

## CHRONOLOGY OF HOLOCENE PEDOGENETIC EVENTS IN THE PAMPEAN AREA OF ARGENTINA

*Eduardo P. Tonni, Alberto L. Cione and Anibal J. Figini*

Paleosols widely occur in the Pleistocene and Holocene sequence of the Pampean area of Argentina. During the last 30 years, Fidalgo and collaborators constructed a lithostratigraphic and pedostratigraphic scheme for the Pampean region from the latest Pleistocene to the present calibrated by means of many  $^{14}\text{C}$  dates (see Fidalgo 1992; Tonni et al. 1999; Table 1). The stratigraphic sequence relied in part on a former sequence by Ameghino (1889), modified by Frenguelli (1957) and others. The stratigraphic Holocene scheme of Fidalgo and others (see Fidalgo 1992) involved two paleosols (Puesto Callejón Viejo Geosol, close to the Pleistocene-Holocene boundary, and the Puesto Berrondo Geosol, at about 2 ky B.P.), and the recent soil. Other workers (eg Iriondo and García 1993; Iriondo and Kröhling 1996; Carignano 1999) agreed only in the existence of a Holocene paleosol and obviously, the present soil. In this later scheme, the Holocene pedogenetic event was considered long-lasting and assignable to the Hypsithermal (see Carignano 1999).

Remarkably, there were no dates in the type area of the soil units of Fidalgo (1992; lower Río Salado basin). However, after the analysis of the numerous dates and additional field work in the Pampean area by workers of the Museo de La Plata, we consider that two Middle-Late Holocene pedogenetic events actually occurred: one at about 6-5 ky B.P. and the other about 2 ky B.P. The Aimaran "Stage" of Frenguelli (1957 and previous papers) corresponds to the 2 ky B.P. episode.

Besides, according to recent dating (Figini et al. 1999), in Punta Hermengo (southeastern Buenos Aires Province), a paleosol in the position of Puesto Callejón Viejo Geosol, which was assigned to the boundary Pleistocene-Holocene by Fidalgo (1992) and others, would be more modern and actually correspond to the Middle Holocene event. At the same pedogenetic event could correspond the paleosols with dates of 6.5-4 ky B.P. in Paso Otero, La Horqueta II, Arroyo Tapalqué and Río Sauce Grande (see Table 1).

On the other hand, paleosols in Paso Otero (Johnson et al. 1998), La Horqueta II (Zárate et al. 1995) and Arroyo Tapalqué (Figini et al. 1998) seems to correspond to an older pedogenetic event of Early Holocene age.

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Eduardo P. Tonni and Alberto L. Cione, División Paleontología Vertebrados, Museo de La Plata, 1900 La Plata, Argentina; e-mail: eptonni@museo.fcnym.unlp.edu.ar  
Anibal J. Figini, LATYR-CIG, Museo de La Plata, 1900 La Plata, Argentina.

Paso Otero (Johnson et al., 1998)	Río Quequén Grande (Zárate et al., 1995)	Punta Hermengo (Figini et al., 1999)	Arroyo Tapalqué (Figini et. al., 1998)	Río Sauce Grande (Quattrocchio y Borromei, 1998)	Río Sauce Grande (Rabassa, 1989)	Barranca Parodi (“Aimaran”)
2690 ± 40 <sup>(1)</sup>		2690 ± 40 <sup>(2)</sup>		2830 ± 90 <sup>(6)</sup>	995 ± 65 <sup>(8)</sup> 1560 ± 70 <sup>(9)</sup>	1870 ± 50 <sup>(2)</sup>
4720 ± 60 <sup>(1)</sup> 4820 ± 105 <sup>(1)</sup>		2860 ± 60 <sup>(2)</sup> 3395 ± 107 <sup>(3)</sup>	4080 ± 60 <sup>(2)</sup> 5300 ± 60 <sup>(3)</sup>			
	5720 ± 60 <sup>(4)</sup>	5620 ± 90 <sup>(2)</sup> 6180 ± 60 <sup>(2)</sup> 6590 ± 90 <sup>(2)</sup>	7180 ± 80 <sup>(5)</sup> 8750 ± 130 <sup>(5)</sup> 8810 ± 140 <sup>(5)</sup> 8940 ± 130 <sup>(5)</sup> 9710 ± 110 <sup>(5)</sup> 10070 ± 140 <sup>(5)</sup>	5010 ± 120 <sup>(7)</sup>		
9880 ± 65 <sup>(1)</sup>	9000 ± 70 <sup>(5)</sup>					

<sup>1</sup>Buried A Horizon

<sup>2</sup>Organic matter in soil

<sup>3</sup>Pedogenetic calcium carbonate

<sup>4</sup>Suelo Puesto Berrondo

<sup>5</sup>Suelo Puesto Callejón Viejo

<sup>6</sup>Chacra La Blanqueada Formation, above the supposed Suelo Puesto Berrondo Soil

<sup>7</sup>Upper member of the Agua Blanca Formation, under a paleosoil.

<sup>8</sup>Coal in paleosoil

<sup>9</sup>Basal peat in Chacra La Blanqueada Formation

**Figure 1 A.** Some Holocene dates in soils of the Pampean area.

In short, we suggest that the main Holocene pedogenetic events in the Pampean area should correspond to the Early Holocene (10–7 ky B.P.; unnamed paleosoil), Middle Holocene (6.5 – 4 ky B.P.; Puesto Callejón Viejo Geosol), Late Holocene (3 – 2 ky B.P.; Puesto Berrondo Geosol) and the present soil.

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**Figure 1B.** Map of locations referenced in Figure 1A, Pampean area of Argentina. 1: Tapalqué, 2: Punta Hermengo, 3: La Horqueta II, 4: Paso Otero, 5: Quequén Salado, 6: Sauce Grande.

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