Skogland, T. 1975, Range use and food selectivity by wild reindeer in Southern Norway. In Luick, J.R. (ed.); p. 342-354; Univ. of Alaska; Fairbanks, Alaska; 1. international reindeer and caribou symposium; Fairbanks, Alaska, United States of America (USA); 9 Aug 1972

Year-round direct ground observations are in progress to determine the portion of active time that reindeer spend feeding in different vegetation types within the arctic-alpine ecosystem. Reindeer ranged through nine phytosociological plant communities during their annual cycle of movement in 1971. Cladonia heaths received 60 percent of the annual use and approximately 95 percent of the December-April use. Deschampsia dominated grass meadows received 14 percent of the annual use and approximately 50 percent of the early spring and late fall use. Salix and herb-dominated snowbeds received 22.5 percent of the annual use and approximately 95 percent of the early and late summer use. Bogs received 3 percent of the annual use and approximately 45 percent of the midsummer use. Grazing succession followed a gradient of altitude, and aspect related to snow conditions and phenology of key Salix and Deschampsia spp. Concentration of feeding on the relatively level and low midwinter range (1,100 m altitude), changed towards south-facing slopes and higher altitudes (1,400 m altitude) during late winter and the early spring snowmelt. A reversed movement downward toward wet areas (1,200 m altitude) relates to emergence of dwarf Salices in bogs and along riverbanks. In late summer reindeer followed the spring growth of north-facing snowbeds upward toward the edge of glaciers (1,450 m altitude). Toward winter reindeer descended eastward to their winter range. Observations of feeding rates were used as an index of food intake. Statistical analysis revealed significant differences in eating rate related to slope and aspect in late winter and spring. The X2 test showed no significant differences in eating rates between age and sex groups. Between lactating females and other herd members a ''t'' test showed significant differences at post-calving

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Chiariello N.R. (1989) Phenology of California Grasslands. In: Huenneke L.F., Mooney H.A. (eds) Grassland structure and function. Tasks for vegetation science, vol 20. Springer, Dordrecht

By comparison with many other plant com-munities, the annual grasslands of California are considered phenologically simple and relatively uniform. Both within and among different grasslands, the relationship between climate and plant growth and development follows a repeated pattern: The herbaceous vegetation (of the San Joaquin Experimental Range) is almost entirely annual plants, most of which germinate after the first rains in the fall, grow slowly during winter, then grow rapidly in spring. The annual plants mature and die when soil water becomes depleted, usually in April or May (Woodmansee and Duncan 1980). The seasonal growth pattern (at the Hopland Field Station) proceeds from germination, usually in November, through a short period of moderate growth, then a longer winter period when growth is slow, and finally ends with about a month of fast growth in April and May (Heady 1958). In California annual grasslands, flowering and seed set occur during spring when soil water conditions change rapidly due to increased plant growth, high evapotranspiration, and infrequent rainfall… (Ewing and Menke 1983b).(Plants of the annual grasslands) begin to germinate in the fall with the first rains exceeding about 15 mm, grow slowly through the winter, grow rapidly in the spring, and mature between late April and June (Heady 1977).

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Sanderson, M.A. and Wedin, W.F. (1989), Phenological Stage and Herbage Quality Relationships in Temperate Grasses and Legumes. Agron. J., 81: 864-869. doi:10.2134/agronj1989.00021962008100060005x

Phenological indexes that account for variation in chemicál composition of herbage would be valuable to farmers and researchers. Hence, the objective of this study was to relate neutral detergent fiber (NDF) and in vitro digestible dry‐matter (IVDDM) concentrations in herbage and plant parts of alfalfa (Medicago sativa L.), red clover (Trifolium pratense L.), timothy (Phleum pratense L.), and smooth bromegrass (Bromus inermis Leyss.) to phenological development of each species. Four replicate plots of each species were harvested at four 2‐wk intervals during the spring of 2 yr. Alfalfa was separated into leaves (including flowers) and stems; red clover into leaflets (including flowers), petioles, and stems; and bromegrass and timothy into leaf blades and stems (including sheaths). Herbage from two plots of each species was scored for phenological stage according to a species‐specific index and a mean stage number (mean stage by weight, MSW) was calculated. For each plant part, NDF and IVDDM concentrations were regressed on MSW across years. Alfalfa leaves remained constant in NDF (206 g kg−1 dry matter, DM) and IVDDM (783 g kg−1 DM) with increasing MSW; however, MSW accounted for 97% of the variation in NDF and IVDDM concentrations of alfalfa stems and herbage. Herbage concentrations of NDF and IVDDM were more closely related to MSW than were concentrations of NDF and IVDDM in leaflets, stems, or petioles of red clover, and leaf blades and stems of bromegrass and timothy. Only in alfalfa did MSW adequately account for variation in NDF and IVDDM of herbage and plant parts. Phenological models for the other species adequately accounted for variation in some, but not all, plant parts.

D. R. KEMP, C. F. EAGLES, M. O. HUMPHREYS, Leaf Growth and Apex Development of Perennial Ryegrass During Winter and Spring, Annals of Botany, Volume 63, Issue 3, March 1989, Pages 349–355, <https://doi.org/10.1093/oxfordjournals.aob.a087751>

The relationships between rates of leaf extension, leaf appearance, and primordia production on the apex were studied in the field during winter and spring in established swards of four contrasting perennial ryegrass lines (Aurora, Melle, a hybrid selection from a cross between Aurora and Melle and S.24). All four lines showed an increase in leaf extension rates which commenced when spikelet primordia were first initiated at the apex. This was some time after vernalization requirements had been satisfied. In early-flowering lines the stimulus to leaf growth rates occurred earlier than in late-flowering lines. Maximum leaf growth rates occurred about the time of double ridge formation, in the middle of the period of spikelet primordia production. The rate and duration of the period of spikelet primordia production varied between lines. By the time of flowering, leaf growth rates declined to values recorded for vegetative plants in the winter. Leaf appearance rates followed a similar pattern to leaf growth rates, although the increase in leaf appearance rate was less than in primordia production or leaf growth rates. Hybrids from a cross between early- and late-flowering lines showed early enhancement of leaf extension rates due to early initiation of spikelet primordia production. These high rates of leaf growth were maintained for longer, compared with the early-flowering line, as the duration of spikelet production was longer. This illustrates a mechanism for combining early spring growth with lateness of flowering in ryegrass breeding programmes