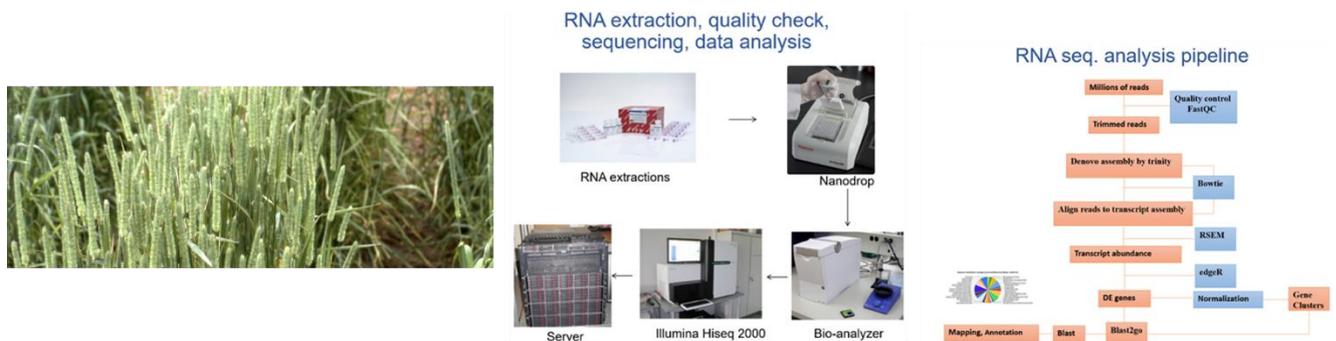


Topic/Title (English) Detecting genes and gene networks associated with ice-encasement survival in forage grass timothy



Summary

Timothy ($2n=6x=42$), a cool-season perennial grass is the most important forage grass species in Northern Norway because of its good winter hardiness, ability to thrive in short-growing season and resistance to frost and ice-encasement. But the predicted increase of temperatures during autumn and winter at higher northern latitudes in coming decades is expected to create variable temperature and precipitation patterns which might negatively affect cold acclimation and winter survival of perennial grasses, therefore potentially affecting the forage production in this region. Four timothy cultivars (Engmo, Snoori, Grindstad, Noreng) tested in two different locations (Vesterålen, Tromsø) for four years will be used in this study. For ice-encasement tests plants are placed in closed boxes containing ice water and kept at -3°C in freezers. Subsets of plants are withdrawn from freezers at preselected times (after approx. 3, 5, 7, 9 weeks) carefully thawed and transferred to the greenhouse (18°C , 24h light). After three weeks their survival is recorded, and regrowth is measured. The crown tissues collected during the tests will be used for RNA extraction to identify genes and gene networks and quantify the expression levels by RNA sequencing.

You will be supervised and trained at the CIGENE lab, where all the work will be done. Further, you will also be trained in bioinformatics analysis regarding transcriptome data analysis. After this project, you would expect to be familiar with several bioinformatics methods in handling RNA sequencing data, identifying genes and quantifying gene expression and exploring gene networks. This will give you a strong basis for further PhD studies or work in companies.

Type of thesis work: laboratory work, literature study

Subject area Plant Science, Genome Science, Biology

Language thesis English

Master thesis

Credits 60 ETC

Project/company Dept. of plant Science, BIOVIT, NMBU

Please contact

Dr. Mallikarjuna Rao Kovi (mallikarjuna.rao.kovi@nmbu.no)

Prof. Odd Arne Rognli (odd-arne.rognli@nmbu.no)