Carbon Dioxide and Temperature Effects on Chemical Composition of Rhizoma Peanut Herbage. (C06-newman093037-Poster)

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Abstract:

Increasing atmospheric CO2 concentration and ambient temperature may affect chemical composition and nutritive value of forages. In vitro digestible organic matter (IVDOM), neutral and acid detergent fiber (NDF and ADF), and lignin concentrations were determined for rhizoma peanut (Arachis glabrata) leaf and stem. Plants were grown in all combinations of two CO2 (360 and 700 micro L/L) and four temperature environments (ambient, A; A+1.5; A+3; and A+4.5 degrees C). Forage was sampled every 6 to 8 wk during two growing seasons. Neither increasing CO2 nor temperature affected leaf IVDOM, but stem IVDOM declined from 562 (A) to 552 g/kg (A+4.5) with increasing temperature in Year 1 and from 577 to 511 g/kg in Year 2. Stem NDF increased with increasing temperature from 556 to 561 g/kg in Year 1 and from 519 to 526 g/kg in Year 2. Averages over 2 yr show that stem ADF increased linearly from 400 to 408 g/kg with increasing temperature, and stem lignin tended to increase linearly (p=0.11) as temperature increased. Rhizoma peanut nutritive value decreases with increasing growth temperature but is relatively unaffected by atmospheric CO2 concentrations in the range studied.

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