK. (Virtual)
10. S. Jeong, J. Ko, and G. Jeong. 2020. Classification of Paddy Fields using Convolutional Neural Network with MODIS imagery in Northeast Asia. EGU General Assembly 2020, Vienna, Austria. (Virtual)
11. T. Shin, S. Jeong, and J. Ko. 2020. Construction of a Light Emitting Diode Chamber for Measurement of Gas Exchange for the Plant Ecosystem. EGU General Assembly 2020, Vienna, Austria. (Virtual)
12. S. Jeong, J. Ko, and Yeom. 2019. Projection of Pixel-based Rice Yields by Linking Geostationary Satellite Imagery and Crop Model in Northeast Asia. ASRS 2019, Daejeon, ROK.
13. T. Shin, S. Jeong, and J. Ko. 2019. Development of a Simple Radiometric Calibration System for Multispectral Images of an Unmanned Aerial Vehicle. ASRS 2019, Daejeon, ROK.
14. D. Phetkhampheng and J. Ko. 2019. Impacts of climate change on rice production in Siem Reap, Cambodia. ASRS 2019, Daejeon, ROK.
15. T. Shin, J. Ko, K. Lee, S. Jeong, A. Shawon, K. So, and S. Shim. 2019. Monitoring of Barley and Wheat Productivity using a Crop Model Assimilated with Remote-controlled Aerial System-based Images. ISRS 2019, Taipei, Taiwan.
16. S. Jeong, G. Jeong, J. Ko, J. Yeom. 2019. Nationwide projection of rice yield using a crop model integrated with geostationary satellite imagery: A case study in South Korea. ISRS 2019, Taipei, Taiwan.
17. A.R. Shawon, S. Jeong, and J. Ko. 2019. Monitoring of soybean growth based on ground remote sensing and the GRAMI model. ISRS 2019, Taipei, Taiwan.
18. S. Jeong, G. Jeong, J. Yeom, and J. Ko. 2018. Classification and monitoring of paddy fields using GOCI imageries in Northeast Asia. ISRS 2018, Pyeongchang, ROK.
19. A.R. Shawon, S. Jeong, and J. Ko. 2018. Parameterization of the GRAMI model for growth simulation of soybean. ISRS 2018, Pyeongchang, ROK.
20. J. Ko, J. Choi, S. Jeong, and B. Nay-Htoon. 2018. Simulation of carbon fluxes and evapotranspiration in rice fields. Agric. & Food Chem. 2018, Rome, Italy.
21. S. Jeong, J. Ko, and J. Yeom. 2018. Geospatial projections of paddy productivity in Korea using a crop model incorporated with satellite imageries. Agric. & Food Chem. 2018, Rome, Italy.
22. J. Ko, C. Ng, S. Jeong, and J. Yeom. 2018. Geospatial projections of crop productivity using a mathematical model integrated with remotely sensed information. PMB-2018, Paris, France.
23. S. Jeong, J. Ko, C. Ng, and J. Yeom. 2018. Monitoring of rice productivity using fused satellite images from MODIS and RapidEye. PMB-2018, Paris, France.

24. C. Nguyen, T. Ng, S. Jeong, and J. Ko. 2017. Estimating crop growth processes using remote sensing data. Spatial Statistics, Lancaster Univ., England.
25. S. Jeong and J. Ko. 2016. Simulation of geospatial production changes of barley due to the impacts of climate change in South Korea. AGU Fall meeting, San Francisco, CA.
26. S. Jeong, J. Ko, and J. Yeom. 2016. Simulation of paddy rice productivity using a grid crop model based on satellite images of South Korea. AGU Fall meeting, San Francisco, CA.
27. J. Ko and S. Jeong. 2016. Geospatial crop simulation scheme to deliver amendment measures to alleviate the impact of climate change on crops. AGMIP6 Global Workshop, Montpellier, France.
28. J. Ko, S. Jeong, and J. Choi. 2016. Integrated crop model uses remote sensing data to simulate crop growth and carbon flux data. AGMIP6 Global Workshop, Montpellier, France.
29. C. Kim, H. Jeong, D. Moon, and J. Ko. 2015. Impacts of climate change on Korea's food supply using simulation model for climate-agriculture relations. AGMIP Global Workshop, Florida, USA.
30. J. Choi, J. Ko, S. Linder, and J. Tenhunen. 2015. Modeling Canopy Photosynthesis of Paddy Rice. Proc. Kor. Soc. Crop Sci. Fall Conf., Chonju, Chonbuk, ROK.
31. J. Ko. 2015. Two-dimensional projections of crop growth and yield. Proc. Kor. Math. Biol. Fall Conf., Gwangju, ROK.
32. J. Yeom, H. Kim, J. Ko, and D. Lee. 2015. The study of GOCI data for land surface application: the case study of temporal vegetation dynamics and crop yield simulation. Proc. Kor. Soc. Remote Sens. Fall Conf., Gwangju, ROK.
33. M. Kim, J. Ko, and S. Jeong. 2015. Modeling of Rice Growth at Different Spatial Scales using Remotely Sensed Imageries. Proc. Kor. Soc. Crop Sci. Fall Conf., Chonju, Chonbuk, ROK.
34. B. N-Htoon, W. Xue, M. Dubbert, S. Lindner, J. Tenhunen, J. Ko, and C. Werner. 2014. Seasonal and spatial variations of water use efficiency of rice (*Oryza Sativa*): from the leaf to the ecosystem. AsiaFlux Workshop, IRRI, Philippines.
35. B. N-Htoon, W. Xue, M. Dubbert, J. Ko, and C. Werner. 2014. Seasonal and spatial variations of carbon and water fluxes of rice (*Oryza Sativa*) from leaf to field scale. BIOGEOMON, Bayreuth, Germany. 8th International Symposium on Ecosystem Behavior, p. 129.
36. J. Choi and J. Ko. 2014. Characterizing and Quantifying CO<sub>2</sub> Flux on the Canopy of Paddy Rice (*Oryza Sativa*). Proc. Kor. Soc. Crop Sci. Fall Conf., Cheonan, Chungbuk, ROK.
37. J. Choi, J. Ko, and J. Tenhunen. 2014. Quantifying Canopy Photosynthesis of Paddy Rice. Proc. Kor. Soc. Crop Sci. Spring Conf., KNU, Taegu, ROK.
38. J. Ko, M. Kim, J. Choi, S. Jeong, and H. Kim. 2014. Simulation of Climate Change Impacts on Barley and Rice Productions in Korea. Proc. Kor. Soc. Crop Sci. Fall Conf., Cheonan, Chungbuk, ROK.
39. M. Kim, J. Ko, and S. Jeong. 2014. Determining Canopy Growth and Yield of Rice under Various Nitrogen Regimes using Aerial Remote Sensing. Proc. Kor. Soc. Crop Sci. Spring Conf., KNU, Taegu, ROK.

40. M. Kim, J. Ko, and S. Jeong. 2014. Radiometric Correction of RapidEye Satellite Images for Determining the Canopy Growth of Paddy Rice (*Oryza Sativa*). Proc. Kor. Soc. Crop Sci. Fall Conf., Cheonan, Chungbuk, ROK.
41. S. Jo and J. Ko. 2014. Monitoring Phenological Stages of Paddy Rice using Remote Sensing Data. Proc. Kor. Soc. Crop Sci. Spring Conf., KNU, Taegu, ROK.
42. W. Xue, B. N-Htoon, J. Ko, C. Werner, and J. Tenhunen. 2014. CO<sub>2</sub> diffusion conductance and leaf nitrogen interactively drive photosynthesis: study from paddy rice under different nutrient availability. AsiaFlux Workshop, IRRI, Philippines.
43. J. Ko and H. Kim. 2011. Simulation of Climate Change Impacts on Paddy Rice Yield. 2011 Proc. Kor. Soc. Crop Sci. Fall Conf., Danyang, Chungbuk, ROK, Vol. 56, Suppl. 2: 9.
44. J. Ko, I. Eom, J. Kim, S. Cho, and H. Kim. 2011. Construction of a Remote Sensing Instrument for Crops using Light Emitting Diode (LED). Proc. Kor. Soc. Crop Sci. Fall Conf., Danyang, Chungbuk, ROK, Vol. 56, Suppl. 2: 14.
45. J. Ko, L. Ahuja, and H. Kim. 2011. Simulation of climate change impacts on crops. 2011 Proc. Kor. Soc. Crop Sci. Spring Conf., Mokpo, Chonnam, ROK, Apr. 21. Vol. 56, Suppl. 1: 17.
46. J. Ko, J. Lee, and S. Kang. 2010. Development of a crop modeling scheme to determine net primary productivity of corn and soybean. AsiaFlux Workshop, Guangzhou, China, p. 131.
47. J. Lee, J. Ko, and S. Kang. 2010. Estimation and evaluation of gross primary productivity using inputs retrieved from MODIS. AsiaFlux Workshop 2010, Guangzhou, China, Dec. 3, p. 130.
48. J. Ko. 2010. Crop environmental ecology research: crop growth monitoring. 2010 Fall Conf. Kor. Soc. Crop Sci., Busan, ROK, Vol. 55, Suppl. 2: 10.
49. J. Ko, J. Choi, and S. Kang. 2010. Assessment of regional forest disasters in Soyang Basin using RHESys. DFG/KOSEF International Research Training Group Workshop 2010, Bayreuth, Germany, Apr. 13, p. 14.
50. J. Ko, L. Ahuja, B. Kimball, S.A. Saseendran, L. Ma, T. Green, G. Wall, P. Pinter Jr. 2009. Simulation of climate change impacts on wheat-fallow cropping systems. ASA-CSSA-SSSA 2009 International Annual Meetings, Pittsburgh, PA, November 5. CD-ROM.
51. J. Ko, G. Piccinni, A. Wentz, and Y. Wen. 2008. Characterizing leaf gas exchange responses of cotton. ASA-CSSA-SSSA 2008 International Annual Meetings, Houston, TX, October 8. CD-ROM.
52. J. Ko, G. Piccinni, E. Steglich, T. Gerik, T. Marek, T. Howell, and A. Kemanian. 2007. Using EPIC simulation model to manage irrigated crops. ASA-CSSA-SSSA 2007 International Annual Meetings, New Orleans, LA, November 5. CD-ROM.
53. D. Rowland, G. Piccinni, T.A. Howell, J. Ko, T. Marek, W. Faircloth, P. Payton, and D. Tissue. 2007. Irrigation in water restricted regions: managing water use efficiency with limited available water. ASA-CSSA-SSSA 2007 International Annual Meetings, New Orleans, LA, November 5. CD-ROM.
54. J. Ko, G. Piccinni, B. Trees, S. Agehara, T. Witten, and M. Kolomiets. 2006. Physiological responses of corn and cotton under limited irrigation management. ASA-CSSA-SSSA 2006 International Annual Meetings, Indianapolis, Indiana, November 12-16. CD-ROM.

55. G. Piccinni, J. Ko, D. Leskovar, T. Gerik, E. Steglich, W. Harman, A. Kemanian, and T. Marek. 2006. Crop simulation and crop evapo-transpiration for irrigation management of corn and spinach. ASA-CSSA-SSSA 2006 International Annual Meetings, Indianapolis, Indiana, November 14. CD-ROM.
  56. S. Mauget, J. Ko, and S.J. Maas. 2006. An evaluation of multivariate statistical classifiers as seasonal forecasting tools. NOAA 31st Annual Climate Diagnostics & Prediction Workshop, Boulder, CO, October 24.
  57. G. Piccinni, T. Gerik, E. Steglich, D. Leskovar, J. Ko, T. Marek, and T. Howell. 2006. Crop simulation and crop evapotranspiration for irrigation management of spinach. ASHS-2006, New Orleans, LA, July 29. *HortScience* 41, 971.
  58. D. Cho, C. Lee, J. Ko, and M. Ku. 2000. Photosynthetic performance of transgenic rice plants over-expressing maize C4 photosynthesis enzymes. Joint meeting of the Korean Society of Crop Science, the Korean Society of Agricultural and Forest Meteorology, and the Korean Society of Agro-Informatics. Suweon, Korea. p. 206-207. (in Korean)
  59. J. Ko, S.-H. Eom, M.-J. Kim, C.-Y. Yu, Y.-S. Lee, H.-S. Ji, J.-K. Ham, D.-Y. Kim, and E.-H. Kim. 1998. Bioassay and analysis of allelopathic substances in rice husks (*Oryza sativa* L.). Proc. Annual Meeting of the Korean Society of Crop Science, Jinju, Korea. *Kor. J. Crop Sci.* 42(2), 106-107. (in Korean)
  50. J. Ko, J.-A. Jung, D.-Y. Kim, D.-H. Cho, and E.-H. Kim. 1997. Studies of the difference in dry matter production and photosynthetic rate of rice cultivars in the eastern and the western regions of Kangwon province. Proc. Annual Meeting of Korean Breeding Society, Suweon, Korea. *Kor. J. Breeding* 30-2, 66-67. (in Korean)
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## PATENT

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1. J. Ko and T. Shin. 2023. **LED-based Canopy Photosynthesis Chamber System**. Patent No. 10-2566749, Korean Intellectual Property Office.
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## PEER REVIEW ACTIVITIES

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**Editor:** *Kor. J. Crop Sci.* (from 2010); *J. Crop Sci. Biotech.* (from 2010); *Scientific Reports* (from 2019); *Remote Sensing* (from 2020).

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## PRESENTATIONS & INVITED SEMINARS

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### Oral Presentations

1. Jul. 23, 2018 — Agric. & Food Chem. 2018, Rome, Italy. Geospatial projections of paddy productivity in Korea using a crop model incorporated with satellite imageries.
2. Feb. 22, 2018 — PMB-2018, Paris, France. Geospatial projections of crop productivity using a mathematical model integrated with remotely sensed information.
3. Jun. 28, 2016 — AgMip6 Global Workshop, Montpellier, France. Geospatial crop simulation scheme to deliver amendment measures to alleviate the impact of climate change on crops.
4. Oct. 20, 2011 — Fall Conf. Kor. Soc. Crop Sci., Danyang, Chungbuk, ROK. Simulation of climate change impacts on paddy rice yield.
5. Oct. 21, 2011 — Fall Conf. Kor. Soc. Crop Sci., Danyang, Chungbuk, ROK. Construction of a remote sensing instrument for crops using Light Emitting Diode (LED).
6. Oct. 5, 2011 — 2011 TERRECO Science Conference, Karlsruhe Institute of Technology, Garmisch-Partenkirchen, Germany. Simulation of Present and Potential Future Paddy Rice Yield in the Mountainous Terrain of Hae-an Basin.
7. Apr. 21, 2011 — Spring Conf. Korean Society of Crop Science, Mokpo, Chonnam, ROK. Simulation of climate change impacts on crops.
8. Oct. 22, 2010 — Fall Conf. Korean Society of Crop Science, Busan, ROK. Crop environmental ecology research: crop growth monitoring.
9. Apr. 13, 2010 — DFG/KOSEF International Research Training Group Workshop 2010, Bayreuth, Germany. Assessment of regional forest disasters in Soyang Basin using RHESSys.
10. Nov. 5, 2009 — ASA-CSSA-SSSA 2009 International Annual Meetings, Pittsburgh, PA. Simulation of climate change impacts on wheat-fallow cropping systems in Colorado.
11. Dec. 11, 2007 — 28th Annual International Irrigation Show, San Diego, California. EPIC model as a decision support system for irrigation management of crops.
12. Nov. 5, 2007 — ASA-CSSA-SSSA 2007 International Annual Meetings, New Orleans, Louisiana. Using EPIC simulation model to manage irrigated crops.
13. Nov. 14, 2006 — ASA-CSSA-SSSA 2006 International Annual Meetings, Indianapolis, Indiana. Physiological responses of corn and cotton under limited irrigation management.
14. Oct. 19, 1997 — Annual Meeting of Korean Breeding Society, Suwon, Korea. Studies of the difference in dry matter production and photosynthetic rate of rice cultivars in the eastern and western regions of Kangwon province.
15. May 3, 1995 — Conf. Weed Science Society of Korea, Jeju, South Korea. An aspect of lowland weeds occurrence in association with the changes of rice cultivation in Kangwon province.

## **Poster Presentations**

1. May 28, 2021 — ISRS 2021, ROK. Estimation of Crop Leaf Area Index using Remote Sensing Data based on Machine Learning and Deep Learning Approaches. (Virtual)

2. May 5, 2021 — Int'l E-Conference on Plant Sci. Biol., London, UK. Integration of Machine Learning and Deep Neural Network Approaches into a Process-based Crop Model for Prediction of Crop Growth. (Virtual)
3. Nov. 4, 2020 — KSRS Fall meeting, Gangchon, ROK. Monitoring Crop Growth based on an Integration of Deep Neural Network and Crop Modeling with Remote Sensing. (Virtual)
4. Nov. 4, 2020 — KSRS Fall meeting, Gangchon, ROK. Simulation of Agronomic Crop Yields grown under Agro-Photovoltaic Module Panels. (Virtual)
5. May 3, 2020 — EGU General Assembly 2020, Vienna, Austria. Classification of Paddy Fields using Convolutional Neural Network with MODIS imagery in Northeast Asia. (Virtual)
6. May 3, 2020 — EGU General Assembly 2020, Vienna, Austria. Construction of a Light Emitting Diode Chamber for Measurement of Gas Exchange for the Plant Ecosystem. (Virtual)
7. Jul. 23, 2018 — Agric. & Food Chem. 2018, Rome, Italy. Geospatial projections of paddy productivity in Korea using a crop model incorporated with satellite imageries.
8. May 10, 2018 — ISRS 2018, Pyeongchang, ROK. Classification and monitoring of paddy fields using GOCI imageries in Northeast Asia.
9. May 9, 2018 — ISRS 2018, Pyeongchang, ROK. Parameterization of the GRAMI model for growth simulation of soybean.
10. Feb. 23, 2018 — PMB-2018, Paris, France. Monitoring of rice productivity using fused satellite images from MODIS and RapidEye.
11. Jul. 4-6, 2017 — Spatial Statistics, Lancaster Univ., England. Estimating crop growth processes using remote sensing data.
12. Dec. 12-16, 2016 — AGU Fall Meeting, San Francisco, CA. Simulation of geospatial production changes of barley due to the impacts of climate change in South Korea.
13. Dec. 12-16, 2016 — AGU Fall Meeting, San Francisco, CA. Simulation of paddy rice productivity using a grid crop model based on satellite images of South Korea.
14. Nov. 3-4, 2016 — KAGIS Fall Conference 2016, Chungju, Korea. Monitoring of paddy fields and rice productivities using satellite images for South Korea.
15. Jun. 26-30, 2016 — AgMip6 Global Workshop, Montpellier, France. Integrated crop model uses remote sensing data to simulate crop growth and carbon flux data.
16. Jul. 1-3, 2015 — ITISE, Granada, Spain. Effective Linking of Crop Modeling and Remote Sensing.
17. Dec. 1-3, 2010 — AsiaFlux Workshop 2010, Guangzhou, China. Development of a crop modeling scheme to determine net primary productivity of corn and soybean.
18. Dec. 1-3, 2010 — AsiaFlux Workshop 2010, Guangzhou, China. Estimation and evaluation of gross primary productivity using inputs retrieved from MODIS.
19. Sep. 10-12, 2007 — Farming System Design 2007, Catania, Sicily, Italy. Decision support system for irrigation management of crops.

20. May 14-18, 2007 — 2007 Joint Rio Grande Basin Initiative Conferences, South Padre Island, Texas. WinEPIC model as a decision support system for irrigation management of crops.
21. Oct. 15-16, 1998 — Annual Meeting of the Korean Society of Crop Science, Jinju, Korea. Bioassay and analysis of allelopathic substances in rice husks (*Oryza sativa* L.).

## **Invited Seminars**

1. Nov. 22, 2024 — Korea Institute of Science and Technology, Seoul. Development and Application of Crop Models using Remote Sensing and a Canopy Photosynthesis Chamber System.
2. Sep. 18, 2023 — University of Freiburg, Germany. A Progress Report of the Eva Mayr-Stihl Fellowship Project and A Research Proposal.
3. Aug. 7, 2023 — Institute of Strategies and Technology Assessment, Federal Research Center of Cultivated Plants (JKI), Kleinmachnow, Germany. Monitoring Crop Productivity based on A Crop Modeling System integrated with Both Remote Sensing and Machine Learning.
4. Feb. 2, 2023 — Busan Nat'l Univ., Milyang. Precision Agriculture and Crop Monitoring based on Crop Modeling, Remote Sensing, and Machine Learning Approaches.
5. Mar. 16, 2022 — GRC, NIAS, Jeonju. UAS-based Phenotyping Research Proposal & Intro to Crop Modeling, Remote Sensing, and Deep Neural Network Research.
6. Jun. 28, 2018 — Symposium on application of big data to crop research in response to climate change, NICS, Jeonju. Application of remote sensing techniques for development of a decision support system.
7. Jan. 24, 2018 — Workshop on construction of big data of crops, NICS, Jeonju. Research on application of crop models.
8. Sep. 5, 2017 — NIAS, Jeonju. Monitoring crop growth conditions and forecasting yield using remote sensing data.
9. Aug. 22, 2017 — WARSAS 2017, Statistics Admin., Daejeon. Crop modeling and remote sensing studies for monitoring growth and forecasting yield.
10. Aug. 17, 2017 — NICS, Jeonju. Monitoring crop growth conditions and forecasting yield using remote sensing data.
11. Sep. 18, 2015 — Fall Conf. Kor. Math. Biol., Gwangju, Korea. Two-dimensional projections of crop growth and yield.
12. Apr. 11, 2014 — CARES, Naju, Chonnam, Korea. Crop simulation and remote sensing studies for monitoring crop growth and yield.
13. Oct. 13, 2011 — Kor. Aerospace Res. Inst., Daejeon, Korea. Remote Sensing Studies to Determine Crop Growth and Yield.
14. Sep. 2011 — Korea Environment Institute, Seoul, S. Korea. Remote Sensing & Simulation Studies to Monitor Crop Growth.

15. Oct. 26, 2010 — Yanbian University, Yanji, China. Crop Environmental Ecology Research: Crop Growth Monitoring.
16. Aug. 9, 2010 — Seoul National University, Seoul, S. Korea. Use and Application of RZWQM2-DSSAT.
17. Jun. 29, 2010 — Chungbuk National University, Cheongju, S. Korea. Crop Environmental Ecology.
18. Jun. 17, 2010 — Chonnam National University, Gwangju, S. Korea. I. Crop Production Strategy; II. Crop Environmental Ecology.
19. Jun. 10, 2010 — Seoul National University, Seoul, S. Korea. Crop Ecology Research and Teaching.
20. Mar. 29, 2010 — Korea Environment Institute, Seoul, S. Korea. Climate Change Impacts on Natural Resources.
21. Mar. 3, 2010 — National Academy of Agricultural Science, Suwon, S. Korea. Crop Environmental Ecology Research.
22. Dec. 18, 2009 — Seoul National University, Seoul, S. Korea. Crop Ecology Research and Teaching.
23. Jul. 21, 2009 — Korea Environment Institute, Seoul, S. Korea. Plant Ecosystems Research.
24. Jun. 12, 2009 — Seoul National University, Seoul, S. Korea. Crop Ecology Research and Teaching.
25. May 14, 2009 — Korea Environment Institute, Seoul, S. Korea. Simulation of Climate Change Impacts on Crops.
26. Apr. 14, 2008 — USDA-ARS Ag Sys Res Unit, Ft. Collins, CO. Crop Modeling Research.
27. Mar. 26, 2008 — McNeese State Univ., Lake Charles, LA. Crop Modeling Research.
28. Dec. 16, 2005 — Texas AgriLife Research, Uvalde, TX. Crop Modeling Studies in the Texas High Plains.
29. Sep. 28, 2005 — College of Agriculture and Life Science, Kangwon Nat'l Univ., Chuncheon, Korea. Remote sensing and precision agriculture (243rd invited seminar at Agricultural Science Research Institute).
30. Jul. 1, 2004 — Muju, Chonbuk, Korea, Conf. Kor. Soc. Agri. & Env. A cotton crop model able to use remotely sensed data.

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## MEETINGS, WORKSHOPS, TRAINING & VISITING

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- **Aug. 11 – Oct. 27, 2023** — Freiburg University, Germany. Visiting Scientist (Sabbatical).
- **Aug. 1-10, 2023** — JKI, Germany. Visiting Scientist.
- **Aug. 8 – Nov. 3, 2019** — Texas Tech University, Lubbock, TX. Visiting Scholar (Sabbatical).
- **Sep. 16-19, 2019** — USDA-ARS, Ft. Collins, CO. RZWQM2 training.
- **Jul. 23-24, 2018** — Rome, Italy. Agric. & Food Chem. 2018.
- **Feb. 22-24, 2018** — Paris, France. PMB-2018.
- **Jul. 4-7, 2017** — Lancaster Univ., England. Spatial Statistics.

- **Jun. 28-30, 2016** — Montpellier, France. AgMip6 Global Workshop.
- **Sep. 18, 2015** — Gwangju, ROK. Fall Conf. Kor. Math. Biol.
- **Jul. 1-3, 2015** — Granada, Spain. ITISE.
- **Oct. 20-21, 2011** — Danyang, Chungbuk, ROK. Fall Conf. Kor. Soc. Crop Sci.
- **Oct. 2-7, 2011** — Karlsruhe Institute of Technology, Garmisch-Partenkirchen, Germany. 2011 TERRECO Science Conference.
- **Apr. 21-22, 2011** — Mokpo, Chonnam, ROK. Spring Conf. Korean Society of Crop Science.
- **Oct. 26, 2010** — Yanbian University, Yanji, China. China-Korea Joint Seminar on Ecosystem Services in Northeast Asia.
- **Oct. 21-22, 2010** — Busan, ROK. 2010 Fall Conf. Korean Society of Crop Science.
- **Apr. 11-14, 2010** — Bayreuth, Germany. DFG/KOSEF International Research Training Group Workshop 2010.
- **Nov. 1-5, 2009** — Pittsburgh, PA. ASA-CSSA-SSSA 2009 International Annual Meetings.
- **Jan. 26-30, 2009** — USDA-ARS-ASRU, Ft. Collins, CO. 1st Collaborator's Meeting on the NP216 CRIS Project of Water Limited Agriculture: Training on RZWQM2.
- **Dec. 3, 2008** — USDA-ARS-ASRU, Ft. Collins, CO. ASRU Focus Group Meeting.
- **Nov. 18, 2008** — Ft. Collins, CO. Colorado/Wyoming Resource Day.
- **Sep. 4, 2008** — Cheyenne, WY. Climate Change in Western Rangelands.
- **May 21-22, 2008** — Texas AgriLife Research, Uvalde, TX. 2nd Annual Consortium for Irrigation Research and Education Meeting.
- **Apr. 8-10, 2008** — Texas AgriLife Research, Temple, TX. 38th Annual Biological Systems Simulation Group Conference.
- **Feb. 19, 2008** — Texas A&M AgriLife Research and Extension Center, Uvalde, TX. Texas Agricultural Irrigation Association South Texas Conference.
- **Jan. 15, 2008** — Texas A&M AgriLife Research and Extension Center, Uvalde, TX. Multi-County Agriculture Conference.
- **Dec. 9-12, 2007** — San Diego, CA. 27th Annual International Irrigation Show.
- **Nov. 4-8, 2007** — New Orleans, LA. ASA-CSSA-SSSA 2007 International Annual Meetings.
- **Jun. 21, 2007** — Uvalde, TX. Uvalde County Extension Crops Meeting.
- **May 14-18, 2007** — South Padre Island, TX. 2007 Joint Rio Grande Basin Initiative Conference.
- **Feb. 21, 2007** — Devine, TX. Multi-County Cotton Workshop.
- **Jan. 16, 2007** — Uvalde, TX. Multi-County Agriculture Conference.
- **Jan. 8-12, 2007** — College Station, TX. 2007 Texas A&M Agriculture Conference.
- **Nov. 12-16, 2006** — Indianapolis, IN. ASA-CSSA-SSSA 2006 International Annual Meetings.

- **Oct. 24, 2006** — Uvalde, TX. Precision Irrigators Network 2006.
- **Aug. 16, 2006** — Dallas, TX. 2006 Small Grain Workers Meeting.
- **Jul. 27-30, 2006** — New Orleans, LA. ASHS 2006 Annual Conference.
- **Jun. 15, 2006** — Uvalde, TX. Uvalde County Extension Crops Tour.
- **Mar. 27-30, 2006** — Ruidoso, NM. 2006 Joint Rio Grande Basin Initiative Conference.
- **Mar. 20-23 & Sep. 4-15, 2006** — Texas A&M AgriLife Research Center, Temple, TX. Crop modeling trainings with WinEpic.
- **Jan. 5-9, 2005** — San Antonio, TX. 2005 Beltwide Cotton Conferences.