

Zeitschrift: Veröffentlichungen des Geobotanischen Institutes der Eidg. Tech. Hochschule, Stiftung Rübel, in Zürich

Herausgeber: Geobotanisches Institut, Stiftung Rübel (Zürich)

Band: 108 (1992)

Artikel: Experimentelle Untersuchungen über das Regenerationsverhalten bei alpinen Pflanzen = Experimental studies on the regenerative behaviour of alpine plants

Autor: Tschurr, Floris Reto

Bibliographie

DOI: <https://doi.org/10.5169/seals-308972>

Nutzungsbedingungen

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften auf E-Periodica. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. Das Veröffentlichen von Bildern in Print- und Online-Publikationen sowie auf Social Media-Kanälen oder Webseiten ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. [Mehr erfahren](#)

Conditions d'utilisation

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. La reproduction d'images dans des publications imprimées ou en ligne ainsi que sur des canaux de médias sociaux ou des sites web n'est autorisée qu'avec l'accord préalable des détenteurs des droits. [En savoir plus](#)

Terms of use

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. Publishing images in print and online publications, as well as on social media channels or websites, is only permitted with the prior consent of the rights holders. [Find out more](#)

Download PDF: 28.03.2026

ETH-Bibliothek Zürich, E-Periodica, <https://www.e-periodica.ch>

LITERATUR

- ABRAHAMSON W.G., 1980: Demography and vegetative reproduction. In: SOLBRIG O.T. (ed.), Demography and evolution in plant populations. Botanical Monographs 15, 89-106.
- ALBERT W.B., 1927: Studies on the growth of alfalfa and some perennial grasses. J.Am. Soc.Agron. 19, 624-654.
- ANDERSEN D.C., 1987: Below-ground herbivory in natural communities: A review emphasizing fossorial animals. Quart.Rev.Biol. 62, 261-286.
- ASHMUN J. W. and PITELKA L. F., 1985: Population biology of *Clitonia borealis*. J.Ecol. 73, 185-198.
- BAZELY D.R. and JEFFERIES R.L., 1989: Leaf and shoot demography of an arctic stoloniferous grass, *Puccinellia phryganodes*, in response to grazing. J.Ecol. 77, 811-822.
- BAZZAZ F.A., CHIARIELLO N.R., COLEY P.D. and PITELKA L.F., 1987: Allocating resources to reproduction and defense: New assessments of the costs and benefits of allocation patterns in plants relating ecological roles to resource use. BioScience 37, 58-67.
- BELSKY A.J., 1986: Does herbivory benefit plants? A review of the evidence. Am.Nat. 127, 870-892.
- BELSKY A.J., 1987: The effects of grazing: confounding of ecosystem, community, and organism scales. Am.Nat. 129, 777-783.
- BENZ G., 1974: Negative Rückkoppelung durch Raum- und Nahrungskonkurrenz sowie zyklische Veränderung der Nahrungsgrundlage als Regelprinzip in der Populationsdynamik des Grauen Lärchenwicklers, *Zeiraphera diniana* (Guenée) (Lep., Tortricidae). Z.ang.Ent. 76, 196-228.
- BILLINGS W.D. and MOONEY H.A., 1968: The ecology of arctic and alpine plants. Biol. Rev. 43, 481-529.
- BINNIE R.C. and CLIFFORD P.E., 1980: Effects of some defoliation and decapitation treatments on the productivity of French Beans. Ann.Bot. 46, 811-813.
- BLISS L.C., 1971: Arctic and alpine plant life cycles. Ann.Rev.Ecol.Syst. 2, 405-438.
- BLOOM A.J., CHAPIN F.S. III and MOONEY H.A., 1985: Resource limitation in plants - an economic analogy. Ann.Rev.Ecol.Syst. 16, 363-392.
- BOSTOCK S.J. and BENTON R.A., 1979. The reproductive strategies of five perennial compositae. J.Ecol. 67, 91-107.
- BRISKE D.D. and ANDERSON V.J., 1990: Tiller dispersion in populations of the bunchgrass *Schizachyrium scoparium*: Implications for herbivory tolerance. Oikos 59, 50-56.
- BRITTON C.M., MCPHERSON G.R. and SNEVA F.A., 1990: Effects of burning and clipping on five bunchgrasses in eastern Oregon. Great Basin Naturalist 50(2), 115-120.
- BROWER R., 1983: Functional equilibrium: sense or nonsense? Neth.J.agric.Sci. 31, 335-348.
- BROWN R.W., JOHNSTON R.S. and JOHNSON D.A., 1978: Rehabilitation of alpine tundra disturbances. J.Soil and Water Cons. 33, 154-160.
- CADISCH J., LEUPOLD W., FREI F. und STRECKEISEN A., 1929: Geologische Karte von Mittelbünden 1:25'000, Blatt B, Davos. Beitr.Geol.Karte Schweiz, N.F. 49.
- CANHAM C.D. and MARKS P.L., 1985: The response of woody plants to disturbance: patterns of establishment and growth. In: PICKETT S.T.A. and WHITE P.S. (eds.), The ecology of natural disturbance and patch dynamics. Acad.Press London, 197-216.
- CARAMIELLO LOMAGNO R., MONTACCHINI F. and PEROSINO G., 1987-88: Sprouting and "in vitro" culture of *Polygonum viviparum* bulbills. Allionia (Torino, Italia) 28, 73-84.
- CARGILL S.M. and JEFFERIES R.L., 1984: The effects of grazing by lesser snow geese on the vegetation of a sub-arctic salt marsh. J.Appl.Ecol. 21, 669-686.
- CARLSSON B.A. and CALLAGHAN T.V., 1990: Programmed tiller differentiation, intracloonal density regulation and nutrient dynamics in *Carex bigelowii*. Oikos 58, 219-230.

- CHAPIN F.S., 1980: The mineral nutrition of wild plants. *Ann.Rev.Ecol.Syst.* 11, 233-260.
- CHAPIN F.S. III and SHAVER G.R., 1985: Individualistic growth response of tundra plant species to environmental manipulations in the field. *Ecology* 66(2), 564-576.
- CHAPIN F.S., BLOOM A.J., FIELD C.B. and WARING R.H., 1987: Plant responses to multiple environmental factors. *BioScience* 37, 49-57.
- CONNELL J.H., 1978: Diversity in tropical rain forests and Coral Reefs. *Science* 199, 1302-1310.
- CONSTABLE G.A. and RAWSON H.M., 1980: Effect of leaf position, expansion and age on photosynthesis, transpiration and water use efficiency of Cotton. *Austral.J.Plant Physiol.* 7, 89-100.
- COTTAM D.A., WHITTAKER J.B. and MALLOCH A.J.C., 1986: The effects of chrysomelid beetle grazing and plant competition on the growth of *Rumex obtusifolius*. *Oecologia* 70, 452-456.
- CRAWLEY M.J., 1983: Herbivory. The dynamics of animal-plant interactions. Blackwell Sci. Publ., Oxford. 437 S.
- CRAWLEY M.J., 1987: Benevolent herbivores? *Trends in ecology and evolution* 2, 167-168.
- DE KROON H., WHIGHAM D.F. and WATSON M.A., 1991: Developmental ecology of may-apple: effects of rhizome severing, fertilization and timing of shoot senescence. *Funct. Ecol.* 5, 360-368.
- DEREGIBUS V.A. and TRLICA M.J., 1990: Influence of defoliation upon tiller structure and demography in two warm-season grasses. *Acta Oecol.* 11(5), 693-699.
- DETLING J.K., WINN D.T., PROCTER-GREGG C. and PAINTER E.L., 1980: Effects of simulated grazing by below-ground herbivores on growth, CO₂ exchange, and carbon allocation patterns of *Bouteloua gracilis*. *J.Appl.Ecol.* 17, 771-778.
- DIRZO R., 1985: The role of grazing animal. In: WHITE J. (ed.), *Studies on plant demography*. Festschrift for J.L. Harper. 343-355.
- ELLISON L., 1960: Influence of grazing on plant succession of rangelands. *Bot.Rev.* 26, 1-78.
- ERIKSSON O., 1988: Patterns of ramet survivorship in clonal fragments of the stoloniferous plant *Potentilla anserina*. *Ecology* 69(3), 736-740.
- FOSSATI A., 1980: Keimverhalten und frühe Entwicklungsphasen einiger Alpenpflanzen. *Veröff.Geobot.Inst.ETH, Stiftung Rübel, Zürich* 73. 180 S.
- FRANKLIN I.R., 1980: Evolutionary change in small populations. In: SOULÉ M.S. and WILCOX B.A. (eds.), *Conservation biology: An evolutionary-ecological perspective*. Sinauer Ass. Inc., Sunderland, Massachusetts. 135-143.
- FREEMAN D.C., KLIKOFF L.G. and HARPER K.T., 1976: Differential resource utilization by the sexes of dioecious plants. *Science* 193, 597-599.
- GALEN C., 1990: Limits to the distributions of alpine tundra plants: herbivores and the alpine skipilot, *Polemonium viscosum*. *Oikos* 59, 355-358.
- GANGE A.C. and BROWN V.K., 1989: Insect herbivory affects size variability in plant populations. *Oikos* 56, 351-356.
- GASSER M. 1986: Genetic-ecological investigations in *Biscutella levigata* L. *Veröff.Geobot.Inst.ETH, Stiftung Rübel, Zürich* 85. 87 S.
- GASSER M., 1989: Bedeutung der vegetativen Phase bei alpinen Pflanzen für die biologische Erosionsbekämpfung in der alpinen Stufe. *Ber.Geobot.Inst.ETH, Stiftung Rübel, Zürich* 55, 151-176.
- GIGON A., 1971: Vergleich alpiner Rasen auf Silikat- und auf Karbonatboden. *Veröff.Geobot.Inst.ETH, Stiftung Rübel, Zürich* 48. 160 S.
- GOTTLIEB L.D., 1977: Genotypic similarity of large and small individuals in a natural population of the annual plant *Stephanomeria exigua* ssp. *coronaria* (Compositae). *J.Ecol.* 65, 127-134.

- GRIME J.P., 1977: Evidence for the existence of three primary strategies in plants and its relevance to ecological and evolutionary theory. *Am.Nat.* 111, 1169-1174.
- GRIME J.P., 1979: Plant strategies and vegetation processes. Wiley and Sons, Chichester.
- GRUBB P.J., 1977: The maintenance of species richness in plant communities: The importance of the regeneration niche. *Biol.Rev.* 52, 107-145.
- HALLÉ F., OLDEMAN R.A.A. and TOMLINSON P.B., 1978: Tropical trees and forests. Springer, Berlin.
- HARPER J.L., 1977: Population biology of plants. Acad.Press London. 892 S.
- HARPER J.L. and OGDEN J., 1970: The reproductive strategy of higher plants. I. The concept of strategy with special reference to *Senecio vulgaris* L. *J.Ecol.* 58, 681-698.
- HARPER J.L. and WHITE J., 1974: The demography of plants. *Ann.Rev.Ecol.Syst.* 5, 419 - 463.
- HARRIS P., 1973: Insects in the population dynamics of plants. *Symp.Royal.Entomol.Soc.London* 6, 201-209.
- HARRIS D. and DAVY A.J., 1986: Regenerative potential of *Elymus farctus* from rhizome fragments and seed. *J.Ecol.* 74, 1057-1067.
- HARTMANN H., 1957: Studien über die vegetative Fortpflanzung in den Hochalpen. *Jb.Naturf.Ges.Graubündens.* 168 S.
- HARTMANN H., 1959: Vegetative Fortpflanzungsmöglichkeiten und deren Bedeutung bei hochalpinen Blütenpflanzen. *Die Alpen* 55, 173-184.
- HARTNETT D.C. and BAZZAZ F.A., 1985: The integration of neighbourhood effects by clonal genets in *Solidago canadensis*. *J.Ecol.* 73, 415-427.
- HASLER A., 1988: Biologische Erosionsbekämpfung oberhalb der Waldgrenze: Verwendung einiger alpiner Arten für die Bepflanzung gefährdeter Stellen. Diplomarbeit. Geobot.Inst.ETH, Stiftung Rübel, Zürich. 79 S. (Polykopie).
- HEICHEL G.H. and TURNER N.C., 1983: CO₂ assimilation of primary and regrowth foliage of red maple (*Acer rubrum* L.) and red oak (*Quercus rubra* L.): Response to defoliation. *Oecologia* (Berlin) 57, 14-19.
- HESS H., LANDOLT E. und HIRZEL R., 1967-1972: Flora der Schweiz und angrenzender Gebiete. Birkhäuser, Basel. 3 Bde. 2690 S.
- HUNT R., 1984: Relative growth rates of cohorts of ramets cloned from a single genet. *J.Ecol.* 72, 299-303.
- JANION S.M., 1989: Changes in interindividual relations as a form of population adaption to environmental stimuli. *Ekol.pol.* 37, 179-184.
- JERLING L., 1988: Clone dynamics and vegetation pattern of *Glaux maritima* on a Baltic sea shore meadow. *Vegetatio* 74, 171-185.
- JÓNSDÓTTIR J.S. and CALLAGHAN T.V., 1988: Interrelationships between different generations of interconnected tillers of *Carex bigelowii*. *Oikos* 52, 120-128.
- JÓNSDÓTTIR J.S. and CALLAGHAN T.V., 1989: Localized defoliation stress and the movement of ¹⁴C-photoassimilates between tillers of *Carex bigelowii*. *Oikos* 54, 211-219.
- KAYS S. and HARPER J.L., 1974: The regulation of plant and tiller density in a grass sward. *J.Ecol.* 50, 171-179.
- KLÖTZLI F., 1991: Möglichkeiten und erste Ergebnisse mitteleuropäischer Renaturierungen. *Garten und Landschaft* 2, 1-20.
- KOBAYASHI S., 1975: Growth analysis of plant as an assemblage of internodal segments - a case of sunflower plants in pure stands. *Jap.J.Ecol.* 25, 61-70.
- KÖRNER CH., 1984: Auswirkungen von Minereraldünger auf alpine Zwergsträucher. *Verh. Ges.Ökol.* 12, 123-136.
- KÖRNER CH. and LARCHER W., 1988: Plant life in cold climates. In: LONG S.F. and WOODWARD F.I. (eds.), Plants and temperature. *Symp.Soc.Exp.Biol.* 42, 25-57.
- KOTANEN P. and JEFFERIES R.L., 1987: The leaf and shoot demography of grazed and ungrazed plants of *Carex subspathacea*. *J.Ecol.* 75, 961-975.