growers for providing the experimental sites, material and workforce.

Supplementary data.

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.scienta.2018.06.013.

References

Aiken, L.S., West, S.G., Reno, R.R., 1991. Multiple Regression: Testing and Interpreting Interactions, first ed. Thousand Oaks.

Allen, R.G., Pereira, L.S., Raes, D., Smith, M., 1998. Crop evapotranspiration: guidelines for computing crop water requirements. FAO Irrig. Drain. Pap. 56, 1–15.

Anderson, L., 2015. Détermination de la stratégie d'irrigation optimale de la fraise basée sur le potentiel matriciel du sol et un modèle climatique. MS Thesis. Univ. Laval, Quebec.

Arnold, T., 2014. How Net Present Value Is Implemented in: A Pragmatic Guide to Real Options. Palgrave Macmillan US, New York, pp. 1–13. http://dx.doi.org/10.1057/9781137391162_1.

Cahn, M.D., Smith, R.F., Farrara, B.F., Hartz, T.K., Johnson, L.F., Melton, F.S., Post, K.M., 2016. Irrigation and nitrogen management decision support tool for vegetables and berries. Groundw. Issues Water Manag. 53–63.

California Department of Water Resources, 2014. Public Update for Drought Response. California Dep. of Water Resour., Sacramento.

California Irrigation Management Information System (CIMIS), 2017. CIMIS Overview - Data Retrieval by Users. 15 April 2016. http://www.cimis.water.ca.gov/Default.aspx.

Chappell, M., Dove, S.K., Van Iersel, M.W., Thomas, P.A., Ruter, J., 2013. Implementation of wireless sensor networks for irrigation control in three container nurseries. HortTechnology 23 (6), 747–753.

Coelho, E.F., Or, D., 1998. Root distribution and water uptake patterns of corn under surface and subsurface drip irrigation. Plant Soil 206 (2), 123–136. http://dx.doi.org/10.1023/A:1004325219804.

El-Farhan, A.H., Pritts, M.P., 1997. Water requirements and water stress in strawberry. Advances Strawb. Res. 16, 5–12.

FAOSTAT, 2016. Food and Agricultural Commodities Production, Countries by Commodity. 24 May 2016. http://faostat3.fao.org/browse/rankings/countries_by_commodity/E.

Fereres, E., Soriano, M.A., 2007. Deficit irrigation for reducing agricultural water use. J. Exp. Bot. 58 (2), 147–159. http://dx.doi.org/10.1093/jxb/erl165.

Fulcher, A., LeBude, A.V., Owen Jr., J.S., White, S.A., Beeson, R.C., 2016. The next ten years: strategic vision of water resources for nursery producers. HortTechnology 26 (2), 121–132.

Gallardo, M., Snyder, R.L., Schulbach, K., Jackson, L.E., 1996. Crop growth and water use model for lettuce. J. Irrig. Drain. Eng. 1996 (November-December), 354–359.

Gaudin, M., Jaffrès, C., Réthoré, A., 2011. Gestion de l'exploitation agricole, third ed. Paris.

Geerts, S., Raes, D., 2009. Deficit irrigation as an on-farm strategy to maximize crop water productivity in dry areas. Agric. Water Manage. 96 (9), 1275–1284. http://dx.doi.org/10.1016/j.agwat.2009.04.009.

Gendron, L., Létourneau, G., Depardieu, C., Anderson, L., Sauvageau, G., Levallois, R., Caron, J., 2017. Irrigation management based on soil matric potential improves water use efficiency of field-grown strawberries in California. Acta Hortic. 1156, 191–196. http://dx.doi.org/10.17660/ActaHortic.2017.1156.29.

Grattan, S.R., Bowers, W., Dong, A., Snyder, R.L., Carroll, J.J., George, W., 1998. New crop coefficients estimate water use of vegetables, row crops. Calif. Agric. 52 (1), 16–21. http://dx.doi.org/10.3733/ca.v052n01p16.

Gray, B., Hanak, E., Frank, R., Howitt, R., Lund, J., Szeptycki, L., Thompson, B., 2015. Allocating California's Water: Directions for Reform. Public Policy Institute of Calif., PPIC Water Policy Center, San Francisco.

Guimerà, J., Marfà, O., Candela, L., Serrano, L., 1995. Nitrate leaching and strawberry production under drip irrigation management. Agr. Ecosyst. Environ. 56, 121–135. http://dx.doi.org/10.1016/0167-8809(95)00620-6.

Hanson, H.C., 1931. Comparison of root and top development in varieties of strawberry. Am. J. Bot. 18 (8), 658. http://dx.doi.org/10.2307/2435677.

Hanson, B., Bendixen, W., 2004. Drip irrigation evaluated in Santa Maria Valley strawberries. Calif. Agric. 58 (1), 48–53 http://doi.org/10.3733.

Hoppula, K.I., Salo, T.J., 2007. Tensiometer-based irrigation scheduling in perennial strawberry cultivation. Irr. Sci. 25, 401–409. http://dx.doi.org/10.1007/s00271-006-0055-7.

Lea-Cox, J.D., 2012. Using wireless sensor networks for precision irrigation scheduling. In: Kumar, M. (Ed.), Problems, Perspectives and Challenges of Agricultural Water Management. In Tech Publisher, London, pp. 233–258.

Lea-Cox, J.D., Bauerle, W.L., Iersel, M.W., van, Kantor, G.F., Bauerle, T.L., Lichtenberg, E., King, D.M., Crawford, L., 2013. Advancing wireless sensor networks for irrigation management of ornamental crops: an overview. HortTechnology 23 (6), 717–724.

Létourneau, G., Caron, J., Anderson, L., Cormier, J., 2015. Matric potential-based irrigation management of field-grown strawberry: effects on yield and water use efficiency. Agr. Water Mgt. 161, 102–113. http://dx.doi.org/10.1016/j.agwat.2015.07.005.

Levallois, R., 2010. Gestion de l'entreprise agricole : de la théorie à la pratique, first ed. Quebec.

Majsztrik, J., Lichtenberg, E., Saavoss, M., 2013. Ornamental grower perceptions of wireless irrigation sensor networks: results from a national survey. HortTechnology 23 (6), 775–782.

Migliaccio, K.W., Schaffer, B., Li, Y.C., Evans, E., Crane, J.H., Muñoz-Carpena, R., 2008. Assessing benefits of irrigation and nutrient management practices on a southeast Florida royal palm (Roystonea elata) field nursery. Irrig. Sci. 27 (1), 57–66. http://dx.doi.org/10.1007/s00271-008-0121-4.

Manitoba Ministery of Agriculture, Food and Rural Development, 2015. Strawberry Irrigation. Water Interrelations. 10 November 2017. http://www.gov.mb.ca/agriculture/crops/production/fruit-crops/strawberry-irrigation.html.

Muñoz-Carpena, R., Bryan, H., Klassen, W., Dukes, M.D., 2003. Automatic soil moisture-based drip irrigation for improving tomato production. Proc. Fla. State. Hort. Soc. 116, 80–85.

Penson, J.B., Capps, O., Rosson, C.P., 2002. Introduction to Agricultural Economics, 3rd ed. Prentice Hall, Upper Saddle River, N.J.

Peñuelas, J., Savé, R., Marfà, O., Serrano, L., 1992. Remotely measured canopy temperature of greenhouse strawberries as indicator of water status and yield under mild and very mild water stress conditions. Agric. For. Meteorol. 58, 63–77. http://dx.doi.org/10.1016/0168-1923(92)90111-G.

Saleem, S.K., Delgoda, D.K., Ooi, S.K., Dassanayake, K.B., Liu, L., Halgamuge, M.N., Malano, H., 2013. Model predictive control for real-time irrigation scheduling. IFAC Agricontrol 4, 299–304. http://dx.doi.org/10.3182/20130828-2-SF-3019.00062.

Scanlon, B.R., Faunt, C.C., Longuevergne, L., Reedy, R.C., Alley, W.M., McGuire, V.L., McMahon, P.B., 2012. Groundwater depletion and sustainability of irrigation in the US high plains and Central Valley. Proc. Natl. Acad. Sci. 109 (24), 9320–9325. http://dx.doi.org/10.1073/pnas.1200311109.

Serrano, L., Carbonell, X., Savé, R., Marfà, O., Peñuelas, J., 1992. Effects of irrigation regimes on the yield and water use of strawberry. Irrig. Sci. 13 (1), 45–48. http://dx.doi.org/10.1007/BF00190244.

Shae, J.B., Steele, D.D., Gregor, B.L., 1999. Irrigation scheduling methods for potatoes in the Northern Great plains. Trans. ASAE 42 (2), 351–360. http://dx.doi.org/10.13031/2013.13366.

Strand, L., 2008. Integrated Pest Management for Strawberries, second ed. United States.

U.S. Department of Agriculture (USDA), 2013. 2012 Census of Agriculture, U.S. Strawberry Harvested Acreage, Yield per acre, and Production, 13 States, 1970-2013. U.S. Dept. Agr., Washington, D.C.

USDA, 2016. California Drought: Farms. 13 August 2016. aspx in August 2016. http://www.ers.usda.gov/topics/in-the-news/california-drought-farm-and-food-impacts/california-drought-farms.

Yuan, B., Sun, J., Nishiyama, S., 2004. Effect of drip irrigation on strawberry growth and yield inside a plastic greenhouse. Biosyst. Eng. 87 (2), 237–245. http://dx.doi.org/10.1016/j.biosystemseng.2003.10.014.

Zwart, S.J., Bastiaanssen, W.G.M., 2004. Review of measured crop water productivity values for irrigated wheat, rice, cotton and maize. Agric. Water Manag. 69 (2), 115–133. http://dx.doi.org/10.1016/j.agwat.2004.04.