

土壤与人之间的联系框架有助于提高粮食系统和土壤功能的可持续性

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摘要: 全球土壤质量和粮食安全持续下降, 表明农业和粮食系统需要适应。通过知识交流改善与土壤的联系有助于实现这一目标。我们提出了一个由三种类型的连接组成的框架, 允许将适当的消息定位到不同的人群。例如, 通过处理土壤的直接联系可以培养土壤管理意识, 农民加入以土壤为重点的农业团体 (如有机农业或免耕) 可以培养这种意识。土壤、食物和生态系统服务之间的间接联系可以为公众的食物选择和环境意识提供信息, 并且可以通过园艺、教育和艺术等方式加以促进。从过去的土壤使用中揭示的时间联系有助于使政策工作者意识到需要长期保持土壤质量以保护环境。通过将它们与维持土壤肥力和土壤功能的土壤生物和孔隙度网络的运作进行比较, 可以帮助理解间接和时间联系。

关键词: 农业生态学, 多样性, 整合, 土壤质量

A framework of connections between soil and people can help improve sustainability of the food system and soil functions

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Abstract: Globally soil quality and food security continue to decrease indicating that agriculture and the food system need to adapt. Improving connection to the soil by knowledge exchange can help achieve this. We propose a framework of three types of connections that allow the targeting of appropriate messages to different groups of people. Direct connection by, for example, handling soil develops soil awareness for management that can be fostered by farmers joining groups on soil-focused farming such as organic farming or no-till. Indirect connections between soil, food and ecosystem services can inform food choices and environmental awareness in the public and can be promoted by, for example, gardening, education and art. Temporal connection revealed from past usage of soil helps to bring awareness to policy workers of the need for the long-term preservation of soil quality for environmental conservation. The understanding of indirect and temporal connections can be helped by comparing them with the operations of the networks of soil organisms and porosity that sustain soil fertility and soil functions.

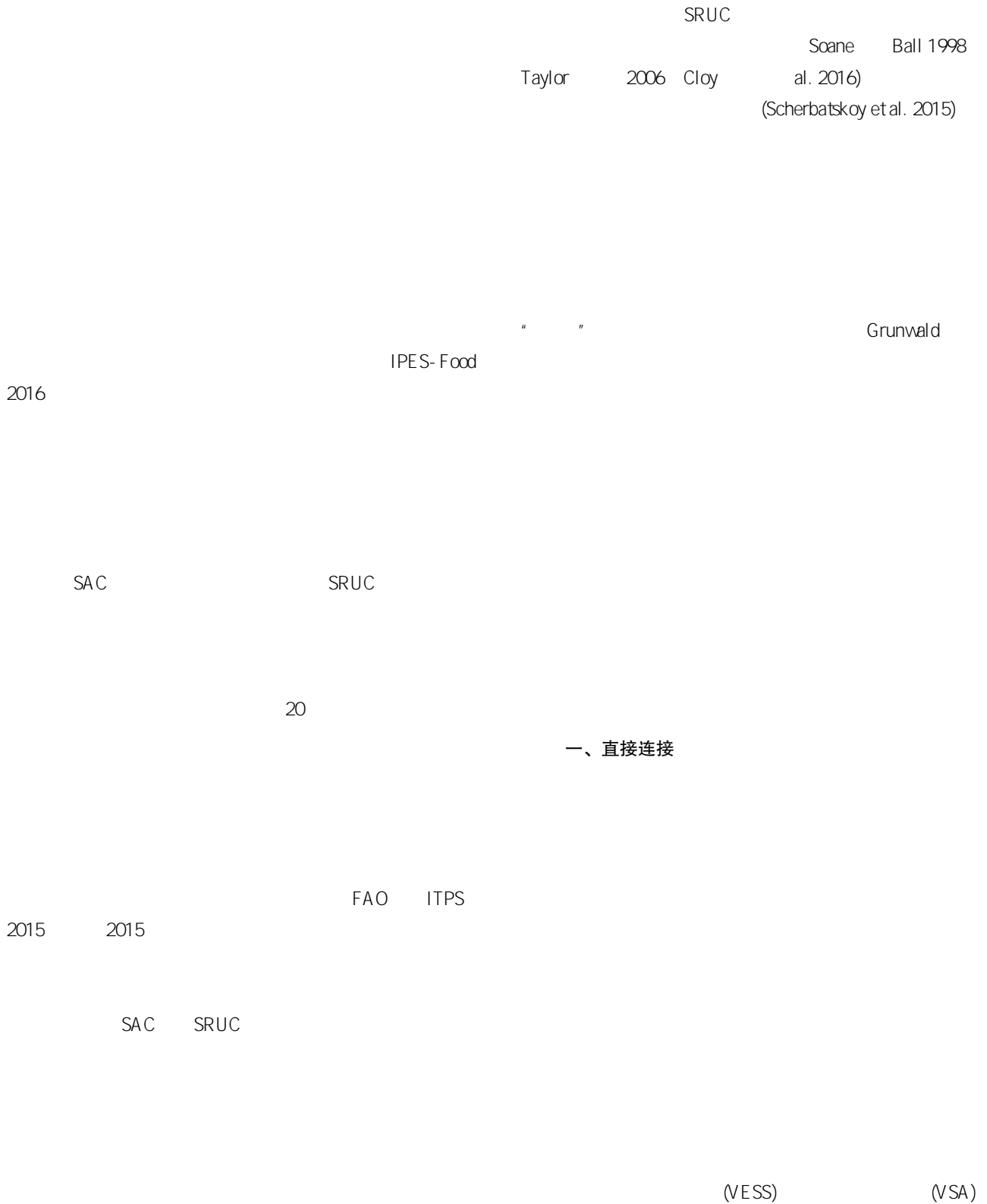
Keywords: Agroecology, Diversity, Integration, Soil quality

引言:

ITPS 2015

33%

PCB



" Profil

" SOILpak
Muencheberg

0 100

SRUC

VESS VSA

二、间接土壤连接

VESS

VESS

" "

pH

pH

2016

2013

< 100 kg ha⁻¹
Muencheberg

2009

1.05

Scane . (2012)

SRUC

Tulloch

Woodside

2002

11

2016

VESS

<10%

VESS

Tulloch SRUC

/ 2007

8

Ball

Logan (1995) Patzel (2010) Ball (2015)

15 Tulloch SRUC
50 (± 1.6) g kg⁻¹ 40.3 (± 1.9)

Wahlhü tter 2016

Naess (1973)

(2017)

Olver Mooradian

三、时间联系

Patzel (2010) Hans Jenny
Logan (1995)

(1973) Naess
Grunwald
2017

Mooradian (2003) Olver

McIntosh (2008)

SAC

1975 1990 SRUC
 0- 60 mm Broadbalk
 37 g kg- 1 49 g kg- 1 50 g
 kg- 1 Cambisol
 VESS SRUC

3
 2012 3
 7.8 g N ha- 1 day- 1 P
 < 0.01, 18.6 g N ha- 1 day- 1 P
 < 0.001, 25.0 g N ha- 1 day- 1
 Tulloch
 3- 4
 2- 3

50 70

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