

10

Ecophysiology of Woody Plants

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THE CENTRAL PLAINS OF BRAZIL ARE OCCUPIED BY A COMPLEX OF plant physiognomies such as *cerradão*, cerrado *sensu stricto*, and *campo sujo* (chapter 6). The great spatial variation in woody plant density across the cerrado landscape results in a complex pattern of resource availability, which changes both horizontally across the landscape and vertically within each vegetation type. This is of particular importance for seedlings that colonize the grass matrix typical of a *campo sujo* vegetation or a closed canopy woodland such as a *cerradão*. Like any other neotropical savanna, the cerrados are characterized by a strongly seasonal climate with distinctive wet and dry seasons (see fig. 10.1). Soils are deep and well drained, acidic, extremely low in available nutrients and with high Al content (Goodland and Ferri 1979; Haridasan 1982; Sarmiento 1984; chapter 2). Recurrent fires in the dry season place additional stress on the survival of woody plant seedlings (fire effects are discussed in chapters 4, 9).

Models explaining the structure and function of savanna ecosystems

Figure 10.1 (*opposite page*) Integrated monthly rainfall, monthly variation in the daily number of hours of sunshine, minimum and maximum air temperatures and relative humidity, and changes in soil water potential for a *campo sujo* (solid squares) and a *cerradão* (open circles). Weather data come from the climate station of Reserva Ecológica do IBGE, Brasília (15°56' S, 47°53' W). Soil water potential is the mean \pm SE for 5 soil psychrometers (models PCT-55-15-SF or PST-55-15-SF, Wescor Inc., Logan, Utah, U.S.) at 5, 30 and 85 cm depth, placed in a *campo sujo* and a *cerradão* of Fazenda Água Limpa (15°56' S, 47°55' W), near the Reserva Ecológica do IBGE. The *campo sujo* site had 533 individuals per ha with stem diameter greater than 5 cm at 30 cm from the ground. The *cerradão* site had 2,800 individuals of the same size class per ha. See chapter 6 for descriptions of cerrado physiognomies.