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An investigation on total nonstructural carbohydrate trends in three *Agropyron* grasses of Golestan National Park in northern Iran

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Key words : *Agropyron* spp., total nonstructural carbohydrate, phenological stages

Introduction We examine total nonstructural carbohydrate (TNC) concentrations in three grasses within the genus *Agropyron*: of *Agropyron cristatum* (L.) Gaertner, *Agropyron trichophorum* (Link) Richt., *Agropyron intermedium* (Host) Barkw. and D.R. Dewey, within Golestan National Park in northern Iran. Our objectives were to (1) compare TNC reserves among root, crown, and rhizomes and (2) compare TNC concentrations during phenological development.

Material and methods Plant materials root, crown, and rhizome were collected throughout growth of three grasses and were dried at 70°C for 48 hours then ground to pass a 35-mesh screen. The TNC concentrations were determined colorimetrically. Data of TNC concentrations in the root, crown, and rhizome in different stages were analyzed using ANOVA and completely random design.

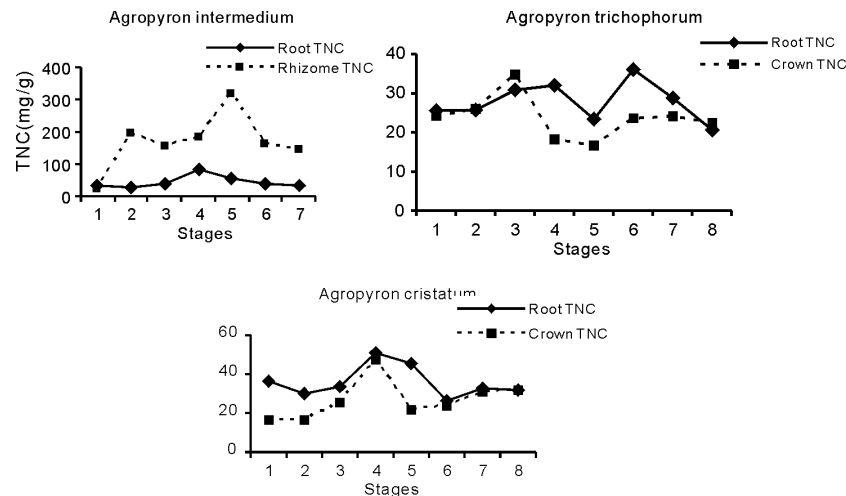


Figure 1 Total nonstructural carbohydrate concentrations at 8 growth stages. Stages 1, 2, and 3 in (a) and (b), 1 and 2 in (c) are vegetative growth. 4 in (a) and (b), and 3 in (c) are heads in boot. 5 in (b), and 4 and 5 in (c) are heads out. 5 in (a), and 6 in (b), and (c) are full flowering. 6 in (a), and 7 in (b), and (c) are seed ripening. 7 in (a) and 8 in (b), and (c) are seed dissemination.

Results As it is shown in Figure 1, the concentration of TNC are different ($p < 0.05$) in root and rhizome for *Agropyron intermedium*. These concentrations are similar for *Agropyron cristatum*, but are still significant ($p < 0.05$). The concentration of TNC are even more similar for *Agropyron trichophorum*, but are not significant ($p > 0.05$).

Conclusions In general, seasonal variation of TNC concentrations in storage organs varying among these closely related grasses with time. Further research will help elucidate grazing intensity and timing that promotes the vigor of these species.

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