



SUMMARY TRIAL REPORT

The Use of TerraCottem[®] Universal in olive tree nurseries

Research done at:

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Olive tree cultivation plays a major role in the Tunisian economic, social and ecological life (roughly 1,624,000 hectares are used for olive tree cultivation). However, the extension and production on the South Mediterranean shore faces a lot of difficulties due to the irregularity and insufficiency of natural rainfall. In these conditions, irrigation becomes a growing necessity in order to obtain an economically profitable production. But water resources are generally limited both in quantity and quality (i.e. salt water).

Therefore, a series of trials have been carried out to evaluate the beneficial effects of the TerraCottem[®] Universal soil conditioner in olive tree production in these challenging circumstances. This report summarises the results of the third trial.

The trials were conducted at the “Olive Tree Institute” in Sfax, Tunisia in several phases:

• **Phase 1** (see [report 1](#) “*Olea europaea, Institut de l'Olivier, Sfax, Tunisie, 2006*”):

In this first phase the effect on plant growth of 4 TerraCottem[®] Universal application rates in 3 types of substrate and using 2 irrigation frequencies has been evaluated.

The results (after 8 months) were very promising:

- A significant difference in plant growth (height of the plants) has been observed between the substrates containing TerraCottem[®] Universal and the non-treated substrates.
- The substrate consisting of pure river sand, irrigated with a watering frequency of 1 x week and treated with 1.5g/l of TerraCottem[®] Universal gave the tallest plants.

• **Phase 2** (see [report 2](#) “*Olea europaea, Institut de l'Olivier, Sfax, Tunisie, 2007*”):

In the second phase the impact on plant growth of 5 TerraCottem[®] Universal application rates in a single substrate using 2 irrigation frequencies has been evaluated.

- For all treatments, the incorporation of TerraCottem[®] Universal results in plant growth increase.
- TC3 and TC4 give the best plant growth but taking the cost of water and TC into consideration, the most cost efficient application rate in these conditions is 2g/l (TC2) with an irrigation frequency of 1 every 2 weeks.

Further to the previous results the Institut de l'Olivier set up a 3rd trial:

- **Phase 3: Trial A** is a continuation of the phase 1 trial but with a reduced irrigation frequency (from 1x / week and 1x / fortnight to 1x / month).

- **Phase 3: Trial B** evaluates TerraCottem® Universal's effect on plant growth of 1-year old plants obtained from semi-hardwood cuttings propagated at the Institute, irrigated with saline water at different concentrations. The plants were kept in pots under conditions permitting monthly irrigation control during 10 months.

• **Trial A**

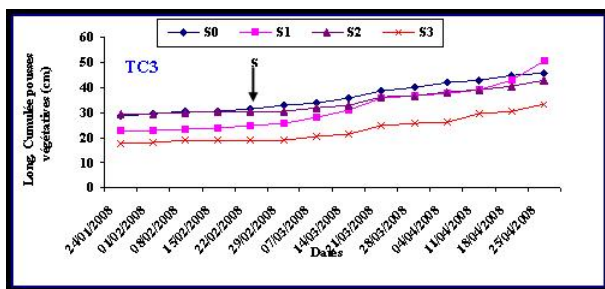
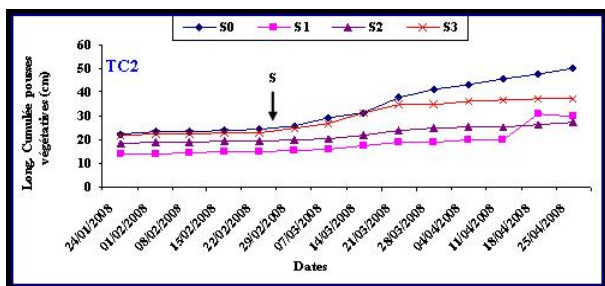
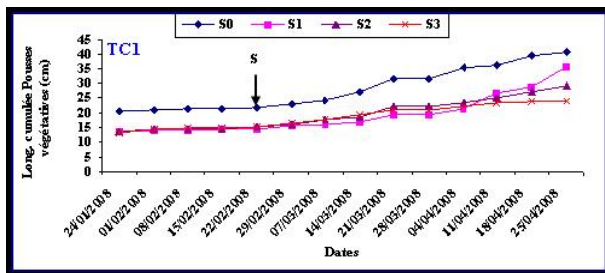
- The irrigation frequency was further reduced to once every month (during summer) and once every 2 months (in the other seasons).
- Picture 1 shows 3 TC-treated trees (starting from the right, 1.5g TC/l) in comparison with a control tree (left). There is a clear visual difference in height. Additionally, the TC-treated plants have been pruned at the top by 35cm; the control ones haven't because they were still too small to do so.
- The maturation of the young olive plants is now finished; in the following weeks (winter 2008-9) they will be transplanted into the open field.

Picture 1



• **Trial B: The effect of TerraCottem® Universal on plant growth with saline irrigation water**

- Substrate: sandy loam + leaf mould
- Irrigation water: S0, S1, S2 and S3 (0 – 25 – 50 - 75mM NaCl)
- Plants: *Chemlali* olive cultivar (*Olea europaea* L.)
- TerraCottem® Universal: TC0, TC1, TC2 and TC3 (0 – 1 – 2 – 3g/l)
- Parameters: plant growth, Na⁺ and K⁺ rate in leaves, effect of TC and salt on shoot length



Conclusion:

3g TerraCottem® Universal per litre soil in the above-mentioned saline growing conditions gives the best results.