

Arborcheck<sup>®</sup>  
analytical stress diagnostics



Tree vitality monitoring  
& stress detection





# Fast, effective assessment of tree vitality and stress for arboricultural professionals

Arborcheck is a cost effective system providing tree professionals and tree owners with a convenient method of assessing overall tree vitality.

The system consists of 2 hand-held instruments which test the physiological characteristics of the leaves. This provides a detailed evaluation of the physiological performance of the tree.

Results may be used as an indication of stress, which may lead to decline, an early indicator of pest and/or disease, where visual symptoms are not apparent or as supporting evidence for the findings of conventional Visual Tree Assessments.

# Simple, non-invasive, non-destructive measurements of leaf chlorophyll fluorescence and chlorophyll content

Arborecheck employs research techniques that are used widely by scientists all over the world as a means of detecting physiological damage caused by biotic or abiotic stress factors.



## Pre-visual detection of many forms of biotic and abiotic stress factors

Photosynthesis can be inhibited by different stress factors in a variety of ways. Issues such as drought and nutrient deficiency starve the tree of raw materials required for photosynthetic processes to occur whilst stress caused by herbicide damage can physically break down the structures within the leaf itself.



## Results compared to extensive species-specific Database of Benchmark Values

The real power of Arborecheck lies in its ability to analyse recorded data from a particular tree against a species-specific Database of Benchmark Values (DBV). The DBV contains optimum chlorophyll fluorescence and chlorophyll content data for over 275 individual species/cultivars collected over a seven year period and revised annually as new data is collected.



## Wide variety of applications

Arborecheck has a wide range of applications including informing biosecurity programmes, selection of planting stock, routine testing of planted stock, routine testing of trees pre- and post-development and regular assessment of physiological health as part of management regimes.





## Clear, intuitive presentation of results with interpretation guide

Data from the leaf fluorescence and chlorophyll content measurements is presented by the Arborcheck app for both overall tree vitality and current stress levels. Vitality is calculated from 2 parameters; photosynthetic efficiency and chlorophyll content with stress calculated from 4 additional stress indicator (Si) parameters taken from the leaf chlorophyll fluorescence measurements. Results are displayed both as a graphical summary of vitality and stress and also as a more detailed presentation of the standard deviation from the DBV for each of the individual parameters.

The app also displays a text interpretation of the data which can indicate slight, significant, critical or no reduction in overall vitality with mild, moderate, severe or no current physiological stress levels.





## Strict data collection policy

Data is collected using robust, peer reviewed research techniques according to a strict set of procedures so that we are able to guarantee that the DBV can be described as optimum. We only collect data from containerised trees since this method of nursery production offers as near as possible a perfectly controlled growth environment. For all tree types, we collect 2 years worth of data for chlorophyll fluorescence, chlorophyll content and an additional laboratory research technique called electrolyte leakage before adding the species/cultivar to the DBV. Data collection is overseen at every stage by researchers from Bartlett Tree Research Laboratories in the UK with data analysis carried out by some of the worlds leading researchers in arboriculture to ensure that the consistency and integrity of the DBV is maintained.

## Ongoing data collection

The DBV contains over 275 individual tree species/cultivar that Barcham Trees are able to grow in the temperate British climate which covers a large geographical area (UK, much of Europe, Northern US states etc). As a commitment to supply Arborcheck to arborists all over the world, we have commissioned reputable independent consultants to collect data from hand-picked nurseries with projects currently ongoing in Australia and the United States of America to screen species from different climatic regions.

## About Arborcheck

Arborcheck is a collaborative venture between 3 UK based companies.



The largest supplier of containerised trees in Europe with more than 160,000 individual trees from over 400 different species. The Nursery Benchmark Database is compiled from measurements taken annually on the nursery since 2009 which forms part of Barcham's intensive tree health and biosecurity programme.



Research arm of the world's leading scientific tree and shrub care company under the guidance of Dr. Glynn Percival. A team of researchers from Bartlett meticulously measure the Photosynthetic Efficiency, Vitality, Chlorophyll Content and Electrolyte Leakage values of the Barcham stock and using this data, compile the Nursery Benchmark Database.



World leaders in the manufacture of scientific instrumentation used globally in both plant and biomedical scientific research programmes for over 40 years. Hansatech Instruments design and manufacture the Arborcheck instrumentation and develop the Arborcheck App and Report Generation Software.

For further information, please visit our website at [www.arborcheck.com](http://www.arborcheck.com) or contact us at the following address:

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