

Do Mediterranean tree species offer resilient forestry alternatives for lowland Britain?

Dr. Scott McG. Wilson (MICFor) investigates alternative species

With challenges to traditional tree species choices from climate change and pests and diseases, the search is on for resilient alternatives. This is most pressing on lowland plantation sites with drier climates (<700mm rainfall) where summer droughts are becoming more serious. A traditional forestry mainstay, Corsican pine, is no longer favoured for planting due to *Dothistroma*. Alternative familiar species choices, including larch, oak, ash and beech face their own problems. Mediterranean, Balkan and Caucasian regions offer resilient alternative tree species and agroforestry approaches, and these should be systematically evaluated. The author is contributing by a programme of independent research and authorship. Work began in 2012 by reviewing species' British forestry 'track record' and has progressed in 2013 with a pilot overseas study tour to southern France, Portugal and Spain. His research has been supported by the Confor Education Fund.

Evaluating options

When evaluating forestry options from overseas territories for application within Britain, a range of evidence should be studied. Previous performance in Britain is an important consideration, but there is often limited experience under representative growing conditions. This prioritises the process of scientific 'climate-matching', using systematic approaches such as the FC Ecological Site Classification (ESC). It is particularly important to assess frost susceptibility when translocating species or provenances more than two to three degrees northwards. Forestry life-cycle evaluation of potential alternatives should include ecological, silvicultural and economic factors, providing aspiring growers with greater confidence on future operability and profitability.

British track-record

Britain has a successful record of adopting tree species and silvicultural regimes from the Mediterranean region, drawing encouragement from classical authors and evidence from aristocratic 'grand tours' to southern Europe. Corsican pine has the best developed track-record as a plantation species, but we should not forget Cedar of Lebanon, walnut and sweet chestnut in southern England. Conifer species from Mediterranean-like climates in California, such as Monterey pine, Monterey cypress and California incense cedar have also been tried. Roman villa and mediaeval monastic estates in Britain deployed



Blue *Cedrus atlantica*, at Mt Ventoux in southern France

Mediterranean agroforestry systems such as vineyards and grazed fruit and nut orchards, which were carried forward into walled kitchen gardens on the major private estates.

Plantation forestry species

Alternative plantation species from the Mediterranean and Caucasian regions can be grouped into categories:

- lowland and coastal pines, such as Monterey, Maritime, Aleppo and Stone pines;
- montane pines, such as Corsican, Macedonian and Bosnian pines;
- true cedars - Atlas cedar and cedar of Lebanon;
- firs and spruces, such as Serbian and Oriental spruces and various *Abies* firs from around the Mediterranean and Caucasus;
- lowland cypresses (and similar), such as Italian cypress, Monterey cypress and California incense cedar and finally
- timber hardwood species, such as walnut, sweet chestnut, oriental plane.

While many of these saw exploitation in classical and mediaeval times, fewer have been drawn into sustained-yield silviculture over the past two centuries.

Maritime pine has among the best developed scientific understandings (tree breeding, silviculture, wood science and processing), notably from France and Portugal. It also has the advantage of natural resins (historically known as 'naval stores') which are again in demand as a chemical and pharmaceutical feedstock. However, its resistance to *Dothistroma* may be

little better than that of Corsican pine.

Atlas cedar (photo) is an alternative conifer of considerable potential. Although slow-grown, with a rotation of up to 130 years, it produces valuable timber and is the subject of increasing forestry interest and research in southern France and Italy. While it can be used in monospecific plantations, it also shows potential in mixtures with Corsican pine, *Abies spp* and Oriental spruce. Mixtures could 'extend the life' of Corsican pine in British lowland forestry by 'diluting' the *Dothistroma* susceptibility of stands.

Future overseas visits may allow study of productive mixed-species forestry in Turkey which combine Corsican pine, Oriental spruce and the *Abies* firs with beech / sycamore.

Agroforestry systems

In a warmer and drier climate there is scope for British adoption of agroforestry systems that combine production of hardwood timber or woodfuel with livestock or crop production on the same land areas (photo). These increase efficiency of use of light, moisture and soil nutrient resources, realising up to 40% more output from the land than any single mode (farming or forestry). Agroforestry in Britain historically concentrated on grazed orchards, parks or wood pastures. These can be developed to combine quality timber production (from walnut, cherry, sycamore or maple) with premium livestock. Systems for growing pine at wide spacing with inter-grazing are well established in parts of southern Europe, the United States

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and New Zealand. Productive lowland areas sites may be suited to mechanised silvoarable systems combining quality hardwood production with arable or vegetable crops. Mediterranean experience with walnut suggests that this species, if pruned to produce a butt-log of 2-4m in length, can yield very high economic returns from timber and nuts.

Technical contacts

Developing the future potential of Mediterranean and Caucasian tree species and silvicultural systems for application in Britain will depend on effective multi-lateral and bilateral technical collaborations with practitioners in their home regions. This can be achieved through enhanced British participation in the European Forest Institute Mediterranean forestry network EFIMED (based in Barcelona) and the United Nations FAO Mediterranean forestry network Silva Mediterranea (based in Rome).

The relevant research conducted to date, as summarised in this article, is detailed in an electronic-media technical information bulletin (2012-2013) now available directly from the present author (scottmcgwilson@hotmail.com).

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Above:
Growing quality hardwoods under agroforestry (Wakelyns, Suffolk)



Right:
Demonstration stands of Turkish firs at Bedgebury