SHRUB AND TREE SPECIES COMPOSITION IN THE CERRADOS OF SOUTHWEST MINAS GERAIS

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ABSTRACT: In order to improve the knowledge about variations in the floristic community of Brazilian *cerrado*, especially in regard to soil and climate conditions, we conducted a floristic assessment of the tree and shrub community of three disjoint adjacent regions situated in three municipalities of southwest Minas Gerais state (geographical coordinates 20-23ºS and 44-47ºW). Over a period of 24 months, in 49 allocated plots of 20 x 20 m, all tree and shrub species 1 m high or more in vegetative and/or reproductive stage were sampled. Additional random samples of blossoming plants were collected outside plots, and each plot was analyzed and categorized for soil type. 170 botanical species were identified belonging to 103 genera and 46 families. Family Fabaceae and genus *Miconia* presented the largest number of species. Although the *cerrado* of southwest Minas Gerais extends over marginal areas of occurrence of Brazilian *cerrado*, its floristic composition is rich not only in species but also in genera and families. Some species found in these cerrados also occur in local semideciduous forests, while other species that are frequently found in other areas of *cerrado* were not found in southwest Minas Gerais. *Tibouchina sellowiana* does not feature in the list of species occurring in Brazilian *cerrados*. There is little similarity among the three sampled areas due to soil factors and different types of human influence in each of the areas. Alpinópolis presented *cerrado sensu stricto* – subtype *cerrado ralo*, with 75 species and red-yellow latosol. Campo do Meio presented *cerrado sensu stricto* – subtype *cerrado típico*, with 88 species and red latosol. Pimenta falls under the *cerradão* category, with 124 species and red latosol. On the subsurface, the soil of Pimenta was found to present lower Al^{+++} saturation, which apparently shapes conditions for a more vigorous vegetation. The *cerrado* soils sampled in this study showed high similarity to *cerrado* soils in other parts of Brazil.

Key words: Floristics, vegetation, Alpinópolis, Campo do Meio, Pimenta.

A FLORA ARBÓREO-ARBUSTIVA DOS CERRADOS DO SUDOESTE DE MINAS GERAIS

RESUMO: *Visando ampliar os conhecimentos sobre as variações da flora do cerrado, ligadas principalmente às condições climáticas e edáficas, realizou-se o levantamento da flora arbóreo-arbustiva de três áreas disjuntas e marginais, localizadas em três municípios do Sudoeste de Minas Gerais (20-23ºS e 44-47ºW). Através de 49 parcelas de 20 x 20 m, coletaram-se em 24 meses todas as espécies arbóreo-arbustivas com altura igual ou superior a 1 m, em fase reprodutiva e/ou vegetativa. Coletas aleatórias de exemplares floridos, fora das parcelas, também foram realizadas. Em cada uma das áreas os solos foram classificados e analisados. Foram identificadas 170 espécies pertencentes a 103 gêneros e 46 famílias. A família Fabaceae e o gênero Miconia apresentaram maior número de espécies. Apesar de os cerrados do sudoeste mineiro se localizarem na região marginal de ocorrência dos cerrados brasileiros, sua flora é rica, tanto em espécies, como em gêneros e famílias. Alguns elementos da flora dos cerrados levantados, ocorrem também nas florestas semideciduais da região. Algumas espécies frequentes em outras áreas de cerrado não foram amostradas no sudoeste mineiro. Tibouchina sellowiana não consta na lista de espécies encontradas nos cerrados brasileiros. A similaridade entre as três áreas estudadas é muito baixa devido ao solo e aos diferentes tipos de ação antrópica a que elas foram submetidas. Alpinópolis apresentou cerrado sentido restrito – cerrado ralo, com 75 espécies, solo Latossolo Vermelho-Amarelo. Campo do Meio é um cerrado sentido restrito – cerrado típico, com 88 espécies, solo Latossolo Vermelho. Pimenta é um cerradão, com 124 espécies, solo Latossolo Vermelho. Subsuperficialmente, o solo de Pimenta apresenta menor saturação de Al^{+++} e, ao que parece, condiciona o aparecimento naquele cerrado de uma vegetação mais pujante. Os solos dos cerrados estudados apresentam alta semelhança com os dos cerrados do resto do país.*

Palavras-chave: Florística, vegetação, Alpinópolis, Campo do Meio, Pimenta.

1 INTRODUCTION

The *cerrado* biome covers about 23% of Brazilian territory, concentrating in Goiás, Tocantins, Distrito Federal states and some parts of Bahia, Ceará, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Piauí, Rondônia and São Paulo states. It also occurs in the form of expanded portions of a core area or in the form of disjoint portions in northern Amapá, Amazonas, Pará and Rondônia states, and further south in the form of small islands in Paraná state (RIBEIRO & WALTER, 1998). It is present in regions with dry winters and rainy summers, where frost is absent

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or at least infrequent (EITEN, 1994). It boasts a very diverse vegetation physiognomy that includes forest, savanna and grassland formations whose floristic composition is characteristic and distinguished from adjacent biomes, though many share species with other biomes (RIBEIRO & WALTER, 1998). Several types of vegetation are present, with predominance of *cerrado sensu stricto*. Its flora comprises 6,429 species, 1,144 genera and 170 families (MENDONÇA et al. 1998). Cerrado is regarded as a worldwide biodiversity hotspot, along with 24 others, due to its biotic richness, endemic levels and extent of threats (MYERS et al. 2000).

Other than climate, which according to Eiten (1994) has indirect effects on vegetation, along with soil chemistry and physics, water and nutrient availability, geomorphology and topography, the distribution of plant species is conditional on latitude, frequency of land-clearing fires, water table depth, grazing patterns and countless other factors relating to human activity (forest clearing for agricultural activities, expansion of urban networks, construction of highways and power plants, selective removal of timber, land-clearing fires for livestock pasture etc).

According to Ferri (1975), 17% of the Brazilian *cerrado* lies in Minas Gerais state and 53% of the state's total area is covered by this vegetation (30.8 million hectares). Virtually all this *cerrado* lies within the core area, which is where most studies in the Minas Gerais portion of *cerrado* have been performed. As regards discontinuous portions of *cerrado*, particularly in the southwest, except for the work of Carvalho on herbaceous and small shrub species (1993), hardly any detailed study has been performed on floristic analysis.

Looking to expand knowledge on floristic variations in *cerrado*, particularly those relating to climate and soil conditions, an inventory was compiled of the shrub and tree community of three disjoint adjacent areas of *cerrado*, extending over three municipalities of southwest Minas Gerais state.

2 MATERIAL AND METHODS

2.1 Study sites

Municipality of Alpinópolis: a fragment of *cerrado sensu stricto* - subtype *cerrado ralo* (RIBEIRO & WALTER, 1998). With about 16 ha, it lies in Fazenda Monte Alto (at geographical coordinates 20º52'40''S, 46º23'28''W, altitude 810m) (Figure 1). Municipality of Campo do Meio: a fragment of *cerrado sensu stricto* – subtype *cerrado típico* (RIBEIRO & WALTER, 1998). With about 73 ha, it lies in Fazenda das Flores (at geographical coordinates 21º06'18''S, 45º50'18''W, altitude 790m). Municipality of Pimenta: a fragment of *cerradão* (RIBEIRO & WALTER, 1998). With about 50 ha, it lies in Fazenda Serra dos Lopes (at geographical coordinates 20º27'18''S, 45º48'30''W, altitude 820m). Data provided by two local climatological stations (Lavras and Furnas) show that these three *cerrado* areas fall under the same climate category, all temperate and rainy with dry winters (Cwa, according to Köppen) with little annual temperature variation. The average temperature is 17ºC in colder months and 22.5ºC in hotter months. Also common in this region is occurrence of frost, especially in June and July. The annual precipitation is about 1,500 mm, with rainy periods between October and March and dry periods in the remaining six months of the year (small water deficit of 26 mm and reasonable water surplus of 420 mm).

2.2 Collection, handling and identification of botanical material

In each of the three areas, 49 plots of 20 x 20 m were randomly allocated while trying to cover the entire study area. Plots were distributed as follows: 7 in Alpinópolis, 27 in Campo do Meio and 15 in Pimenta, covering a total area of 19,600 m². For 24 months all shrub and tree species 1 m high or more in reproductive and/or vegetative stage were sampled. Additional random samples of blossoming plants were collected outside plots. Specimens were pressed, dried and mounted, then tagged, cataloged and incorporated into the ESAL Herbarium of the Federal University of Lavras. Identification was done by comparison with already existing desiccated material from various herbariums, including ESAL, SP (Institute of Botany of São Paulo - São Paulo/SP), SPF (University of São Paulo - São Paulo/SP) and UEC (State University of Campinas - Campinas/SP) herbariums, and/or by consulting with specialists from the above herbariums. Species not blossoming during the sampling period were identified according to Mantovani et al. (1985). Species were categorized into families following guidelines by Souza & Lorenzi (2008).

2.3 Soil inventory and classification

Soils were classified and analyzed in each plot. Samples were collected from each horizon up to 200 cm of depth and submitted to the Laboratory of Soils of the Federal University of Lavras for chemical and granulometric

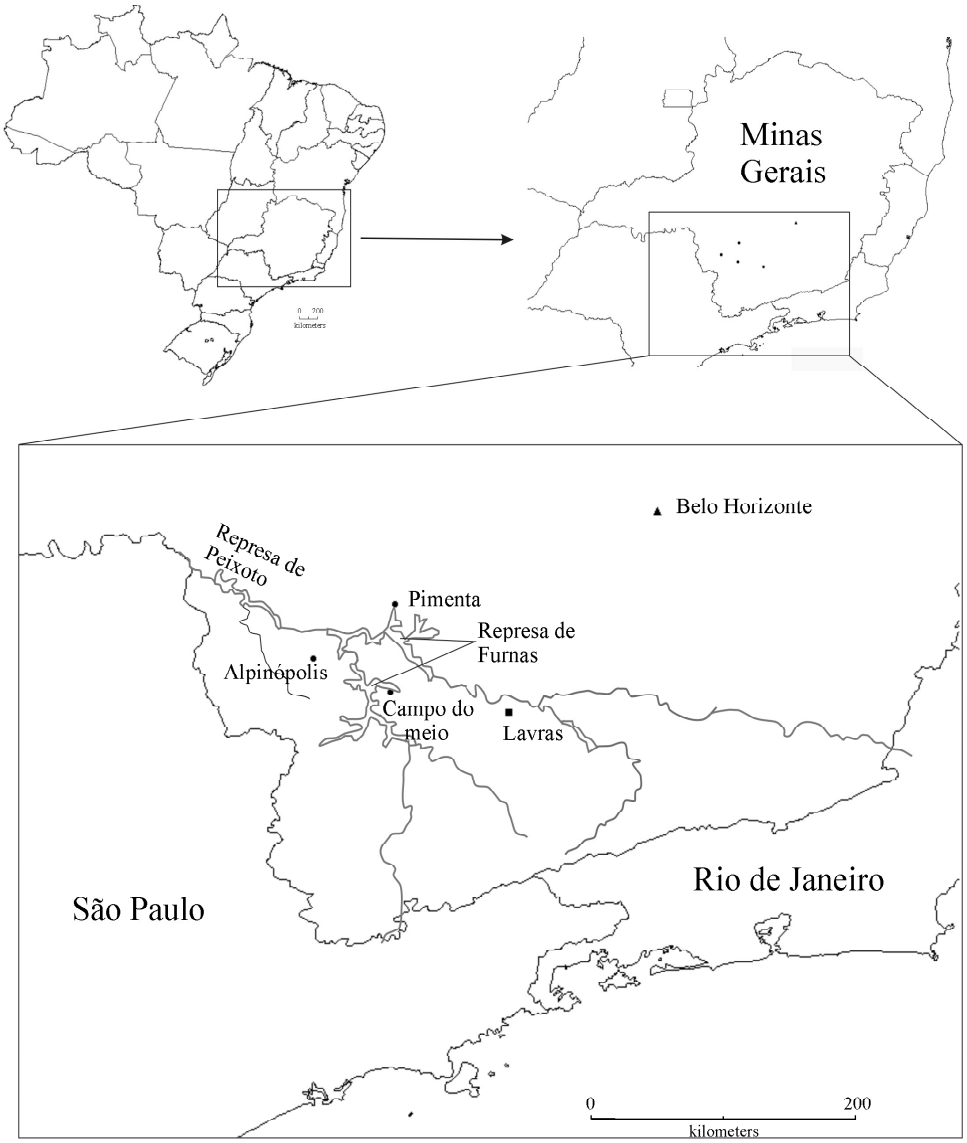

Figure 1 – Geographic location of municipalities containing the sampled areas of *cerrado*, in southwest Minas Gerais.

Figura 1 – *Situação geográfica dos municípios onde se localizam as áreas de cerrado amostradas no sudoeste de Minas Gerais.*

analysis following Embrapa guidelines (1997), and categorized according to the Brazilian Soil Classification System (EMBRAPA, 1999).

3 RESULTS AND DISCUSSION

We identified 170 species belonging to 103 genera and 46 families (Table 1). Eighty-five percent of species were sampled on-site, while the remaining species were collected in fortnightly visits to the study sites. Species with no fertile material were also collected from inside plots, greatly contributing to their botanical identification. Families with the greatest number of species included Fabaceae (18), Asteraceae and Myrtaceae (16), Melastomataceae (14), Malpighiaceae (10), Bignoniaceae (8), Annonaceae (7), Rubiaceae (6), Clusiaceae, Erythroxylaceae and Vochysiaceae (5) as well as

Myrsinaceae (4), which accounted for 67% of the total number of species sampled. Genera with the greatest number of species included *Miconia* (8), *Myrcia* (7), *Vernonia* (6), *Erythroxylum* and *Eugenia* (5), *Annona*, *Byrsonima* and *Kielmeyera* (4), *Baccharis*, *Casearia*, *Heteropterys*, *Psidium*, *Qualea*, *Senna* and *Terminalia* (3), which accounted for approximately 38% of all species.

Families with the greatest species richness in this work are also common to other areas of Brazilian *cerrado* (EITEN, 1972; FELFILI & SILVA JUNIOR, 1993; WEISER & GODOY, 2001). In comparing our results for number of species, genera and family to other survey locations such as Brasília-DF (RATTER, 1980), Lagoa Santa-MG (WARMING, 1908), Triângulo Mineiro-MG (GOODLAND, 1969), Moji Guaçu-SP (MANTOVANI & MARTINS, 1993), Chapada dos Guimarães-MT (OLIVEIRA-FILHO & MARTINS, 1986) and Chapada do Araripe-CE (COSTA et al. 2004), it was verified that in the above surveys numbers ranged from 107 to 180 for species, from 92 to 114 for genera, and from 40 to 51 for families.

Despite the fact that the *cerrados* of southwest Minas Gerais lie in marginal areas of occurrence of Brazilian *cerrado*, they nonetheless have a rich floristic composition, even though climate conditions are considerably different from those in the central portion of Brazil, where the dry season typically has accentuated water deficit (REIS, 1971) allowing this type of vegetation to occur in abundance. This reinforces propositions by some authors (CAMARGO, 1963; REIS, 1971), according to whom *cerrado* is an ecological climax much more related to soil than to climate factors. This lower regional water deficit probably explains the sharing of species with local semidecidual forests (ROCHA et al. 2005), including *Casearia* spp., *Cedrella fissilis*, *Copaifera langsdorffii*, *Dendropanax cuneatus*, *Lacistema hasslerianum*, *Lafoensia pacari*, *Lamanonia ternata*, *Myrcia splendens*, *Ocotea pulchella*, *Pera glabrata*, *Siparuna guianensis*, *Tapirira guianensis*, *Vismia brasiliensis* and *Zanthoxylum rhoifolium*. Other species such as *Curatella americana* L., *Eugenia desynterica* DC., *Hancornia speciosa* Gomez and *Pterodon pubescens* Benth., common to other areas of *cerrado* (SILVA JÚNIOR, 2005), were not sampled in the *cerrados* of this study, probably due to frequent occurrence of frost. Though found in our study site, species *Tibouchina sellowiana* does not feature in the list compiled by Mendonça et al. (1998) of species occurring in Brazilian *cerrados*.

Following a trip to São Sebastião do Paraíso, in southwest Minas Gerais, Brade & Pereira (1946) reported that the presence of a palm tree (*Attalea* sp.) and a bromeliad caught their attention in the local *cerrado*. They are probably *Attalea geraensis* and *Pseudananas sagenarius* (Arr. Cam.) Camargo, both of which were sampled in the *cerrado* of Alpinópolis (CARVALHO, 1993), which is close to the area visited by the former authors. *P. sagenarius* was also sampled in the *cerrado* of Pimenta.

Alpinópolis region produced 75 species and 58 genera belonging to 31 families, Campo do Meio region produced 88 species and 65 genera belonging to 34 families, and Pimenta region produced 124 species and 83 genera belonging to 40 families. Alpinópolis soil was classified as cambic dystrophic red-yellow latosol (Table 2), while Campo do Meio and Pimenta soils were classified as typic dystrophic red latosols (Tables 3 and 4 respectively).

Though not with the largest total area or largest sampled area, the *cerrado* soil of Pimenta presented the greatest floristic richness, which apparently relates to better subsurface conditions. It presented lower Al^{+++} saturation with levels of exchangeable aluminum nontoxic to plants, whose root system according to field observations exceeds 76 cm of depth. No signs of human disturbances were detected either – according to the property owner, no occurrence of fire has been reported in that specific area. The floristic richness in Campo do Meio was found to be greater than in Alpinópolis. These areas differ in size and apparently both have been affected by human disturbances, but the local soil must have influenced the flora composition of each region, as more organic matter was found in Campo do Meio than in Alpinópolis. In comparing these areas based on soil, climate and floristic data, Carvalho & Martins (1994) also inferred that these areas have little similarity due to soil factors and different types of human influence.

Considering that latosols are the most common soil types in areas of *cerrado* (RANZANI, 1971), the *cerrado* soils of southwest Minas Gerais have high similarity to other *cerrado* soils in Brazil. The sampled *cerrado* soils are deep, as are most soils under *cerrado* vegetation (RANZANI, 1963), having a clearly clayey texture – a highly variable characteristic in soils under *cerrado* – with predominance of clay and sand (LOPES, 1983). They are well structured and have a low water retention capacity, being under strong weathering. Additionally, their chemical characteristics resemble other soils under *cerrado* as to low fertility, high acidity and high Al^{+++} saturation (FREITAS & SILVEIRA, 1977; LOPES 1983). The soil units identified in the three sampled areas confirm those cited by Brasil (1962) in a map of soil distribution in the watershed of Furnas reservoir.

Table 1 – Floristic composition (trees and shrubs) in three *cerrado* areas of southwest Minas Gerais. A = Alpinópolis. C = Campo do Meio. P = Pimenta. Reg = Registration number at the ESAL Herbarium. *Species collected outside plots.

Tabela 1 – *Famílias e espécies arbóreo-arbustivas ocorrentes em três áreas de cerrado no sudoeste de Minas Gerais. A = Alpinópolis. C = Campo do Meio. P = Pimenta. Rg = Número de registro no Herbário ESAL. * Espécies coletadas fora das parcelas.*

Families/Species	A	C	P	Reg
Anacardiaceae				
Anacardium humile St. Hil.	x	x	x	3581
Lithraea molleoides Engl.		x	x	3138
Tapirira guianensis Aubl.		x	x	3718
Annonaceae				
Annona coriacea Mart.		x	x	3153
A. crassiflora Mart.	x	x	x	3578
A. dioica St. Hil.		x		3152
A. tomentosa R.E.Fr.		x		3964
Duguetia furfuracea (St. Hil.) Saff.	x		x	3109
Xylopia aromatica Mart.		x	x	4046
X. sericea St. Hil.		x	x	3140
Apocynaceae				
Aspidosperma tomentosum Mart.	x	x	x	3244
Aquifoliaceae				
Ilex cerasifolia Reiss.	x			3573
Araliaceae				
Dendropanax cuneatus Decne. & Planch.			x	3282
Schefflera macrocarpa (Cham. & Schltdl.) Frodin	x		x	3330
S. vinosa (Cham. & Schltdl.) Frodin & Fiaschi		x		3677
Arecaceae				
Attalea geraensis Barb. Rodr.	x			3996
Syagrus flexuosa Becc.	x			3980
Asteraceae				
Baccharis dracunculifolia DC.	x	x	x	3408
B. lymanii G.M.Barroso		x	x	3253
B. tridentata var. subopposita (DC.) Cabrera*	x			2886
Eremanthus mattogrossensis O. Kuntze	x		x	2615
Eupatorium trixioides Mart.*	x	x		2876
Gochnatia barrosii Cabrera	x	x		2893
G. polymorpha (Less.) Cabrera*			x	2613
Mikania sessilifolia DC.			x	3211
Piptocarpha rotundifolia (Less.) Baker	x	x	x	2729
Symphyopappus cuneatus Sch. Bip.*			x	2606
Vernonia ferruginea Less.			x	3134
V. missionis Gardner*			x	2611
V. mucronulata Less.			x	3270
V. polyanthes Less.	x		x	2884
V. rubriramea Mart.		x		3928
V. ruficoma Schltdl.*			x	2607

To be continued...

Continua...

Table 1 – Continued...

Tabela 1 – *Continua...*

Families/Species	A	C	P	Reg
Bignoniaceae				
Anemopaegma glaucum Mart.*	x			2996
Arrabidaea brachypoda Bureau	x			2999
Jacaranda caroba (Vell.) DC.	x			3570
J. decurrens Cham.			x	3982
Memora peregrina (Miers) Sandwith*			x	2671
Tabebuia aurea (Manso) Benth. & Hook. f.			x	3346
T. ochracea (Cham.) Standley	x	x	x	3574
Zeyhera digitalis (Vell.) Hoehne		x	x	2665
Caryocaraceae				
Caryocar brasiliense Camb.	x		x	2962
Celastraceae				
Peritassa campestris (Cambes.) A. C. Sm.		x	x	3961
Salacia micrantha G. Don*		x		2797
Chrysobalanaceae				
Couepia grandiflora Benth.		x		2796
Clusiaceae				
Kielmeyera coriacea Mart.			x	2583
K. corymbosa Mart.	x	x	x	2771
K. rubriflora Cambes.			x	2290
K. variabilis Mart.	x			3538
Vismia brasiliensis Choisy			x	3295
Combretaceae				
Terminalia argentea Mart.			x	3262
T. brasiliensis Raddi	x			3571
T. phaeocarpa Eichler		x	x	3325
Connaraceae				
Connarus suberosus Planch.	x	x	x	2866
Rourea induta Planch.			x	3203
Cunoniaceae				
Lamanonia ternata Vell.	x			3304
Dilleniaceae				
Davilla elliptica St. Hil.			x	3240
Ebenaceae				
Diospyros hispida A. DC.			x	3319
Ericaceae				
Leucothoe pohlii (G. Don) Sleumer*	x			3185

To be continued...

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Table 1 – Continued...

Tabela 1 – *Continua...*

Families/Species	A	C	P	Reg
Erythroxylaceae				
Erythroxylum ambiguum St. Hil.	x			3527
E. campestre St. Hil.	x	x	x	2954
E. deciduum St. Hil.			x	3321
E. suberosum St. Hil.	x	x	x	2644
E. tortuosum Mart.	x	x	x	3297
Euphorbiaceae				
Maprounea guianensis Aubl.			x	2687
Pera glabrata Poepp.		x	x	3313
Fabaceae - caesalpinioideae				
Bauhinia holophylla (Bong.) Steud.	x	x	x	3395
Chamaecrista cathartica (Mart.) Irwin & Barneby	x	x	x	2830
Copaifera langsdorfii Desf.	x			3564
Dimorphandra mollis Benth.	x	x	x	3235
Hymenaea stigonocarpa Mart.		x		4022
Senna pendula (Humb. & Bonpl.) Irwin & Barneby		x		3409
S. rugosa (G. Don) Irwin & Barneby	x	x	x	3230
S. sylvestris (Vell.) Irwin & Barneby			x	3333
Fabaceae - faboideae				
Acosmium dasycarpum (Vogel) Yakovlev	x		x	4729
A. subelegans (Mohlenbr.) Yakovlev	x	x	x	9016
Aeschynomene paniculata Willd.*		x		3518
Bowdichia virgilioides H.B. & K.	x	x		3569
Dalbergia miscolobium Benth.	x	x	x	3212
Machaerium acutifolium Vog.	x	x	x	2689
M. opacum Vog.			x	3255
Fabaceae - mimosoideae				
Enterolobium gummiferum J. F. Macbr.		x	x	3271
Mimosa millefoliata Scheele*		x		3675
Stryphnodendron adstringens (Mart.) Coville	x	x	x	3264
Lacistemataceae				
Lacistema hasslerianum Chodat			x	3798
Lamiaceae				
Aegiphila lhotzkiana L.	x	x	x	3577
Lauraceae				
Ocotea pulchella Mart.		x	x	3486
O. velloziana (Meisn.) Mez		x		3955
Persea caerulea (Ruiz & Pav.) Mez	x			3559

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Table 1 – Continued...

Tabela 1 – *Continua...*

Families/Species	A	C	P	Reg
Lythraceae				
Diplusodon virgatus Pohl			x	3206
Lafoensia pacari St. Hil.		x	x	3263
Malpighiaceae				
Banisteriopsis argyrophylla (A. Juss.) B. Gates	x			4024
B. megaphylla (A. Juss.) B. Gates		x		6688
Byrsonima coccolobifolia H. B. & K.	x	x	x	3958
B. guilleminiana A. Juss.*			x	2603
B. intermedia A. Juss.	x	x	x	2899
B. verbascifolia Rich.	x	x	x	3278
Heteropterys byrsonimifolia A. Juss.	x	x	x	3207
H. escaloniifolia A. Juss.	x			2904
H. umbellata A. Juss.			x	2705
Pterandra pyroidea A. Juss.			x	2593
Malvaceae				
Luehea grandiflora Mart.			x	4465
Pseudobombax longiflorum (Mart. & Zucc.) A. Robyns		x	x	3923
Melastomataceae				
Leandra lancifolia Cogn.	x	x	x	2934
L. polystachya Cogn.			x	3194
Miconia adenostemon Cogn.*		x		3983
M. albicans (Sw.) Steud.	x	x		2931
M. cinerascens Miq.		x	x	2748
M. ibaguensis Triana			x	2627
M. ligustroides Naudin		x	x	3158
M. pepericarpa DC.			x	3147
M. rubiginosa DC.*	x			2932
M. stenostachya DC.			x	3197
Tibouchina adnostemon Cogn.	x		x	3511
T. sellowiana Cogn.			x	2620
Trembleya parviflora Cogn.*			x	2631
T. phlogiformis DC.*	x		x	3432
Meliaceae				
Cabralea canjerana subsp. *polytricha* (A. Juss.) T. D. Penn.	x	x	x	2972
Cedrela fissilis Vell.			x	3316
Moraceae				
Brosimum gaudichaudii Trécul		x	x	3956
Myristicaceae				
Virola sebifera Aubl.*			x	2677

To be continued...

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Table 1 – Continued...

Tabela 1 – *Continua...*

Families/Species	A	C	P	Reg
Myrsinaceae				
Cybianthus detergens Mart.		x	x	2790
Rapanea ferruginea Mez			x	3326
R. guianensis Aubl.	x	x	x	2676
R. parvifolia Mez		x		3994
Myrtaceae				
Campomanesia pubescens O. Berg	x	x	x	2905
Eugenia aurata O. Berg		x	x	3949
E. bimarginata DC.	x	x	x	3344
Eugenia livida O. Berg	x			2917
E. obversa O. Berg	x	x	x	3543
E. punicifolia H. B. & K.	x			3565
Myrcia daphnoides DC.	x			2633
M. splendens (Sw.) DC.	x	x	x	3552
M. larouttena Cambes.		x		3948
M. tomentosa DC.	x	x	x	3249
M. uberavensis O. Berg			x	3348
M. variabilis DC.	x	x	x	3846
M. venulosa DC.		x		2577
Psidium firmum O. Berg			x	3246
P. guineense Sw.*			x	2693
P. incanescens Mart.			x	3302
Nyctaginaceae				
Guapira noxia (Netto) Lundell			x	3243
Ochnaceae				
Ouratea spectabilis Engl.		x		2781
Opiliaceae				
Agonandra brasiliensis Benth. & Hook. f.		x		4006
Proteaceae				
Roupala montana Aubl.	x		x	3226
Rosaceae				
Rubus brasiliensis Mart.*			x	2669
Rubiaceae				
Alibertia sessilis K. Schum.	x	x	x	3184
Chomelia pohliana Müll Arg.*			x	3400
Palicourea rigida H. B. & K.	x	x	x	3544
Rudgea viburnoides (Cham.) Benth.			x	2661
Sabicea brasiliensis Wernham	x	x	x	3978
Tocoyena formosa K. Schum.	x	x	x	3192

To be continued...

Continua...

Table 1 – Continued...

Tabela 1 – *Continua...*

Families/Species	A	C	P	Reg
Rutaceae				
Zanthoxylum cinereum Engl.		x	x	3324
Z. rhoifolium Lam.		x	x	2681
Salicaceae				
Casearia decandra Jacq.		x	x	4008
C. lasiophylla Eichler			x	3258
C. sylvestris Sw.	x	x	x	2769
Siparunaceae				
Siparuna guianensis Aubl.	x	x	x	4000
Solanaceae				
Cestrum corymbosum Schltdl.*			x	2683
Solanum lycocarpum St. Hil.	x	x		2870
Styracaceae				
Styrax camporum Pohl	x	x	x	3390
S. ferrugineus Ness & Mart.			x	3336
Verbenaceae				
Lantana camara L.*			x	2709
L. fucata Lindl.			x	2787
L. salviifolia Cham.*		x		3415
Vochysiaceae				
Callisthene major var. *pilosa* Warm.			x	3221
Qualea dichotoma Warm.*		x		2795
Q. grandiflora Mart.		x	x	2692
Q. multiflora Mart.	x			3327
Vochysia cinnamomea Pohl			x	3315

Table 2 – Chemical and textural attributes of *cerrado* soil in Alpinópolis, MG: cambic dystrophic red-yellow latosol.

Tabela 2 – *Atributos químicos e texturais do solo do cerrado de Alpinópolis, MG: Latossolo Vermelho-Amarelo distrófico câmbico.*

Attributes	Horizons					
	A1	A2	AB	Bw1	Bw2	BC
pH	5.1	5.1	5.1	5.1	5.3	5.3
P(mg/kg)	1	1	1	1	1	1
K(cmolc/dm)	0.04	0.02	0.01	0.01	0.01	0.01
Ca(cmolc/dm)	0.2	0.2	0.2	0.2	0.2	0.2
Mg(cmolc/dm)	0.1	0.1	0	0	0	0
Al(cmolc/dm)	4.6	0.7	0.6	0.1	0.2	0.3
V (base saturation,%)	8	7	6	8	9	17
O.M. (g/kg)	14.3	13.1	9.4	8.2	5.8	3.4
Coarse sand (g/kg)	116	105	104	103	122	174
Fine sand (g/kg)	244	335	236	197	258	326
Silt (g/kg)	96	36	56	76	116	136
Clay (g/kg)	544	524	604	624	504	364

Table 3 – Chemical and textural attributes of *cerrado* soil in Campo do Meio, MG: typic dystrophic red latosol.

Tabela 3 *– Atributos químicos e texturais do solo do cerrado de Campo do Meio, MG: Latossolo Vermelho distrófico típico.*

Attributes	Horizons				
	A	AB	BA	Bw1	Bw2
pH	5.2	5.2	5.3	4.7	5.5
P(mg/kg)	2	1	1	1	1
K(cmolc/dm)	0.09	0.02	0.01	0.01	0.01
Ca(cmolc/dm)	0.13	0.13	0.12	0.13	0.24
Mg(cmolc/dm)	0.13	0.11	0.07	0.09	0.14
Al(cmolc/dm)	1.3	0.7	0.5	0.3	0.1
V (base saturation,%)	6	5	3	6	9
O.M. (g/kg)	40	22.9	20.5	16.8	12.0
Coarse sand (g/kg)	67	43	25	47	41
Fine sand (g/kg)	159	113	161	109	115
Silt (g/kg)	50	40	30	80	120
Clay (g/kg)	724	804	784	764	724

Table 4 – Chemical and textural attributes of *cerrado* soil in Pimenta, MG: typic dystrophic red latosol.

Tabela 4 *– Atributos químicos e texturais do solo do cerrado de Pimenta, MG: Latossolo Vermelho distrófico típico.*

Attributes	Horizons				
	A	BA	Bw1	Bw2	Bw3
pH	5.5	5.6	5.7	5.9	6.1
P(mg/kg)	2	1	1	1	1
K(cmolc/dm)	0.06	0.04	0.02	0.02	0.02
Ca(cmolc/dm)	0.2	0.2	0.3	0.3	0.3
Mg(cmolc/dm)	0.01	0	0	0	0
Al(cmolc/dm)	1.1	0.4	0.1	0.1	0.1
V (base saturation,%)	3	4	7	8	9
O.M. (g/kg)	29.4	18.4	14.6	13.4	14.4
Coarse sand (g/kg)	44	23	27	28	24
Fine sand (g/kg)	102	95	105	86	108
Silt (g/kg)	164	122	188	286	128
Clay (g/kg)	690	760	680	600	740

4 CONCLUSIONS

Family Fabaceae and genus *Miconia* presented the greatest number of species. Although the *cerrado* of southwest Minas lies in a marginal region of occurrence of Brazilian *cerrados*, its flora is rich in species as well as in genera and families. Some floristic components of the sampled *cerrados* also occur in local semidecidual forests. Some species commonly found in other *cerrados* were not found in the *cerrados* of this study. Likewise, *Tibouchina sellowiana* does not feature in the list of species occurring in Brazilian *cerrados*. The three sampled areas have low similarity due to soil factors and different types of human influence in each area. On the subsurface, the soil of Pimenta presents lower Al^{+++} saturation which, to the extent observed, conditions the development of a more vigorous vegetation in that area. The *cerrados* sampled in this study have high similarity to *cerrados* in other parts of Brazil.

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