

Genotyping of seven (7) English Elm (*Ulmus procera*) samples for Mr Paul King of King & Co The Tree Company Ltd.

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Four (4) individually-labelled samples of nursery tree under propagation (King 1, King 2, King 3 and King 4) were sent to East Malling Research to be compared with samples of three (3) source trees (Tree 1, Tree 2 and Tree 3) also provided by the customer from a location known to them. Three (3) additional Elm samples from different locations were also provided by the customer and analyzed at no cost to confirm the discrimination power of the DNA markers used.

DNA extractions were performed for each sample using the DNeasy Plant Miniprep kit (Qiagen Ltd) following the manufacturer's protocol. Samples were resuspended in 200 µl sterile water and quantified using a NanoDrop100 Spectrophotometer (Thermo Scientific). DNA concentrations ranged from 6 to 50ng/ µl. All DNA solutions were diluted to 1:100 of the original extraction for use in the polymerase chain reaction (PCR) genotyping screen.

A total of fourteen (14) microsatellite markers (SSRs) develop from other *Ulmus* species were tested for analysis in each sample. Of those, only one failed to produce any amplification. Data was generated using an Applied Biosystems 3100 Prism Genetic Analyzer. Data was collected and analysed using the GENESCAN and GENOTYPER (Applied Biosystems) software applications. Eight (8) markers providing the highest level of polymorphism and ease of scoring were chosen as a fingerprinting set to be used in future characterisation of English Elm material.

The fingerprinting set clearly discriminated between the three original trees and control samples. Samples for nursery trees (King 1- 4) were all shown to be identical to original 'Tree 2'.

Scores for eight SSR markers for all *Ulmus* samples analysed.

Sample	Ulm1-165	Ulm-2	Ulm1-21	UR138	UR123	UR173a	Ulm-8	UR153
Elm control, nursery hedgerow	126 128	94 109	208 212	233 235	244 248	165 167	172 179 195	185 195
Elm control, Gas Point	126	97 103	206 222	229 230	248	149 165	192 195	185
Elm control, Pods Lane	142 170	100 103	206 208	237 239	246 248	151 165	197 199	187 192
Nursery tree King 1	156 164	94 97	206 208	229 235	248 250	165	180 190 195	182 185
Nursery tree King 2	156 164	94 97	206 208	229 235	248 250	165	180 190 195	182 185
Nursery tree King 3	156 164	94 97	206 208	229 235	248 250	165	180 190 195	182 185
Nursery tree King 4	156 164	94 97	206 208	229 235	248 250	165	180 190 195	182 185
Original Tree 1	126	97 103	206 218	229 230	248	165 171	175 195 210	182 185
Original Tree 2	156 164	94 97	206 208	229 235	248 250	165	180 190 195	182 185
Original Tree 3	150	94 103	206 212	229 235	246 250	149 171	195 210	185