

Succession Guide

A quick & easy to use reference to understand the terminology and meaning of the different stages of species succession according to Syntropic Agriculture.



syntropia.com.au

Introduction



Species succession is commonly known, and described in many ways.

Syntropic Agriculture has its own terminology, directly translated from Portuguese - the main language of Brazil, where syntropy began.

The different stages of species succession can be determined nominally, however in real life there are never any real distinct thresholds that separate one stage from another, and all ecosystems have their differences - we encourage you to determine your own once you are deeply familiar with the ecosystem you are working with.

We break up the stages of species succession into groups of plants that have common characteristics and patterns, with similar lifecycles.

In Syntropic Agriculture we **generally** refer to these groups by the following names.

Pioneers, Placenta 1, Placenta 2, Early Secondary, Mid Secondary, Late Secondary, Primary.

The term "Placenta" refers to the early succession plants that are first to grow over the earth, forming a protective cover.

Species Succession



Pioneers

Placenta 1

Placenta 2

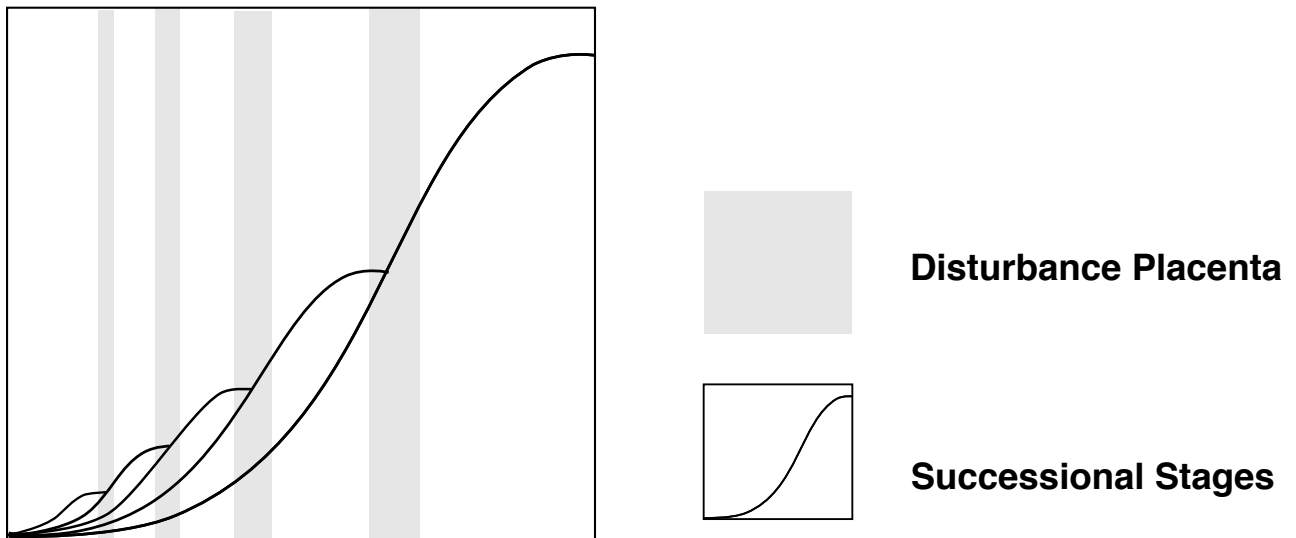
Early Secondary

Mid Secondary

Late Secondary

Primary

Disturbance Placenta



While the term "Placenta" in Syntropic Agriculture is normally applied to the early plants covering bare soil at the beginning of the process of species succession, it also includes the plants which grow quickly and fill in the openings after a disturbance event.

A disturbance event creates an opening and a growth pulse.

Plants that survive the disturbance event recover and continue to grow, but in the short term, there are many large gaps that are filled by shorter lived and fast growing plants.

These are the Disturbance Placenta.

The Disturbance Placenta only lives for the period of time when the recovering trees and younger trees start to resume use of the space and light.

Disturbance Placenta is very important for nutrient cycling and growth of biomass during an important event in the cycles of forests.

Disturbance Placenta is also a way of growing vegetables and annuals in our agroforestry.

Disturbance Placenta occurs mostly in a recovery cycle between longer lived species.

Pioneers



Pioneers are the beginners, they start from zero - bare rock, bare soil. They are plants like moss and lichen, highly specialised and most primitive.

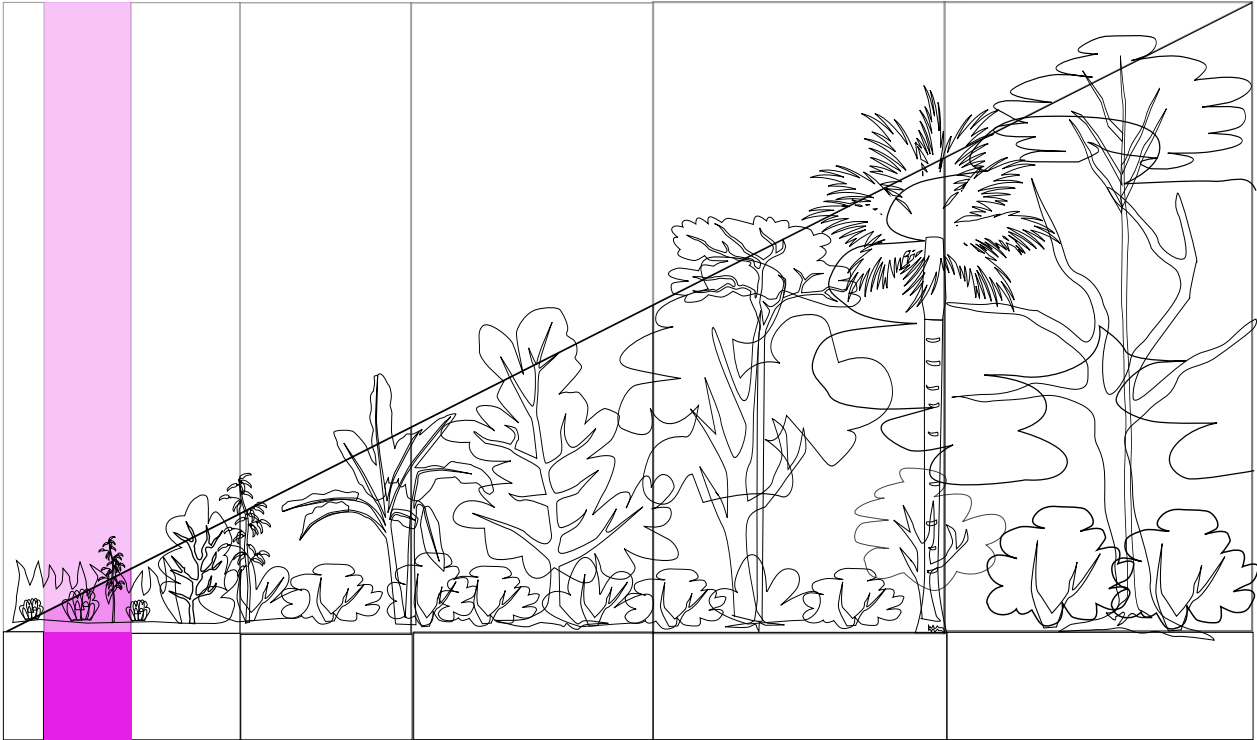
There are unfortunately many situations where life is reduced to the pioneer stage in succession. This occurs mostly in chemical monocultures, where poisons have reduced the soil life to the minimum and the soil below the crops are bare, with very low succession weeds like thistle and tap rooted shrubs germinating, and not getting very far in life (often poisoned out) and with these few examples, one can often find mosses growing, particularly after rain.

These situations require some effort to bring up to a level of quality where Placenta 1 can thrive naturally, treatments like the tool of animal impact, application of microbes, deep ripping to oxygenate the soil and create disturbance are some examples.

In this stage you will be looking to create disturbance, perhaps with the soil in order to incorporate oxygen. The tool of animal impact is perhaps the best approach due to the soil disturbance created by hooves and the microbes which are delivered via the manure of the animals.

The goal here is to move towards Placenta 1, so one must investigate ways of getting a flush of annuals. There are many options but the challenge remains of supplying enough fertility and microbial life.

Placenta 1



Placenta 1 are annual species. They normally grow after disturbance.

Placenta 1 is important for creating the first canopy over the soil and establishing life.

A lot of staple foods like our grains come from Placenta 1, as well as most of our vegetables.

Placenta one has many fast growing plants including important biomass producers such as sorghum, oats, rye and millet.

Placenta one has many vigorous “weeds” which are highly specialised in forming strong relationships with soil life, helping to establish the macro organism.

At this stage of planting, at the same time, we often plant species of higher succession so that they are nursed by Placenta 1.

Placenta 2



The end of the cycle of Placenta 1 will see it giving way to Placenta 2, which will be following closely.

Placenta 2 should be pushing against Placenta 1 and wanting space, just as Placenta 1 is getting old and ready to be cut.

Placenta 2 will form the next canopy.

Placenta 2 are perennial grasses and “woody weeds”. A lot of important crops come from Placenta 2.

Placenta 2 is important because it is the phase in succession which begins to nurse trees as a small understory develops.

Placenta 2 “woody weeds” are very strong with their ability to feed the soil microbes with sugars and help build the macro organism.

Placenta 2 stabilises the transition into more woody species and trees, Placenta 2 must fully cycle for the next phase of succession to thrive.

Placenta 2 benefits very much by the cut and harvest of Placenta 1

Early Secondary



Early Secondary is a noticeable transition into more woody short lived trees, with growth cycles typical of 5 -10 years.

These are hardy, fast growing species which create a low canopy with an understory.

Early Secondary scrub can be thick, with very dense populations.

Early Secondary occupies a lot of marginal landscapes.

Early Secondary creates a lot of important biomass when returned to the soil, forming excellent mulch.

Early secondary is often very misunderstood, and these plants will be considered invasive, even when native to their areas - succession, plus the disturbance and recovery cycle, is key to understanding their function and getting the most benefit.

Mid Secondary



Here is where we are really starting to move into abundance - the system is moving from short lived smaller trees towards longer lifecycle trees.

We should be seeing our emergents reaching impressive heights, our seed bank will have produced recognisable young trees of a high level of diversity, there should be a good density expressed in stratification.

Fruit or other production species should be showing signs of good health and will be in full production.

There will be multiple pruning cycles in this stage of succession, including very heavy cuts of the hardy and vigorous trees such as eucalypt or poplar (either pollarded or coppiced), which will provide great quantities of high quality carbon rich biomass and strong growth pulses - here begins the true function of the ***Disturbance Placenta*** which can be planted on every pruning cycle and benefits from the growth pulse, layering your yield.

Late Secondary



Late Secondary is when you really have a forest. There will be maturing high emergents - oak, palms etc - trees which really express the higher states of life in your region.

Your production trees will be cropping in their peak, you will have good soil cover and the woody biomass from pruning cycles will be well decayed and the soil will be full of life - get a soil sample and show all of the soil science people.

It will be a time of many options, as a significant period will have passed since your original planning, you have the choice of changing your crop choice to adapt to new markets etc. The system will have large potential energy ready to be unleashed in the direction of your choice.

The macro organism will be very complex and will hold a lot of nutrients and water.

Birds will be roosting and nesting in the trees, dropping more seeds, and animal life will be expressed in much more quantity and diversity.

You will still be doing pruning cycles with large cuts, more growth pulses, dropping heavier wood to the ground with positive feedbacks increasing.

You've done a great job and by now, you will be an experienced agroforester.

Primary



This point of succession will be reached by your children or your grandchildren. This will be your legacy and contribution to regeneration and a better world left by you than when you arrived.

This is the outcome of syntropic agroforestry.

In this situation we are carrying long lived crops such as nut trees and very high value timber trees.

We can include the time managed presence of livestock and enjoy the improvement of the whole ecology.

This is the highest point of regeneration.

The options of disturbance are available also, it is quite reasonable to prune as heavily as you like and plant again - the harvest of timber trees will initiate such a reset and the cycle continues....