

Distilling in a Copper Alembic.

Presented by: Dan Zinsli

Mountain Road Estate



I've been invited here to speak about my experience distilling in a copper alembic
I know there is a wealth of knowledge in this room.
The information I share today is based on my experiences and my unique view point
as an engineer with OCD and a passion for all things botanical.



ABOUT ME:

Prefers workshop scenarios answering questions etc, rather than presenting.
Loves Logic, Rebuilding and Repurposing things and Plants.

Who are we?

- Dan and Kylie Zinsli
- Mountain Road Estate - South Taranaki
- Truffle, Hazelnuts, Lavender and White Sage
- Organic 3 acre lifestyle block



Why?



- Kylies a Lavender Addict.
- Create plant medicine for our family.
- Create high value products to contribute to the wellbeing of our community
- Make a small 3 acre property profitable.
- Love plants

Types of Copper Still



Alquitar



Fancy Nancy



Alembic Column

Why Copper?

Humans have been utilising copper for thousands of years.

Copper has over ten times the thermal conductivity of stainless steel (creating an absolute connection between the heat source and fluid in your distillations.)

Scientific research suggests that copper is highly antibacterial and it also has antimicrobial properties that can inhibit waterborne microorganisms such as bacteria, viruses, algae making it the material of choice for the removal of impurities and infectious parasites.

Distillations using copper stills create finer, more pure products. In my opinion. 😊

I recommend it to everyone, get to know your plants with copper.

Downsides

Copper is soft and easily damaged

S/S is 2.5 x stronger

can Oxidise and React with different botanicals.

Cleaning processes take longer.

Cost of materials and Skilled craftsman



Copper Column Alembic

Parts of a Column Still



Combo Distillation:

Fully assembled
Botanicals in the Column
Water & Botanicals in the Pot

Steam Distillation:

Fully assembled
Botanicals in the Column
Water in the Pot

Hydro Distillation:

Column and Lyne arm removed
Botanicals and Water in the pot

Our Setup



40 litre Column Alembic
Hand made in Portugal
imported by Alembics NZ

*note that the litres eg 40litre
alembic is a random figure
Our 40litre likes to average:
7 kg plant material in the column
25 litres of water in the Pot

Why didn't I purchase a 100-250litre alembic?

i find our 40 litre very manageable by myself, I feel more connection to the process, I can carry her full of boiling water.

I have found with the continual process of distilling I can get a better feel for the plants.
Morning vs afternoon distillation, dec vs march, full sun vs miserable days.

Parts

3 way manifold:

Drain

Condenser water cooler

Still Condenser Bucket



Condenser Water:

Water chiller *Dan-Made*

Old Copper washer tank

large pond pump

Distillate outlet to Essencier:

Essencier *Dan-Made*

Glass & 316 Stainless Steel.



Table: *Dan-Made*

Firebricks

Steel

Heat Source:

Paella gas burner

9kg gas bottle

Cleaning

Wash and Scrub Copper with brushes and Citric Acid

Rinse and Scrub

Rye Flour distillation

Rinse and Scrub

Water distillation

Ready to go.

Sanitise everything with alcohol!

Keep the outside dry!!!



Harvest.



Hand Harvested:
For Connection to our plants
We hand harvest our plants as a family while the still is running.

We gradually harvest throughout the morning when it's lovely and sunny so the flowers don't even get a chance to wilt before they end up in the still.



The Process:

niwisahi or secateurs a “bunch” and then chop the flower heads into a trolley reducing as much stem as possible.

around 50/50 flower to stem length.

Make a pile in the Distillery
Chop them all up again with hedge cutters, make a nice consistent texture to ensure an evenly packed column for optimal steam path.



Distilling

I put 25 litres in the Pot,

Heat it with a paella gas burner

It produces a lovely constant low heat to suit the coppers very high conductivity (wind can affect the distillation)



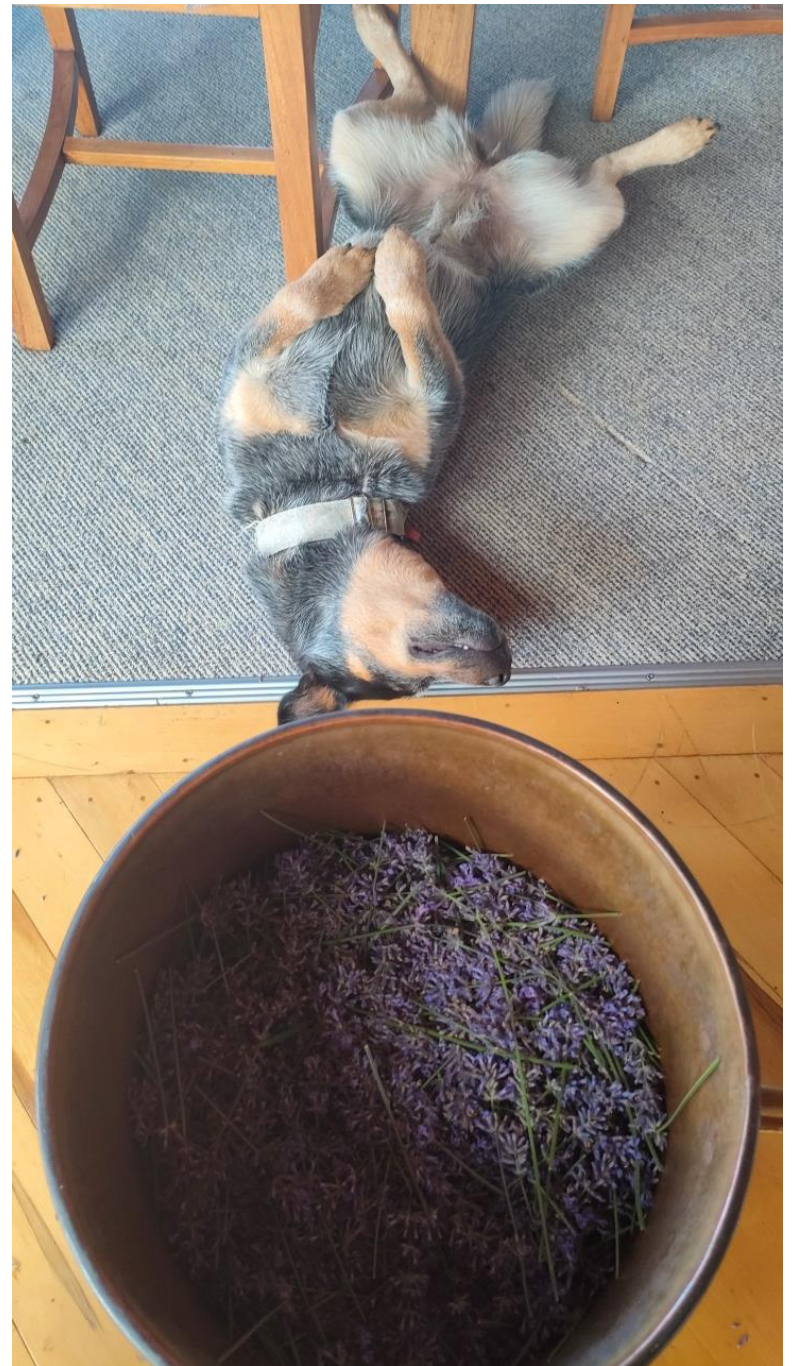
I have experimented with big cast iron camping style burners

it does produce a higher quantity of essential oil although its nowhere near as full and round as low and slow on the paella burner.



7 kg Flower in the Colum, *Average*

Being Firm, Evenly
stack the column in
stages to allow the
steam to flow
through all plant
material and pull
off the VOC's





Combo-distillation
6kg Salvia Apaina Column
4kg Salvia apaina Pot
24 litres water

Assemble the still and apply one layer of electrical tape to seal joints

You can use a Rye flour paste.
Its very messy.



Hydro-distillation
8kg Piper Excelsum
21 Litres water
Targeting Hydrosol

I use this home built
condenser water
chiller in a loop to
save water
consumption,

**Condenser water
temp:**
40-50 degrees C for
Lavender Grosso



I find having a
warmer condenser
temperature when
distilling lavender
helps the flow of
steam through the
still and aids
separation of the eo
in my essencier

Failures

Yuck water left in pot after a steam distillation:

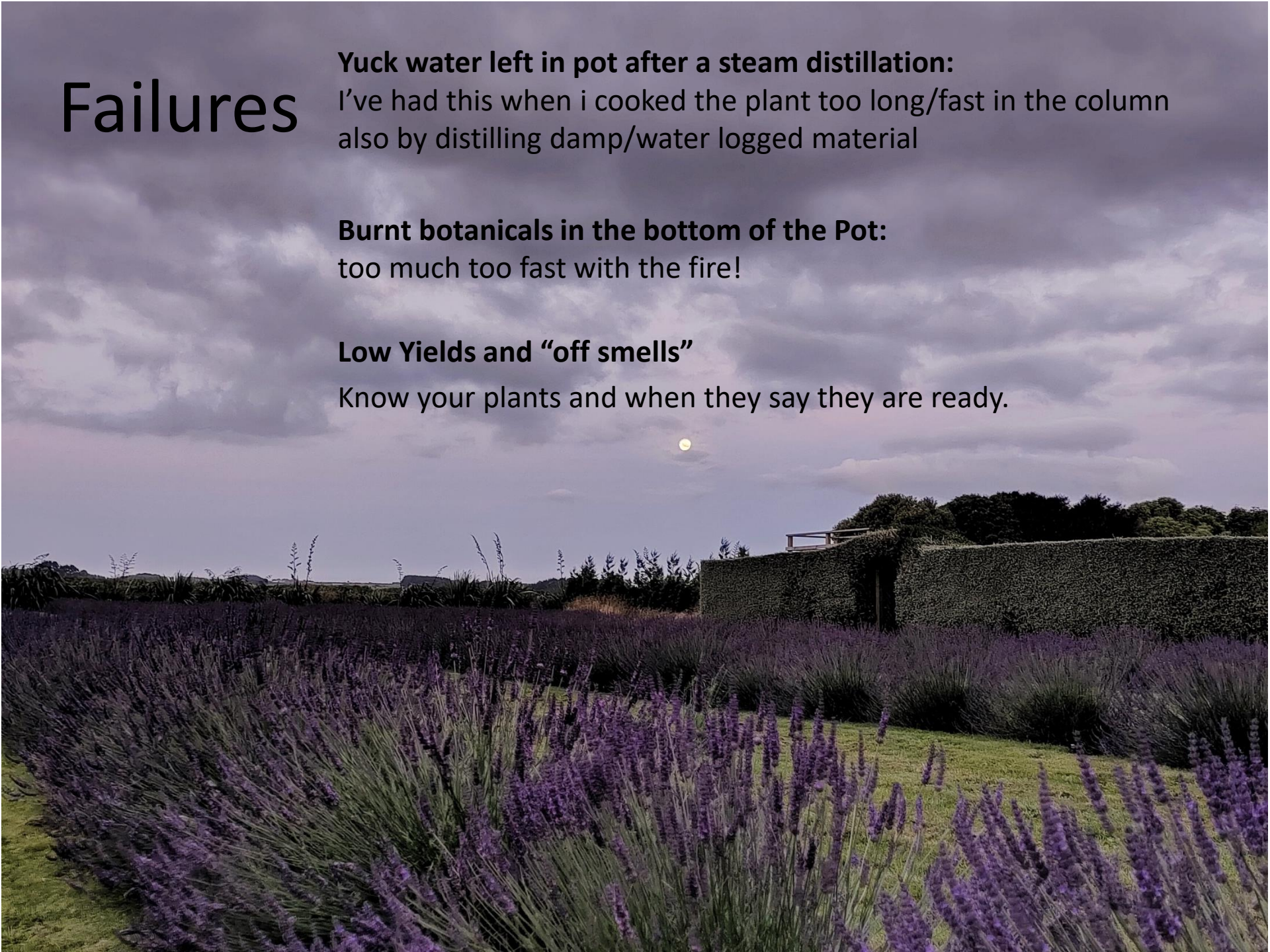
I've had this when i cooked the plant too long/fast in the column
also by distilling damp/water logged material

Burnt botanicals in the bottom of the Pot:

too much too fast with the fire!

Low Yields and “off smells”

Know your plants and when they say they are ready.



The fun part.

I take 2 litres of hydrosol per column/distillation as a run

I find it easier to think of my grosso distillations as 4x 15 mins parts.

1x 15mins for the steam to travel though the plant material till first drip
3x 15 min producing 2 litres hydrosol total

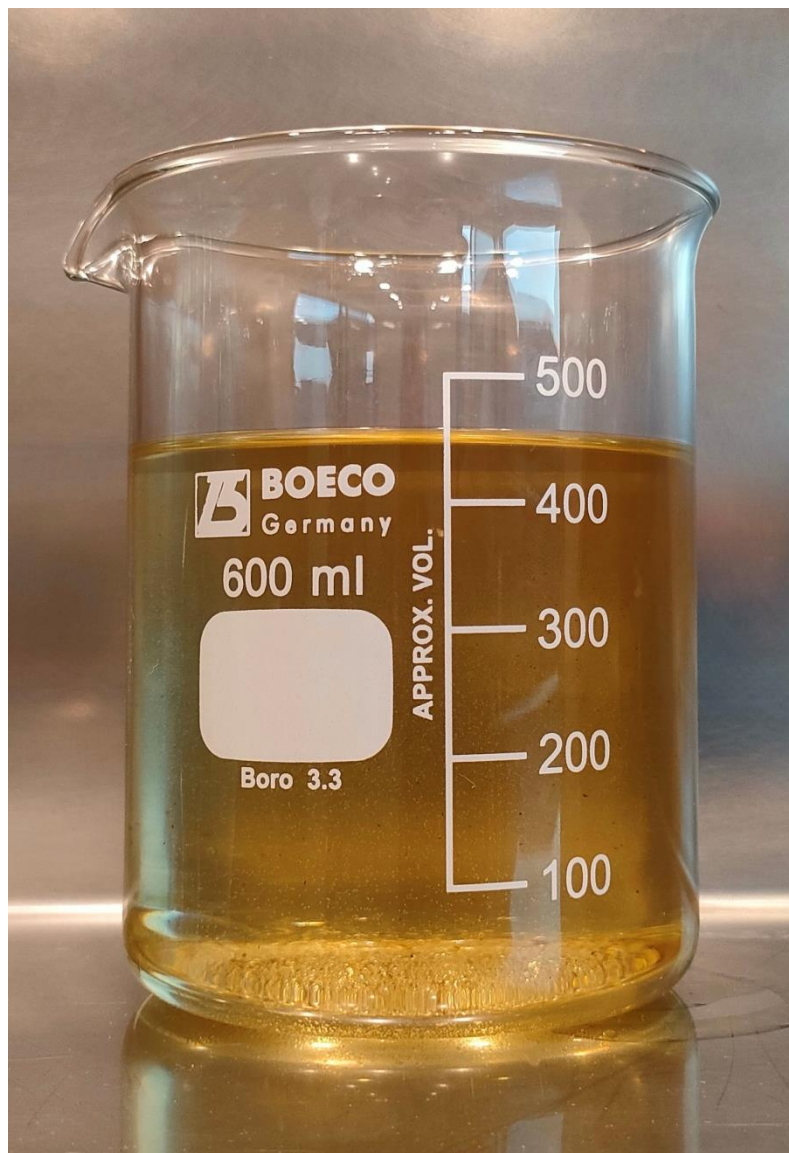
average EO yield in thirds

1st 90ml

2nd 45ml

3rd 20ml





Average 155ml eo
7 kg Flower
(sometimes 200ml eo)

1 hour after the still was assembled I pull it down. The scent gets greener as I believe the flowers start to stew releasing vegetative compounds.

I leave the water in the bowl and the gas on, Reload the column and reassemble the still, repeat this all again another time.

3 hours of running 25
litres of water in the Pot.
3 x 7kg Column

21kg Flowers Average
465ml essential oil
Average

Summary:

lets call this a 4 hour
block including faffing
and then repeat, some
days even three times!

12hour day

63 kg flower

18 litres hydrosol

1395ml eo *average*

As you can see,
compared to running a
100kg stainless steel
cassette for 45 mins
inline in a steam
generator producing 1.2
litres of oil (complete
guess, I hope that this
gets corrected)



The numbers look terrible!

But the products are incredible
and worth it.



Thanks for listening,
Any Questions?

