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# Testing new *Ulmus* varieties; DED resistance of elms recently introduced in the Netherlands

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Elms, and especially *Ulmus* × *hollandica* and its varieties have been dominant and very much appreciated trees in many cities for centuries as well as in the rural landscape of the Netherlands. As a result of two Dutch Elm Disease (DED) epidemics in the 20th century these trees largely disappeared from the landscape. Despite the introduction of new varieties with increased levels of DED-resistance, by the end of the 20th century the elm had disappeared from the top 20 list of trees produced by Dutch nurseries whereas for decades it had been the number one. In 2005 an inventory among managers of urban green revealed that there is still not one species available that has all the good qualities of the elm, especially for its use as street tree. It was concluded that the best replacement for the classical Dutch elm is a new elm, provided that this new elm variety is DED resistant. It was also concluded that the very limited use of new elm varieties is due to a lack of confidence in their DED resistance.

To break this deadlock it was decided to investigate the level of DED resistance of all elm varieties recently introduced into Dutch tree nursery industry. In a five year field experiment 29 *Ulmus* varieties were tested; 17 new varieties, 10 not yet released selections from the Dutch elm breeding programme and the old varieties 'Belgica' and 'Commelin' as reference. In a split-plot design 9 trees of each variety were inoculated with *Ophiostoma novo-ulmi* and symptom development and recovery were recorded. This was repeated with a new set of trees four times over two years. The results show that (1) this procedure allows varieties to be tested for resistance to DED, (2) it is possible to compare levels of resistance among varieties, (3) the resulting classification corresponds well with the experience from practice in urban green. It is concluded that the level of resistance of the varieties varies, and there is a substantial group of varieties with a high level of DED resistance available. This provides ample opportunities for the use of elms as street tree in future.