



PEI Soil & Crop  
Improvement Association



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## Evaluation of dwarf hybrid hazelnuts on steep sloping land

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**Location:** Cornwall (Fig. 1)

**Introduction:** Initiated the spring of 2006, this project's objective was to evaluate several varieties of dwarf hybrid hazelnuts on steeply sloping agricultural land. Survival, growth rate and time to production were evaluated for four varieties of hazelnuts. The site was located on the well drained, sandy loam (Alberty soil type) soil with a north facing 9 to 11% slope. Some characteristics of the surface soil are listed in Table 1.



Fig. 1. Cornwall site prior to planting

Organic Matter (%)	pH	Phosphate (ppm)	Potash (ppm)
3.5	5.7	162	55

### **Treatments and design:**

dwarf hybrid hazelnut varieties Delta, Epsilon, Zeta (layered varieties) and New York (seedling) complete randomized block design with four replicates.



## Results and Discussion

The project was originally planned to run until 2010 but was terminated following the 2009 crop year because of the poor performance of the hazelnuts. A summary of plant survival is given in Table 2. Plant survival may have been compromised by two factors. First when the plants were planted, compost was used. This compost may have had levels of chlorine considered to be toxic to hazelnuts. Before using, compost should be analyzed and if levels exceed 30 ppm it should not be used. Second fertilizer was applied to half the plants the spring of 2008. The fertilizer in some cases came in direct contact with the plants which may have caused mortality (Table 3). Fertilization was not done in 2009.

Variety	Plants planted May 2006	Plants alive		
		July 2007	July 2008	Oct 2009
Delta	30	23	18	7
New York	30	29	26	17
Epsilon	30	30	30	19
Zeta	30	10	10	1

Variety	Mortality of fertilized plants	Mortality of non fertilized plants
Delta	14 out of 15	9 out of 15
New York	8 out of 15	5 out of 15
Epsilon	11 out 15	0 out of 15
Zeta	15 out 15	14 out of 15

Performance of the surviving plants has been very poor. In some cases the main stem of the plants has died with sprouts from the plant roots the only sign of life. Average plant height is shown in Figure 1 below.

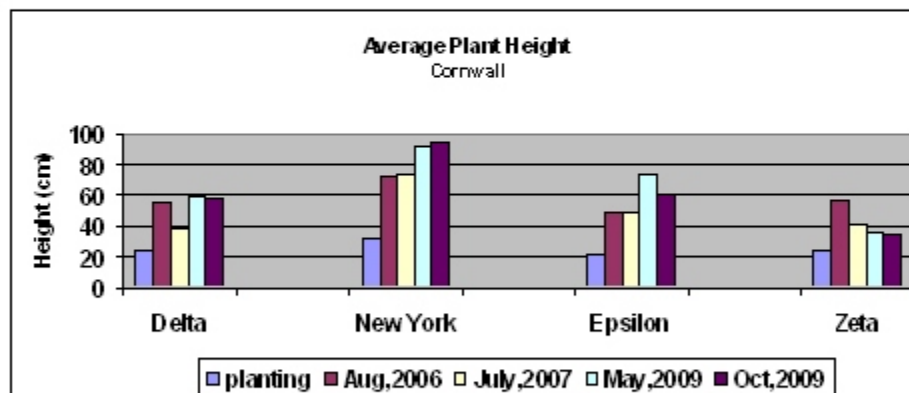


Figure 1. Average plant height of hazelnut varieties between spring of 2006 and October 2009.

Plant performance was also assessed on the guard plants used to surround the plots (data not shown). Those plants were selectively fertilized and limed in 2007 and 2008 but extra care was taken to avoid contact of fertilizer with the plant stems. In general, the plants are in poor shape. Growth has been very slow and plants are beginning to die. Because mortality was nil for the first 3 years of the experiment no negative affect from planting with compost occurred. Fertilization was not a factor also as plant mortality was equal between fertilized and non fertilized treated plants.

The site where the experiment is located is exposed with little or no protection from prevailing winds. It is thought that this may be a factor in the survival of the hazelnuts. As a result a new experiment was initiated in the fall of 2008. This experiment which will be expanded to 3 sites the spring of 2010 will be evaluating numerous varieties of hazelnuts on sites which are better sheltered from prevailing winds. Results from that experiment should determine the potential for hazelnut production on PEI.

