



## Factors influencing canopy closure after fire in boreal forest in Québec, Canada

**K. Jayen** (1, 2), S. Gauthier (3), A. Leduc (1) and Y. Bergeron(2)

(1)Centre for Forest Research (CFR), UQAM, CP 8888, Succ CV, Montreal, Québec, H3C 3P8, Canada, (2) NSERC-UQAT-UQAM industrial chair in Sustainable Forest Management, Québec, Canada, (3) Natural Resources Canada-Canadian Forest Service, Québec, Canada

kjayen@yahoo.ca / Fax: 00-1-514-987-4647 / Phone: 00-1-514-987-3000-7608

Fire in the boreal forest plays an important role in stand dynamics and regeneration. However, stand regeneration is sometimes deficient, especially for black spruce (*Picea mariana*) stands. The reasons for these regeneration failures are mostly unknown, although they can be attributed either to a deficiency in tree establishment or a slow growth. Consequently, this study aims to establish a relationship between stand factors, like pre-fire composition, structure and age, surficial material and drainage, time since fire, and geographical location, and an index of the speed of canopy closure. Ten fires with a surface larger than 2 500 ha in different zones of feather-mosses black spruce domain in boreal forest of Québec (Canada) were studied using georeferenced forest inventory and forest fire databases. Logistic regressions were used to establish a predictive model of the regeneration success. Our results suggested that stand composition and stand structure before fire and soil characteristics influenced canopy closure (regeneration establishment and growth) about twenty years after fire. Regeneration success is better 1) in jack pine (*Pinus banksiana*) stands and in mixed stands than in black-spruce stands, 2) on well-drained soils than on bad-drained soils 3) when stand density before fire is more than 60%.