



**RIO18**  
21st World Congress  
of Soil Science

**21 WORLD CONGRESS OF SOIL SCIENCE**

August 12-17, 2018

Rio de Janeiro, Brazil

Rio de Janeiro August | 12 - 17

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## **E10 - FIELD TRIP TO THE HIGHLY WEATHERED SOILS OF THE RAIN FOREST – CERRADO TRANSITION IN THE CENTRAL BRAZIL**

**Summary:** The State of Minas Gerais is placed in the center-southeastern region of Brazil, and it has a huge diversity of landscapes as well as three of the main Brazilian biomes, the Tropical Rain Forest, the “Cerrado” and the “Caatinga” (tropical and semiarid savannas). Its great geological, geomorphological, hydrological and climatic diversity is reflected in the soil diversity, which is representative of most of the country. The tectonic stability of the Brazilian central shield gave time to long lasting weathering cycles, resulting in deep, well drained and highly weathered soils. They share the landscape with younger soils, placed in the sections of the hillsides dissected by erosion. The field trip will provide an opportunity to see the results of the soil formation factors, especially time, under the Brazilian tropical climate.

**Period:**

Post event; 18 to 21st August, 2018; 410 km in four days.

**Guides:**

Dr. João Herbert Moreira Viana (Researcher – Brazilian Agriculture Cooperation Embrapa Milho e Sorgo) and Prof. Adriana Monteiro da Costa (Professor Federal University of Minas Gerais), plus support team.

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**Attention:**

The field trip participants are responsible for their travel to the meeting point, at the International Airport of Belo Horizonte (Confins), Minas Gerais State, one hour flight from Rio. Hotel accommodations are included in the trip fees, with the breakfast at the hotels. Meal expenses are not included in the trip fees, and the organization of the field trip will supply bottled water and snacks or fruits during the travel. The participants are recommended to wear adequate clothing and footwear for the field work, including boots, hats and UV and mosquitoes' protection sprays. Rains are not expected, but the nights are cool during this period (minimum temperatures below 10°C at night at the city of Ouro Preto). Yellow fever vaccination is recommended.

**Travel itinerary:**

Day/month	Descrição
18/08	<p><i>Morning:</i> departure from the International Airport – Belo Horizonte at 11:00 h AM, travel to Sete Lagoas.</p> <p>12:00 h AM, reception at Embrapa Milho e Sorgo (<b>1<sup>st</sup>. Stop</b>)</p> <p><i>Lunch:</i> 13:00 h, restaurant at city (Eufrásio)</p> <p><i>Afternoon:</i> leaving restaurant at 14:30 h, return to Embrapa.</p> <p>Visit to the <b>2<sup>nd</sup> and 3<sup>rd</sup> Stops, and the profiles 9 and 20</b></p> <p><i>Night:</i> arrival at the hotel at 19:00 h; dinner - free choice</p>
19/08	<p><i>Morning:</i> departure from the hotel at 8:00 h AM, travel to Embrapa</p> <p>Visit to the <b>profiles 5, 6 and 7 (4<sup>th</sup> stop)</b></p> <p><i>Lunch:</i> 13:00 h, restaurant at the city (Eufrásio)</p> <p><i>Afternoon:</i> leaving the restaurant at 14:30 h, return to the field.</p> <p>Visit to the <b>profiles 17, 26 (5<sup>th</sup> stop)</b></p> <p><i>Night:</i> arrival at the hotel at 19:00 h; dinner - free choice</p>
20/08	<p><i>Morning:</i> departure from the hotel at 7:00 h AM, travel to Ouro Preto.</p> <p>Visit to the <b>profiles 01 and 02 (6<sup>th</sup> stop)</b></p> <p><i>Lunch:</i> 13:00 h, restaurant along the road (<i>Topo do Mundo</i>)</p> <p><i>Afternoon:</i> leaving the restaurant at 14:30 h, travel to Ouro Preto and visit to the museum (<b>7<sup>th</sup> stop</b>).</p> <p><i>Night:</i> arrival at the hotel at 19:00 h; dinner - free choice</p>
21/08	<p><i>Morning:</i> departure from the hotel at 8:00 h AM, travel to city of Antônio Pereira</p> <p>Visit to the <b>profile LVd (8<sup>th</sup> stop)</b></p> <p><i>Lunch:</i> 13:00 h, restaurant on the road.</p> <p><i>Afternoon:</i> leaving the restaurant at 14:30 h, travel back to the airport, arrival at 18:00 h.</p>

**Cost per person:** US\$ 600 USD

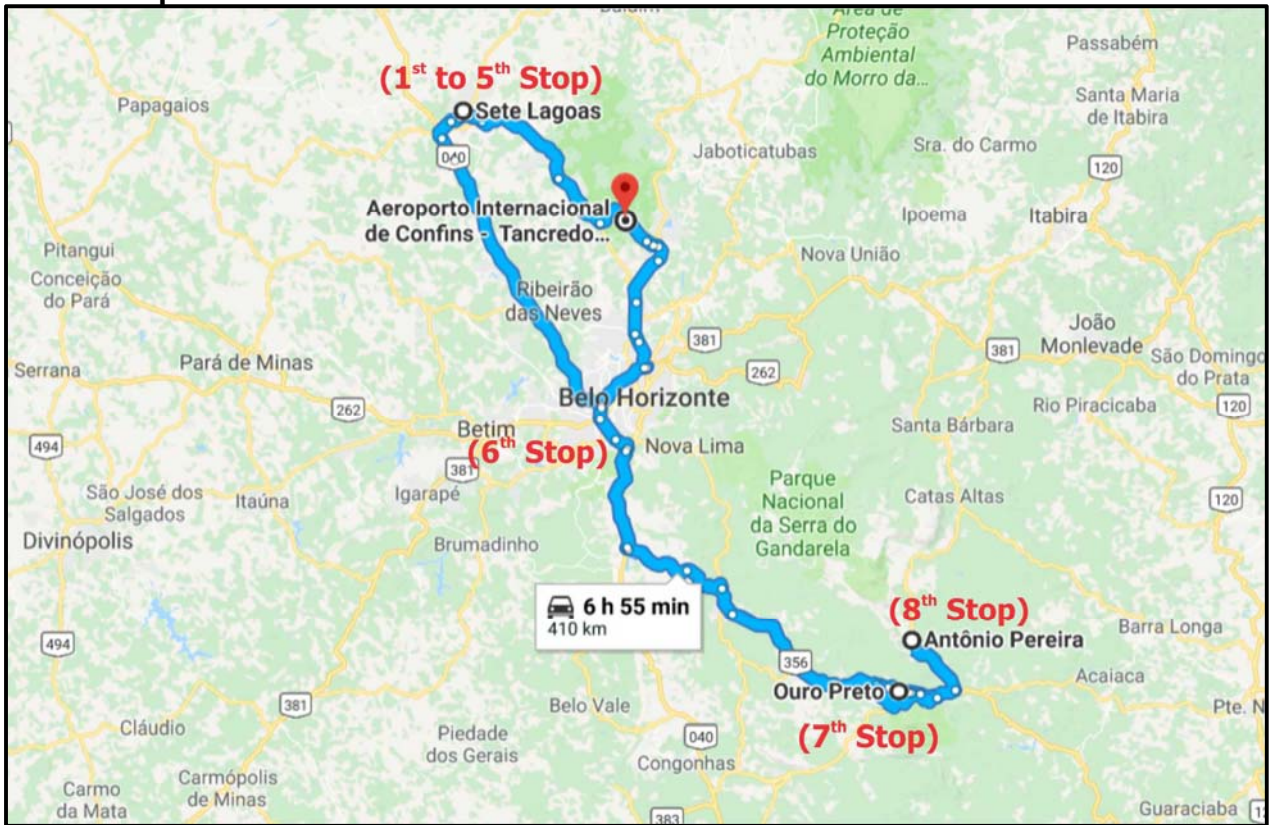
**Tour includes:** Bus transportation, hotel accommodations and beverage along the trip (bottled water); plus technical guide and staff to assist in the logistics (organization of the trip).

**Group:** 30-40 people. In case we don't reach the minimum number of participants the excursion will not be held and the values paid will be reimbursed.

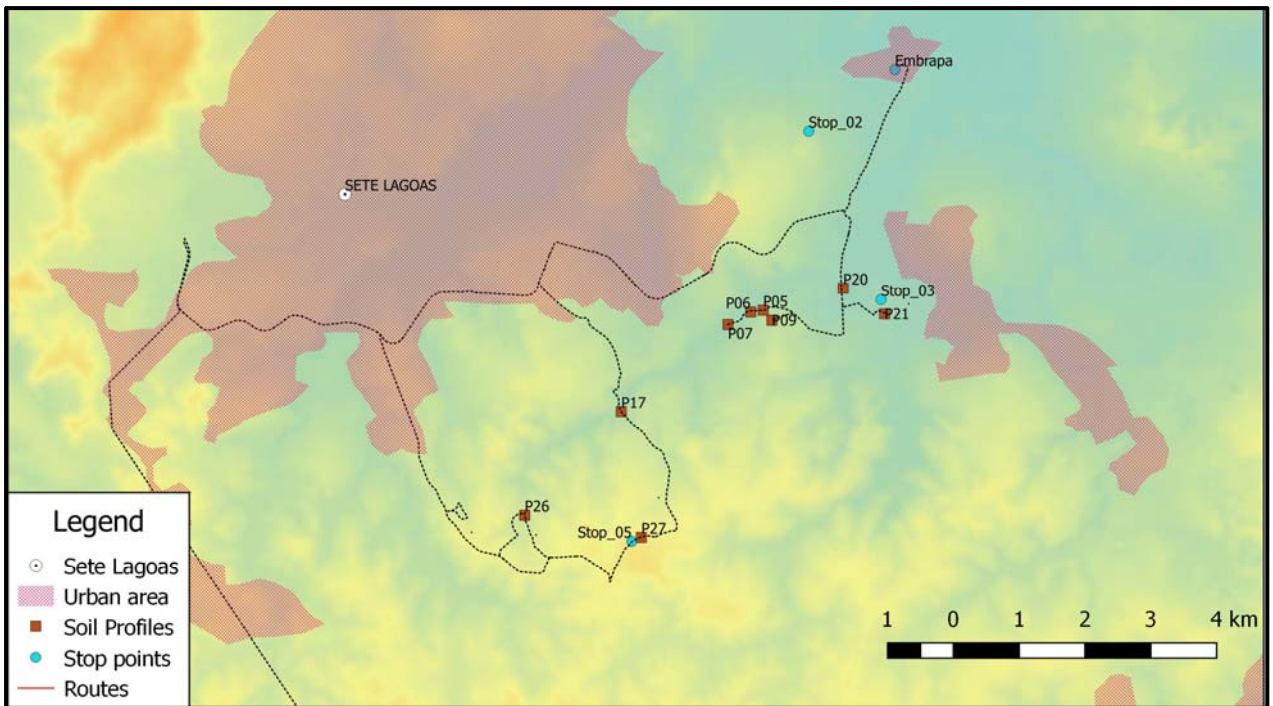
**Accommodation:**

Day	Hotels
18/08	Sete Lagoas – MG Hotels <a href="http://sandiegohoteis.com.br/hotel/san-diego-veredas-sete-lagoasmg/">http://sandiegohoteis.com.br/hotel/san-diego-veredas-sete-lagoasmg/</a> <a href="http://www.tulipinnsetelagoas.com/pt-br">http://www.tulipinnsetelagoas.com/pt-br</a> <a href="http://hotelatlas.com.br/">http://hotelatlas.com.br/</a>
19/08	Sete Lagoas – MG (idem)
20/08	Mariana – MG <a href="http://www.hotelmullermg.com.br">http://www.hotelmullermg.com.br</a> <a href="http://www.hotelfaisca.com.br">http://www.hotelfaisca.com.br</a>

### Travel map:



### Map detail of the 5 first stops



**Places to be visited:**

Welcome reception at the Embrapa Milho e Sorgo – head office (Rod. MG 424 km 45, in the neighborhood of Sete Lagoas urban area) (**1°. Stop**)



Visit to the research experimental station - observation of regional landscape and native and transitional vegetation; some karstic features (**2nd. Stop**).



Visit to irrigated experimental area of Embrapa Milho e Sorgo; with observation of regional landscape and some karstic features (**3<sup>rd</sup>. Stop**).



Visit to Marinheiro creek catchment basin; observation of local landscape with karstic features, and the local flora and soils (**4<sup>th</sup>. Stop**).



Visit to Marinheiro creek watershed highest point, with observation of the regional landscape and the geomorphology (**5<sup>th</sup> Stop**).



Stop at BR 040 highway, to observe the regional landscape and native vegetation (**6<sup>th</sup> Stop**).



Visit to the Science and Technology Museum of the Mining School of Federal University of Ouro Preto – Mineralogy Sector Prof. Claude Henri Gorceix (**7<sup>th</sup> Stop**).



Stop at Antônio Pereira (Mariana), to observe the regional landscape and the range close to the Caraça Hills (**8<sup>th</sup> Stop**).



**Landscape/Soil profile description:**  
**Day 18/08 - Afternoon**



**(4<sup>th</sup>. Stop)**

“LATOSSOLO VERMELHO Distrófico típico”; under protected area (regeneration of the savanna), mid-slope

Parent material: colluvial deposits from pelitic rocks (shales or slates) of the Bambuí Group – Neoproterozoic

An archetypal example of the clayed highly weathered soils of central Brazil



“LATOSSOLO VERMELHO Eutrófico húmico”; in an irrigated area (cash crops under central pivot system), toe-slope (depressed area – uvala),

Parent material: colluvial deposits from the pelitic rocks (shales or slates) of the Bambuí Group – Neoproterozoic

An example of a highly weathered soil, in a karstic area.



“CAMBISSOLO FLÚVICO Tb Eutrófico típico”; in the riverine terrace plain, close to the creek.

Parent material: alluvial sediments of the Marinheiro Creek.

The profile has buried paleosols.



## Day 19/08 - Morning



“CAMBISSOLO HÁPLICO Tb Distrófico típico”; under protected area (regeneration of the forest), mid-slope;

Parent material: colluvial deposits from the pelitic rocks (shales or slates) of the Bambuí Group – Neoproterozoic.

An example of a less weathered soil in this region, mottled transition horizons with iron-manganese concretions.



“ARGISSOLO VERMELHO-AMARELO Eutrófico nitossófico”; under pasture (beef cattle farm), toe-slope (close to the riverine terrace);

Parent material: colluvial deposits from the pelitic rocks (shales or slates) of the Bambuí Group – Neoproterozoic

An example of a weathered soil with blocky structure (B horizon).



“LUVISSOLO HÁPLICO Pálico típico”; toe-slope (close to the riverine terrace);

Parent material: colluvial deposits from the pelitic rocks (shales or slates) of the Bambuí Group – Neoproterozoic

A less weathered soil than the previous with stony and high organic matter A horizon and high base saturation.

## Day 19/08 - Afternoon



### (5<sup>th</sup>. Stop)

“NITOSSOLO HÁPLICO Eutrófico típico”; toe-slope (close to the creek);

Parent material: colluvial deposits from the pelitic rocks (shales or slates) of the Bambuí Group – Neoproterozoic;

Shallow brown soil with blocky structure in the B horizon and C layer (saprolite of the pelitic rocks)



“ARGISSOLO AMARELO Distrófico típico”; under pasture, toe-slope (close to the creek);

Parent material: granitic rocks (shales or slates) of the Belo Horizonte super group – Archean;

An example of a weathered soil developed over granitic rocks, Paredão Farm, close to rock outcrops in a hilly topography.

## Day 20/08 - Morning



### (6<sup>th</sup>. Stop)

“LATOSSOLO VERMELHO perférrico húmico”; at the side of the BR-040 highway, in a mining area, mid-slope

Parent material: colluvial deposits from the itabiritic rocks (quartzites) of the Cauê Formation - Itabira Group – Paleoproterozoic

Weathered soil with humic A horizon and high iron content, close to the iron mining facilities.

“CAMBISSOLO HÁPLICO perférrico típico”; at the side of the BR-040 highway, in a mining area, mid-slope;

Parent material: colluvial deposits from the itabiritic rocks (quartzites) of the Cauê Formation - Itabira Group – Paleoproterozoic.

Less weathered soil than the previous, stony with high iron content.  
(no image)

### Day 21/08 - Morning



#### (8<sup>th</sup> stop)

“LATOSSOLO VERMELHO ácrico”; MG-129 highway, mid-slope;

Parent material: quaternary deposits and colluvial deposits from the itabiritic rocks (quartzites and phyllites) of the Gandarela Formation - Itabira Group – Paleoproterozoic – Proterozoic

Weathered soil with high iron content, close to the city and to a mining area.