Agroforestry Policy 2020

Chocolats Halba
Division of
Coop Cooperative
Nachhaltigkeit.

Salinenstrasse 70
4133 Pratteln
Switzerland

Tel. +41 61 825 91 45
Mobile +41 79 870 10 45
CHE-116.311.185 MWST

Petra.Heid@halba.ch
www.halba.ch
202101 Agroforestry Policy EN.docx

Contents

1. Introduction

Cocoa is mainly grown in monocultural full-sun systems. These production systems are known to deplete soil fertility, reduce biodiversity and compromise the long-term productive capacity of the land. The removal of forest cover exposes crops and soil to wind and water erosion, nutrient leaching and runoff, and reduced water holding capacity. The loss of forest cover exacerbates climate change with local impacts such as increased incidence of drought, extreme heat, and floods. Removing the forest also changes the local ecosystem and habitats for biodiversity, leaving production more susceptible to pest and disease outbreaks (Ashley Thomson, 2019). Despite the application of agro-chemicals, harvest continue to decline, and producers react by applying mineral fertilizer and pesticides, which cuts into their margins and does additional damage to the soil. This negative spiral drives many small-scale farmers into poverty – or to clearing remaining patches of forest in order to create new plantations (Halba/Sunray, 2018).

This negative trend must be stopped as soon as possible. A paradigm shift in the cocoa sector must take place. We are convinced that only a radical rethink and rapid action can bring a profound improvement in cocoa plantations in the long term and thus an improvement in the living conditions of small holder farmers and ecosystem services of that area. As a responsible company, Chocolats Halba/Sunray has been striving since 2008 to put an end to this negative trend in the cocoa-producing countries where it buys its cocoa and started to promote and slowly implement robust and highly diversified agroforestry systems in cooperation with their cocoa suppliers.

If we manage to help cocoa farmers to transform their cocoa plantation into a multifunctional eco-system, that serves not only nature, but also the farmer in generating additional significant income and enough food, he will be willing to continue growing cocoa for us in the future with joy and conviction.

This agroforestry policy describes our way forward about the establishment of agroforestry systems in cocoa producing countries, where we buy our cocoa beans from. This policy is part of our corporate strategy, which was endorsed by our board of directors at the end of 2020.

2. Definition Agroforestry

2.1 Different Definitions of Agroforestry

For the cocoa sector a clear definition on agroforestry is still lacking. In general, agroforestry can be described as an agricultural practice where woody perennials (trees, shrubs, palms, bamboos, etc.) are deliberately used on the same land-management units as agricultural crops and/or animals, in some form of spatial arrangement or temporal sequence (FAO 2015).

Different Organizations has defined Cocoa Agroforestry Systems as follows:

1. Entry Level for Agroforestry	2. Basic Category for Agroforestry	3. Advanced Category for Agroforestry
16+ (non cocoa) trees/ha 3 different tree species, preferably native **Description:** This is an entry level for agroforestry that corresponds to industry standards set by CFI and WCF (CFI/WCF, 2019).	• At least 40% shade canopy cover • Minimum of 5 different native trees species **Description:** This is in accordance with Rainforest Alliance's shade coverage and species diversity reference parameters (RainforestAlliance, 2020).	• At least 40% shade canopy cover • Minimum of 12 different native tree species (pioneer species excluded) • 15% native vegetation coverage • Attention is given to landscape approach (reformulated after) • 2 strata or stories and shade species should attain a minimum of 12-15 meters in height. **Description:** This is in alignment with the Voice Network and an agroforestry system which will be contextualized with local farmers with clear arrangements on the financing of the transition to and maintenance of agroforestry (Cocoa Barometer, 2020).

On closer examination of these definitions, and based on our experiences in this field, we assume that No. 1 and 2 of these definitions, if thoroughly implemented, would not be sufficient to sustainably improve cocoa farming systems in regard to sustainably increase of farmer livelihoods and ecosystem services; while the definition No. 3 could fulfil that partly. But it must be made clear that it is neither the absolute percentage of shade that matters, nor the number of trees per hectare, but the quality and periodicity between shade and light (stratification and life cycle of species). That definition of number of trees per hectare makes no sense if the dynamics of the system are not considered, such as the life cycle of the trees and the stratus in which they stand.

Although we list our own agroforestry definition below, which we implement in our projects since 2016, we consider the three agroforestry definitions mentioned above to be relevant, as they allow us to classify the actual state of our cocoa suppliers before we start to work with them in our agroforestry projects.

According to the above classification, we have honestly evaluated and categorised our cocoa cooperatives from which we bought our cocoa beans in 2020 into the following ranking:

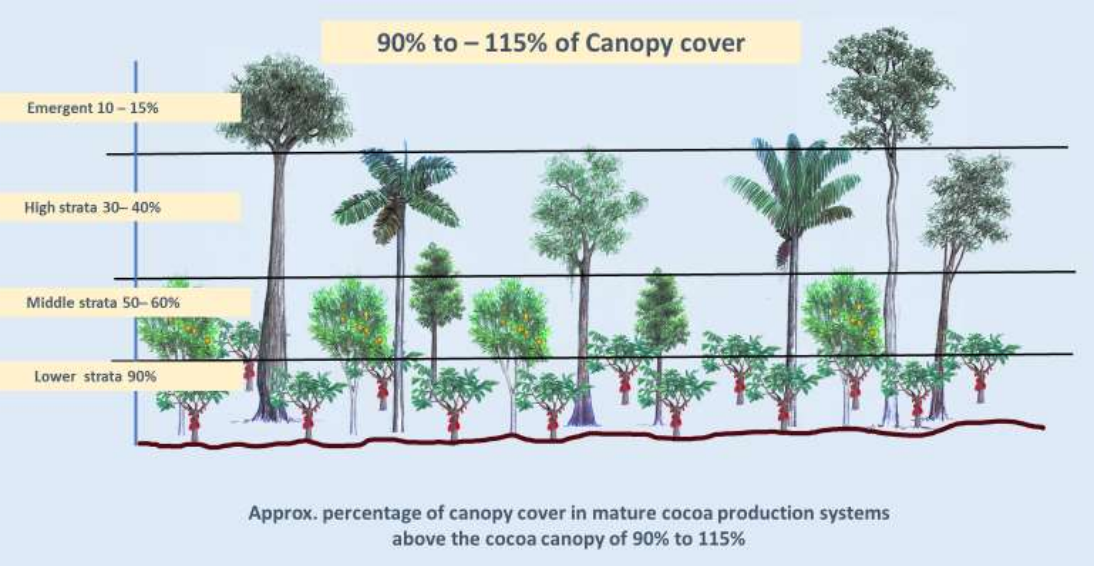
1. Partly or complying the Entry level for Agroforestry or below:
    - Ghana, Kuapa Kokoo (Rainforest Alliance/Utz and Fairtrade Certification, Gold Standard CO2-carbon emission insetting for Coop)

2. Complying the Basic Category for Agroforestry:
    - Honduras, all cooperatives (organic certified, partly Fairtrade certified, Gold Standard CO2-carbon emission insetting for Halba),
    - Peru, Acopagro (organic and Fairtrade certified, CO2-product carbon emission insetting, VCS),
    - Madagascar, CPCS (organic and Fairtrade certified)
    - Ecuador, Fortaleza del Valle (organic and Fairtrade certified)
    - Ecuador, UNOCACE (organic and Fairtrade certified, Gold Standard CO2-carbon emission insetting for Coop)

2.2 Our Definition of Agroforestry

Based on our many years of experience and observation, we consider the Dynamic Agroforestry (DAF) approach to be the most promising in terms of environmental and social sustainability.

Dynamic Agroforestry Systems are based on the understanding of the succession and structure of natural ecosystems. The holistic approach mimics the original rainforest habitat of the cocoa tree – including establishing an understory and a closed nutrient cycle. Cocoa is planted densely with crops such as maize, cassava, bananas or mangoes, and with high-quality mainly native timber trees. The various plants help each other to grow, with tall light-loving ones providing a canopy for other crops that prefer more shade. Plants with high nutrient requirements benefit from neighbours that supply nutrients. The cocoa trees grow in the moist and shady understory where they flourish and produce more beans longterm.



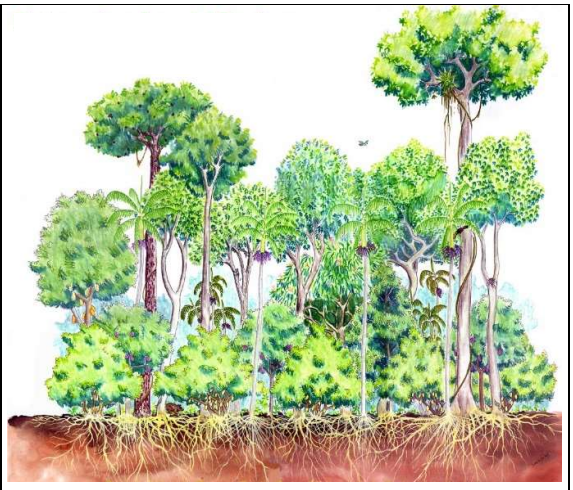
(Milz, Lessons Learnt from 25 Years Agroforestry, presented at the Agroforestry congress of the Swiss platform for sustainable cocoa, 2020)

This form of balanced mixed cultivation also produces large quantities of organic material. In contrast to monocultures, this is not thrown away or burned, but left lying. As a result, the ground does not dry out and the mulch created provides the plants with all the nutrients they need, making synthetic fertilizers and pesticides redundant.

DAF is an advanced cultivation method. In particular, the specific initial planting of the plots and appropriate pruning require a lot of expertise. Our DAF projects are designed to run over several years (Halba/Sunray, 2018).

At that moment, only a few tons of cocoa are already produced in Ecuador under this advanced cultivation system, which fulfil all the requirements mentioned below.

Main Principles of a Dynamic Agroforestry System:

• High biodiversity, abundance of different native tree species • High energy flow in terms of biomass without the need for using external fertilizers or pesticides • High native species density with different life cycles and occupation of different strati (minimum 3) • Plant communities fulfilling different purposes (CO2, income sources, food, ecosystem services, etc.) • Optimisation of the overall system rather than maximising the yield of individual crops • Requires constant farm management, such as pruning and selective weeding considering natural regeneration • Application of the principle of natural succession of species and regenerative practices • No burning	 (Seles, 2011) http://agrofloresta.net/educacao-agroflorestal/sistema-agroflorestal-sucessional-biodiverso/gravuras-agroflorestais

3. Benefits of Dynamic Agroforestry Systems

Farmers benefit from the DAF systems in several ways.

- Thanks to better soil quality and fertility, cocoa productivity can be doubled in the long term (baseline 300-400 kg/ha).
- Mixed-crop cultivation enables farmers to harvest crops regularly for their own consumption or to sell.
- High-quality timber trees also serve as a form of a retirement fund they can be sustainably harvested and sold 20 to 30 years later, as long as they are replaced.
- DAF consequently improves the living standards of smallholders while also countering social problems such as exploitative child labor practices, malnutrition or migration to the cities (Armentgot_et_al, 2016).

Nature also benefits from DAF systems in several ways.

- Previously deforested areas are reforested, returning to a model close to primary forest.
- Biodiversity in the plantations is enhanced, and the insects that are vital for pollination and other native animals return.
- The timber trees act both as a water reservoir and as a natural defence against erosion.
- Moreover, timber trees sequester CO2 and therefore contribute to reversing climate change.

- The soil is regenerated due to a variety of species working together, ultimately sequestrating CO2 below ground and therefore also contributing to reversing climate change.

In summery the following benefits can be named:

Increased farmer livelihood	Increase Ecosystem Services
- Less/no dependency on cash crop & external inputs - Increased cocoa productivity - Higher overall plot productivity - Inclusion of younger generations and women - Contribution to a robust rural development - Higher & diversified income and economic resilience for the farmers - Increased food security due to the mixing of plants - Happy farmer	- Recovering or conversation of biodiversity of flora and fauna - Reforestation and avoidance of further deforestation - CO2-sequestration above and below ground - Climate change mitigation & higher climate resilience - Increased biomass, nutrients & soil fertility - Preserved and increased soil moisture - Improved microclimatic conditions (controlled temperatures, higher humidity) - Stopped expansion of cocoa plantation into forests - Stopped burning in rural areas - Less/no pest and disease infestation

4. Vision and Objectives

4.1 Our Vision

We contribute significantly to the sustainable transformation of agricultural production systems, especially in the cocoa sector, by promoting and implementing high-quality agroforestry systems in our supply chains that benefit both planet and people.

If cocoa suppliers are not willing or interested in the implementation of our DAF approach, we focus our conversations with those farming groups on carbon reduction projects, contributing to the UN Sustainable Development Goals via insetting of our corporate CO2-carbon emissions (Halba's, Coop's -Halba's holding company- and the emissions of our chocolate finished

goods). The CO2-Insetting strategy consists in the planting of native CO2 relevant trees in the cocoa plantation of the cocoa farmers we source cocoa beans from (within our supply chain).

If cocoa suppliers are neither interested in the implementation of our DAF approach or of an CO2-insetting project, we will end our cooperation mid-term with those farming groups.

4.2 Our Objective

Based on our vision, we have defined the following objectives:

- ***By 2030 we will source a minimum of 50% of our cocoa beans from cocoa farms applying Dynamic Agroforestry or equivalent production systems***
- ***By 2040 we will source 100% of our cocoa beans from cocoa farms applying Dynamic Agroforestry or equivalent production systems***

In order to achieve these objectives, we will offer support to all of our significant[1] cocoa suppliers as they implement a DAF approach.

5. Our implementation strategy

5.1 Our Achievements

So far, we have achieved the following objectives in this context:

- Since 2011: Gold Standard CO2-insetting in Honduras of Halba/Sunray's corporate CO2-Emissions (Halba/Sunray, 2018), via the planting of 389'145 native timber trees
- Since 2012: VCS Certification CO2-insetting in Peru, reaching carbon neutrality for some of our chocolate finished goods
- As announced in Halba/Sunray's 2018 sustainability report, we have implemented DAF projects in all cocoa producing countries we source more than 100MT/year, except in Peru. The

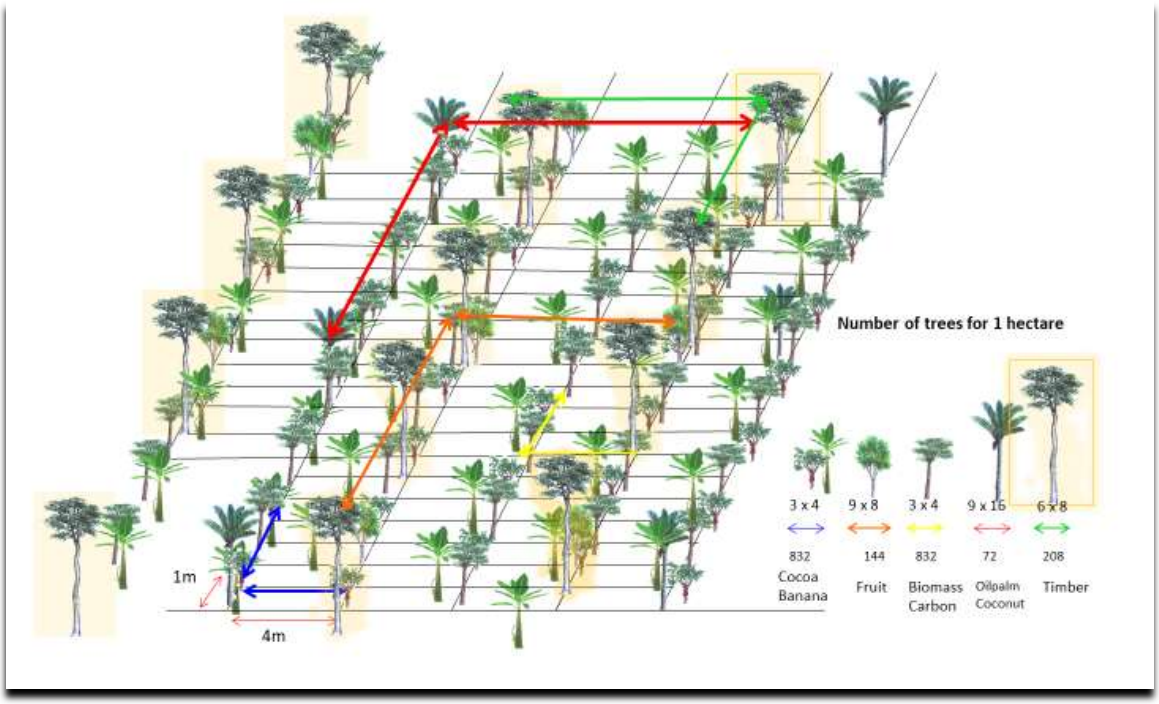
[1] "Significant" means a cocoa producing cooperative selling to Halba at least 100 MT/year of cocoa beans

Peruvian Acopagro cocoa cooperative continues to focus on CO2-insetting with VCS Certification (Halba/Sunray, 2018).

Past and future projects:
- 2016 – 2019: DAF project 1st phase in Ecuador
- 2017 – 2018: DAF project pilot started in Ghana
- 2018 – 2019: DAF project pilot started in Madagascar
- 2019 – 2022: DAF project in Madagascar
- 2019 – 2022: DAF project in Ghana
- 2020 – 2023: DAF project 2nd phase in Ecuador
- 2018 – 2022: DAF project pilot in Honduras
- 2021 – 2023: DAF project in Honduras

5.2 Planting scheme

It is our claim that all DAF projects, regardless of the country in which they are implemented, follow the same principles listed above.
Therefore, when installing a new DAF plot, plant communities with different life cycles and occupying different layers will be planted together according to the following planting scheme:



(Milz, Excerpt from a consultation document elaborated by Ecotop for Chocolats Halba/Sunray, 2019)

The following table shows the planting density in the first year after implementation of a DAF plot, in this instance in Ghana:

Type	**Plants/ha**	**Notes**
Cocoa plants	832	Grafted, certified varieties
Native timber trees	208	Mid- or long- living species, min. 12 species on average, + natural generation species, such as *Terminalia, Mansonia, Nauclea, Guibucia, Khaya, Triplochiton, Milicia*, etc.
Biomass trees	832	Short- living pioneer species, e.g. *Senna Acacia, Albicia*, min. 4 species
Palms	72	e.g. Coconut or/and Oil Palm, min. 2 species
Fruit Trees	144	e.g. Citrus, Mangos, Avocado, Ramputan, etc., min. 7 species
Cashew	832	For additional biomass production
Gmelinia	832	For additional wood production after 10 years
Banana/plantain	832	Common and popular local varieties
Biomass shrubs (seeds)	20 kg	e.g. Bixa orellana, Pigeon pea, Mexican sun-flower, min. 2 species
Biomass grass	tbd	e.g. Elephant grass
Leguminose plants (seeds)	72 kg	e.g. Bushy beans, Canavalia, Cow peas, Peanut/ Groundnut
Cassava (sticks)	625 Sticks	For consumption and/or to sell on local market
Yam (seeds)	1,600	For consumption and/or to sell on local market
Cocoyam	TBD	Varies depending on farmers' request
Maize (seeds)	16 kg	For consumption and/or to sell on local market
Vegetables seeds	120 g	e.g. Egg plants, Chili pepper, Tomatoes
Others	TBD	e.g. Ginger, Turmeric, Pumpkin, Peanut/Ground-nut

As a result, in the first year of a new plot installation, more than 2,700 trees including more than 20 different tree species are present, in addition to cocoa trees. Shade coverage can vary between 30 and more than 100%.

Over the years, more and more trees can be removed when they grow bigger, especially the fast-growing ones with a short lifespan. In a mature 30-year old DAF plot, the following plants will still be present, while canopy coverage varies between 90 and 115% and can be reduced during a heavy pruning intervention down to 30%.

Presence of plants in a mature 30-year-old cocoa plantation:

Type	**Plants/ha**	**Notes**
Cocoa plants	832	Grafted, certified varieties
Native timber trees	130	Mid- or long- living species, min.12 species on average, + natural generation species, such as *Terminalia, Mansonia, Nauclea, Guibucia, Khaya, Triplochiton, Milicia*, etc., including natural generation
Palms	72	e.g. Coconut or/and Oil Palm, min. 2 species
Fruit Trees	144	e.g. Citrus, Mangos, Avocado, Ramputan, etc., min. 7 species
Cashew	30	For additional biomass production
Cocoyam	TBD	Varies depending on farmers' request
Others	TBD	e.g. Ginger, Turmeric, Pumpkin, Peanut/Groundnut

As a result, in a mature DAF plot, where cocoa is producing as its maximum, one can find more than 300 mid- and long living trees occupying different strata and still more than 20 different tree species, in addition to cocoa.

During a new plot installation, it is important to ensure that each stratum and each annual phase feature the required plants in the right density. The example of a species matrix below shows the strata and annual phases for a selection of key crops and trees.

Strata	**Pioneers Until 6 months**	**Secondary I Until 2 years**	**Secondary II Until 15 years**	**Secondary III Until 80 years**	**Primary More than 80 years**
High, not shade tolerant, light seekers	Maize	Passion fruit, Sunn hemp, Cassava, Yam, Mexican sunflower	Papaya, Inga, Bixa Orellana, Castor nut, Plantain, Elephant grass	Coconut Vanilla Acacia magnum Gmelinia Moringa Glyricidia, Cashew	Eucalyptus Amazon nut Mahagony Teak Rubber Neem Oil palm
Medium, produces fruits under shade	Beans, Sesame, Rice, Canavalia	Pigeon pea, Chili pepper, Tomato, Egg plant		Different fruit trees, e.g. Citrus, Avocado, Bread fruit, Banana	Cloves, Mangostan, Mango, Jackfruit, Ramputan
Low, very shade tolerant	Pumpkin, Peanut	Cocoyam	Ginger, Tumeric		Cocoa

5.3 Training

An important part of the DAF model is that the project must be carried out over several years. This is the only way to achieve sistemic changes and long-term sustainable success. As initiators of DAF projects, we therefore make sure that infrastructures are created on the ground during the project phase, for it to remain in place after the project has ended. In doing so, we make sure that the project reaches a critical mass of DAF farmers and trained agrotechnicians so that there is enough know-how locally and impetus once our project has ended, and so that the DAF overall implementations can be continued by our project partner without external support.

In most projects, we implement a "train the trainer" mentality. This means that selected farmers receive intensive training in agroforestry methods so they can then act as trainers themselves and pass on their acquired knowledge to other producers member of the farming cooperative.

For the DAF training we use external experts, which have the knowledge and competence to accompany a project intensively over several years.

5.4 Financing

All DAF projects are implemented and financed by Halba/Sunray in cooperation with other partners. Due to the required intensive training sessions, the complex project set-up and the large number of seeds and seedlings necessary to provide for the installation of new DAF plots, budgets are often in millions of Swiss Francs.

Projects are partly financed by us, Chocolats Halba/Sunray. Funding also comes often from the Coop Sustainability Fund, managed by our holding company Coop, or from third-party donors.

These funds allow us to support our project partners with intensive high-quality training, as well as planting material and tools, such as pruning shears and saws.

5.6. Monitoring

The implementation of DAF projects is thoroughly reviewed by external independent project partners, such as GIZ (Gesellschaft für Internationale Zusammenarbeit) in Ecuador, SECO (State Secretariat for Economic Affairs) in Ghana, WCS (World Conservation Society) in Madagascar, and the SDC (Swiss Development Corporation) in Honduras.

At the beginning of each DAF project, we define clear objectives, milestones, activities and budgets. A baseline study is established, and regular monitoring and evaluation are implemented to check progress against our set targets. As an example, within the framework of Gold Standard (GS), monitoring and verification takes place annually or every five years from the start of the project for a period of 30 years.

6. References

Armentgot_et_al. (2016). *Cocoa agroforestry systems have higerh return on labour compared to full sun monocultures.* Switzerland: FibL.

Ashley Thomson, S. K. (2019). *Devloping Cocoa Agroforeatry Systems nin Ghana and Côte d'Ivoire.* Washington, USA: World Cocoa Foundation.

CFI/WCF. (2019). *Definition Agroforestry Systems.* Washington: WCF.

Cocoa Barometer. (2020). *Cocoa Barometer.* Ede, Netherlands: VOICE Network.

Halba/Sunray, C. (2018). *Sustainability Report.* Pratteln: Chocolats Halba/Sunray.

Milz, J. (2019). *Excerpt from a consultation document elaborated by Ecotop for Chocolats Halba/Sunray.* Bolivia: Ecotop.

Milz, J. (2020). *Lessons Learnt from 25 Years Agroforestry, presented at the Agroforestry congress of the Swiss platform for sustainable cocoa.* Bolivia: Ecotop.

RainforestAlliance. (2020). *Glossary for 2020 Certification Program.* Rainforest Alliance.

Seles, D. (2011). *Manual do Educador Agroflorestal.* Brazil: Agenda Ernesto Goetsch.

Swiss Platform. (2020). *Overview of the four different categories of agroforestry for cocoa cultivation.* Bern: Swiss Platform for Sustainable Cocoa.