

Soil profile CICS 2016-1/2¹

Xacafre (Roxo's irrigation area), Aljustrel, Portugal

Authors and date: Fernando G. Monteiro, Carlos Alexandre;
19/07/2016

Local Xacafre (Roxo's irrigation area), S. João de Negrilhos,
Aljustrel.

Maps and coordinates: *Carta Militar* Nº 519;
37°58'5.96"N 8°12'55.08"W; Altitude: 98 m.

Soil map unit: Ps – Hydromorphic soils with eluvial horizon,
Planosols derived from sandstones, clay conglomerates or clays
(soil family of the *Classificação dos Solos de Portugal* in *Carta
dos Solos de Portugal*, 1:50.000, 42D).

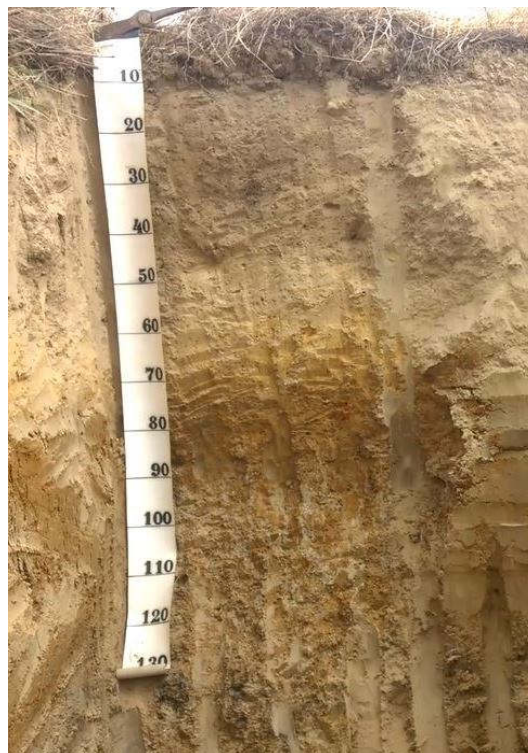
Soil unit: WRB 2006: Luvic Planosol (Ruptic, Hyposodic); WRB
2014: Luvic Planosol (Ruptic, Endosodic)

Geology and parent material: Plio-Pleistocene (*Carta Geológica
de Portugal*, 1:50.000, 42D); Clay deposit.

Land unit and slope gradient: Flat, approx. 0% (class 1)

Coarse surface fragments: few **Erosion:** null **Drainage:** bad

Land use: Annual crops / fallow.



Horiz.	Depth (cm)	Description
Ap1	0 - 10	Light brownish gray 2.5Y 6/2 (dry), olive brown 2.5Y 4/4 (moist); loamy sand with few fine and medium gravel subrounded; aggregation mainly near plant roots, blocky subangular, medium, weak and fine, moderate; loose; dry; common medium and coarse voids inter-aggregates and fine voids intra-aggregates; common fine roots. Abrupt transition to
Ap2	10 - 45	light gray 2.5Y 7/2 (dry), dark yellowish brown 10YR 4/4 (moist); loamy sand with few fine and medium gravel subrounded; apedal, moderately dense; dry; few fine channels; very few fine roots. Clear wavy transition to
Ecg	45 - 65	pale yellow 2.5Y 8/4 (dry), light yellowish brown 2.5Y 6/4 (moist); loamy sand, few fine and medium gravel subrounded; apedal, moderately dense; dry; few fine channels; few spherical medium hard black concretions of iron and manganese; very few fine roots. Clear transition to
Btcg	65 - 90	yellowish brown 10YR 5/6 (dry), yellowish brown 10YR 5/8 (moist), many mottles, medium, distinct, red, 7.5YR 5/8 (dry) and small, distinct, gray, 10YR 6/1 (dry), both with clear boundary; sandy clay loam with common fine and medium gravel subrounded; prismatic structure, coarse, strong, breaking to blocky angular, medium, strong; dense; moderately moist; common spherical hard black concretions of iron and manganese, especially near the base of the horizon; no roots. Gradual transition to
2BCcg	90 - 150	grey 10YR 6/1 (dry), grey 10YR 6/1 (moist), abundant mottles, coarse, distinct, red, 7.5YR 5/8 (dry), with clear boundary; clay with many fine and medium gravel subrounded; massive, dense; moist; many hard black concretions of iron and manganese between 130 and 150 cm; no roots. Gradual transition to
2Cg	150 - (180)	clay deposit with common fine and medium gravel, subrounded, common mottles, grey, 10YR 6/1 (dry) and 10YR 6/1 (moist); very few fine hard black concretions of iron and manganese.

¹ More information about soils in the irrigated area of Roxo: <https://abroxo.maps.arcgis.com/home/index.html>



VII Congresso Ibérico da Ciência do Solo (CICS 2016)/
/ VII Congresso Ibérico de la Ciencia del Suelo (CICS 2016)
&
VI Congresso Nacional de Rega e Drenagem



Soil profile CICS 2016-1/2 (cont.)

Xacafre (Roxo's irrigation area), Aljustrel, Portugal

SOIL ANALITICAL DATA ²

Horiz.	Depth (cm)	Coarse fraction		Fine fraction			Corg	pH (1:2.5)		EC (1:2.5) (dS/m)	Exchange complex (ammonium acetate, pH 7)						
		Coarse sand	Fine sand	Silt	Clay	H ₂ O		KCl	Ca		Mg	K	Na	EB	CEC	BS (%)	
		----- g kg ⁻¹ -----						----- cmol(+) kg ⁻¹ -----									
Ap1	0 - 10	64	519	365	78	38	6,5	6,4	5,3	0,085	1,40	0,54	0,44	0,00	2,38	3,43	69,4
Ap2	10 - 45	62	536	346	83	36	4,7	6,7	5,5	0,041	1,46	0,53	0,16	0,01	2,15	2,83	76,2
Ecg	45 - 65	61	501	388	83	28	0,7	7,4	5,9	0,03	0,76	0,34	0,13	0,01	1,24	1,46	84,7
Btcg	65 - 90	91	326	266	59	349	0,3	7,5	6,0	0,264	4,51	3,51	0,06	1,39	9,47	10,94	86,6
2BCcg	90 - 150	251	250	223	93	434	1,3	7,1	6,0	0,672	6,23	8,45	0,09	4,04	18,82	18,75	100,4
2Cg	150 - (180)	84	171	272	117	439	1,4	7,7	6,0	0,861	6,13	10,96	0,15	7,91	25,16	23,03	109,2

Coarse fraction (> 2 mm); Coarse sand (2-0,2 mm); Fine sand (0,2-0,02 mm); Silt (0,02-0,002 mm); Clay (< 0,002 mm). Corg – organic carbon; CE – electric conductivity.
EB – Exchangeable bases; CEC – Cationic Exchange Capacity; BS – Base saturation (EB/CEC).

² Analysis performed at the Laboratory of Pedology of the U. Lisboa.

Soil profile CICS 2016-2/2³

Xacafre (Roxo's irrigation area), Aljustrel, Portugal

Authors and date: Fernando G. Monteiro, Carlos Alexandre;
19/07/2016

Local: Xacafre (Roxo's irrigation area), S. João de Negrilhos,
Aljustrel. About 40 m to north of Soil Profile CICS 2016-1/2.

Maps and coordinates: *Carta Militar* Nº 519;
37°58'5.96"N 8°12'55.08"W; Altitude: 99 m.

Soil map unit: Ps – Hydromorphic soils with eluvial horizon,
Planosols derived from sandstones, clay conglomerates or
clays (soil family of the *Classificação dos Solos de Portugal* in
Carta dos Solos de Portugal, 1:50.000, 42D).

Soil unit (estimated): WRB 2006: Luvic Planosol (Ruptic,
Hyposodic); WRB 2014: Luvic Planosol (Aric, Ruptic,
Endosodic)

Geology and parent material: Plio-Pleistocene (*Carta
Geológica de Portugal*, 1:50.000, 42D); Clay deposit.

Land unit and slope gradient: Flat, approx. 0% (class 2)

Coarse surface **Erosion:** null **Drainage:** bad
fragments: few

Land use: Almond tree orchard, installed after deep
cross-ripping.



Horizon	Depth (cm)	Description
(Ap)	(0 – 10)	Removal of soil material of this horizon from the inter-row area to the row.
Ap	0 - 30/110	As shown in the photograph above the Ap horizon forms like "tongues" to about 1.1 m deep, as a result of cross-ripping held with heavy equipment (Caterpillar D11).
Ecg / Ap	30 - 55	Comparable to Ecg horizon of the Soil Profile CICS 2016-1/2.
Btcg / Ap	55 - 85	Comparable to Btcg horizon of the Soil Profile CICS 2016-1/2.
2BCcg / Ap	85 - 120	Comparable to 2BCcg horizon of the Soil Profile CICS 2016-1/2.
2Cg	120 - (160)	Comparable to 2Cg horizon of the Soil Profile CICS 2016-1/2.

³ More information about soils in the irrigated area of Roxo: <https://abroxomaps.arcgis.com/home/index.html>