

Butternut Health and Genetic Diversity in New Brunswick, Canada¹

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Butternut (*Juglans cinerea*), a native tree species of eastern North America, is under serious threat from an introduced fungal pathogen (*Ophiognomonia clavigignenti-juglandacearum*), the agent of butternut canker disease. Butternut canker was first reported in North America in Wisconsin in 1967 and finally reached New Brunswick (NB) in 1997. The purpose of this study was to assess the health of NB butternut populations and develop a cryogenic *ex situ* conservation reserve of NB butternuts using part of the embryo isolated from nuts. We assessed a total of 425 trees in 25 populations for general health and genetic diversity. Parameters included tree vigor, crown dieback, and the presence of cankers. We use 11 nuclear microsatellite markers (gSSR), and two chloroplast CAPS markers to evaluate the genetic diversity of NB butternuts relative to butternuts in the rest of the species' native range, and to detect evidence of hybridization with Japanese walnut. To date, approximately 25,000 embryos either have been or are in the process of being cryopreserved. The results of the population survey and intended use of the *ex situ* collection will be discussed.

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