



# **Towards the alliance for environmental education to achieve SDGs**

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International Union of Soil Sciences



Were born at the United Nations Conference on Sustainable Development in Rio de Janeiro in 2012 to produce a set of **universal goals** that meet the urgent **environmental, political and economic challenges** facing our world.

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Aims to **conserve** and **restore** the use of **terrestrial ecosystems** such as forests, wetlands, drylands and mountains by 2020.

### Targets

- By 2020, ensure the **conservation, restoration and sustainable use** of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements
- By 2030, **combat desertification, restore degraded land and soil**, including land affected by desertification, drought and floods, and **strive to achieve a land degradation-neutral world**

**52 %**

of the land used for agriculture is moderately or severely affected by soil degradation

land degradation affected **1.5 bil.** people globally

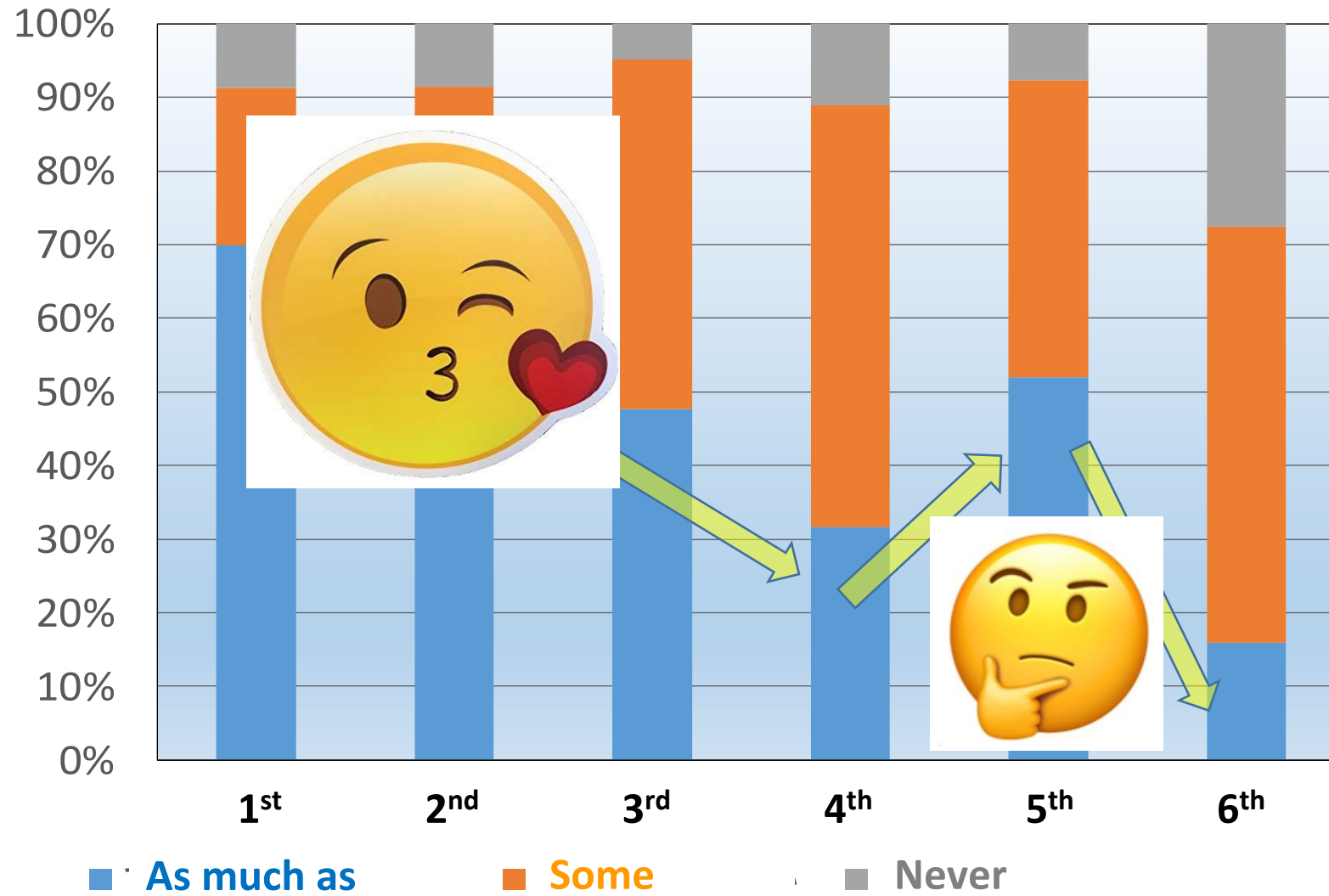
Due to drought and desertification, **12 mil.** ha/yr (23 ha/min.) are lost

**74 %**

of the poor are directly affected by land degradation

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## Question: Do you like to know about soils?



Hirai and Hirai (2014)

## Why it happened?

### Keywords in Guidelines from Min. of Edu.

	1947	1958	1968	1978	1988	1998	2008
Soil	52	7	14	8	5	2	1
Rice	28	7	2	0	0	0	0
Plough	8	17	0	1	1	2	2
Plant	24	16	27	26	16	26	26
Culti- vation	11	15	12	6	2	2	2
Growth	11	3	17	17	10	13	13
Environ ment	21	8	9	7	15	18	11

Hirai et.al. (2011)

# Current guideline on “soils” for Grade 5 (2008)

## Life and Earth (Science)

### (1) Germination, growth and fruiting

- a. Plants germinate using nutrients in their seeds.
- b. Plants need the sun and the fertilizer when they germinate.
- c. Germination is affected by moisture, air and temperature.
- d. Plant growth is affected by sun light and fertilizer.
- e. Pollination results in fruiting.

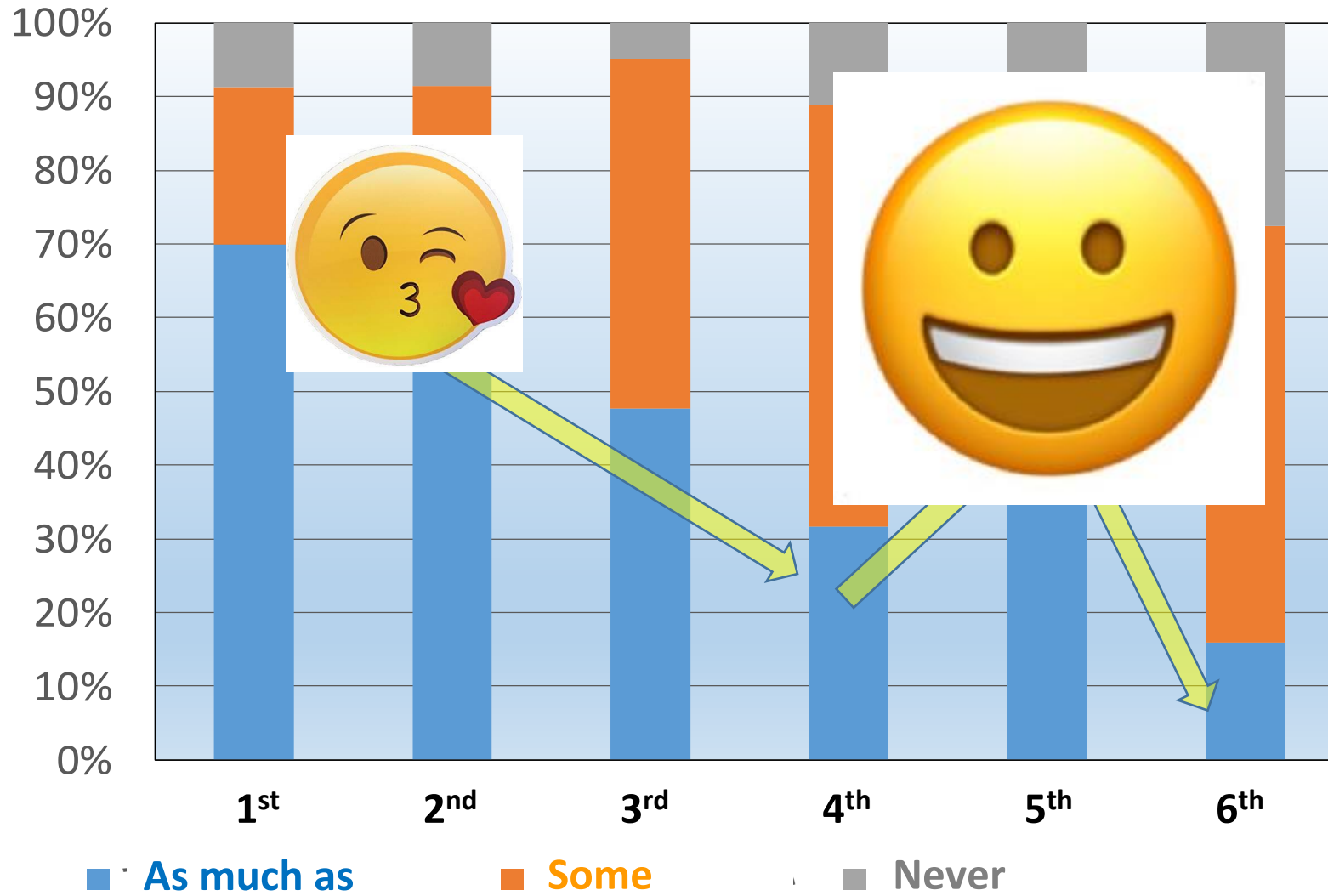
### (3) Runoff

- a. Rain and soil.
- b. Soil type and size from those in
- c. Rain and amount of flowing water.

**Even ONE,  
it helps a lot!**



# Question: Do you like to know about soils?



Hirai and Hirai (2014)

**Good start is ....**  
**Efficient target is ....**



Soil and environmental education program for school kids and their parents and all laymen.

--- Jointly with national/regional societies, museums of Natural History, universities, agricultural research centers, schools, private companies, etc.



**Taking them out of doors:  
observation of soil profiles and making  
miniature monoliths**

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**In the lab:**



Union

# Major Activities of IYS



## Mobile: Soil Museum







**Textbooks, videos,  
games, etc.  
for  
children, students  
and teachers**

# Introductory topics for elementary school children

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4. おちばと土のにおいを  
かごう！

Let's sniff  
soils smell !

第一部 土壌を調べよう



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5. 上の土と下の土の

What color  
here?  
And there?

第一部 土壌を調べよう

- 上の土と下の土の
- 上の土と下の土の
- 上の土と下の土の



# Middle-level topics for high school students

**Soil biology**

**Hand sorting**

**Tullgren funnel  
procedure**

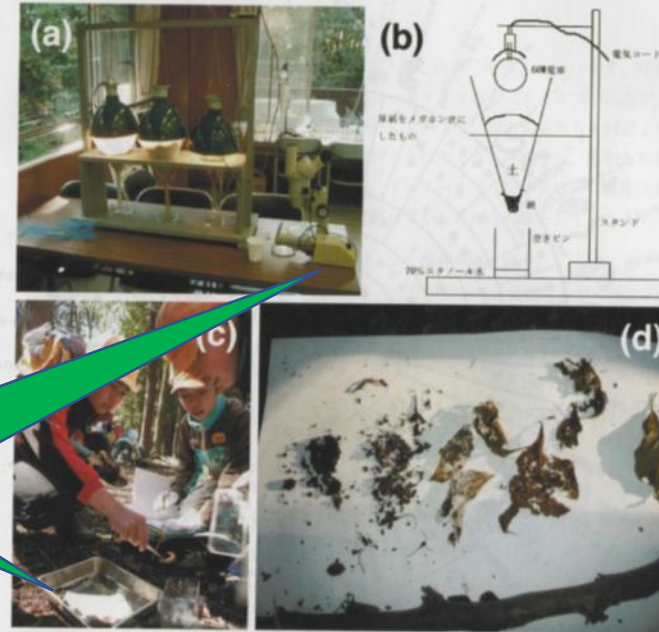


図 7.2 (a) ツルグレン装置 (左) と実体顕微鏡 (右), (b) ツルグレン装置の自作例, (c) ハンド・ソーティング法による土壌動物の収集, (d) 落ち葉めぐり (写真提供: (a) 愛知県農業総合試験場 瀧野俊, (c) (d) 武蔵野学院大学 福田直)



# Advanced-level topics for school teachers

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## 第8章

### 土壌の標本（モノリス）を作る

土壌断面の標本のことを土壌モノリスとします。ここではモノリス製作の実際<sup>\*1</sup>を紹介し

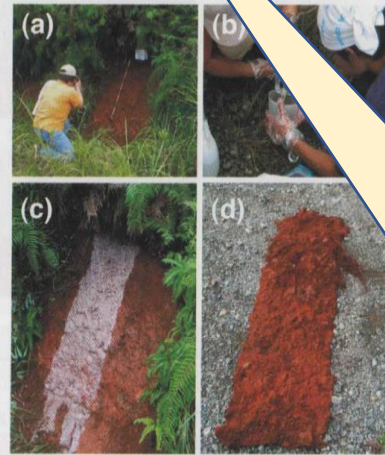


図 8.1 モノリス製作の概要：(a) 代表的な土壌断面の選択，(b) 接着剤の注入，(c) 接着剤の塗布，(d) 剥ぎ取り終了後の土壌の様子（これを板に貼り付けて完成させる）

<sup>\*1</sup> 2004 年 9 月 8 日，九州大学農学部附属福岡演習林において開催されたモノリス製作研修より（講師：筑波大学 田村憲司，東北大学 三恒商事文化財課 電話：06-6531-1111 住所：大阪市西区新町 1 丁目 10 番 2 号）。

8.1 現地における土壌断面採取の実際

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## 8.1 現地における土壌断面採取の実際



図 8.2 モノリス製作の詳細（その 1）：(a) 土壌断面の表面をできるだけ平らに整形する，(b) 接着剤の塗布（塗布するポイントは，土壌断面に角度を付けることに注意する。）(c) 接着剤を流す（流しすぎに注意する。）(d) 接着剤を流した土壌断面下部より，刷毛で土壌断面の表面に接着剤を塗布し，接着剤を固化させるために霧吹

# Monoliths preparation

Contents are **unique and diverse**,  
but  
area-, nation-, regional-**specific**  
thus  
**not easy to approach policymakers**



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We need **alliance**  
with **simple and standardized protocols** in environmental education  
to **approach policymakers** for their better understanding  
“soil matters”.



International Union



**Platform is**

**ISC**



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