Teaching soil erosion in high schools. A coherent set of experiments showing processes and factors

Baptiste Algayer, Marie-Josée Broussaud, Alban Caillette, Christine Cottard, Laurence Desfougères, Jean-Yves Dupont, Charles-Henri Eyraud, Françoise Morel-Deville, Vincent Voisin, Nathalie Pajon-Perrault, et al.

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Baptiste Algayer[a], Marie-Josée Broussaud[b], Alban Caillette[c], Christine Cottard[bc], Laurence Desfougères[c], Jean-Yves Dupont[c], Charles-Henri Eyraud[b], Françoise Morel-Deville[b], Vincent Voisin[b], Nathalie Pajon-Perrault[b], Patricia Quincé[c], Aude de Quillacq[c], Frédéric Darboux[a]

[a] INRA, UR 0272 Science du sol, Centre de recherche d'Orléans, CS 40001 – Ardon , F-45075 Orléans Cedex 2, France.
[b] French Institute for Education (IFÉ), École normale supérieure de Lyon, BP 7000, F-69342 Lyon cedex 07, France
[c] Institute for Research on Science Teaching (IRES), Université d'Orléans, BP 6759, F-45067 Orléans Cedex 2, France.
Contact : Baptiste.Algayer@orleans.inra.fr

The need for soil erosion teaching

The national program for French high schools requires teaching about soils.
Because **soils are new in the curriculum**, "Life and Earth sciences" teachers have a limited knowledge about soils. Hence, **pedagogic resources need to be expanded**.

Most teachers and students have never paid attention to soil erosion

A collaboration between soil scientists and teaching specialists

Teaching specialists → **Sound teaching material** ← **Soil scientists**

- Soil scientists know about soil erosion.
- Teaching specialists know about teaching.

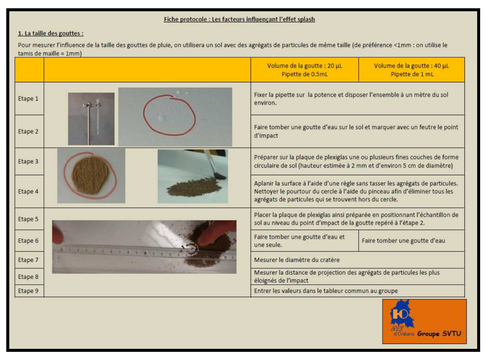
Collaboration between soil scientists and teaching specialists is needed to build pedagogic resources about soils that teachers can use in the classroom.

Experiments for the classroom

The description of the experimental set is made available to teachers.
It requires only easy-to-find and cheap materials.

A procedure for splash

Factors: Drop size and aggregate size



A procedure for interrill erosion

Factors: Soil cover and rainfall intensity

This experimental set allows to use the knowledge acquired in both **physics** and **biology-geology** courses.

For now, no procedure for rill erosion…

We are looking for ideas to experiment with the factors of rill erosion.
Suggestions welcome!

A movie showing an experiment and its dataset

Because not all classrooms will go to a soil lab,
we have to bring them the lab!

The movie

The movie shows a laboratory experiment under rainfall simulation.

The dataset

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Nom de l'échantillon	Début du prélèvement (min)	Fin du prélèvement (min)	Masse tare (g)	Masse tare + eau + sédiments (g)	Masse tare + sédiments (g)
Bour-2-R-M-01	37	38	42,02	71,17	41,32
Bour-2-R-M-02	45	51	43,13	355,00	46,51
Bour-2-R-M-03	55	61	42,49	486,69	47,05
Bour-2-R-M-04	63	71	42,60	636,33	50,18
Bour-2-R-M-05	73	81	42,58	744,1	51,19
Bour-2-R-M-06	84	91	43,01	675,26	51,26
Bour-2-R-M-07	93	101	42,84	786,70	51,82
Bour-2-R-M-08	103	111	42,20	395,81	47,01
Bour-2-R-M-09	113	121	42,11	1394,8	64,53
Bour-2-R-M-10	123	131	43,04	1866,3	69,09
Bour-2-R-M-11	153	134	42,59	1853,5	69,82

The dataset is used as teaching material.

The students plot the data:

The teacher guides the students in explaining the results.

Teaching about soil erosion becomes **more than teaching about soil**:
It is an opportunity to teach the scientific method!

The basis was a real scientific experiment that got published in a peer-reviewed journal.

Outcome

- This work is the base of a new dynamic of collaboration between teaching institutions and researchers.
- Teaching material is available for all teachers
- More material could be built in the future (rill erosion…)

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FRENCH NATIONAL INSTITUTE FOR AGRICULTURAL RESEARCH
Centre de Recherche d'Orléans
Unité de Science du Sol, UR0272
2163 Avenue de la Pomme de Pin
CS 40001 45075 ORLEANS cedex 2
www.orleans.inra.fr/ScienceduSol

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