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WP2. SOIL DIVERSITY AND FERTILITY SERVICES FROM SOWN DIVERSITY IN GRAZED SYSTEMS

Tea bag index (Following Keuskamp et al., 2013)

1. **Sampling Design:** 40 plots x 3 replicates x 2 grazing treatments x 1 times
2. **Timing:** intergrazing period: fall-winter 2023 depending on the site. Ideally, the tea bag incubation period in soil, and thus the intergrazing period, should last 3 months (less time is possible if required). Choose the best intergrazing period to bury the tea bags based on optimum conditions for microbial activity (sufficient rain and non-extreme temperatures).
3. **Where to buy the tea?**

We will use 2 types of tea of the brand Lipton: Lipton green tea (EAN: 87 22700 05552 5), which is more labile, and Lipton rooibos tea (EAN: 87 22700 18843 8), which is more recalcitrant. We will need 480 tea bags in total for 1 sampling (40 plots x2 grazing treatments x3 replicates x2 teabags in each replicate) =

= 240 green tea bags + 240 rooibos bags.

Find more information about the tea bag methodology in:

<http://www.teatime4science.org/about/the-project/>

3.1. Technical details of tea bags

Green tea – Lipton Indonesian tea Sencha tradition: EAN 87 22700 05552 5.

Rooibos tea: Lipton Infusion Rooibos: EAN 87 11327 5143 48.

You need to buy over 240 tea bags of each type.

Easy confusion exists with ‘Green tea with flavoring’ and ‘Japanese Sencha’ as well as with ‘red tea’ and ‘African rooibos’. Those are not the right type of tea. Always check the EAN number (Figure 1).



Figure 1. Image of the tea used for the Tea bag methodology.

3.2. Shops

To our knowledge, Green and Rooibos tea can be bought in grocery shops only in a few countries in Europe.

3.3. Online

If you cannot find the right tea in your local shop, you can order it online.
e.g.

Green

[Apotea](#)

[Scandinavian](#)

[Onfos.de](#)

[cheapbasket.com.cy](#)

Sporadically also via amazon available.

Rooibos

[Dutchsupermarket.com](#)

Dutchsupermarket sponsors TBI project and provides 10% discount when you apply the coupon code TBI10 in the shopping cart.

4. Field and lab procedure

- Before the tea bags installation in the field, measure in the laboratory the initial, air-dry weight of the tea bags (.000 g) -including bag, cord and label- Record the data in the **WP2_tea_bags template**.
- Mark the tea bags on the white side of the label with a permanent black marker. Labels should include the following information: **Plot***- replicate- grazing treatment: yes (Y) or not (N)- type of tea: green (G), or rooibos (R). Example: 10-1-Y-G. NOTE*: Please use **PLOT as always in your labels (and no Composition)**
- Bring to the field the tea bags labelled and organized per each plot and grazing treatment. Bury three replicates consisting of a pair of green tea and rooibos in each grazing treatment of each plot (40 plots x2 grazing treatments x3 replicates x2 tea bags in each replicate). In detail, dig 6 holes, 8 cm deep, and place a tea bag in each hole. The distance between the Rooibos and green tea bags should be 15 cm, and the distance between the pairs 75 to 100 cm. (Figure 2). Keep the labels visible above the soil and mark the burial site with a stick or a label. Note the date of burial.

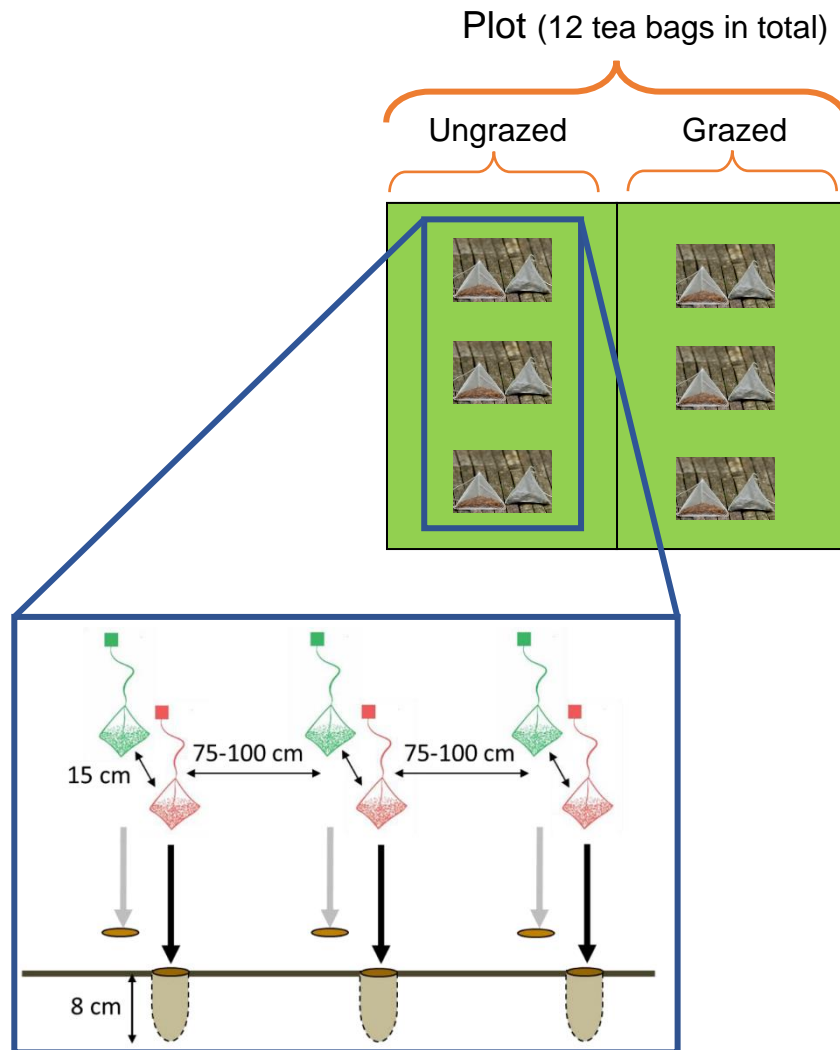


Figure 2. Tea bags installation scheme in each plot.

- Recover the tea bags after c. 90 days. Note the date of collection.
- Remove adhered soil particles (do not use water to remove the soil particles, because that can cause extra loss of material from the bag) and dry in a stove for 48 h at 70°C (not warmer!).
- Take the tea out of the bag, be careful not to lose any material and weigh the tea (.000 g) (Figure 3). When taking the tea out of the bag examine if any roots have grown and remove them before weighing. You should not weigh the label, cord and bag without tea as we in CREAM have a record of the standard mean of these tea bag components.



Figure 3. Final tea weight measurement.

- Record the tea final weights in the **WP2_tea_bags** template.
- Send the information to a.ribas@creaf.uab.cat