



PHYTOTOXICITY OF SULFAMETHAZINE AND OXYTETRACYCLINE ANTIBIOTICS TO CROP AND WILD PLANT SPECIES

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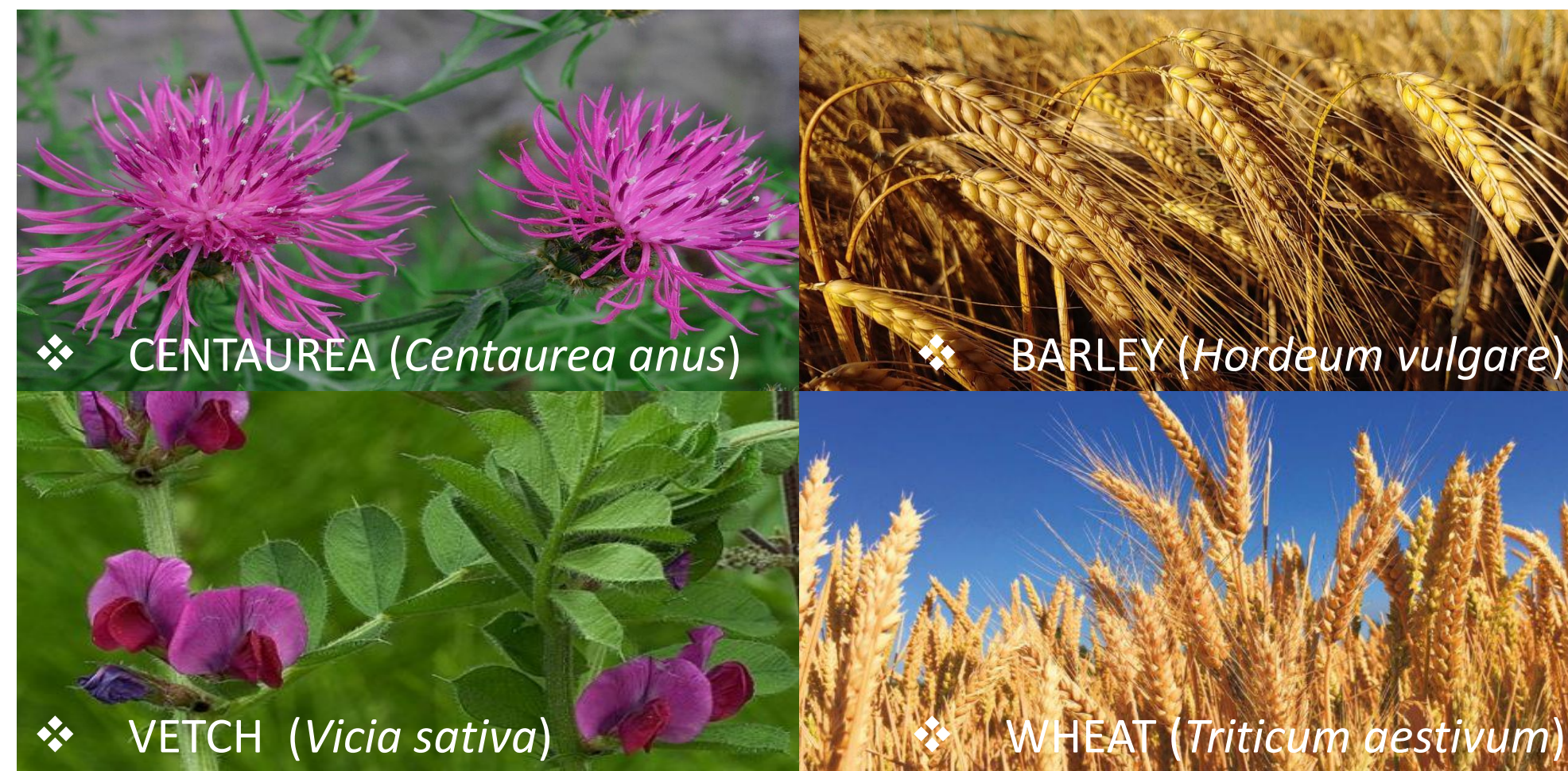
INTRODUCTION AND OBJECTIVE



- Antibiotics are poorly absorbed by animals; 20-90% are excreted in manure that is added to the field immediately by grazing animals or later when it is added to fields as fertiliser.
- Adverse effects on germination of crop and wild species by antibiotics have been described in literature but data are very scarce, especially for wild plants (Carballo et al., 2021), leading to gap on impact on biodiversity.
- In this study we have assayed (OECD 208) the effects of sulfamethazine and oxytetracycline on growth of crop and wild (n=4) plant species representative of the Mediterranean scenario (García et al., 2022).

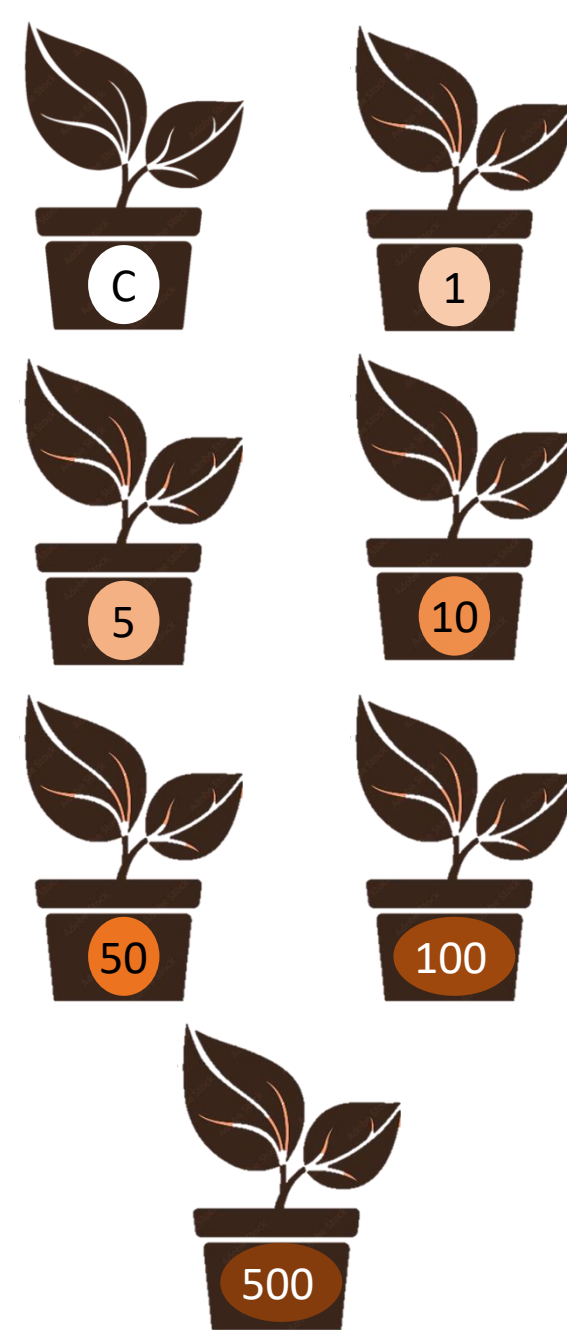
MATERIAL AND METHODS

SPECIES

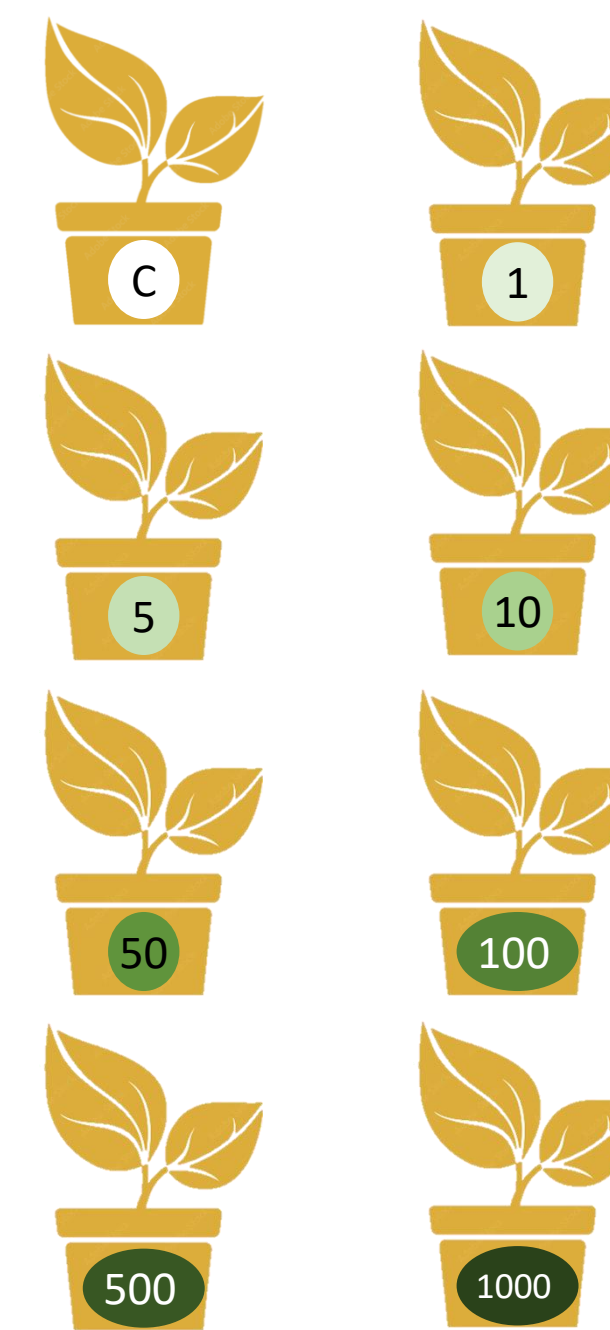


ANTIBIOTICS

SULFAMETHAZINE (mg/kg)



OXYTETRACYCLINE (mg/kg)

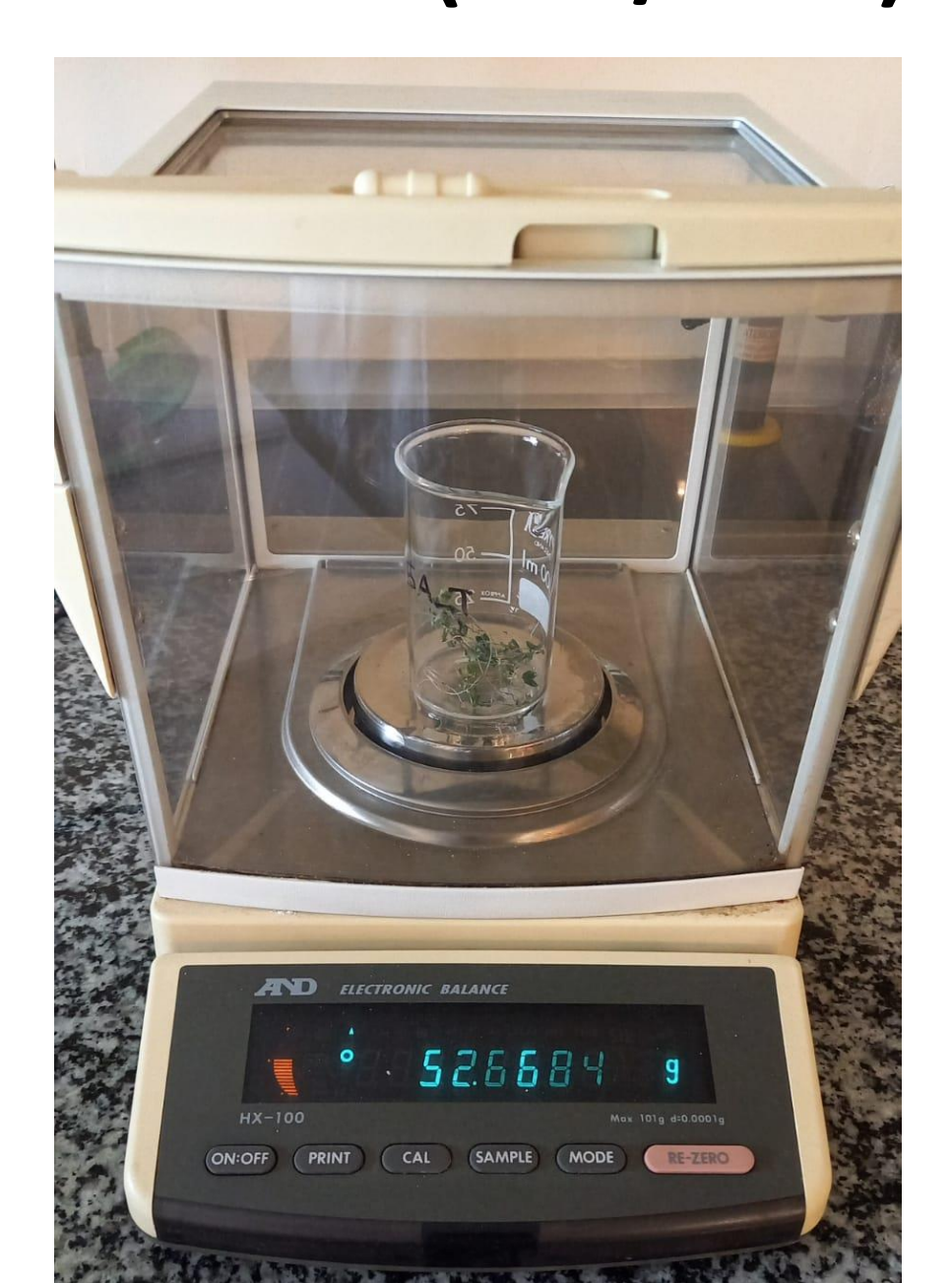


VARIABLES ANALYZED

SHOOT/ROOT LENGTH



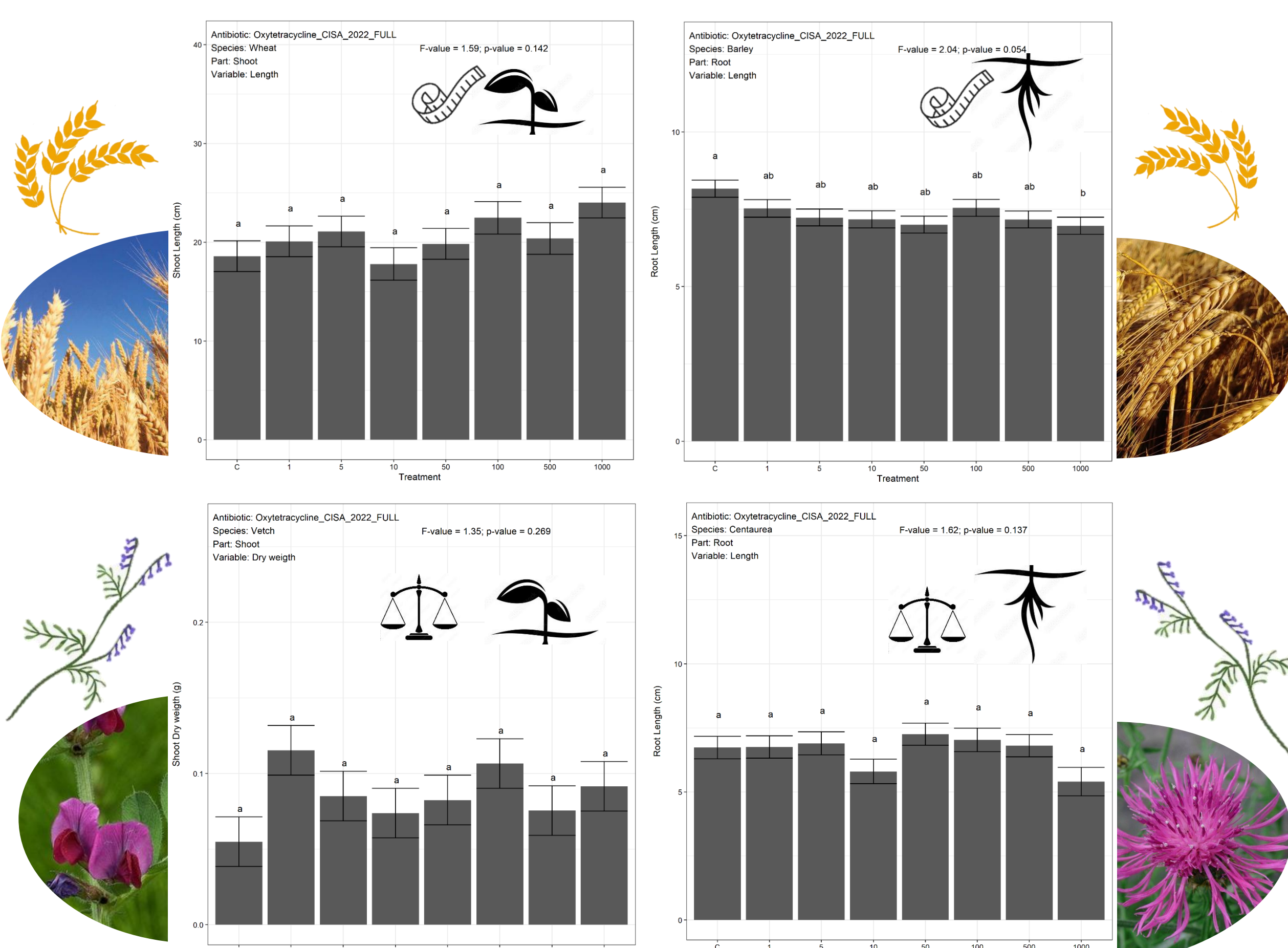
SHOOT/ROOT WEIGHT (DRY/WET)



RESULTS

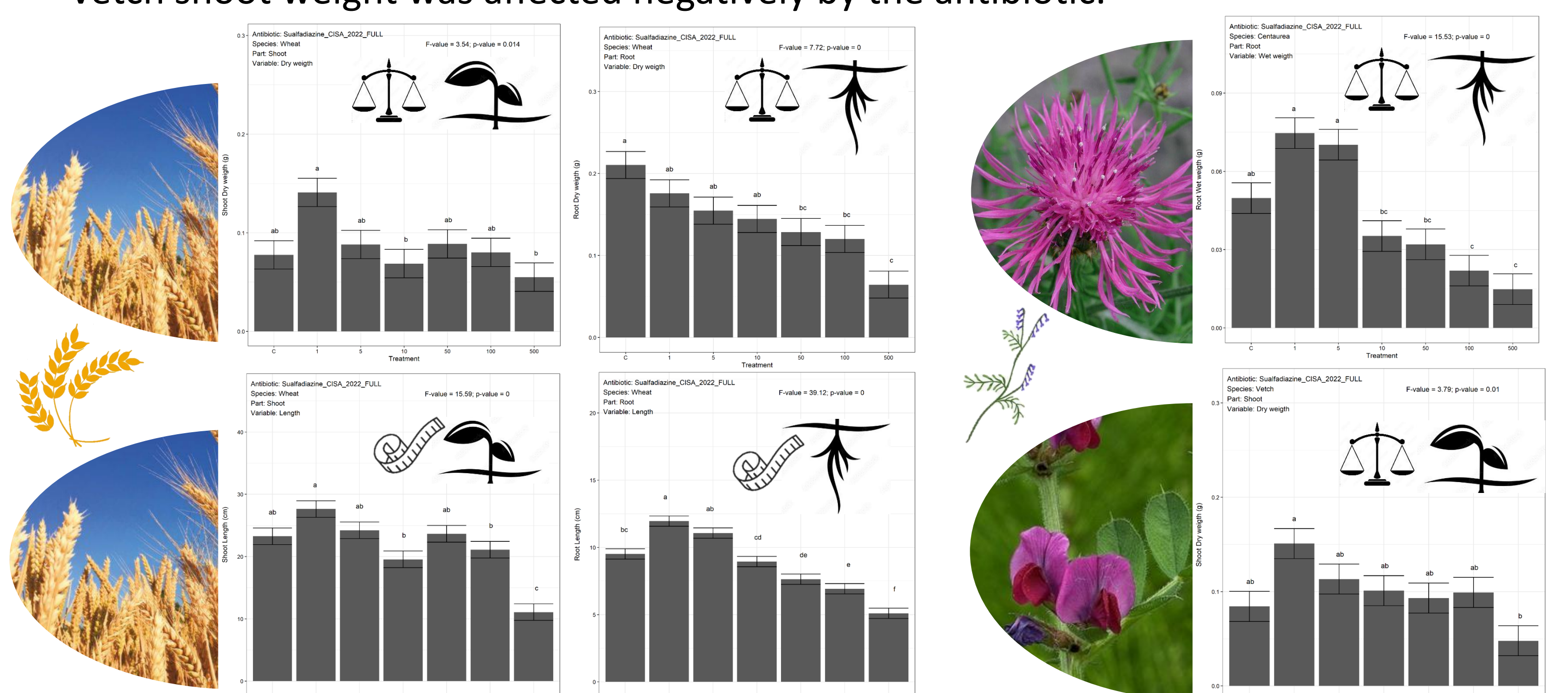
OXYTETRACYCLINE

- No statistically significant differences were obtained in any of the species analyzed for any of the variables tested.



SULFAMETHAZINE

- Best results were obtained for wheat, which showed statistically significant differences for all the variables studied, presenting negative effects in all of them.
- Barley didn't showed any statistically significant difference in any of the variables tested.
- Centaurea showed statistically significant differences respect to root weight, being affected negatively by the antibiotic.
- Vetch shoot weight was affected negatively by the antibiotic.



CONCLUSIONS

- Sulfamethazine presented higher phytotoxicity comparing with oxytetracycline, probably due to the antibiotics biodisponibility differences.
- Altogether, roots were more affected by antibiotic toxicity than shoots.
- No differences in antibiotic toxicity between wild or crop species were observed. However, wheat showed the highest toxic effects.
- More variables as well as a higher number of species are necessary to be studied in order to better understand the phytotoxicity of antibiotics.