

Synec0

2. Introduction of Synecoculture

Synecoculture introduction video

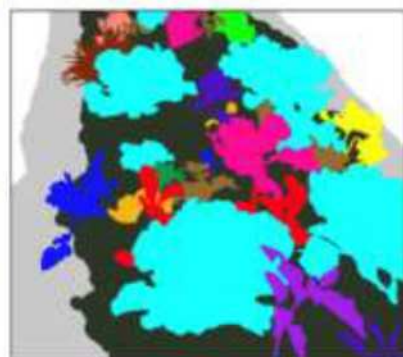















[Renewing agriculture to rebuild a broken environment Sony Computer Science Laboratories, Inc. - YouTube](#)

What is Synecoculture?

In Synecoculture, various type of useful plants are introduced in the farm, which form a well-established ecosystem.

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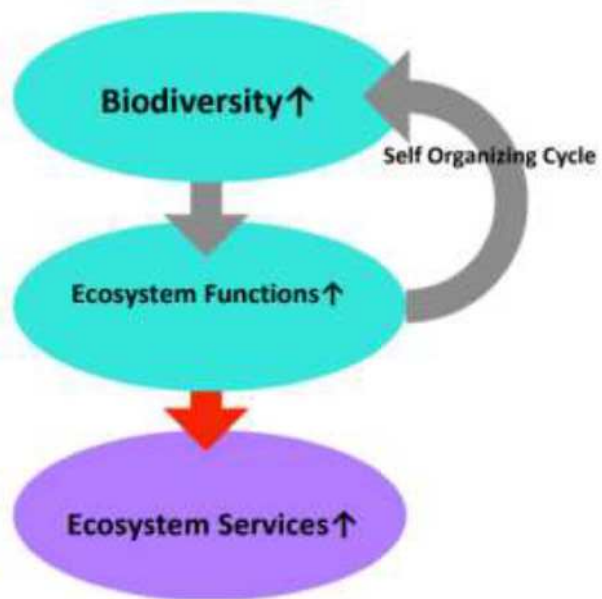


- | | | | |
|--|--|--|---|
|  Chinese cabbage |  Edible chrysanthemum |  Burdock |  Cabbage |
|  Radish |  Komatsuna |  Cauliflower | |
|  Carrot |  Purple cabbage |  Potato | |
|  Eggplant |  Pak choi |  Leek | |

Various plants are densely and mixedly planted

Principles of Synecoculture

No tillage, no fertilizer, and no agrochemicals.
We bring only seeds and seedlings into the farm.



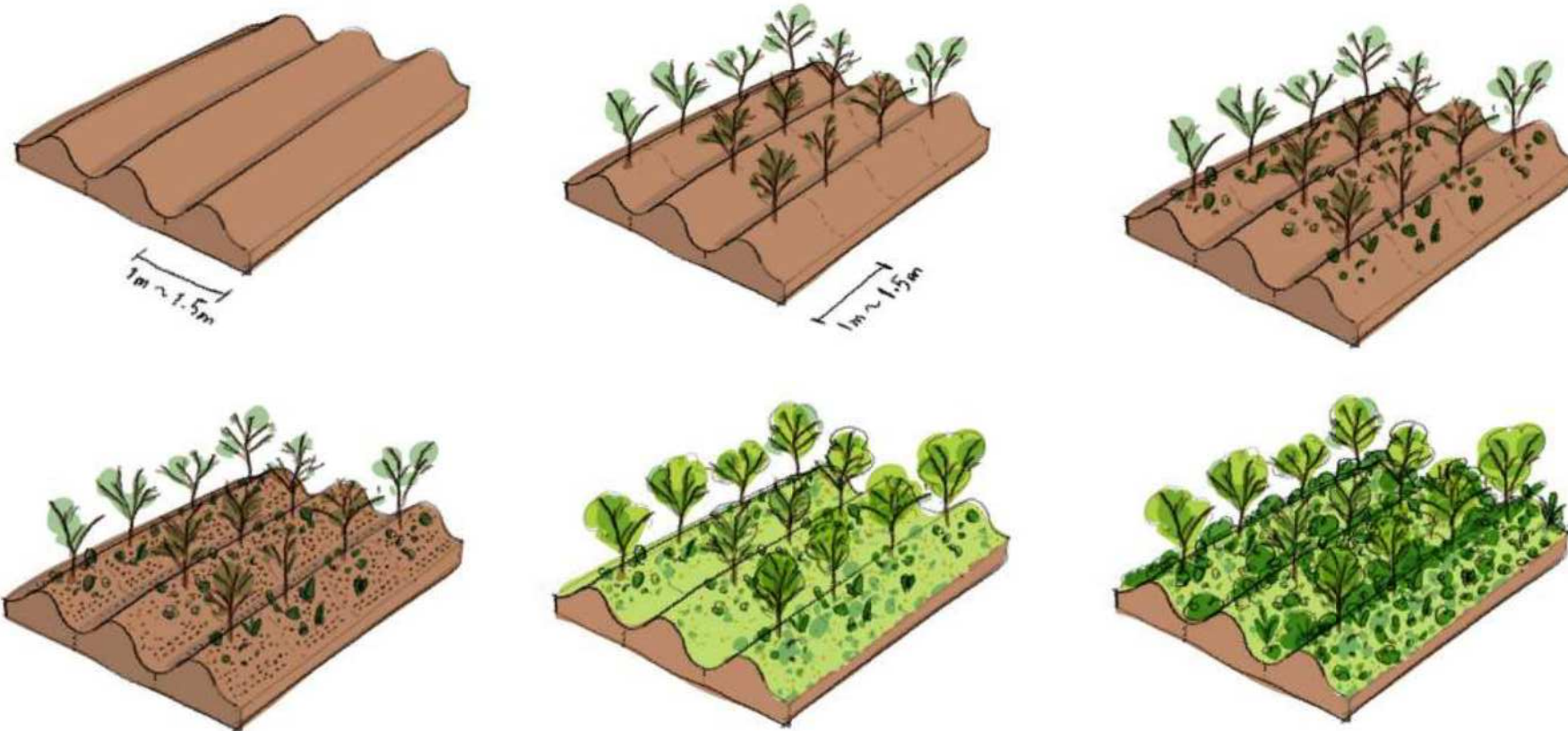
Conventional
(Low ecosystem functions)



Synecoculture
(High ecosystem functions)



Establishment of Synecoculture farm



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https://www.sonycsi.co.jp/wp-content/uploads/2023/08/synecokit_ver051j20230830f.pdf

Synecoculture in Sub-Saharan Africa



From bare land to rich edible forest:

Development of Synecoculture pilot farm at Mahadaga, Tapoa, Burkina Faso with 150 edible species in 500 m² (April 2015-)

- Productivity: 1000 Euro/month/500m²
 - 20 times higher than the GNI per capita of Burkina Faso
- 88 times more profitable than the conventional agriculture

[20181022 Proceedings of the 1st African Forum on Synecoculture.pdf \(sonycsl.co.jp\)](#)

[\(PDF\) Power-law productivity and positive regime shift of symbiotic and climate-resilient edible ecosystems \(researchgate.net\)](#)

Synecoculture in Burkina Faso



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Photos: AFIDRA

2016/7 Africa Burkina Faso

African forum



African Forum on Synecoculture has been conducted 6 times so far

An NGO called CARFS (Centre Africain de Recherche et de Formation en Synecoculture) promotes Synecoculture over Africa

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3. Its potential in cocoa farm

Difference between Synecoculture and Agroforestry

Synecoculture in cocoa farm will be like...

- Cocoa trees
- Various shade trees
- Various understory plants



Traditional
cocoa farm

**Is it Synecoculture?
If not, what is the difference?**

Difference between Synecoculture and Agroforestry

Answer: it might be

1. **Use of fertilizer and agrochemicals**

If it is used, it is not Synecoculture

2. **Presence of useful plants**

There are various and plenty of useful plants in Synecoculture farm



Traditional cocoa farm



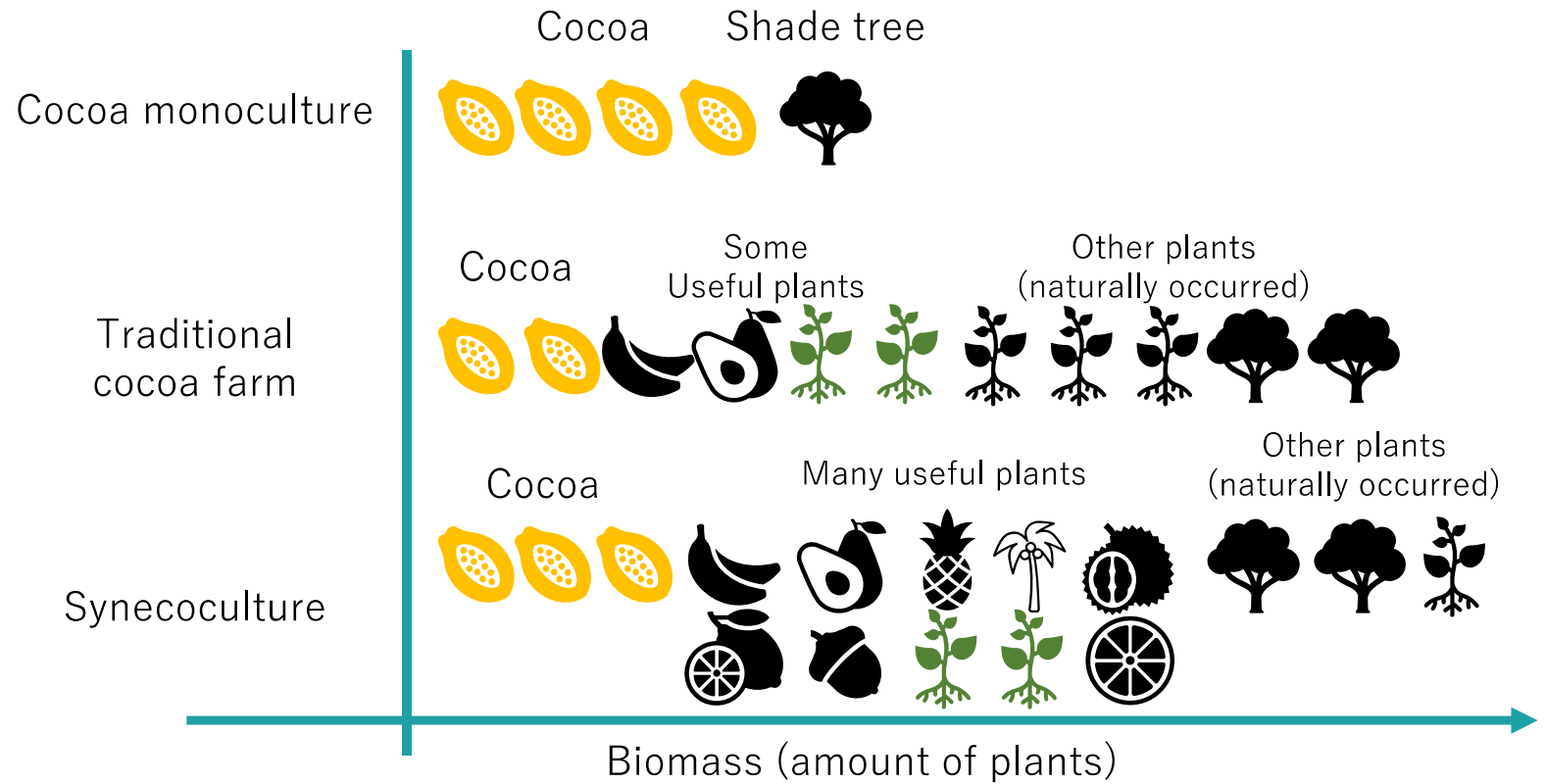
Cocoa yield is not so high and there are a lot of useless plants

Difference between Synecoculture and Agroforestry

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Traditional cocoa farm

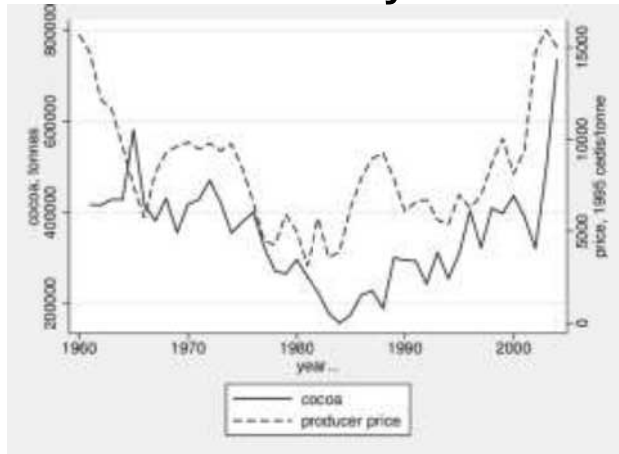


Resilience

Resilient - strong and not easily damaged by being hit, stretched, or squeezed. (<https://www.collinsdictionary.com/>)

Many uncertain factors surrounding cocoa farm

Volatility



Climate uncertainty

- Extreme weather
- Rainfall pattern

Synecoculture

can reduce the risk related to the volatility
can reduce the water-related risk because of the complex ecosystem

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Biodiversity

Synecoculture primarily aims for increasing biodiversity and well-established ecosystem

The farm will be the habitat of a lot of species
Pests will be preyed by predators such as bird and insects

Once well-established ecosystem is achieved, the farm will give ecosystem services to the farm, farmers, and community



Image: TEEB Europe

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Benefit

Although cocoa yield might be lower compared to monoculture, you can harvest vegetables and fruits in the farm. Additionally, you can benefit from the traditional useful plants in the farm. It is possible that total benefit will be higher in Synecoculture



https://www.sonycscl.co.jp/wp-content/uploads/2023/08/synecokit_ver051j20230830f.pdf

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Conclusion

- There are crucial nature-related risks in Ghana as well as over the world
- Sustainability and resilience is required for cocoa production to deal with the environmental issues and nature-related risks
- Synecoculture where various useful plants will be planted together with cocoa, can be an alternative adaptation strategy in cocoa production
- Synecoculture will increase the resilience of the farm, improve ecosystem, and contribute to the economic situation

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