



## Syntropic Agriculture Workshop at Gabalah Farm

When doing high apical cut on Eucalypts sometimes they resprout from the bottom. They've found that if you leave about 5 branches at the top that is enough to stop it resprouting at the base.

In arid/temperate climates you can use cactus or agave as alternative to banana (for chop and drop

See also: [English Language](#)  
[Syntropic Agroforestry](#)  
[Resources & Permaculture in NZ](#)

In October 2018 about thirty people convened on [Scott Hall's](#) farm for a workshop on Syntropic Agriculture

with lots of internal moisture).

Stratification is not height or longevity based, there are high strata short plants (eg. kale).

If the plant is from a system with less resources (arid, cold, poor soil etc) than the entire system might be shorter.

Stratification is based on light requirements when the plant is **mature** (eg. a high strata plant will be tolerate additional shade for the first part of its life).

Corn and okra are emergent. Tomatoes and kale are high.

If they need full sun they are emergent. If they get sunburned they aren't.

Broad, dark green leaves are an indication of lower layers.

The best way to know a plant is to live with it. Just like our mother, she can cut her hair or change clothes and we still know her.

From an ecological point of view you could have all four strata in a single organism. However to provide enough space for each layer, the high and

(Agrofloresta). The workshop was led by Namastê Messerschmidt.

Below are my notes in case they are useful to anyone else. I wasn't trying to record everything, this is just anything which caught my attention in the moment. Some is quite mundane, some very specific and lacking context, and some of it greatly helped my understanding of Syntropic methods and principals.

It's quite likely that I've understood things incompletely and may have worded them poorly.



emergent layers end up very tall and hard/dangerous to work with. In general they have found it is better to mix emergent and medium (or high and low) cropping species in a single row so your crops stay closer to the ground. You can have non-crop biomass emergent species mixed in as well.

You need 1-1.5m between the top of one strata and the bottom of the next. So if you have low strata to 2m then the **bottom** of your high strata can't begin until 3.5m.

With these height requirements you can't have high/emergent tree rows at 5m because you

create too much shade. They've found it works well to alternate high/low rows with emergent/medium rows. That way there are 10m between your big trees.

When pruning you must respect strata and relationships between species. For example, if you prune a high species lower than a medium species it won't thrive.

For simplicity of management it is best to have only one species of each strata in a single row.

## Planning:

1. What is going to make organic matter in short to long term?
2. What to harvest when?
3. Respect stratification and lifecycle
4. Management considerations per species.
5. How to sell harvests
6. Plant sizes and spacing
7. Type of organic matter (eg. tilth, what can germinate)
8. Water
9. Slope, sun & row orientation
10. Machine or human labour resources
11. Respect the vocation of the land/climate/season (grow what will thrive)
12. Protection from animals

Start **planning** from the species which will remain in the system the longest (not counting biomass species) and work down through species that will be shorter lived.

Start **planting** from the biggest to the smallest, with seeds coming after seedlings and grafted plants. Idea is to make the most mess early so as few species as possible are disturbed by later planting.

Put grafting wound facing away from sun.

When planting trees cut off half of every leaf (in their experience this works better than cutting off every other leaf). Cut off all fruit/flowers for first two years to give tree a chance to establish. Grafted trees think they are older than they actually are and so you need to hold them back as producing even a few fruit takes a lot of effort for a young tree.

When planting root crops (cassava, taro, ginger etc) larger roots will produce larger crops because they have more stored energy to get started with.

Young, or sun sensitive plants, are more easily damaged by the afternoon sun. You can angle cuttings towards the west so less surface area is exposed to afternoon sun.

Don't cut ginger for planting, break it with your fingers. Let the wound heal for about 5 days. Keeps it safer from infection. Not critical.

Grasses have all the same strata considerations (emergent, high, medium low).

Rule of thumb is that it takes 3m of grass to feed 1m of bed.



A consortium is an organism. If you introduce a new species mid-cycle their observation is that it won't thrive. In order to introduce new species you either harvest the entire organism or create a "pulse" by heavily pruning everything in the row.

The boundaries between organisms aren't distinct. A row is an organism, the inter-rows form an organism, the inter-rows plus the adjacent tree rows for an organism.

General recommendation was to treat the inter-rows as an organism and the tree rows as an organism.

When learning start small, 1sqm is great. Working first with short lived plants gives you lots of iterations to learn fairly quickly.

Plants will influence other plants in a radius equal to their height. So if you have a row senescent trees that are 10m tall, they will be slowing down the growth of other plants within a 10m radius.

In three sisters you strip the corn of leaves once the cob is fully formed (but not dried). This stops it sending senesce

nce messages to other plants.

General rule is don't plant a seed deeper than 4x it's size. Shallower is better than too deep. Corn is an exception and can be planted deep and makes it stronger. Also can plant three corns together in same hole (like onions) with wider spacing for 20% shade.



Cannot cover grass seed with any organic matter or won't germinate.

Building bamboo is typically high strata so could build a consortium with an emergent.

Every plant has a growth curve (x axis is time, y axis is biomass production). You want to prune as soon as the rate of biomass production starts dropping off. See photo for how senescence works with this.

They have observed that when planting lots of seeds at once, plants thrive. Plants seem to cooperate to make sure that a few thrive. Ernst says plant 100 seeds if you want one tree.

Seeds adapt to their environment, seedlings can struggle to adapt to the change after transplanting.

Make a slurry and dip tree seedlings into it to help with establishment. Use rock dust, ash or clay or whatever you have and is appropriate for that plant.

Horticulture beds do best on east side, so develop system with new beds being added to the east of what's established. (Wonder if that's the same in cooler climates?)

Bird seed can be a way to get untreated seeds.

They've observed that putting pruned organic matter on top of grass weeds doesn't kill them, it makes them stronger. By pruning you are making light and then feeding them.



Prune biggest trees first. If you damage the smaller trees you still have options for how you prune.

On living wood, always use machete to cut in an upward angle (in the direction the plant fibres have grown). This creates a much cleaner cut than cutting downwards.

On dead wood, if you are holding the base of a limb, you chop in a downwards motion with the machete (same principal as above). It's less effort this ways.

Coppice on an angle, with cut surface facing south or east to minimise sun damage.

Diversity in organic material is important. More species is better.

They have observed that wood chip doesn't create the same crumbly, black soil that diverse organic matter does. The finer "tilth" does make planting/sowing easier so sometimes is worth it.

When laying logs on soil it is important to cover them with organic matter or they seem to dry out and mummify rather than decompose.

When pruning citrus don't prune a little off the tip of a branch, instead prune it back to just after a branch which can take over growth in the direction you want.

When creating a pulse, any herbaceous plants which have completed their lifecycle (eg. flowering) can be cut because it won't resprout. Then roots stay to nurture soil.

Producing some crops (seeds, fruit) will create a senescence effect. But it's worth it if you want the crop.

You can't compromise on organic matter. If you don't have it you must grow it first.



Don't sharpen the first third of your machete.  
Too easy to hurt yourself if your hand slips.  
Don't use a machete two-handed because if your blade side hand slips off you can cut yourself badly.

Trees don't mind being pruned or even removed **if** it is in the best interests of the organism. Namaste said that we couldn't think of trees like people (but I'm not sure that we are much different in this regard).

Once you have started a pulse you want to get everything planted fairly quickly so it can form an organism. Ideally you'd have it all done within a week.

Ernst says planting is 5% of the work, management is 95%.

Animals generally aren't used within Syntropic systems. However some people were designing Syntropic systems specifically for chickens and egg production.

## Questions:

- Nut crops and clear ground for harvesting. Perhaps grass rows next to trees? What about other plants within the tree row? Could you have berries which produce at a time that you could mow them after fruiting to harvest nuts?
- Trade offs on deciding which ways rows face? Lower latitudes? Colder climates? Wind? Slope?
- Would love more information on Syntropic chicken designs?
- How Ernst's daughter felled the tree, with deep V cut?
- No mention of windbreaks which is unusual in tree systems. Is that because the entire system works as a windbreak?
- When pulsing a row to introduce a new species I'm unclear if coppicing the biomass species is sufficient to introduce new species? Or if you have to coppice "everything in the organism" (which wouldn't work well with grafted trees).

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COMMENTARY posted on 1 Oct 2018 in #designing, #eating & #travelling

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