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Arboriculture Research Note

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CONTROL OF EPICORMIC SHOOTS ON AMENITY TREES

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Summary

The physiology of epicormic shoots and the stimuli to their formation are reviewed; chemical treatments to control unwanted shoots are considered. It is concluded that Burtolin[1] and Mazide 25[2] are probably most appropriate for short term control.

Introduction

1. Epicormic shoots are characteristic of some tree species, e.g. Oak *Quercus robur*), Common lime (*Tilia vulgaris*), English elm (*Ulmus procera*) and Poplar (*Populus* spp). Such shoots on the stems of hedgerow trees can be unsightly while in woodlands they may reduce the value of the butt length of a log. In urban areas epicormic shoots may be visually unacceptable, but more significantly they become a hazard for pedestrians and vehicles. Mechanical pruning has been practised by arboriculturists and foresters but it is costly, causes unsightly wounds and fails to prevent initiation of shoots in subsequent years, thus necessitating annual cutting.

Physiology of Epicormic Shoots

2. Epicormic shoots usually arise from suppressed buds in the bark. These buds form on the growing shoot but fail to extend and then become embedded in the bark as the stem grows in thickness. A small amount of growth each year prevents the buds from being engulfed in wood and maintains their position in the bark. Such buds often produce additional buds over the years and the new ones also remain suppressed. Buds can also form in the bark adventitiously, i.e. out of the normal sequence, as a result of injury to the tree, or in callus tissue over pruning wounds.

3. The buds embedded in the bark appear to be held in a suppressed condition by hormonal control exerted by the upper part of the tree. Thus, if the phloem connection with the upper tree is broken, as by girdling, the buds grow out from the bark below the girdle. However, the influences which usually maintain the buds in a suppressed condition are not well understood, and it can only be concluded that various environmental factors which distort the hormone balance of the tree can give rise to the outgrowth of epicormic shoots.

4. Factors which stimulate elongation of epicormic shoots in woodlands include both silvicultural thinning and overcrowding. In urban situations the most common cause may be severe crown pruning and pollarding but environmental stress on the tree, alteration of soil conditions, e.g. water-logging, soil sealing, and root severance during site development, or colonisation of roots by pathogens, may all be sufficient to initiate epicormic shoot formation. In some species, defoliation by insects or damage to shoots by the weather or chemicals may initiate epicormic shoot growth. Before taking action causal environmental factors so that chances of shoot regrowth are minimised.

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1 Burtolin is no longer available in the UK.

2 Mazide 25 and Regulox K are currently approved for sucker inhibition in amenity trees and shrubs.

Control of Unwanted Shoots

5. There is evidence that the genetics, especially of some specimens of, for example, Common lime and *Zelkova* sp. are the controlling factor in epicormic shoot production. In these species it is possible that the most profuse producers of epicormic shoots are also the most easily rooted from cuttings. A long-term management programme to replace such trees with specimens less prone to epicormic production or an alternative species and cultivar should be implemented.

6. Chemical treatment of epicormic shoots appears attractive and could be appropriate as a short-term solution in some circumstances. Although chemicals should kill or restrict expansion of epicormic shoots they are unlikely to produce a clean stem. However, small diameter dead twigs on the lower stem of a tree are unlikely to persist for a long time, especially in public places.

Forestry Commission Trials

7. Forestry Commission trials laid down in February 1982 applied three chemicals to the stems of oaks in recently thinned woodland. The chemicals were applied to randomly selected stems. The results suggest that epicormic shoots can be reduced by chemicals for one year.

8. Of the chemicals tested Burtolin[1], a growth retardant applied at the manufacturer's recommended rate to young shoots in July, looks most promising. Current shoot growth was halted by the application. There was a high degree of epicormic suppression early in the growing season of the year following application. However, by the end of the second growing season treated trees had more epicormic shoots than control or pruned trees.

Conclusion

9. Factors triggering epicormic shoot growth should be identified and if possible modified before adopting routine treatment of shoots with chemicals. At the present time replacement of individual trees noted for their profuse epicormic production is the best long-term management policy.

Further Reading

Evans, J. (1982). *Epicormic branches and their control, with a report of current research in Britain*. Paper 3rd Annual Meeting of National Hardwood Project, Oxford.

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