



# The practices and action plans of 4 per 1000 initiative in Taiwan



TARI (Taiwan Agricultural Research Institute) is representative of Taiwan, R.O.C., to join the “4‰ Initiation” since November 14, 2016, and aims to achieve the goal of increasing 4‰ of SOC (soil organic carbon) every year.

## Taiwan's participation in 4 % Initiative: Motivation and Expectation

- Represent Taiwan's achievements to the internationals and enhance agricultural connections
- Introduce the international advanced research technologies to domestic developments

### Goals

To assess the effect and cost-benefit of different strategies on increasing soil carbon sequestration.  
To propose and promote optimal strategies for achieving the goal of “4‰ Initiative” in Taiwan

### Working Group



## International practices on improving SOC -their possibilities in Taiwan-

International Practices	Priorities	Challenges
Manure Reuse	1.First	Smelling, heavy metal accumulated, etc.
Green Manure	1.First	Weed and insect management, etc.
Biochar	1.First	Burning technology, etc.
Orchard Grass Cultivation	1.First	Weed and insect management, etc.
Afforestation	1. First	Replace potential crop yield, etc.
Organic Farming	2. Moderate	Pest, cost, certification, etc.
Restore degraded soil	2. Moderate	Ownership, policy, funding, etc.
Land use change	2. Moderate	Demand/supply in domestic market, etc.
Low/minimum tillage	3. Difficult	Weed, herbicides, fertilization, etc.
Pasture management	None	Very few pasture in Taiwan

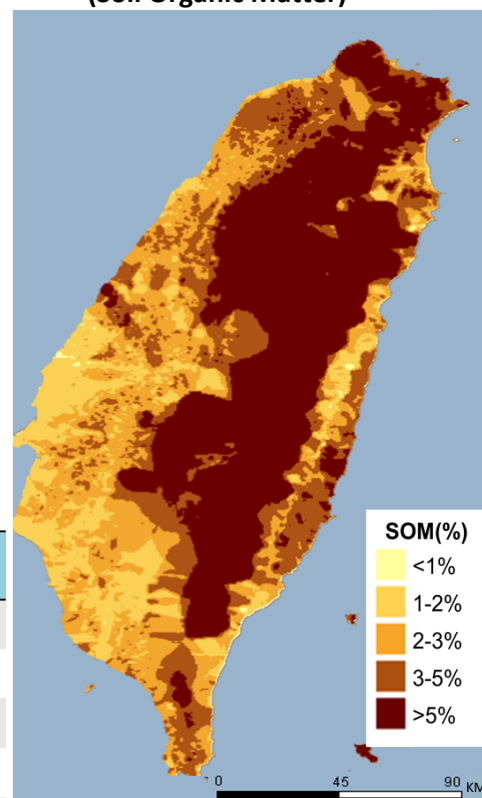
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## Taiwan's Practices on “4‰ Initiative”

4‰ Initiative		Taiwan
Pillar	Objectives	Projects and Accomplishments
1	Assessing the carbon sequestration potential	Estimate Taiwan SOC and assess the carbon sequestration potential
2	Designing carbon sequestration strategies and co-benefits	Assesse the possible strategies for soil carbon sequestration and co-benefits
3	Identifying and creating policies for adoption of 4 per 1000 practices	Policies and financial support by government
4	Monitoring, verifying and reporting (MRV) soil carbon sequestration	Under study

### Taiwan SOM (Soil Organic Matter)

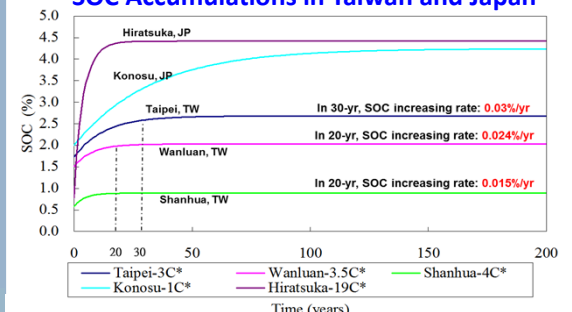


Potential SOC = 843,760 Mg/yr in Taiwan

Practices	Area(Ha)	SOC 10 <sup>3</sup> Mg/yr
Manure reuse <sup>1</sup>	225,000	2,350
Green Manure <sup>2</sup>	500,000	1,000
Organic Farming <sup>3</sup>	100,000	2,000
Biochar <sup>4</sup>	300,000	12,000
Orchard Grass Cultivation <sup>3</sup>	180,000	3,600
Afforestation <sup>1</sup>	18,000	144

SOC increase rate/yr = 1:0.02%; 2:0.004%; 3:0.04%; 4:0.08%

### SOC Accumulations in Taiwan and Japan



### Manure reuse (Top dressing)



### Orchard Grass Cultivation



### Biochar (water caltrop shell)



### Afforestation



Légende illustration © Crédit

## Can Taiwan reach the goal of “4‰ Initiative”?

- In Taiwan, SOC in 1-m depth of soil = ~100 Mg/ha
- SOC in Farmland = 80,000 x10<sup>3</sup> Mg
- SOC in Farmland + Forest = 480,000 x10<sup>3</sup> Mg
- Currently, total potential SOC sequestration = **843,760 Mg/yr**, we can reach **10 %** of SOC in farmland, but only reach **~2 %** of SOC in farmland + forest.

Initiative 4pour1000

Montpellier  
(France)

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