

FOREST FERTILIZATION

Effects on Ground Vegetation

There is little available information regarding the effects of forest fertilization on ground vegetation in British Columbia coastal and interior forests. The majority of studies have been undertaken in boreal forests.

The effects of fertilization on ground vegetation vary depending on many factors, including the abundance of light, nutrients and water. Because of interactions between these variables, studies of the effect of forest fertilizers on ground vegetation have produced conflicting results.

Most studies indicate that a single fertilizer application will likely have only a small and (or) transient impact on understorey vegetation biomass and species composition. However, vegetation shifts may be large and persistent with frequent fertilization.

Whereas a single fertilization apparently has only minimal impact on understorey species diversity (richness and evenness), large and repeated nutrient additions may reduce long-term stand-level species diversity.

Understorey vegetation typically responds in such a way that species composition becomes more similar to that of a naturally more fertile site. Species that commonly occur on nutrient-poor sites (e.g., mosses, lichens, dwarf shrubs) usually decrease in abundance, and species usually found on nutrient-rich sites (fireweed, rose, raspberry) increase in abundance. The amount and relative abundance of mosses and lichens is generally most negatively affected by single and repeated fertilizer applications. The decline is likely caused by a combination of competition and shading from canopy trees and by direct toxic effects of the fertilizer.

Where ground-level light is abundant, a single fertilization may cause significant, if temporary, increases in understorey biomass and nutritive quality of browse. However, where light is limiting (e.g., dense tree canopy), the effects of fertilization on understorey vegetation may be less pronounced, since the growth of grasses and herbaceous species may be inhibited.

A short-term increase in mushroom yield has been observed following N fertilization. Also, short-term shifts in mushroom species composition have been reported following fertilization.

The few reported effects of forest fertilization on berry crops are variable and partly contradictory. Some studies report small increases in berry crops of *Vaccinium*, while other studies report a decline in berry production, possibly due to increased shading due to tree crown expansion.

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