

# HUNDZSOIL

SCIENTIFIC AND ACADEMIC DOCUMENTATION  
BASED ON AND/OR RELATED TO HUNDZSOIL.

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## Abstract

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*This handbook is about presenting the scientific research done on Hundzsoil. The properties of Hundzsoil have attracted scientific interest several times and each time results from the experiments are striking and interesting.*

*This handbook includes some characteristic studies that can help the reader form a comprehensive view of product properties most studies result in:*

- 1. Increase water efficiency**
- 2. Increase yield / plant**
- 3. Improves the quality of the product**
- 4. Enhances plant's health**
- 5. Nematodes control**

*Specifically, four academic papers are included, all published in valid scientific journals, as well as a doctoral dissertation.*

*\*Please note that the company has never encouraged, requested, funded or directed any research or its results. However, Hundzsoil has always responded and facilitated scientists that seeking information or raw material for conducting their experiments and research.*

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## Introduction

Water resources are limited all over the world, but the problem is very intense in the middle east area and the Arab peninsula. Food production is limited and is shrinking while the need is increasing in order for us to be self sufficient we need to plant more; we need good fertile soil and water. <sup>1</sup>

More than 43 per cent of Qatar's water used for agriculture is used to irrigate fodder crops. <sup>2</sup>

### **HUNDZSOIL can scientifically contribute towards solving this problem.**

We bring the material that lasts for years in the soil and make it capable of holding water, fertilizers, and improving the soil. In the following pages there are researches that are proving the effectiveness of our product to Agriculture.

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<sup>1</sup> <http://www.futuredirections.org.au/publication/food-and-water-security-in-qatar-part-2-water-resources/>

<sup>2</sup> <http://www.asianews.it/news-en/Unprecedented-water-crisis-puts-Middle-East-at-risk-47716.html>

رسالة دكتوراه

اسم الطالب : محمد رشاد مصطفى محمد الضليفي  
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اسم الدرجة : دكتور الفلسفة في العلوم الزراعية (محاصيل خضر)  
لجنة الإشراف:

د. محمد هاشم محمد الديب  
أستاذ الخضر المتفرغ ، قسم البساتين، كلية الزراعة ، جامعة عين شمس (المشرف الرئيسي)  
د. أحمد أبو اليزيد عبد الحافظ  
أستاذ الخضر ، قسم البساتين، كلية الزراعة، جامعة عين شمس  
د. محمد عبد ربه أحمد  
رئيس بحوث الخضر، المعمل المركزى للمناخ، مركز البحوث الزراعية

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**Ph.D. Thesis:**

**“Effect of using soil conditioners on water use efficiency and productivity of tomato plant”**

*Author: Mohamed Rashad Mostafa Eldolify*

*Faculty of Agriculture, Ain Shams University, 22/3/2016*

(The following pages show some indicative tables and conclusions on product performance and behavior. Please refer to the original file for more information)

The Hundz soil Conditioner was added with preparing the soil. Plant length, number of leaves, stem diameter, leaf area, total fresh and dry weight of plant, chlorophyll reading, early and total yield, fruit parameters and the mineral analyses of tomato leaf (N, P, K, Ca and Mg) were measured.

**Table (6):** Effect of different irrigation treatments and soil conditioners on number of leaves of tomato plants after 30 days from transplanting during the two seasons of 2012/2013 and 2013/2014.

<b>2012-2013</b>				
	<b>W.R 60%</b>	<b>W.R 80%</b>	<b>W.R 100%</b>	<b>Mean</b>
<b>Hundz soil</b>	78.67 c	92.33 a	93.00 a	<b>88.00 A</b>
<b>Oligo plus</b>	74.67 c	84.00 b	90.67 a	<b>83.11 A</b>
<b>Bioconditioner</b>	72.00 cd	74.67 c	76.33 c	<b>74.33 B</b>
<b>Control</b>	61.67 d	62.33 d	74.67 c	<b>66.22 C</b>
<b>Mean</b>	<b>71.75 C</b>	<b>78.33 B</b>	<b>83.67 A</b>	
<b>2013-2014</b>				
<b>Hundz soil</b>	76.00 bcd	91.67 ab	95.66 a	<b>87.78 A</b>
<b>Oligo plus</b>	75.33 bcd	86.60 ab	91.67 ab	<b>84.53 A</b>
<b>Bioconditioner</b>	74.00 bcd	75.33 bcd	80.33 abc	<b>76.55 B</b>
<b>Control</b>	63.00 d	63.67 d	76.67 ab	<b>67.78 C</b>
<b>Mean</b>	<b>72.08 B</b>	<b>79.32 B</b>	<b>86.08 A</b>	

Interaction between Hundz soil and 100% irrigation regime recorded the highest value of plant length and number of leaves after 30, 60 and 90 days from cultivation. On the contrary, interaction between control (without conditioners) and irrigation regime 60% were obviously the lowest significant in both discussed characters. The obtained result was confirmed during the second season.

Concerning to the soil conditioners treatments, there was no significant differences in number of shoots between tested soil conditioners after 30 days from transplanting in the first season. While, in the second season there was a significant difference between the Hundz soil and control, the highest significant value of number of shoots resulted from Hundz soil treatment. However, after 60 and 90 days from transplanting, there was a significant difference between the tested types of soil conditioners compared to control treatment. The Hundz soil was recorded the highest significant value during the first season compared to control treatment. In the second season, the Hundz soil and Oligo plus treatments gave the highest significant values of shoots number comparing with other soil conditioners treatments.

Concerning the soil conditioner treatments, a significant different was detected after 60 days from transplanting. Hundz soil and Oligo plus treatments were caused significantly increased in leaf area values comparing with the other treatments of soil conditioner in both tested seasons. Moreover, there were significant differences among treatments after 120 days from transplanting. Hundz soil recorded the highest significant value. Control treatment recorded the lowest significant value in the two studied seasons.

### **Stem Diameter**

Concerning the interaction effect among irrigation level and soil conditioner treatments, after 30 days from transplanting the highest significant value of stem diameter resulted by using 100% irrigation level combined with Hundz soil. The lowest significant value was obtained by using 60% irrigation regime combined with control treatment in the both studied seasons.

Stem diameter of the plant had no significant difference between the irrigation and soil conditioner treatments in the both seasons. On the other hand, the interaction had recorded the highest value by using Hundz soil with 100%; while the lowest value was obtained by control combined with 60% irrigation level in the both seasons.

### **Fresh weight**

days from transplanting. The lowest total fresh weight values were obtained by using 60% irrigation level combined with control treatment in the both studied seasons. However, the highest values of total fresh weight resulted from using 100% irrigation level combined with Hundz soil treatment after 90 days from transplanting date in the second seasons.

### **Fruit weight**

Regarding the interaction effect between irrigation and soil conditioner treatments, data showed that the highest average fruit weight values were resulted from using 100% irrigation level combined with Hundz soil. The lowest values were obtained by using 60% irrigation level combined with control treatment in the both seasons.

### **Early yield**

Referring the effect of soil conditioners on tomato early yield, there were significant differences between the soil conditioners in the both studied seasons. Hundz soil was recorded the highest early yield value while, the lowest value was obtained by control treatment.

### **Marketable yield**

both seasons. Hundz soil was recorded the highest marketable yield per plants followed by Oligo plus without any significant differences between them. The lowest value was obtained from control treatment.



**Table (22):** Effect of different irrigation treatments and soil conditioners on total dry weight (g) of tomato plants after 180 days from transplanting during the two seasons of 2012/2013 and 2013/2014.

<b>2012-2013</b>				
	<b>W.R 60%</b>	<b>W.R 80%</b>	<b>W.R 100%</b>	<b>Mean</b>
<b>Hundz soil</b>	112.6 bcd	130.0 abc	170.7 a	<b>137.8 A</b>
<b>Oligo plus</b>	105.8 bcd	119.7 bc	146.7 ab	<b>124.1 A</b>
<b>Bioconditioner</b>	88.43 cd	108.9 bcd	138.8 ab	<b>112.0 AB</b>
<b>Control</b>	69.03 d	102.1 bcd	125.4 abc	<b>98.86 B</b>
<b>Mean</b>	<b>93.97 B</b>	<b>115.2 AB</b>	<b>145.4 A</b>	
<b>2013-2014</b>				
<b>Hundz soil</b>	118.5 cde	133.3 c	181.2 a	<b>144.3 A</b>
<b>Oligo plus</b>	105.8 def	121.7 cd	167.7 ab	<b>131.7 A</b>
<b>Bioconditioner</b>	88.41 fg	107.9 def	156.1 b	<b>117.5 B</b>
<b>Control</b>	74.00 g	96.13 ef	155.1 b	<b>108.4 B</b>
<b>Mean</b>	<b>96.66 B</b>	<b>114.8 B</b>	<b>165.0 A</b>	

**Table (23):** Effect of different irrigation treatments and soil conditioners on fruits number /plant of tomato plants in the two seasons of 2012/2013 and 2013/2014.

<b>2012-2013</b>				
	<b>W.R 60%</b>	<b>W.R 80%</b>	<b>W.R 100%</b>	<b>Mean</b>
<b>Hundz soil</b>	51.40 bc	64.03 ab	71.43 a	<b>62.28 A</b>
<b>Oligo plus</b>	46.97 c	59.30 abc	67.73 a	<b>58.01 A</b>
<b>Bioconditioner</b>	56.93 abc	64.03 ab	70.83 a	<b>63.93 A</b>
<b>Control</b>	53.07 bc	59.10 abc	68.83 a	<b>60.33 A</b>
<b>Mean</b>	<b>52.09 B</b>	<b>61.62 A</b>	<b>69.71 A</b>	
<b>2013-2014</b>				
<b>Hundz soil</b>	57.07 bc	61.50 abc	69.17 ab	<b>62.58 A</b>
<b>Oligo plus</b>	52.27 c	61.60 abc	63.67 abc	<b>59.18 A</b>
<b>Bioconditioner</b>	55.63 c	61.03 abc	64.90 abc	<b>60.52 A</b>
<b>Control</b>	55.30 c	64.03 abc	72.47 a	<b>63.93 A</b>
<b>Mean</b>	<b>55.07 B</b>	<b>62.04 AB</b>	<b>67.55 A</b>	

On the following you can see a reference to Nitrogen, and the same is included in the document for P, K, Ca and Mg.

## **Nitrogen percentage:**

Hundz soil recorded the highest nitrogen content while, the lowest values were obtained from control treatment in both of two studying seasons.

**Table (34):** Effect of different irrigation treatments and soil conditioners on nitrogen (%) of tomato leaves during the two seasons of 2012/2013 and 2013/2014.

<b>2012-2013</b>				
	<b>W.R 60%</b>	<b>W.R 80%</b>	<b>W.R 100%</b>	<b>Mean</b>
<b>Hundz soil</b>	4.220 abc	4.683 ab	4.813 a	<b>4.572 A</b>
<b>Oligo plus</b>	3.693 cde	4.080 abcd	4.643 ab	<b>4.139 A</b>
<b>Bioconditioner</b>	3.367 de	3.920 bcd	4.460 abc	<b>3.916 B</b>
<b>Control</b>	2.933 e	3.747 cde	4.243 abc	<b>3.641 B</b>
<b>Mean</b>	<b>3.553 B</b>	<b>4.108 A</b>	<b>4.540 A</b>	
<b>2013-2014</b>				
<b>Hundz soil</b>	4.303 abc	4.813 ab	5.097 a	<b>4.738 A</b>
<b>Oligo plus</b>	3.747 cde	4.103 bcd	4.497 abc	<b>4.116 B</b>
<b>Bioconditioner</b>	3.383 de	4.023 bcd	4.673 ab	<b>4.027 B</b>
<b>Control</b>	3.057 e	3.740 cde	4.360 abc	<b>3.719 B</b>
<b>Mean</b>	<b>3.622 B</b>	<b>4.170 A</b>	<b>4.657 A</b>	

All data was obtained from: Mohamed R. El Dolify, (2016) Ph. D. Faculty of Agriculture, Ain Shams University.

## **Conclusion:**

Although Oligo plus contains sensible amount of Mg, Sulfur, Copper, Iron, Manganese, Molybdenum and Zinc, while Hundzsoil is chemical free (organic).

Results showing:

1. Hundzsoil has the highest number of leaves per plant.
2. Hundzsoil has the biggest stem diameter.
3. Hundzsoil has the highest fresh weight.
4. Hundzsoil has the highest fruit weight.
5. Hundzsoil has the highest early yield.
6. Hundzsoil has the highest marketable yield.
7. Hundzsoil has the highest nitrogen content in leaves.

Also, the Oligo plus price range/acre is 3 times higher than applying Hundzsoil. Plus, it must be applied on each planting.

**Article:**

**“Effect of seaweed extract and Hundzsoil conditioners on seeds production of common bean (*Phaseolus Vulgaris* L.) under drought condition”**

*Authors: 1Y. A. A. Belal, 2E. M. Soliman 3A. Abou El-Yazied, 4A. A. Abdelhafez, 3 H. G. Abd El-Gawad, and 5B.B. M. Salim*

*Published in: J. Biol. Chem. Environ. Sci., 2017, Vol. 12(3): 369-384*

<http://biochenv.blogspot.com/eg/>

The data revealed that the highest significant value of the weight of 100 seeds of common bean plant was observed with hundz soil (HS) treatment at harvest time in both seasons. As for the effect of all treatments on the seeds yield per fed of common bean plants, all treatments had significant and positive effect at harvest time in both seasons as compared to the control.

(...) The highest significant values of total soluble carbohydrates was recorded by hundz soil (HS) treatment at harvest time in both seasons

(...) Application of seaweed extract and hundz soil conditioners treatments produced a significant increase in phosphorus and calcium concentrations of common bean seeds at harvest time as compared to the control.

***Table 2. Soil analysis of the experimental soil in the two seasons (2013 and 2014).***

Samples	2013			2014			
	Soil	Soil+ hundz	Soil + Seaweed extract	Soil	Soil + hundz	Soil + Seaweed extract	
pH	7.5	7.4	7.3	7.4	7.35	7.35	
E.C	0.93	0.83	0.93	1.09	0.81	0.82	
CaCO <sub>3</sub> (%)	3	2	4	1	2	1.4	
Cations soluble mm / liter	Ca <sup>+2</sup>	6.6	3.8	3	4.2	3.6	1.8
	Mg <sup>+2</sup>	0.6	0.8	2.4	1.8	1	3.2
	Na <sup>+</sup>	1.43	1.84	2.02	2.33	1.95	1.6
	K	1.29	1.21	1.27	1.6	1.19	1.13
Anions dissolved mm/liter	HCO <sub>3</sub> <sup>-</sup>	2.8	2.6	2	2.4	2.6	2.8
	Cl <sup>-</sup>	1.5	2.5	2	2	2	1.5
	SO <sub>4</sub> <sup>-</sup>	5.62	2.55	4.69	5.53	3.14	3.43
Macronutrients (ppm)	N	30	40	60	50	45	40
	P	94	77	40	88	52	74
	K	744	728	736	288	344	168
Micronutrients (ppm)	Fe	7.8	5.5	5.6	5.4	5.2	7.8
	Cu	4.4	4.8	7	5	3.5	4
	Zn	4.4	4.2	3.6	3.6	3	2.7
	Mn	12	12	12	12	12	12

**Article:**

**“Pathogenicity of *Helicotylenchus indicus* Siddiqi, 1963 on papaya and impact of some bio-organic materials”**

*Authors: Shimaa F. DIAB 1 , Ahlam M. EL-GHONIMY 2 and Hosny H. KESBA 1,3*

*Published in: Acta agriculturae Slovenica, 113/2, 273–279, Ljubljana 2019*

**Results are;**

**Hundzsoil is naturally (without any chemical interference) defends Nematodes with the same efficiency as Nemakey N and Nemastop**

Pathogenicity of *Helicotylenchus indicus* Siddiqi, 1963 on papaya and impact of some bio-organic materials

**Table 5:** Effect of bio-organic materials on NPK contents of papaya plants infected with *H. indicus*

Treatment	Dose/plant (one month interval)	Plant analysis					
		N (g 100 g <sup>-1</sup> dry mass)		P (g 100 g <sup>-1</sup> dry mass)		K (g 100 g <sup>-1</sup> dry mass)	
			% Change		% Change		% Change
Bio Tonic <sup>c</sup>	5 g + 5 g	1.4 c	- 6.7	3.6 b	- 23.4	3.8 a	+ 58.3
Hundz Soil <sup>f</sup>	5 g + 5 g	1.6 bc	+ 6.7	3.7 b	- 21.3	3.9 a	+ 62.5
Nemakey-N <sup>e</sup>	5 ml + 5 ml	1.7 ab	+ 13.3	3.6 b	- 23.4	2.8 c	+ 16.7
Nemastop <sup>g</sup>	5 ml + 5 ml	1.5 bc	0.0	3.7 b	- 21.3	2.6 cd	+ 8.3
Nubtea <sup>f</sup>	5 g + 5 g	1.9 a	+ 26.7	2.7 c	- 42.6	3.1 b	+ 29.2
Nematode only	-	1.5 bc	-	4.7 a	-	2.4 d	-

Means followed by the same letter(s) within a column in each block are not significantly different ( $p < 0.05$ ) according to Duncan's multiple range test.

**Table 6:** Multiplication of *H. indicus* on papaya as affected by different bio-organic materials

Treatment	Dose / plant (one month interval)	Nematode counts				
		On root	In soil	Total	PI/PI	% Efficiency *
Bio Tonic <sup>c</sup>	5 g + 5 g	170 c	10335 c	10505 c	2.6 c	62.3
Hundz Soil <sup>f</sup>	5 g + 5 g	121 d	6810 d	6931 d	1.7 d	75.4
Nemakey-N <sup>e</sup>	5 ml + 5 ml	96 e	5730 e	5826 e	1.5 e	78.3
Nemastop <sup>g</sup>	5 ml + 5 ml	114 de	6780 d	6894 d	1.7 d	75.4
Nubtea <sup>f</sup>	5 g + 5 g	204 b	21615 b	21819 b	5.5 b	20.3
Nematode only	-	360 a	27168 a	27528 a	6.9 a	-

Means followed by the same letter(s) within a column in each block are not significantly different ( $p < 0.05$ ) according to Duncan's multiple range test.

\* % Efficiency = ((Nematode build up in control - Nematode build up in treatment) / Nematode build up in control) × 100.

been governed by inoculation level of nematode which was at and above 2000 infective stages/plant. However, the significant reduction in plants growth parameters was noticed at and above 4000 inoculum levels. Our results are in agreement with those of Piroza and Maqbool (1995) who studied the effect of different population densities of *H. difflora* (Cobb, 1893; Sher, 1961) on growth of brinjal, tomato and wheat reporting 4000 nematodes kg<sup>-1</sup> soil as damaging threshold level.

Rate of nematode multiplication has considerably affected by the inoculation level. By increasing inoculum levels of the nematode, corresponding decrease in rate of multiplication could occur. This may be due to shortage of food or competition for suitable feeding sites (Sartaj et al, 1999; Kumar and Singh, 2007 and Rashid and Azad, 2013). Moreover, our results are not in agreement with those of Rao and Swarup (1974), Sartaj et al. (1999) and Kumar and Singh (2007) who reported that the damaging threshold level varied between 500 to 5000 inoculum level on different crops. This variation may be possibly

due to either different crop plants used or change in experimental conditions.

Practically the tested organic materials could manage *H. indicus* and improve papaya growth. The literature concerning suppression of phytonematode densities by organic amendments is replete with both promising and inconsistent results (Al-Sayed et al., 2007; Kesba and Al-Shalaby, 2008; Siddiqui et al., 2009; Parahat et al., 2012 and Kesba et al., 2013). Additions of organic materials to soils have been known to improve crop productivity. Moreover, such materials have beneficial effects on soil nutrients (as substrate for microorganisms), soil physical conditions (water retention, cation exchange capacity and soil aggregation), soil biological activity and crop performance (McConnell et al., 1993; Abo-Elyouss et al., 2010; Shankar et al., 2011). These changes in soil chemical and physical properties may induce plant responses that have increased their tolerance to nematodes, as suggested by McSorley and Gallaher (1995). The efficacy of organic amendments against the plant parasitic nematodes depends on different factors, including the nema-

**Article:**

**“Effect of Soil conditioners and Irrigation Levels on Growth and Productivity of Pomegranate Trees in the New Reclaimed Region”**

**Author:** *Abd-Ella E.K.Eman.1*

*Published in: ALEXANDRIA SCIENCE EXCHANGE JOURNAL, VOL.32, No.4 OCTOBR- DECEMBER 2011*

(...)

Hundz soil is a natural soil conditioner that is made of dry compressed cellulose and recycles agricultural material, shaped in grains and varies in size (0.2-2.0mm) that is capable of penetrating through the sand grains, forming a new media ideal for growing plants, has a balanced pH of 6.8-7.2, water holding capacity of 300% naturally, which will change sandy soil water capacity and does not absorb heat, so water evaporation is dramatically minimized. Hundzsoil retains water longer than regular soil, so plants develop healthy root system. Hundz soil is certified from Soil, Water and Environment Res., Institute, ARC, Giza Egypt.(...)

Concerning the main effects of Hundz soil on previously mentioned parameters, the results in Table (5) illustrated generally that application of Hundz soil at 10Kg/tree reflected significant increasing effects on the mean values of the previous characters than other treatments in both seasons. Hundz soil has a high cation exchange capacity and hence it will affect soil nutritional capacity and the supply of nutrients to plants. Also, it has a high water absorbing capacity thus will affect positively the yield (Wafaa El-Etr, 2001) .These results are in correspondence with those obtained by Saddik and Laila –Ali et al., (2009) who found that the yield of peanut and carrot increased significantly by natural amendments application compared to nontreated one.

**Table 5. Effect of irrigation frequency ,Hundz soil and Mixture of Nile fertile + K<sub>2</sub>SO<sub>4</sub> on flowering, fruiting and yield of Arabi pomegranate trees during 2010 and 2011 growing seasons**

Treatments	Flowers number /shoot		Fruit Set %		Yield Kg/tree	
	2010	2011	2010	2011	2010	2011
<b>Irrigation levels m<sup>3</sup>/tree/year</b>						
I <sub>1</sub>	3.68 b	3.96 b	51.42 b	54.29 b	27.70 b	29.80 b
I <sub>2</sub>	3.89 a	4.18 a	56.01 a	58.40 ab	29.76 a	31.84 a
I <sub>3</sub>	3.99 a	4.29 a	58.85 a	61.19 a	30.79 a	32.74 a
<b>Hundz soil kg/tree</b>						
HN <sub>0</sub>	3.51 c	3.80 c	49.49 c	52.11 c	25.97 b	28.07 c
HN <sub>1</sub>	3.89 b	4.18 b	56.22 b	58.94 b	29.76 ab	31.83 b
HN <sub>2</sub>	4.17 a	4.46 a	60.57 a	62.83 a	32.52 a	34.47 a
<b>Nile fertile + K<sub>2</sub>SO<sub>4</sub> Kg/tree</b>						
MX <sub>0</sub>	3.49 c	3.79 c	49.23 c	51.87 c	25.78 c	27.84 c
MX <sub>1</sub>	3.93 b	4.23 b	56.98 b	59.61 b	30.13 b	32.30 b
MX <sub>2</sub>	4.14 a	4.43 a	60.07 a	62.39 a	32.33 a	34.22 a

Values followed by similar letter(s), within a comparable group of means, do not significantly differ, using revised LSD test at 0.05 level

(...)

Concerning the main effects of application of Hundz soil on fruit chemical composition, the results reflected that Hundz soil at highest rate (10Kg /tree) increased fruit juice TSS and anthocyanin in both seasons. However this trend of increment did not reach the significance level for V.C in the 2ndseason. Fruit acidity and tannins were significantly decreased as application of Hundz soil increased. Addition high rate of Hundz soil (10Kg /tree) significantly gave the lowest percent than either of treatment HN0 or HN1in both seasons.

**Report:**

**“Quantification of the Effect of Hundzsoil on Turfgrass Water Use”**

By: Jaime Barros da Silva Filho(1) and Milton E. McGiffen Jr.(1)

In: University of California Riverside, Department of Botany and Plant Sciences, 4106 Bachelor Hall, Riverside, CA, 92521.

At: July 2<sup>nd</sup> 2017

(...)

The experiment was initiated on January 29, 2017 at the University of California Riverside (UCR) in an environmentally controlled (heated and cooled) glasshouse located at the geographic coordinates latitude: 33°58'09.8" N and longitude: 117°19'28.2" W.

Experimental Design: Five levels of HUNDZsoil (0, 0.2, 0.5, 1.0, and 1.5 cm deep), plus an additional control (1.0 cm deep of peat moss) were uniformly mixed into the upper 8 cm of sand in each pot. All treatments were replicated five times in a randomized complete block design (n = 30). All pots were filled with three liters of sand and sterilized for one hour.

**Results:**

The treatment that used the most water was peat moss 1 cm deep. HUNDZsoil 0.2 cm had the lowest water usage for both the early phase – 6/2 to 6/17/17; the last phase analyzed – 6/2 to 7/1/17 (Figures 1 and 2).

**Conclusions**

We are excited about the results of HUNDZsoil, the product has been surprisingly effective for low water consumption and we see great prospects with HUNDZsoil when we cut the addition of water and analyze the stress of water in the plant.

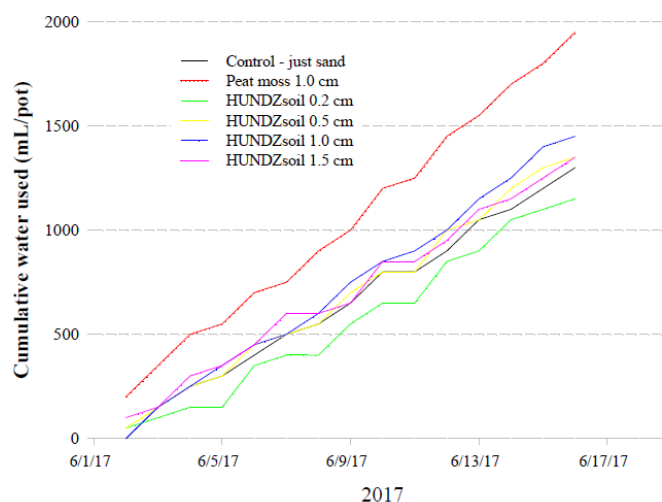


Fig. 1. Amount of water added in each treatment in the HUNDZsoil experiment: (measured



Research:

***Economy evaluation of using organic soil conditioner “Hundzsoil” and effects on increasing use efficiency of agricultural resources in wheat cultivation on sandy soils***

**Author: Ahmed M. Awad** - Soils, Water and Environment Research Institute, ARC, MALR, Egypt

Professor Dr. Awad confirmed that usage of Hundzsoil does increase soil's ability to retain water – as well as to increase soil fertility. The research can be found at Egyptian Journal of Agricultural Research 93(2):605-62

✓ Also:

- 43% saving in nitrogen fertilizer
- 50% saving in water
- Significant yield increase in crops.
- Long lasting effect – up to 6 planting seasons
- Saving energy and electricity

The research can be found in the Egyptian Journal of Agricultural Research 93(2):605-62

Research:

***Effect of Irrigation Systems and Soil Conditioners on the Growth and Essential Oil Composition of Rosmarinus officinalis L. Cultivated in Egypt***

Omer, E.; Hendawy, S.; ElGendy, A.N.; Mannu, A.; Petretto, G.L.; Pintore, G.

*The researchers concluded:*

- A drastic reduction in water usage was obtained without affecting the quality of the plants.
- During the first cut of both seasons, the HUNDZ soil gave the highest values of fresh herb and dry weights of herb, as well as bentonite mixed with Hundzsoil.
- Regarding the effect of soil amendments on the totally fresh and dry weights (sum of three cuts), the data reported in Tables 3–6 show that they can be significantly increased if using Hundzsoil.
- By using a soil conditioner, almost every type of soil can be made fertile.

References:

Articles Retrieved from:

- <https://www.researchgate.net/publication/337825380> Journal EFFECT OF SEAWEED EXTRACT AND HUNDZ SOIL CONDITIONERS ON SEEDS PRODUCTION OF COMMON BEAN PHASEOLUS VULGARIS L UNDER DROUGHT CONDITIONS
- <https://www.researchgate.net/publication/334748524> Pathogenicity of *Helicotyle nchus indicus* Siddiqi 1963 on papaya and impact of some bio-organic materials
- <http://www.iosrjournals.org/iosr-javs/papers/vol7-issue12/Version-2/M071228697.pdf>
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