Assignment 6 - Exercise 1

Gunther Krauss

January 11, 2022

Assignment - Exercise 1

Assume, that we have ten different varieties of wheat, each variety having a specific phyllochron (in `[°C day]`).

```
phyllochrons <- c(60,70,80,90,100,110,120,130,140,150)
```

We assume a tillering period of `100` days.

You should use the total number of tillers per stage `tt` as calculated during the exercise (see also the script `tillers.R`).

Question A

Let the daily mean temperature be `10 °C`.

1. Which temperature sum is accumulated during `100` days?
2. Calculate for all phyllochrons the number of completed stages after `100` days.
3. Calculate for all phyllochrons the total numbers of tillers after `100` days.
4. Plot the number of tillers agains the phyllochron.
5. How does the number of tillers depend on the phyllochron? (Increasing/Decreasing? Linear?) [Give your answer in maximum 25 words!]

Question B

The daily mean temperature is now not the same every day, but taken from real weather data.

1. Read the table `weather.txt`.
2. Calculate the temperature sum from `DAY 61` to `160` by summing up the coresponding values from the column `MeanTemp`. (Don't worry, that on some days there might be negative temperatures.)
3. Calculate for all phyllochrons the number of completed stages after `100` days (i.e. from day `61` to `160`).
4. Calculate for all phyllochrons the total numbers of tillers after `100` days (i.e. from day `61` to `160`).
5. Plot the number of tillers agains the phyllochron.

Hints:

- **Have a look at the examples from the exercises, where we did similar calculations.**
- Please include **all** R code that is needed to produce the result.
- Don't forget to use `header=TRUE` option when you `read.table`, as the first line of the weather files contains the column names.
- You have to include/run the code from `tillers.R` to get the number of new tillers `t` and total number of tillers `tt` calculated.
- **Once you have calculated the stages (item A.2 and B.3), the following items are quite simple and straight forward. Please look at `Tillering.pdf`, especially last lines of page 31 and page 32 ;)**