

Causes and implications of intra-clonal variation in *Gracilaria chilensis* (Rhodophyta)

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Abstract

Strain selection studies in *Gracilaria chilensis* detected significant levels of intra-clonal variation. These findings motivated more detailed studies on the causes and implications of intra-clonal variation in these and other red algal species. Our results indicate that intra-clonal variation is common among replicated units (e.g.: carpospores and ramets) of several red algal species and suggest that a larger data base probably will show the occurrence of various kinds of intra-clonal changes, differing in frequency of occurrence and magnitude of phenotypic expression. It is likely also that different species would exhibit different amounts of variation. Four types of factors may cause intra-clonal variation: (1) physiological or developmental differences among ramets, (2) localized pathogen infections, (3) several kinds of genetic changes, and (4) sporeling coalescence. Intra-clonal variation among ramets: (1) increases the possibility of genet survival, (2) explains the origin of morphological and physiological differences among ramets of a given genet, (3) explains the large population variation found in many clonal species and (4) suggests that strain selection of some economically important seaweeds should be thought of as a fairly continuous process due to the instability of some of these clones.