

Potassium content of the A, B and C horizons

As a rule, any soil contains substantial quantities of potassium, but no more than between 1% and 2% of it is immediately available for uptake by plants. Potassium is one of the three major nutrients that are essential to crops, and an average harvest removes a considerable amount of it. This element plays an important role in many physiological processes: maintenance of an adequate level of water in plants, sugar formation, movement and storage, nitrogen mobilization and protein manufacture. Potassium helps develop sturdy stems, thereby reducing the risk of lodging (Magny and Baur 1962, Bockman et al. 1990).

Table 1. Definition of K content classes

Class	K (meq/100g)	k (kg/ha)
Very low	<0.13	<110
Low	0.13 - 0.25	110 - 225
Moderate	0.25 - 0.45	225 - 390
High	0.45 - 0.57	390 - 500
Very high	≥0.57	≥500

Martin and Nolin 1991

Five potassium content classes are used (Table 1). The potassium content of the A horizon of soils in the southeastern part of the Montreal plain is generally low (51% of area) (e.g. Kierkoski series) to moderate (39.8%) (e.g. Sainte-Rosalie series). Soils in the “very low” class account for 8.1% of the total area (e.g. Saint-Thomas

series), while organic soils (1.1%) are in the “high” class. None of the soils in the study area was found to have a surface layer with a very high potassium content. The spatial distribution of potassium content classes is noticeably related to the spatial distributions of soil taxonomy and surface texture. Potassium enrichment is commonly observed in the underlying horizons, except in the case of sandy soils, which display leaching in the B horizon and enrichment in the C horizon.