## Estimation of the Daily Crop Irrigation Requirements under Abu Dhabi Conditions I-Vegetables

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## Abstract

the estimation method could be a good alternatives to increase the irrigation efciency. In this study, the crop water requirements for the open feld grown vegetables under Abu Dhabi Emirate conditions is estimated using FAO-modifed penman Monteith equation for the main three agro-regions. The results showed the highest crop water requirements are in the AlAin area with average 5-13 mm/day, followed by Al Dhafra and Abu Dhabi. Also the study examines the

I a c ; C a R ; I a E c c ; I a c ; C a c a ; C a

## и <u>Г</u>, с н

UAE Р а а A ab a а b 22 40' 26 00' N, a 51 00' а а 00' E. I 56 ca а а 100 а a a а а а. а а а Ab D ab E Е а UAE, acc а а а 87% a a a. Ab D ab а а а А с ca ;(a) ca a a a а а а с а . (b) а а а ab 50 C a а с [1].

U A ab E а (UAE) а а - ca c с а с а ac ۰. С ca c а а , а а с а а а са а с [2]. A , UAE а а а а ba ca а а а а а ca а UAE 500 L а с а а b 180 с а а а а а [3].F а а а с , с с c a а а а , a [4]. а a c С а а а

0 UAE а , a с а с а с а а а с a а a а с : а , a ab с . D с а а с а а a с b a а а а а b [5]. а с а а а а

Scaaa aaba AbDab

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., а a a с (E c) с а а ۰, a a a a a с. а ca c а с а a c с а а а а.

Wa с b a a a aa ., cac a с а a cabaac а с а с а а а с, а а а a a cc а а а а а baac.c а а а С а a a, a [11] a cab a b а a c С с а ca a a. Εc с а ca a a a a cabcaca , а Р -ba CROPWAT a -M а b F O a a (FAO) 8.0 a a A c W .Facccc caca aca a a c ca c aaa.Ia а с а а a a [12] a a , a a c a cab , а cac a ( a c a aa), a ab a cabca

, FAO-CROPWAT a a a b с а a c С а [13]., CROPWAT 8.0 a ab a ca a caca c c acc ab [14]. a a a a а а Saaba c a baac а ba ab a а а acc.Ica c c С а a c а a c b с а с а a.S c a c а а а С a , a UAE a а с a c a a Wa c a c a a а а . A a C а ab а а с С -a c acc ca аса , a c a а а , b ac a c a а с c Ab D ab а с Ab Daba c ca a a a Е а, a abc а 1. 1. J

 Table 1: Summarizes the geographical and climatic parameters for Abu Dhabi Metrological Station average monthly measurement between 1980 to 2016.

| natic Station: Abu Dhabi I.A.<br>itude : 24 25 59 N |                  |      |              | L        | Al-attitude: 27 m<br>Longitude : 54 39 04 E |                 |  |
|---|------------------|------|--------------|----------|---|-----------------|--|
| Month   | Temperature (°C) |      | Humidity (%) |          | Wind (km/hr)                                | Solar Radiation |  |
|   | Max              | Min  | Mean Max     | Mean Min | Mean Wind                                   | (wh/m²)         |  |
|   | 34.3             | 5.6  | 86           | 44       |   | 4114.5          |  |
|   | 38.1             | 5.4  | 85           | 40       | 14.5  | 4994.3          |  |
|   | 43               | 8.4  | 83           | 33       | 14.8  | 5789.1          |  |
|   | 44.7             |      | 77           |          | 14.6  | 6733.2          |  |
|   | 46.9             | 16.6 | 74           |          | 14.4  | 7527.1          |  |
|   | 48.5             | 19.8 | 79           |          | 14.7  | 7593.8          |  |
|   | 49.1             |      | 77           | 26       | 14.5  | 7073.1          |  |
|   | 49.2             | 23.8 | 76           | 26       | 14.6  | 6757.8          |  |
|   | 47.7             | 19.9 | 83           | 26       | 13.3  | 6398.9          |  |
| October   | 43.1             | 14.6 | 84           | 30       |   | 5566.9          |  |
| November  | 37.9             |      | 83           | 38       |   | 4621.2          |  |
|   | 33.8             | 7.3  | 86           | 45       |   | 3969.6          |  |

Table 2: Summarizes the geographical and climatic parameters for Alain Metrological Station average monthly measurement between 1980 to 2016.

| atic Station: Abu Dhabi I.A. Al-attitude: 27 m<br>ude : 24 25 59 N Longitude : 54 39 04 E |                  |      |              |          |              |                 |
|---|------------------|------|--------------|----------|--------------|-----------------|
| Month   | Temperature (°C) |      | Humidity (%) |          | Wind (km/hr) | Solar Radiation |
|   | Max              | Min  | Mean Max     | Mean Min | Mean Wind    | (wh/m²)         |
|   | 31.8             | 5.6  | 86           | 38       | 12.4         | 4408.5          |
|   | 36.6             | 5.9  | 81           | 30       | 14.6         | 5290.6          |
|   | 42.9             | 9.9  | 75           | 24       | 15.3         | 6024.7          |
|   | 44.4             | 13.2 | 61           | 18       |              | 7010.6          |
|   | 49.3             | 18   | 53           | 13       | 14.8         | 7744            |
|   | 49               | 20.9 | 60           | 13       | 14.6         | 7747.6          |
|   | 49.2             | 22.8 | 62           | 18       | 14.8         | 7261.9          |
|   | 48.8             | 21.9 | 57           | 18       | 15.4         | 7131.4          |
|   | 47.8             | 21.8 | 67           | 17       | 14.4         | 6763.8          |
| October   | 43.1             | 16.2 | 72           | 19       | 13.1         | 5941.5          |
| November  | 37.5             | 13   | 79           | 29       |              | 4864.1          |
|   | 35               | 7.4  | 85           | 36       |              | 4287.9          |

Table 3: Summarizes the geographical and climatic parameters for AI Dafra Metrological Station average monthly measurement between 1980 to 2016.

| natic Station: Abu Dhabi I.A.<br>tude : 24 25 59 N |                  |      |              | Al-attitude: 27 m<br>Longitude : 54 39 04 E |              |                 |  |
|--|------------------|------|--------------|---|--------------|-----------------|--|
| Month  | Temperature (°C) |      | Humidity (%) |   | Wind (km/hr) | Solar Radiation |  |
|  | Max              | Min  | Mean Max     | Mean Min                                    | Mean Wind    | (wh/m²)         |  |
|  | 33.1             | 5.6  | 94           | 42  |              | 4413            |  |
|  | 38.3             |      | 92           | 36  |              | 5338            |  |
|  | 41.7             | 7.8  | 86           | 30  | 13           | 6149            |  |
|  | 44.5             | 13.7 | 79           |   | 13           | 6574            |  |
|  | 48.1             | 17.1 | 73           | 17  | 13           | 7130            |  |
|  | 49.4             | 20.4 | 80           | 16  | 14           | 7285            |  |
|  | 48.7             | 24.6 | 78           |   | 13           | 6842            |  |
|  | 49.4             | 24.7 | 83           |   | 13           | 6637            |  |
|  | 47.6             | 21.6 | 92           |   |              | 6385            |  |
| October  | 43.2             | 18.4 | 94           | 24  |              | 5708            |  |
| November   | 37.7             |      | 92           | 36  |              | 4705            |  |
|  | 31.8             | 6.9  | 96           | 45  |              | 4221            |  |

ΕT ac а а Ja а с a а а аАА. с а а Ab D ab а a a S c b a а а а с а с Tab 4 с а а а a c a a с а а с , Ab D ab a A D a a а а а а a a а а ac c a а а ۰, b . Tab 5 с а а а а а а A A (<100%) c Ab D ab а а а с а а а а а а а а

D c a c a , bab c a a a

c a Ab D ab E a ., a a a а а a a ab a a а а a 3741 (Tab 6 b N b Y a S Ma, J, J, A а 11 (Tab 6). W a a a N b a a а 41 а Ocb. 1100 А а ab

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