California Plant & Soil Conference – 2017 (Fresno, CA)

Instructions – Preparation of Papers for the Conference Proceedings

1. Thank you for participating in the Plant and Soil Conference and for agreeing to provide a paper which will be published for the Conference. These papers will be printed in a booklet provided to attendees at the Conference, and will also be placed in pdf file form on the CA American Society of Agronomy website (http://calasa.ucdavis.edu/).

2. The font to be used for the paper is Times New Roman, size 12 font for text and size 14 Bold font for the title. Use single-spaced text with 1-inch margins on all sides. Do not use logo or letterhead.

3. Suggested paper length is three to six pages (including tables/figures).

4. Be sure to include name(s) of author(s) and affiliation(s) below the title. Also include addresses, phone number, FAX, e-mail address. (see attached example or examples at http://calasa.ucdavis.edu).

5. Tables, graphs, and line drawings are acceptable. Color and half tone graphics will be reproduced in black and white. All tables and figures should be in the **"portrait"** setup. **Do not use "landscape" page setup**.

6. Note manuscript format in the attached example. Title and section headings are **Bold,** while the rest of the text is standard. Follow American Society of Agronomy style for any citations, if any.

7. Standard English units are preferred. If metric units are used, please include both English and metric in paper (For example: 1.0 kg/ha (0.9 lbs./acre).

8. **Do not type page numbers**. Pages will be numbered sequentially across all papers in final preparation of the Proceedings for printing.

9. Do not use **headers or footers** for footnotes or titles.

10. **DEADLINE:** An electronic copy, formatted per instructions provided, should be sent to your session chair by Monday, **JANUARY 9, 2017**. This "due" date is set to provide time for editing and printing the proceedings for the conference. If you cannot meet the deadline for providing your paper to your Session Chair, please contact them as soon as possible to request an alternative date.

Summary

Times New Roman Font – 12 point for text, 14 point for titles
Three to six pages, single spaced
One inch margins all sides; use only "Portrait" page setup
Do not use logos, letterhead, headers, footers, or page numbers please

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For 2017, in addition to preparing a paper to be included in the Conference Proceedings and the CA-ASA Website, we would like to post a "PDF" copy of your Powerpoint slide presentation on the CA-ASA website. Please indicate your preference below (yes or no), along with electronic signature. Your presentation will not be posted unless permission is granted.

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<u>Example</u>
A Web Based Model For Estimating Peach Tree Water Use

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Introduction

Over the past several years we have been developing a model for predicting peach tree water use. The model is based on data obtained from peach trees planted in a large weighing lysimeter at the Kearney Ag Center, near Fresno California (Phene et al., 1991). Originally, the purpose was to predict young tree water use (Johnson et al., 2002) since reliable information was lacking and grower practices are often wasteful. Since then, additional information has been gathered on mature trees, so the model can be expanded to include orchards of almost any age, planting configuration and irrigation system (Johnson et al., 2004). The next step is to post the model on the Internet to make it widely accessible to growers, consultants, extension agents and researchers.

Components of the Model

The details of the model have been published elsewhere (Johnson et al., 2002; Johnson et al., 2004) and only a brief summary will be presented here. Tree transpiration and soil evaporation are modeled separately. The transpiration component is driven by canopy light interception (Johnson et al., 2000), which is estimated from the shaded area under the tree or from tree dimensions of young, isolated trees. In addition, day-to-day fluctuations in vapor pressure deficit (VPD) have been shown to affect tree water use of the lysimeter trees. Therefore, a VPD factor has been added.

The soil evaporation component is modeled after the approach of Ritchie (1972) with two distinct stages. During stage I, which starts with an irrigation event, the wetted area in the sun evaporates at a rate equal to reference crop evapotranspiration (ETo) and the shaded area at one third this rate. We have developed an equation to estimate the percent of the wetted area in the sun with different irrigation systems and canopy sizes. Once the soil has dried sufficiently, it initiates stage II, which follows an exponential decay rate over time. The transition from stage I to II is a function of soil type and daily ETo. The soil evaporation component can be modeled with a minimum amount of input, including soil type, wetted area, irrigation frequency, canopy light interception and weather station ETo.

Putting the Model on the Internet

The model will be included as an option on the weather page of the UCD Fruits and Nuts web page (http://fruitsandnuts.ucdavis.edu). We have set up the input screen with three columns of data. The first column asks for orchard information such as tree spacing, shaded area for mature trees or tree dimensions for young trees, soil type and harvest date. The second column asks for input on the irrigation system including emitter output, wetted area, frequency of irrigation and irrigation efficiency.

Finally, the third column deals with weather information. The closest CIMIS weather station is identified and a two-week time period needs to be specified. The model will only predict water use for a period of two weeks since canopy light interception can change significantly during that time.

The output page indicates the results of the model calculations in daily (or weekly) gallons of water per tree. Three separate scenarios are presented that give the user different options. The first scenario is called "Maximum Water Use" and is based on the maximum amount of water used by the lysimeter trees under non-limiting soil water conditions. This value can be quite large (Ayars et al., 2003). Based on our experience in the field, we have often found this amount of applied water to be less than optimum (and sometimes harmful) for the welfare of the trees. Problems such as iron chlorosis and root disease can arise from waterlogged conditions, especially with heavier soils. Therefore, we have identified the second scenario as "Horticulturally Optimum Water Use". This is generally about 20% less water than the first scenario but doesn't appear to have any negative effects on productivity or fruit quality. Finally, a third scenario, "Moderate Water Stress" is presented. Based on past research, we have found substantial savings of irrigation water can be achieved by imposing moderate stress during certain periods, especially post harvest (Johnson et al., 1992; 1994). Vegetative growth is decreased and certain fruit disorders can be increased (Handley and Johnson, 2000), but careful irrigation management can maintain productivity. Given these three scenarios, the end user can make decisions based on his/her goals, water availability, management level and risk tolerance.

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