Seed biology is a relevant aspect of tropical forests because it is central to the understanding of processes of plant establishment, succession and natural regeneration. Anadenanthera colubrina var. cebil is a timber tree from South America that produces large seeds with thin weak teguments, which is uncommon among legumes. This study describes the morphology and anatomy of the seed coat, the viability, imbibition, and germination in this species. Seeds used during the essays came from 10 trees that grow naturally in Horco Molle, province of Tucumán, Argentina. Seed morphology was described from a sample of 20 units. The seed coat surface was examined with a scanning electron microscope. Transverse sections of hydrated and non-hydrated seeds were employed to describe the histological structure of the seed coat. Hydration, viability and germination experiments were performed under laboratory controlled conditions; and the experimental design consisted of 10 replicas of 10 seeds each. Viability and germination tests were conducted using freshly fallen seeds and seeds stored for five months. Morphologically the seeds of A. colubrina var. cebil are circular to subcircular, laterally compressed, smooth, bright brown and have a horseshoe fissure line (=pleurogram) on both sides. The seed coat comprises five tissue layers and a double (external and internal) cuticle. The outer cuticle (on the epidermis) is smooth and interrupted by microcracks and pores of variable depth. The epidermis consists of macroesclereids with non-lignified secondary walls. This layer is separated from the underlying ones during seed hydration. The other layers of internal tissues are comprised of osteosclereids, parenchyma, osteo-sclereids, and macrosclereids. The percentage of viable seeds was 93%, decreasing to 75% in seeds with five months old. Seed mass increased 76% after the first eight hours of hydration. Germination percentage was 75% after 76 hours. Germination of seeds stored for five months decreased to 12%. The results showed that seeds of A. colubrina var. cebil are highly permeable and germinate directly without a dormant period. Rev. Biol. Trop. 61 (3): 1109-1118. Epub 2013 September 01.

Keywords
Anadenanthera, Fabaceae, seed, anatomy, imbibition, viability, germination.