4. Management of Valuable Broadleaves
4.1 Crown Architecture of Valuable Broadleaved Species

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Abstract

The architecture and growth dynamics of Prunus avium L., Fraxinus excelsior L. and Acer pseudoplatanus L. were studied in several regions of France. Trees growing in open field and in the understory of forest stands were observed. Numerous trees were studied at several stages of development in order to identify the morphological and architectural features of these species. The establishment of the architectural unit and the strategy of crown development were described for each species. The architectural bases of interspecific and intraspecific variations are discussed and their consequences on understanding of forest structure and plantation management are suggested.

Keywords: crown architecture, crown development, valuable broadleaves, plantation management

4.1.1 Introduction

Initiated in tropical areas, the architectural approach (Barthélémy et al. 1991, 1989 Hallé et al. 1978, Hallé and Oldeman 1970) has provided a powerful tool for studying plant form. Investigations in this field have quickly spread to the study of temperate tree species among which high quality hardwood broadleaved species such as ash (Barthélémy and Caraglio 2007), beech (Nicolini 1997), wild cherry (Caraglio 1996), chestnut (Caraglio 1992), plane (Caraglio and Edelin 1990), sycamore (Gardère 1995) and walnut (Barthélémy et al. 1997b, 1995) may be cited. Architectural studies of ash, wild cherry and sycamore species started some years ago in the context of an agreement between I.D.F. (Institut pour le Développement Forestier) and C.I.R.A.D. (Centre de coopération Internationale en Recherche Agronomique pour le Développement). These studies of temperate species led to a general interpretation of their architectural sequence of development and were then extended to the analysis of inter- and intraspecific architectural variations. In this paper the architectural sequences of the development of Prunus avium, Fraxinus excelsior and Acer pseudoplatanus are described. Intra- and interspecific variations