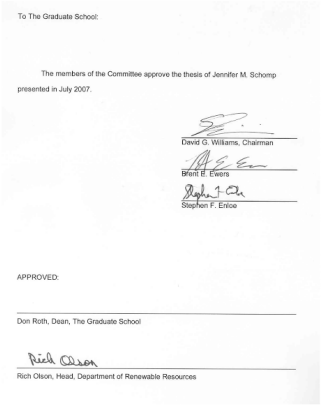
To The Graduate School:

The members of the Committee approve the thesis of Jennifer M. Schomp presented in July 2007.

David G. Williams, Chairman

Brent E. Ewers

Stephen F. Enloe

APPROVED:

Don Roth, Dean, The Graduate School

Rich Olson, Head, Department of Renewable Resources

Rising Atmospheric Carbon Dioxide Concentrations And Plant Invasion In The Northern Mixed-grass Prairie An Ecophysiological Perspective

Author : Schomp Jennifer M / **Category :**Invasive plants / **Total Pages** : 71 pages

Summary : Free rising atmospheric carbon dioxide concentrations and plant invasion in the northern mixed-grass prairie an ecophysiological perspective pdf download - native deep-rooted forbs and subshrubs persist in the northern mixed-grass prairie by acquiring soil resources not available to dominant warm and cool season grasses several nonnative species possess an extensive taproot which may explain their successful invasion and persistence in this ecosystem environmental change resulting in increased moisture storage in deep soil layers is therefore likely to promote ecological success of native deep-rooted species in diverse prairie ecosystem and increase the vulnerability to invasion by taprooted exotics elevated atmospheric co2 levels in addition to directly enhancing photosynthesis rates and biomass production of c3 species are predicted to indirectly stimulate plant growth in semi-arid grasslands by reducing stomatal conductance and evapotranspiration and prolonging favorable soil-plant water relations during the growing season soil moisture savings under elevated co2 may benefit deep-rooted species which take advantage of extended periods of moisture available in deep soil layers i assessed seasonal patterns of leaf photosynthetic gas exchange and water relations of the dominant native c3 grass pascopyrum smithii the native c4 grass bouteloua gracilis and the deep-rooted forb artemisia frigida under ambient 378 ppm and elevated 600 ppm atmospheric co2 levels in the prairie heating and co2 enrichment phace experiment at the usda-ars high plains grassland research station near cheyenne wyoming among these species a frigida exhibited the greatest reductions in stomatal conductance and greatest enhancements in plant water status in response to elevated co2 compared to that under ambient conditions in a separate study under natural field conditions i investigated patterns of leaf-level gas exchange plant and soil water balance and rooting distribution in native a

frigida and nonnative linaria dalmatica l dalmatica had higher net photosynthetic rates than that of a frigida maintained deeper maximal rooting depth and greater root mass density in deep soil layers and had higher pre-dawn leaf water potentials than those of a frigida l dalmatica is apparently poised to take advantage of moisture stored in deep soil layers beyond that available to a frigida global atmospheric changes enhancing the availability of moisture in deep soil layers are therefore likely to stimulate further invasion by l dalmatica and other taprooted species in northern mixed-grass prairie

Pusblisher : ProQuest on 2007 / **ISBN :** 9780549217084

PDF RISING ATMOSPHERIC CARBON DIOXIDE CONCENTRATIONS AND PLANT INVASION IN THE NORTHERN MIXED-GRASS PRAIRIE AN ECOPHYSIOLOGICAL PERSPECTIVE