Metadata Records
Irrigation Innovation Consortium-Supported Project Datasets

Please use a separate sheet for each dataset. Answers are automatically saved.
Questions? Contact Diane DeJong: diane.de_jong@colostate.edu.

Thank you!

Question	Answer
Project name	Integration of Mobile Drip and Variable Rate Irrigation Technologies for Specialty Crop Vegetable Production
Project background	Melon production shows great potential in the Southern High Plains as an alternative to traditional field crops, where farm revenue can be maintained or increased while using substantially less water. This is important because less water is available from the Ogallala Aquifer, but irrigation is essential to maintain crop production and stabilize crop yield in the semiarid climate of the Southern High Plains, especially in light of the pressures of climate change. LESA and MDI are modern and efficient irrigation methods, and already show potential for high crop water productivity for melons. New irrigation management tools used in conjunction with variable rate irrigation (VRI) are being developed based on soil water and plant temperature sensing. These new management tools can automate LESA and MDI, apply water at the right place and the right time, save water and energy, and save time incurred for irrigation management.
Dataset name	IRT
Primary author Include first & last name, institution affiliation, and email address.	Paul Colaizzi, USDA-ARS, paul.colaizzi@usda.gov
Primary contact The primary contact may be the same or different from the primary author. Include first & last name, institution affiliation, and email address.	Qingwu Xue, TAMU, qingwu.xue@ag.tamu.edu
Dataset description Please provide a brief, clear summary description of the dataset contents. Indicate as applicable: purpose and scope; time period; areas of investigation; and any other special characteristics.	Canopy and bare soil temperatures will be measured by stationary wireless IRTs, where two IRTs will view the canopy from opposing directions (to average sunlit and shaded leaf temperatures) at 2.0-m height and 45 degree zenith and azimuth (relative to the crop row) angles, and one IRT will view the soil at nadir and 0.30-m height (mast mounted north of the IRT to minimize shadows). In the DI plots, an additional IRT will measure the plastic mulch surface temperature (nadir and 0.30-m height). The canopy IRTs will be aimed at the top of the canopy using a cross laser, and the proportion of canopy and substrate (soil, mulch, or both) appearing in the IRT field of view will be calculated using a geometric model.
Spatial coverage Please be specific as possible about the geographic coverage of your data, and record the information according to defined standards, such as FGDC or the Getty Thesaurus of Geographic Names. You can enter lat/long data, county names, state names, etc.	Latitude and Longitude of plot centers where the IRTs were located.

Temporal coverage Describe the temporal coverage of your dataset: Start: Time of day, Date, Month, Year Finish: Time of day, Date, Month Year	2022 Start 1345 CDT, 7/6/2022; 2023 Start: 1503 CDT, 7/19/2023; 2022 End 1008 CDT 9/6/2022; 2023 End 1530 CDT, 9/25/2023
Re-use limitations Describe known problems or caveats that would limit reuse of the data (e.g., uncertainty, sampling problems, blanks, quality control samples) and/or that future potential users of your dataset should know about. Or indicate "None."	Quality control following Colaizzi et al., 2023 (see below); correction for surface and atmospheric emissivity.
Citations Please include full citations and DOIs for articles published based on or related to this dataset. Or indicate "None."	Colaizzi, P. D., O'Shaughnessy, S. A., Evett, S. R., Marek, G. W., Brauer, D., Copeland, K. S., & Ruthardt, B. B. 2023. Data quality control for infrared thermometers viewing crops. Appl. Eng. Agric. 39(4): 427-438. https://doi.org/10.13031/aea.15642. Lamm, F.R., P.D. Colaizzi, R.B. Sorensen, J.P. Bordovsky, M. Dougherty, K. Balkcom, D. Zaccaria, K.M. Bali, D.R. Rudnick, and R.T.Peters. 2021. A 2020 vision of subsurface drip irrigation in the U.S. Trans. ASABE, Vol. 64(4): 1319-1343 doi.org/10.13031/trans.14555. Leiva Soto, A., Q. Xue, R. Adhikari, C. Rush, S. O'Shaughnessy, and P. Colaizzi. 2022. Evaluation of Mobile Drip Irrigation for Watermelon Production in the Texas High Plains. ASA-CSSA-SSSA International Annual Meeting. November 6–9, 2022, Baltimore, MD.
Keywords Please add a few appropriate National Agricultural Library keywords: https://agclass.nal.usda.gov/vocabularies/nalt	water use efficiency; drip irrigation; Texas; specialty crops; vegetable growing; watermelons
Tags Please add a few of your own user-defined tags that would be useful to others who might use your dataset in the future.	variable rate irrigation; mobile drip irrigation
Acronyms & abbreviations Please define any acronyms, site abbreviations, or other project specific designations used in your dataset. Or indicate "none."	LESA - low elevation spray application; LEPA - low energy precision application; MDI - mobile drip irrigation; VRI - variable rate irrigation; WUE - water use efficiency; ISSCADA - Irrigation Scheduling and Supervisory Control and Data Acquisition; DI - traditional surface drip irrigation; IRT - infared thermometers; USDA- ARS - United Stated Department of Agriculture - Agricultural Research Service; iCWSI - integrated crop water stress index; VFIC - Texas Vegetable and Fruit and Improvement Center;
Other dataset storage location Has this dataset already been uploaded elsewhere? Yes or No Reasons may include a requirement as part of publishing a paper or storing data on GitHub or other locations to make accessible to others. If yes, please provide the link or other information to explain where the dataset is located and where or how it can be accessed.	No.