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SUMMARY

The study deals with the growth of 14 alpine *Leguminosae* species; it includes experiments in the greenhouse and the garden in Zurich as well as in alpine machine-graded ski runs near Davos. In addition, natural populations in undisturbed alpine areas were observed and compared with experimental series. The results obtained in the greenhouse and the garden trials contributed information to the establishment and regenerative growth as well as the resource distribution in the plant throughout the year. The field experiments contributed in the first place to conclusions about the expansive and reproductive growth and the dynamics of the individuals and populations.

As expected, all of the growth types included a genetic as well as an environmental component. During the establishment and reproductive growth, the potential of growth was mostly reflected in the speed of growth and in the dynamics of given individuals. During the regenerative growth, it was influenced by the physiological integration of the ramets and during the expansive growth by the capacity of resource uptake. The phenotypical plasticity of clonal growth was related to the growth type: the modifications of reproductive growth were rather slight, whereas the other growth types proved to be more variable. Cycles of establishment and expansive growth were characterized by seasonal changes, apparently resulting from differences in internal distribution of resources throughout the year.

The dynamic of the experimental populations was dominated at the beginning by the ramet-turnover. Later on, some of the individuals reached the reproductive phase and the age-state structure of populations became more differentiated. Further diversification relative to age-state hierarchy resulted from self-seeding and the subsequent development of new generations. However, this aspect could not have been investigated in detail on account of the limited research period.

Immigration of diaspores from the neighbouring areas was registered but not analysed.

In conclusion, the relevance of the results obtained to revegetation of machine-graded ski runs above the timberline is briefly discussed.