Predicting value of isotope discrimination ratios for yield potential in water-limiting conditions of spring barley. (C02-roche121623-Oral)

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Abstract:

In atmospheric CO2, besides the regular isotope 12C there are minute amounts of 13C. The final discrimination ratio between these two isotopes in any plant tissue is influenced by levels of transpiration and stomatal aperture which directly affect internal and external CO2 concentrations. In several studies on cereal crops carbon isotope discrimination values have been positively correlated to aboveground biomass and grain yield. Using a line source irrigation design where a decreasing water application pattern is controlled, from full irrigation to none along the length of the plot, we tested several two-rowed and six-rowed spring barley cultivars and a few wheat cultivars for their yield potential in water-limiting conditions. The carbon isotope discrimination data for grains, awns and flagleaves will be presented. The predicting values of carbon isotope discrimination ratios for grain yields will be tested at different levels of irrigation for subplots in which samples were collected.

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