Meiotic and mitotic chromosomes of 12 species from 7 sections of Dioscorea L. (Dioscoreaceae) were studied. Provenance of the materials were NE & NW Argentina and SE Brazil. Flowers buds were fixed in a 6:3:1 solution (ethanol: chloroform: glacial acetic acid, by volume). Immature anthers were squashed directly in propionic acid haematoxylin (2 %) using as mordant ferric citrate Mitosis were observed too in squash of root tips from germinating seeds pretrated with 8’ hidroxyquinoline. Most of our data are new counts*, two of them confirm previous reports or modify the ploidy level cited previously. *Dioscorea brachybotrya Poepp. and D. reticulata Gay from section Chirophyllum Uline, both have n=15 and secondary associations of bivalents were observed. Moreover, groups of bivalents were characterized in metaphases, suggesting the presence of different genomes with 5 chromosomes each one. Accordingly, we assume that results support a basic chromosome number of x=5, for these entities. The same number n=15 presents *D. bolbothicha Hand-Mzt., whose belonging to sect. Dematostemon is in need of review. Chromosome numbers presented in *D. glomerulata Hauman, from sect. Dematostemon Griseb., and *D. ovata Vell. pertaining to sect. Chondrocarpa Uline, have proved to be 2n=50. A number of 2n=36+2B, x=9, was obtained in D. sinuata Vell.-classified in Sect. Brachystigma Uline The presence of x=10 is presumed in the following taxa. In sect. Centrostemon Griseb. two species were analyzed : *D. pilcomayensis Hauman is a tetraploid 2n=40 and *D. multispicata R. Knuth an octoploid n=40. *D. stenopetala Hauman (Sect. Cycladenium Uline), has 2n=40+1B. Finally, the section Monadelpha Uline has provided two species tetraploids, *D. monadelpha (Kunth) Griseb. and *D. cienegeensis R. Knuth n=20, and the octoploid *D. coronata Hauman with 2n=80. Some systematic and evolutionary aspects of the genus Dioscorea, in the light of the chromosomal data, are discussed.