

Bachelor or Master thesis BIOVIT 22/23

Norsk tittel: **Utvikling av avling/halm/stubb/rot-forholdet til korn det siste hundreåret og mulig betydning for jordas innhold av organisk materiale**

English title: **Development of the grain/straw/stubble/root-ratio in cereals over the last century and possible implications for the soil organic matter content**

Summary:

The topic is related to an observed reduction in soil organic matter on grain production areas in Southeast Norway. Modern plant breeding has given us ever more effective grain varieties with respect to the transformation of photosynthetic products into grain rather than straw or roots. Thus, after harvest, less carbon than before is now probably available for microbial activity and maintenance of the soil organic matter pool. The work includes a combined field- and theoretical approach. Data for carbon in plant parts will be gathered from the cereal variety-library at Apelsvoll Research station at Mjøsa. Special attention will be paid to root sampling. Development in the grain/straw/stubble/root ratio with time will be visualized. Carbon input to soil from plant parts will be calculated from these data and corrected with measurements of stubble height under practical threshing conditions in the area. Values for carbon input through root exudates will be sought in literature. In a final phase, development (with time) in carbon input to soil for spring wheat, barley and oats will be calculated and compared with similar values elsewhere in Europe. It could involve using a simple model, like the ICBM. The discussion should also include a section on how straw has been treated the last century and how it preferably should be used in the future.

Subject area: Soil, organic matter, carbon input, cereal breeding

Language thesis: Norwegian and/or English

Bachelor or Master thesis, Credits: 15, 30 or 60 credits

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