

Standards and The Mother Sauce

*A report generated from tastings conducted at
Roast Summit, Melbourne, March 2026,
exploring what
Roast Profile Recipe Standards
could look like for the Oceania Region*

By Anne Cooper – Equilibrium Master Roasters

With the price of coffee increasing, now more than ever, we don't have the luxury of running multiple batches to get a roast right and the pressure is on to get a roast profile set using as little coffee as possible and as fast as possible.

Roasters are often crippled by constant uncertainty constantly asking themselves, "How do we know we are on the right track?" So, with no real industry standards in place for coffee roasting or creating a 'standard' roast profile, the overall goal of the Tasting Sessions on Day 2 at Roast Summit Melbourne was to explore, by blindly tasting different roast profiles of the same coffee, what flavour profiles were preferred. Once analysed, the results would then give some clarity as to what the roast profile recipe standards for the preferred flavours can look like, specifically for the Oceania region, thus helping roasters be more consistent and decisive with their roasting.

So, the title of this report is not the name of a garage band or another industry gimmick, but actually taking inspiration from when chefs learn how to cook a classic sauce known as the 'Mother Sauce' which forms the backbone of classical cuisine. For, no matter where they are in the world, all chefs learn the same base recipe for each of the 5 Classic Mother Sauces which serves as the foundation for countless other variations (actually called daughter sauces!) and remains essential to both professional kitchens and home cooking. Then, as the chefs go back to their respective regions, they then put their own cultural palate twist into the sauce using the classic/standard Mother Sauce recipe as their guide.

And it could be the same for when we learn how to roast/cook coffee with the base recipe for Light, Medium and Dark being the classic Mother Sauce standard recipes that then get tweaked/adjusted as they get adapted culturally (which is already happening it just hasn't been highlighted enough – yet!).

However, there are currently no agreed classic 'Mother Sauce' standard recipes to follow or start with in the coffee roasting industry, thus seeing many roasters globally (both new and experienced) develop wasteful roasting techniques from misguided, anecdotal education/advice creating an enormous amount of confusion, doubt and then mistrust in any decent teachings that do use the Mother Sauce recipe technique on how to roast coffee.

But, it doesn't have to be that way.

We've all heard the comment that roasting coffee is not that hard, and it really isn't, but no-one is fully stepping up to actually properly describe/explain how coffee roasting isn't hard and what that looks like – which is what this report and tasting exercise is aiming to address!

It's not about telling people how to roast but providing the tools to help, via data collection and tasting, because you can't argue with data & taste! With the right tools we can then better decide how we want to roast and step up to the roaster more decisively with a strategy, a sense of purpose and a stronger sense of some knowledge of the flavour outcome before the coffee even comes out of the roaster.

So the aim of the Roast Summit tastings was to then set about defining a roasting standard for the Oceania region with clear outcomes showing what a preferred flavour should or could look like as a standard 'Mother Sauce' roasting recipe, resulting in key information that roasters can then actually use to successfully and efficiently dial in a roast profile for any bean on any roasting system.



And it all starts with recognizing the running joke in the industry of 'turning beans brown', where the crux of coffee roasting is actually **how** we turn those beans brown and the **how** is the timing of the beans physically cooking/changing from Green to Brown which is the key to all things coffee roasting and ultimately flavour.

Time is Everything in Coffee Roasting. In coffee roasting, when you learn how to follow the beans physically changing from green to brown, the one thing you realize you can roast without is temperature, the one thing you can't roast without is time!!

Roasting is cooking and cooking needs a recipe of time, and the only way to define this is by honing in on the linear progression of the beans cooking from Green to Brown. The timing of the physical changes of the bean drive everything that we focus on when defining our roasting and resulting end flavours.

Looking at the beans whilst roasting is not an old school technique, it IS roasting!! To counter this, one has to ask would you eat food from a chef that never looked at the food while they were cooking it? You most probably wouldn't – you would question their integrity and skill as a chef - and it can be the same for a coffee roaster. There is a lot of skill involved in knowing how to navigate a bean correctly through the physical changes at the 'right' time where ultimately the 'right' roast/time is what you like the taste of.

Then, only once you get the target times for the linear progression of green to brown in place for a specific roast level and flavour you're trying to achieve, a roast curve/line is then created as a road map to follow that fully represents the heat application/energy used in order to achieve the desired timing of the linear progression of the beans cooking.

We also need to remember that there are no curves/lines on the screen without beans in the roaster. If we don't know how to watch and then influence with heat application how we want the beans to physically cook/change during roasting, then we won't know how to best interpret the data/lines on the screen.

And, perfect lines on the screen do not equate to good taste/flavours!!

The pursuit of perfection in roasting is also causing wasteful roasting practices, especially from the desire for 'perfect' lines on the screen. Often at the expense of flavour, perfect-line-flavours are often thin, sour, dry and watery with no finish. For roasters that only focus on the lines on the screen, if they do not also connect the timings of the physical changes of the bean to an end flavour then they will always be frustrated, confused and unhappy with the flavours in their roasting constantly tasting unbalanced and incomplete causing them to discard that batch and try and try again without properly understanding the true cause of the flavour issues.

Lines on the screen are also just feedback from a specific probe with a specific thickness and position in the faceplate. The adjustment of the burner/heat source and any radiant heat from the materials of the roaster will also influence probe/curve readouts which is not necessarily the true read out of what's happening to the bean.

The way you operate your machine is very much in response to your recipe goals/time markers. So, if you don't have any time markers/goals then you won't know why or how to adjust the machine to help cook coffee in line with the intended recipe and end goal flavour.

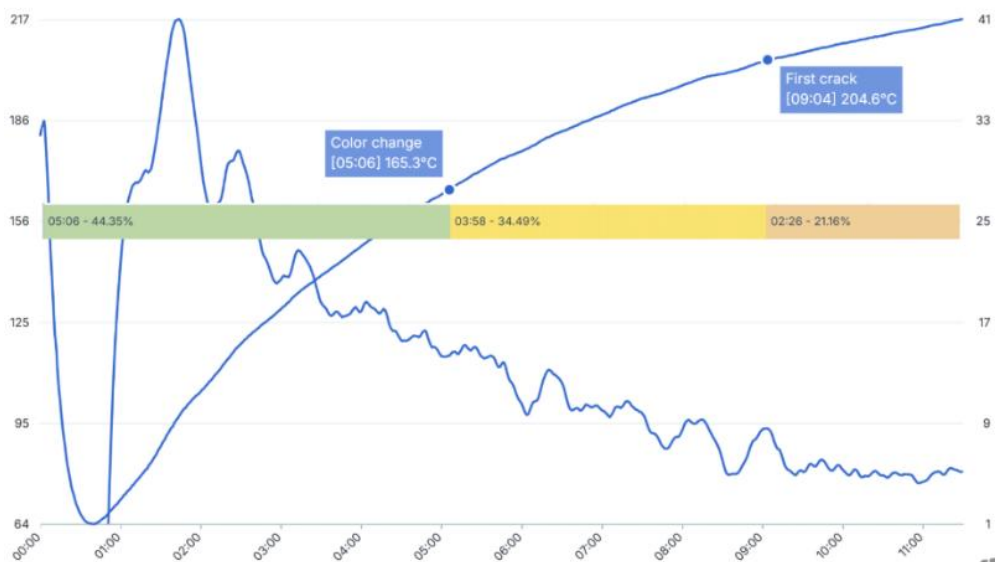
So the skill and craft of roasting is learning how to decide on how to adjust the heat (by how much and when) on a particular brand/model of machine with specific probes, materials and control systems in order to cook a certain batch size/mass of coffee beans with specific physical properties for the amount of time you want for a desired end flavour and roast level, using the timings of the physical events of the beans cooking as your guide.

Currently there are a lot of teachings on how to operate roasting machines and not enough about how to cook coffee! I often have to ask roasters – are you roasting the machine or the coffee beans in the roasting machine?!

A machine does not 'give flavour' as the marketing from some machine manufacturers claim. **A recipe of time gives flavour.** A roasting machine's design (materials and control system) will influence our ability to apply enough heat for a certain recipe of time we're trying to do for a certain batch size of a bean with specific physical properties.

So then, what can this standard roast profile recipe of time look like for the linear progression of the beans going from green to brown?

It's actually been there all along in the roasting software but has never been given enough importance - The 3 Phases!



THE biggest indicator of your roasting style/flavour and overall Intellectual Property that can be copied and transferred to any roasting system is the marking of the times for the key physical events that occur in the 3 key Phases of the roasting profile – Green to Yellow to First Crack to End Roast Colour/Level.



We also generally refer to these phases as: **Preparation** (green to yellow phase) – **Maillard** (yellow to first crack phase) – **Roast Level Development** (first crack to end) and it is the marking/timing of these phases that is currently **THE MOST contentious point in coffee roasting** in agreeing/recognizing/understanding the impact on the intensity of certain flavours and qualities (like sweetness, acidity and body) as a result of the time spent in each of these 3 key phases.

If you're being told that marking the key physical events that define these phases is subjective, then just practice being more consistent at how you subjectively call those events.

For the Roast Summit Tasting samples, yellow was called when all the green disappeared, first crack was called when consecutive pops were heard, not the first, and the end roast level was determined by time, colour and some pre-determined roast level data parameters.

Along with the 3 key phases, a **Parameters Chart** is also needed (which is created from summarised roast log data) with Development Degrees (to help determine an end temperature from your specific probe) and Development Time data for achieving a specific roast level post first crack in the last phase.

ROASTING PARAMETERS - 'GUIDE' TO END 'ROAST STYLE' DEFINITION

	WEIGHT LOSS % <i>Depending on/ Affected by the initial Green Moisture Content</i>	DEVELOPMENT RATIO % <i>'Time Ratio' in relation to 1st Crack & the Overall Time of the roast</i>	STRETCH DEGREES <i>1st Crack to End of Roast</i>	STRETCH TIME <i>1st Crack to End of Roast</i>	AGTRON DELTA SPREAD <i>Whole Bean to Ground EK grind: - old #8/ new #11 - 800-850 microns - on a Lightells</i>
SAMPLE Green - Yellow: 4:30-5min. Yellow - FC: 3:3-30min.	11% - 12.5%	11% - 13%	+ 3-4°C Example: 1ST Crack @ 200°C End Roast @ 203°C	1min. – 1:15	15-20pts
LIGHT Green - Yellow: 4:30-5min. Yellow - FC: 3:30-4min.	13% - 14%	14% - 18%	+ 5-6°C Example: 1ST Crack @ 200°C End Roast @ 205°C	1:15 – 1:30 (1:45)	10-15pts
MEDIUM MED-DARK DARK Green - Yellow: 5:5-30min. Yellow - FC: 3:45-4min.	14.25% - 14.75% 15%-16% 17%-19%	20% - 24% 25%-27% 28%-35%	+ 8-10°C + 13-15°C + 20-25°C Example: 1ST Crack @ 200°C End Roast @ 210°C MED End Roast @ 215°C MED-DK	2:00 - 2:30 2:45 - 3:30-3:45 4:00 - 4:30	7-9pts 5-6pts 2-4pts

Nb: data has been developed on a BRZ Sample Roaster & Probat P12 w/ 3mm k-type probes

****This is very much a guide and dependent on the**

Bean & Specific Flavour Preferences

Finishing a roast post first crack only referring to the development ratio percentage (Dev. ratio %) is unfortunately another one of the biggest issues in coffee roasting that is causing a lot of confusion and wasteful practices.

Dev. ratio % is a very inconsistent data point and should not be used as the only data point when defining an overall roasting recipe or standard. It needs support from other more important data points, like Development Time and Development Degrees, as the Dev. ratio % is only referring to one section of the roasting recipe from first crack to the end of the roast. It does not give any indication whatsoever as to what happened in the other 2 phases before first crack, which are actually as important (if not more important!) as the last phase of the roast. You can't do the last phase of the roast unless the first 2 phases are also consistently in line with your post first crack development goals.

Through tasting and record keeping with software and roast logs, you can easily ascertain and create your own guide/parameters for how the timing for each phase contributes to your own specific flavour preferences for a roast level.

Separate roast logs to any software being used is essential for doing this and this is where all the key roast data that makes up a roasting recipe standard should go.

So when you're brewing/tasting and/or analysing at the cupping table, you highlight the data of your favourite roast on your roast log sheet - as you can see below on the Roast Summit Roast Log sheet - and then look at the times spent in each phase along with the other key data points for the end roast level development as this is then how you create your own 'Mother Sauce' profile recipe standards that reflect the flavours you're after.



DAILY ROAST LOG

ORIGIN-PROCESS	MOISTURE	DENSITY
Costa Rica - Washed - EQMR	12.3%	693g/L
Costa Rica - Washed - Guest Roaster 1	12.1%	697g/L
Costa Rica - Washed - Guest Roaster 2	11.8%	691g/L

DATE: 18/3/26

ROASTINGMACHINE: s7 Loring

OPERATOR/S: Anne Cooper

ROASTING ROOM ENVIRONMENT - TEMP °C/HUMIDITY %

- AC on / Muggy & Humid

BEFORE PRE-HEAT: 19C / 61%

AFTER PRE-HEAT: 19C / 58%

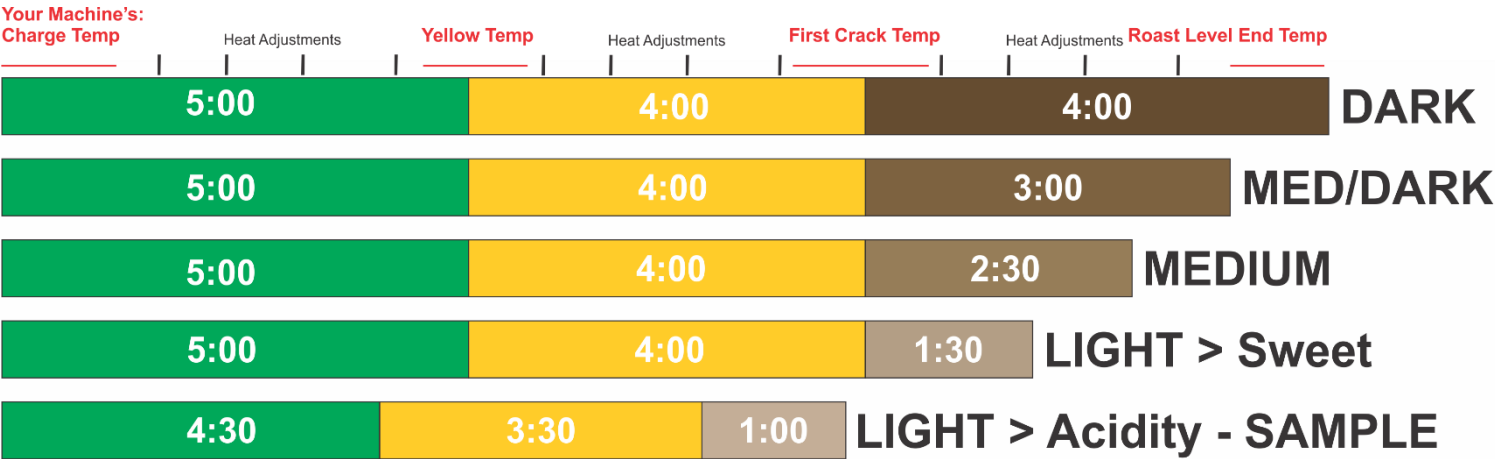
MID-MORNING 9am:

MIDDAY 12pm:

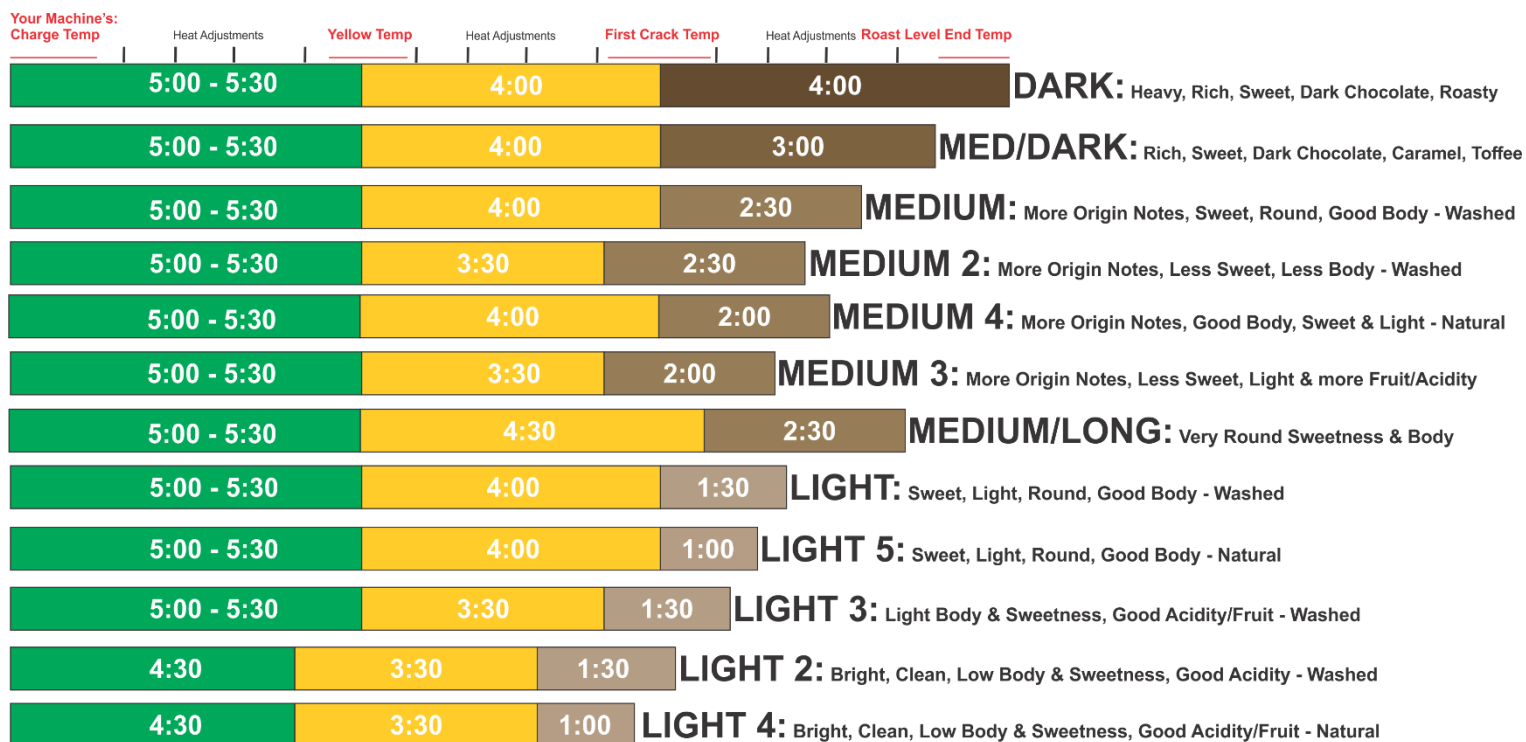
COFFEE	START/ CHARGE TEMP	YELLOW TIME	YELLOW TEMP	FIRST CRACK TIME	FIRST CRACK TEMP	YELL. TO FC TIME	TOTAL ROAST TIME	END ROAST TEMP	STRETCH TIME Total Time minus FC Time	STRETCH DEGREES End Temp minus FC Temp	DEV. RATIO %	GREEN KG IN	ROAST KG OUT	WEIGHT LOSS %	WB	GND Cupping Grind 800microns	DELTA SPREAD
1. Sample - EQMR - D	Probat	4:38		8:07		3:29	8:56		49sec			100gm	88	12%	70	85	15
2. Sample - SCA - B	Probat	5:06		9:07		4:01	11:54		2:47			100gm	85	15%	55	64	9
3. Sample Guest 1 - A	Probat	5:30		8:30		3:00	9:30		59sec						60	75	15
4. Sample Guest 2 - C	Roest	3:09		6:43		3:34	7:38		54sec						66	82	16
5.																	
6. Light Profile 1 - A	180	5:06	163	9:07	203	4:01	10:22	208	1:15	+5		3kg	2.58	14%	68	82	14
7. Light Profile 2 - B	180	4:07	163	7:07	203	3:00	8:24	208	1:17	+5		3kg	2.595	13.3%	70	88	18
8. Light Profile 3 - C	180	6:05	163	10:59	203	4:54	12:13	208	1:15	+5		3kg	2.63	12.3%	68	82	14
9. Light Profile 4 - D	180	4:36	163	8:07	203	3:31	9:25	208	1:16	+5		3kg	2.63	12.3%	71	85	14
10.																	
11. Medium - A	180	5:00	163	9:00	203	4:00	11:22	213	2:22	+10		3kg	2.54	15.3%	61	71	10
12. Light - B	180	5:00	163	9:00	203	4:00	10:19	208	1:19	+5		3kg	2.58	14%	68	82	14
13. Med/Dark - C	180	5:00	163	9:00	203	4:00	12:00	218	3:00	+15		3kg	2.515	16.3%	57	64	7
14. Dark - D	180	5:00	163	9:00	203	4:00	12:30	224	3:30	+21		3kg	2.495	16.8%	51	57	6
15. Light/Med - ?	180	5:00	163	9:00	203	4:00	11:00	211	2:00	+8		3kg	2.55	15%	65	76	11
16.																	
17.																	
18.																	
19.																	
20.																	

Patterns in the roast log data, that were highlighted for favourite roasts, are then summarised which can then turn into a master 'Mother Sauce' standard recipe where you then add in your machine's specific temperature probe data as well.

Your machine's heat adjustments are then simply a result of trying to get to a certain time, temperature (for your machine's probe) and physical event in line with the 'Mother Sauce' standard recipe. **Essentially the 'Mother Sauce' standard recipe will teach you how to decide on the required heat strategy/steps for your roasting machine and the individual bean & batch size you're roasting.**



Then these initial master 'Mother Sauce' standard profile recipes get further explored and expanded into a more specific end flavour goal for a batch size and bean of a specific process.



Batch size in particular will impact the timing of the first Preparation phase where it is totally acceptable to extend the time as needed for a larger batch size (what that time is, is determined by you from your data & QC tasting). But once the beans turn yellow, regardless of batch size, the timings of the Maillard and Roast Level Development phases must stay the same for the intended recipe.

One other concern that is often brought up with this standard phase time recipe approach is how to address different beans and processes. All beans physically go through the same cooking reactions except for the end where process plays a significant role in how we cook to achieve the final roast level.

What stays the same is the recipe of time – what changes is the heat application as you address the different properties of the beans – moisture content, screen size, batch size, conditions in the roasting room/temperature of the green beans, density and process. It's important to remember where to use the information for these properties so we can better decide on a heat strategy in order to keep a certain bean on track with the Mother Sauce recipe.

So, moisture content, screen size, batch size and conditions on the day all significantly influence how to start a roast and then decide on a heat strategy to get in line with the target times of the phases in the recipe. Then density and process are more relevant to influencing the heat strategy at the end of the roast leading into & post first crack.

Never start a roast based on density as it will not frame up the right amount of energy needed to activate the moisture content & start transferring the heat efficiently through the structure of the bean, especially when you have a high moisture, low density bean!

And don't let the process psych you out as often a roaster can get nervous about a unique process & forget the basics of addressing/activating the origin characteristics first & then address the process at the end.

Overall, the goal is to help roasters better recognise that these Mother Sauce standard recipes focusing on the timing of the 3 key phases are the key to managing wasteful practices and allows roasters to be able to consistently step up to the roaster with a recipe and a decisive heat strategy to achieve a desired end flavour goal.

Essentially it can be like, if you 'cook' this way with these 'Mother Sauce' standard recipes (of time) you will get these flavours, you just need to add in your machine's specific probe temperatures and heat strategy.

So you roast, record and taste and, based on the results of the tasting, you then analyse the roast log information to see what made it taste that way, compare it to the target recipe phase times and then make any adjustments accordingly on the next roast and you will be very close to a satisfactory result without wasting too much coffee.

Roast – Record – Taste – Analyze. Repeat.

All of this has been a firm foundation of my teachings in coffee roasting since I first started consulting/training 11 years ago – focusing on the key principles of roasting/cooking that have been ignored/pushed to the side for far too long and these need to be brought back into focus – especially if we want to embrace the future that is all about training AI and using more Automation.

We need a stronger understanding of the basics in order to progress/move forward!

So at Roast Summit Melbourne we wanted to do a series of tastings that both tested how we are currently tasting as an industry, focusing on the Oceania market, and to then give some structure to what we preferred the taste of so that we could then create some 'Mother Sauce' standard recipes that roasters from the Oceania region can then use and apply to their own roasting.

It has to be noted that it is understood that these tastings are a first instance of this type of data collection and that the tastings were only conducted with one bean and one process. For the continuing credibility of the results the tastings need to be repeated again in the future with other beans and other processes in other regions around the world.

We had roasters do a set of blind tastings of the same coffee, a washed Costa Rica, roasted 13 different ways and then presented in 3 different curated tasting sets each focusing on a particular roasting outcome – Sample Roasts, The impact of Time on Flavour and Roast Levels.

All roasts were then batch brewed for tasting on a Moccamaster. This then also brought up some questions on the potential differences between the assessment techniques of Tasting vs Cupping as some of the samples were also taken away to be cupped. Unfortunately, there is not an exact number for how many of these cuppings were done so they can't be properly identified in the results. But in the cupping assessments before and after the event it was noted some things were more evident in the cupping and not so much in the brewed tasting. Cupping is efficient and quicker but is it necessarily the best for evaluating production roasts? Does Tasting/Brewing mask certain roasted attributes that we may see as being negative in a cupping but not so much in a brew? Is cupping also contributing to the unnecessary waste and confusion at the roaster? Should cupping be something that is only for grading & quality assessment, not necessarily for production evaluations where the coffee is going to be brewed or extracted another way? This is definitely something to further explore more thoroughly with future iterations of these tastings.

But overall, we need to remember that we are in the business of flavour and the Mother Sauce standard recipes will help us to better achieve more efficiently the flavours we're wanting to express in our roasting.

Many roasters globally will argue that just reading data from a roast curve cannot give you a 100% assessment of how a coffee is going to taste - and I would agree. BUT I would then also argue that reading the phase times from a 'Mother Sauce' standard roasting recipe will give you a better indication of how a coffee is going to taste because, through record keeping and analysis, you would have learnt that certain flavours are expressed as a result of roasting for a certain amount time in each of the phases as per the Mother Sauce standard recipe.

The following is then a summary report of the results of the tastings with the ability to offer some clear resolution and actionable outcomes for providing a 'Mother Sauce' standard profile recipe for roasters in the Oceania region to follow/use and that can be transferred between all roasting systems with just a few adaptations to one's individual machine's probe temperatures and control systems.

SAMPLE ROASTING:

One of THE most profound and heartbreaking things ever to be said by a coffee producer is that *“potential sales are lost and a lifetime of hard work on the farm is often undone in minutes by a roaster’s bad sample roast!”*

Also, the most failed exam in the Q Graders was the Roast ID exam, because the control sample (which was meant to be the sample roast) was thought to be the over roasted example and the light roast was thought to be the control/sample roast.

So, what is the best roast level/colour and profile recipe for a sample roast that best represents a producer's lifetime of work?

To determine what we in the Oceania region are actually doing or preferring to use as a Sample roast, roasters tasted and then chose their favourite from a range of prepared sample roasts.

The purpose was to explore and identify the Sample Roast that best represented the coffee - a Washed Costa Rica - and to potentially also identify a preferred Sample Roast Profile Recipe Standard for the Oceania region.

The general tasting notes provided for the washed Costa Rica were: *crisp, fruity aroma leads to a bright apple and berry throughout the cup with stone fruit acidity. Juicy body and hazelnut and caramel in the finish.*

All samples were prepared by 3 different companies with a Sample Roast Profile that they felt best represented the washed Costa Rica.

There was also a sample roast prepared following the current SCA 'ground colour' recommendations.

The current SCA Sample Roast definition is: an 8–12 minute Light-Medium roast with a ground agron colour of 63 (± 1) aiming to avoid undeveloped grassy notes, be light enough to highlight the beans character, identify potential defects and also have no bitterness of a dark roast.

What the samples were:

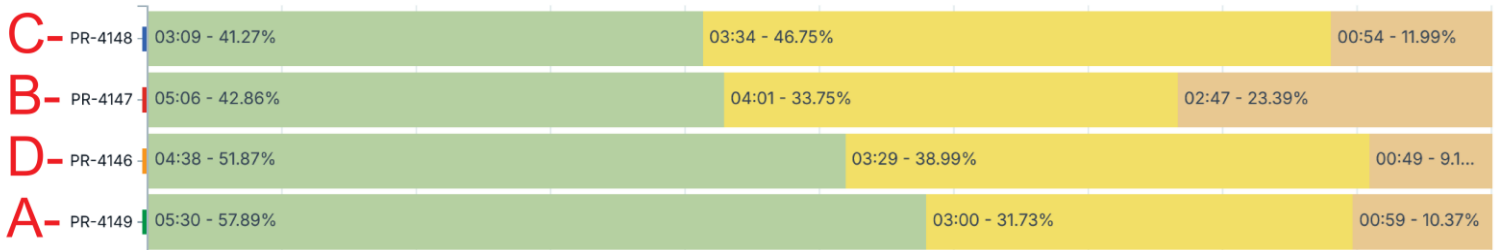
A: Guest Roaster 1 Sample Roast

B: SCA Sample Roast

C: Guest Roaster 2 Sample Roast

D: Equilibrium Master Roasters Sample Roast

How the Samples were Roasted:



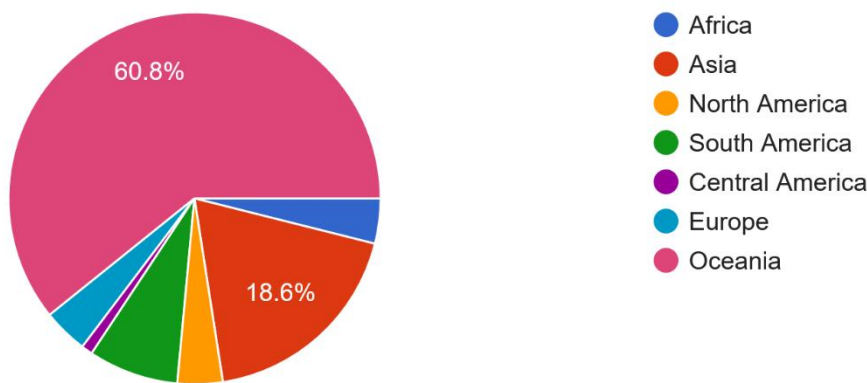
Roast Log Data:

Maillard																			Dev. Time	Dev. Degrees					
COFFEE	START/ CHARGE TEMP	YELLOW TIME	YELLOW TEMP	FIRST CRACK TIME	FIRST CRACK TEMP	YELL TO FC TIME	TOTAL ROAST TIME	END ROAST TEMP	STRETCH TIME Total Time minus FC Time	STRETCH DEGREES End Temp minus FC Temp	DEV RATIO % 	GREEN KG IN	ROAST KG OUT	WEIGHT LOSS %	WB	GND Cupping Grind 800microns	DELTA SPREAD								
1. Sample - EQMR - D	Probat	4:38		8:07		3:29	8:56		49sec			100gm	88	12%	70	85	15								
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4. Sample Guest 2 - C	Roest	3:09		6:43		3:34	7:38		54sec						66	82	16								

Results of the Tasting:

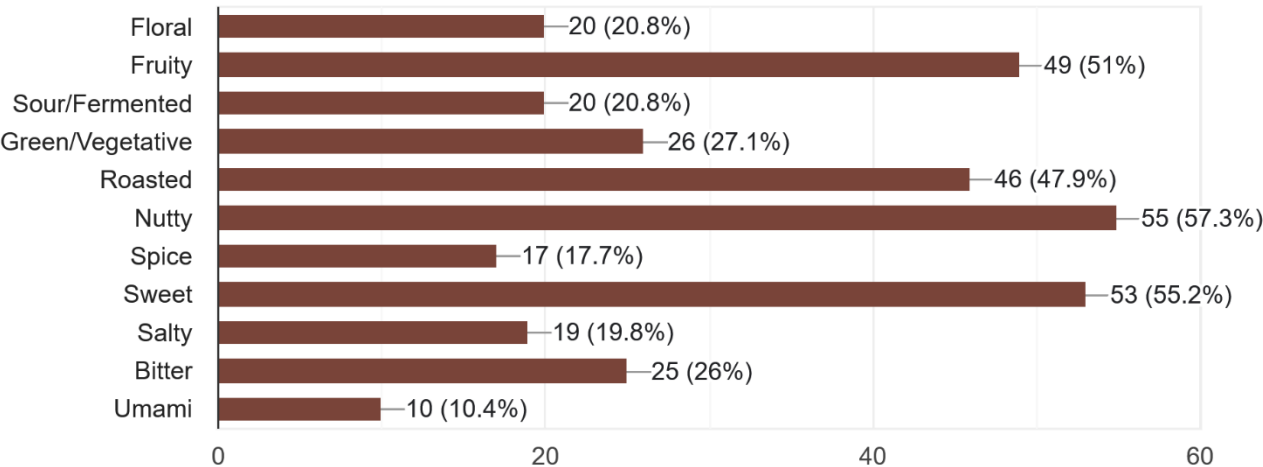
Which Region are you from?

102 responses



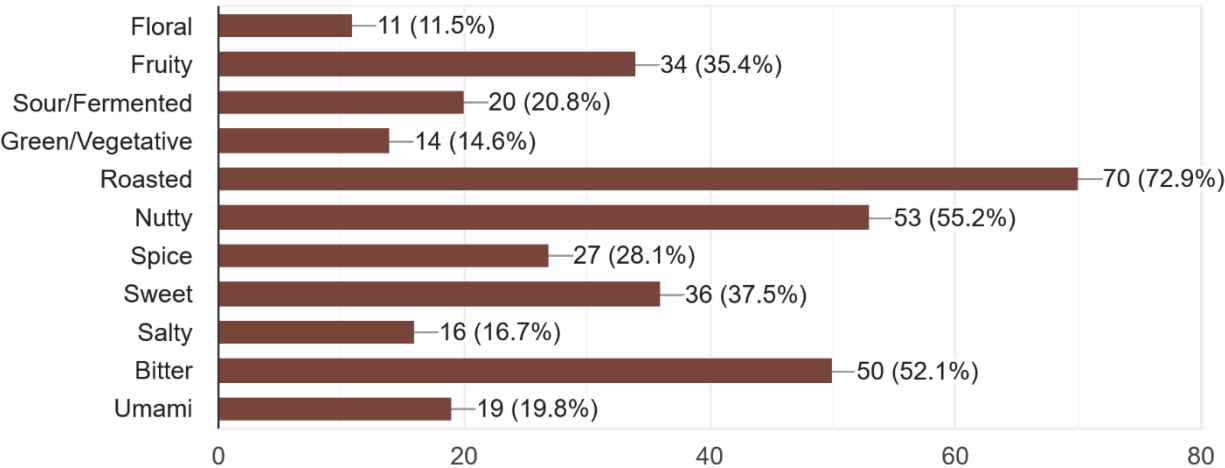
Question 1 Which flavours did you taste in Sample A? Tick all that apply

96 responses



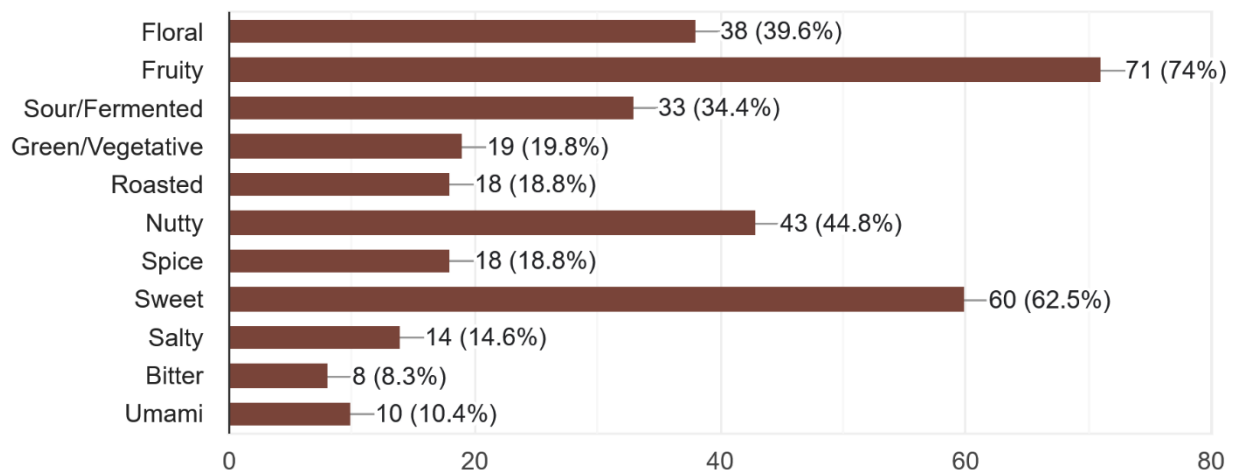
Question 2 Which flavours did you taste in Sample B? Tick all that apply

96 responses



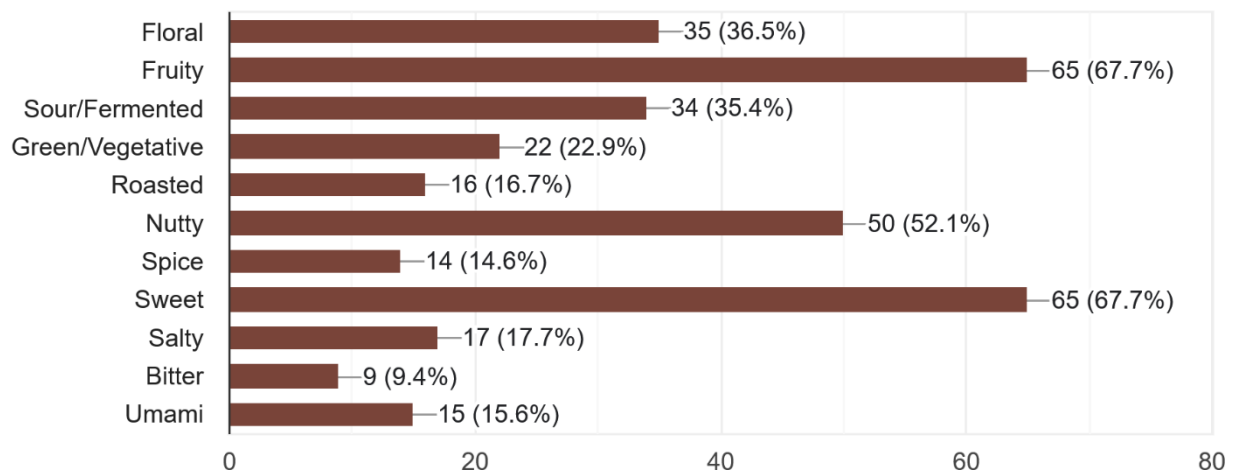
Question 3 Which flavours did you taste in Sample C? Tick all that apply

96 responses



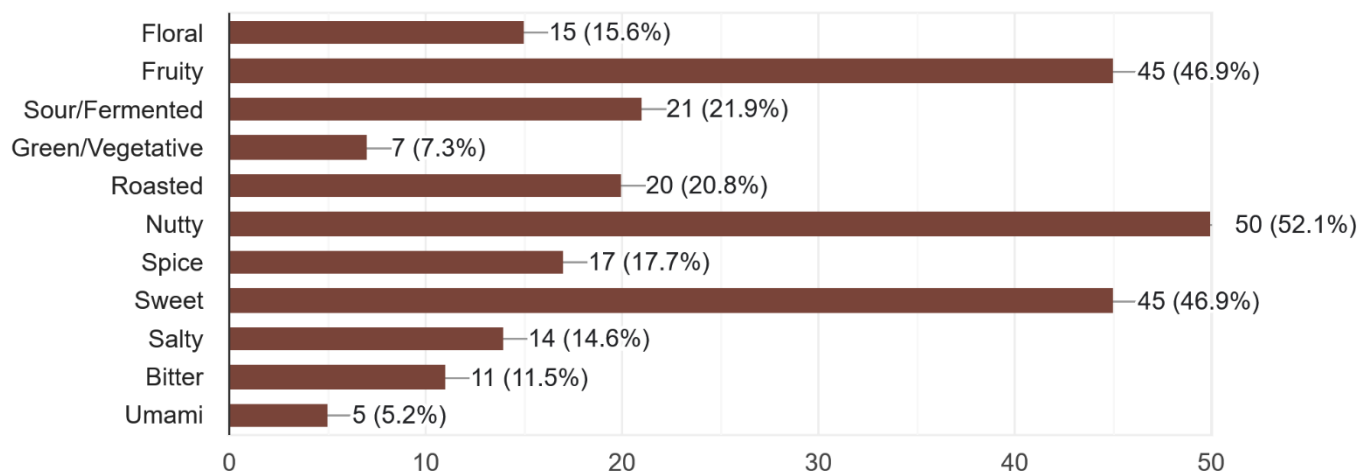
Question 4 Which flavours did you taste in Sample D? Tick all that apply

96 responses



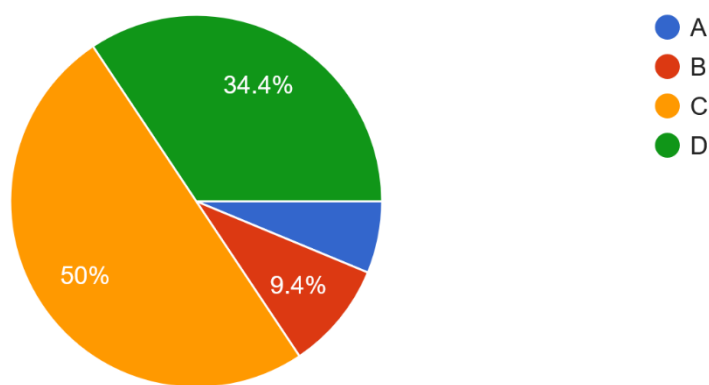
Question 5 Which flavours did you taste across ALL of the samples? Tick all that apply

96 responses



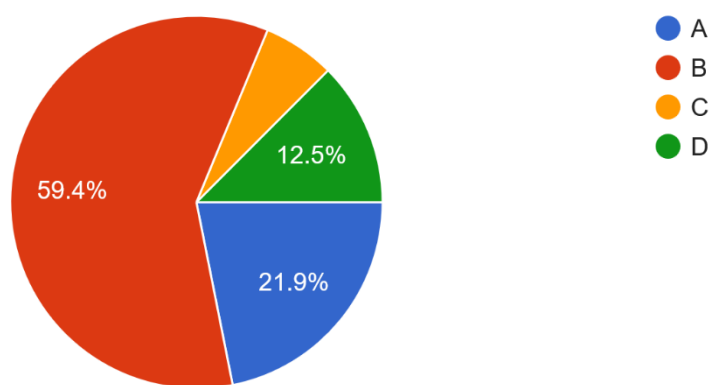
Question 6 Which one do you think best represents the Washed Costa Rica?

96 responses



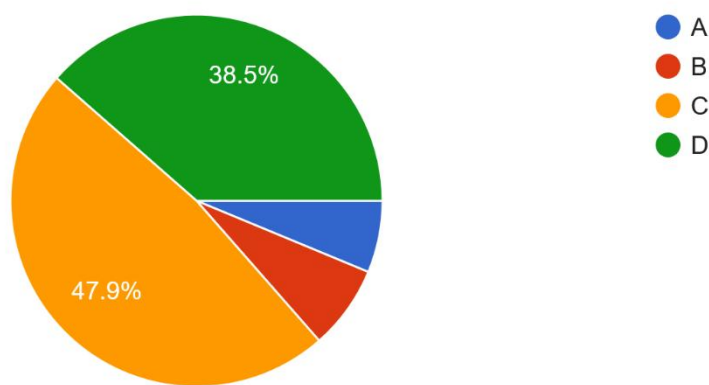
Question 7 Which one do you think does not best represent the Washed Costa Rica?

96 responses



Question 8 Which one would you use for a Purchasing Decision?

96 responses



Outcome:

It can be clearly seen that samples C and D were favoured over A and B thus giving some clear definition of the preference for a Sample Roast recipe profile for the Oceania region.

It can also be noted that SCA need to recognize that its current sample roast specifications do not meet the ground colour measurement standards for a sample roast currently being used by roasters globally and does not best represent a producer's coffee (harsh to say, but true). The only way to produce a ground colour of 63 (± 1) is for the outside of the bean to be Medium (almost Med/Dark) which is a roast level that significantly cooks out any prominent qualities in a bean and masks our ability to properly assess/evaluate and taste what a bean has to offer. No wonder producers have been frustrated!!

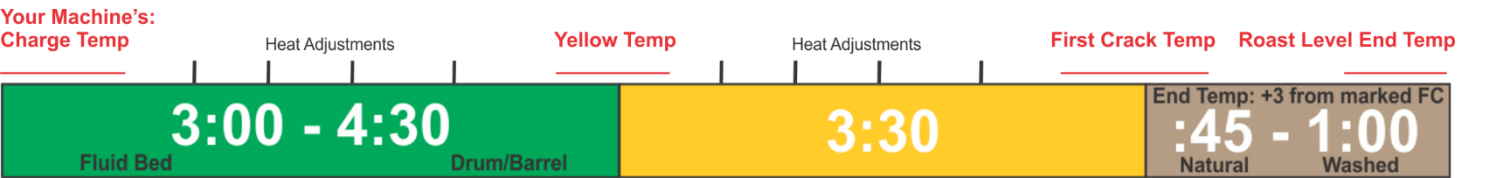
For the Oceania region it could be firmly stated that a Sample Roast is currently defined as:

- a Light Roast with a 7:30-9:00 total roast time
- with an 800micron ground agtron colour of 80-85
- with recipe phase times of: 3:00-4:30 / 3:30 / :45-1:00
- with some variation in the first Prep Phase due to recognizing differences in heat transfer from using either a Fluid Bed sample roaster (like Ikawa) vs a Drum/Barrel sample roaster (like a Probat BRZ). Because there is no turning point recorded on a fluid bed, then approx. 1:00 can be taken off the target time for this first Prep phase. If transferring a sample profile from a fluid bed to a drum sample roaster, then add 1:00 to the prep phase time for the best opportunity to match the flavour recipe.
- 3:30 in the middle Maillard Phase must become a standard sample roast profile requirement, regardless of roasting machine used, as this will always result in optimal balance, especially for a light, sample roast.

Further recommendations for the sample roast recipe, in regard to setting the final end temperature in the last roast level development phase post FC for specific processes would be:

- Washed: +3 degrees post marked FC in 1:00
- Honey: +3 degrees post marked FC in 1:00
- Natural: +3 degrees post marked FC in 45sec
- Experimental: +3 degrees post marked FC in 30-45sec

So the Mother Sauce Standard Sample Roast recipe for the Oceania Region could look like:



To do this Sample recipe on your machine, simply use your temp probe markers for yellow and FC and then apply heat on your machine accordingly to achieve the same recipe phase times along with the above suggested way to achieve the end temperature for your machine's probe and a specific bean's process.

So essentially this is a guide on how to cook coffee, not on how to operate your machine – you operate your machine in response to the cooking time goals of the recipe!

THE IMPACT OF TIME ON FLAVOUR:

Time is Everything in Coffee Roasting!

To drive home that time is important to roasting, roasters tasted samples of the Same Coffee (washed Costa Rica) with the Same End Temp and Similar End Colour but with very Different Total Roast Times which produced different flavours or expressions of certain flavours.

The purpose was to explore the Impact of Time on Flavour, specifically before first crack, and to help roasters better connect with the fact that roasting coffee is all about time and that roasting coffee either fast or slow has an impact on certain flavour expressions.

The goal of the roast profile was to be a Light Roast level.

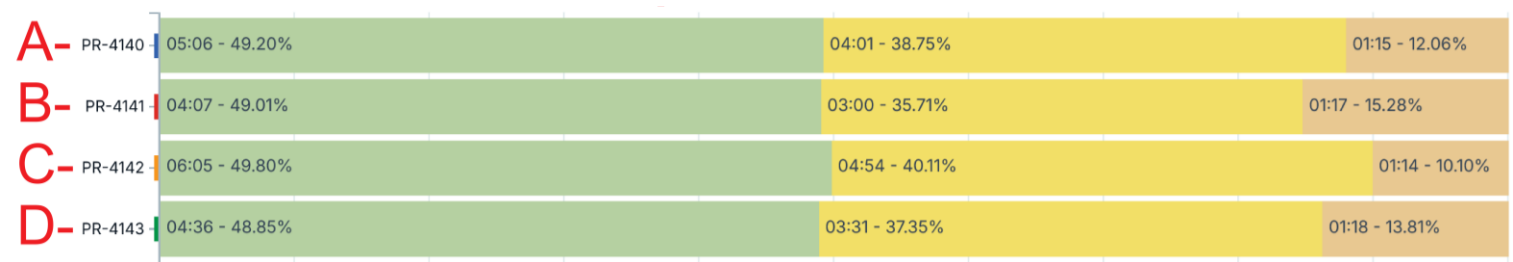
All samples have the same end temperature and development time post first crack.

All samples have different total roast times, and different Preparation and Maillard phase times before first crack.

What the samples were:

- A: Light Profile 1** – intended to be sweet, round, low acidity – slightly slow
- B: Light Profile 2** – intended to be bright, tart, sour, intense acidity – fast
- C: Light Profile 3** – intended to be flat, mild, baked, mellow acidity – slow
- D: Light Profile 4** – intended to be the most balanced – ideal: not too fast, not too slow

How they were Roasted:



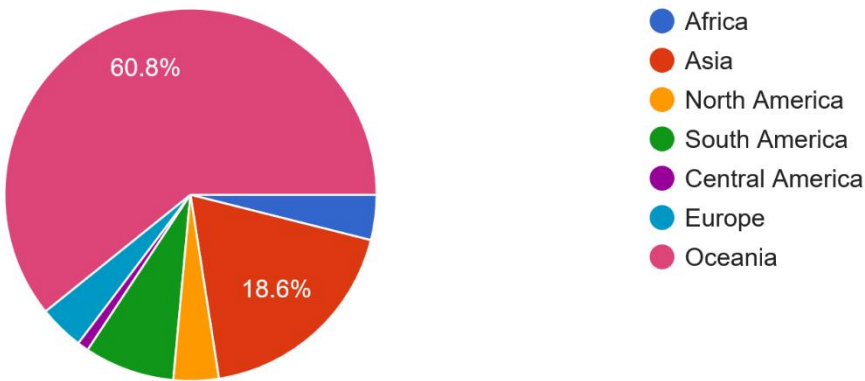
Roast Log Data:

Maillard																		
COFFEE	START/ CHARGE TEMP	YELLOW TIME	YELLOW TEMP	FIRST CRACK TIME	FIRST CRACK TEMP	YELL TO FC TIME	TOTAL ROAST TIME	END ROAST TEMP	Dev. Time	Dev. Degrees	DEV RATIO %	GREEN KG IN	ROAST KG OUT	WEIGHT LOSS %	WB	GND Cupping Grind 800microns	DELTA SPREAD	
									STRETCH TIME	STRETCH DEGREES								
									Total Time minus FC Time	End Temp minus FC Temp								
6. Light Profile 1 - A	180	5:06	163	9:07	203	4:01	10:22	208	1:15	+5		3kg	2.58	14%	68	82	14	
7. Light Profile 2 - B	180	4:07	163	7:07	203	3:00	8:24	208	1:17	+5		3kg	2.595	13.3%	70	88	18	
8. Light Profile 3 - C	180	6:05	163	10:59	203	4:54	12:13	208	1:15	+5		3kg	2.63	12.3%	68	82	14	
9. Light Profile 4 - D	180	4:36	163	8:07	203	3:31	9:25	208	1:16	+5		3kg	2.63	12.3%	71	85	14	

Results of the Tasting:

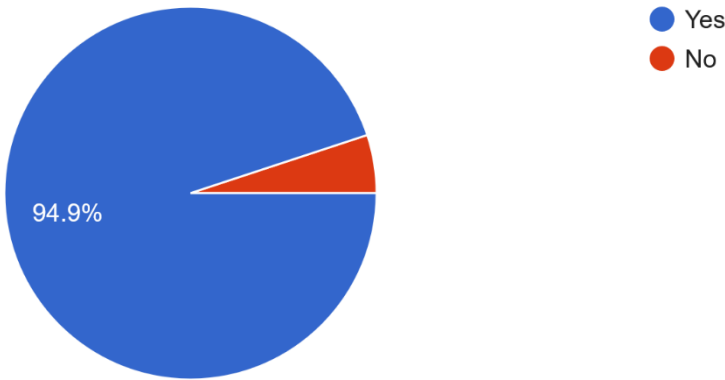
Which Region are you from?

102 responses



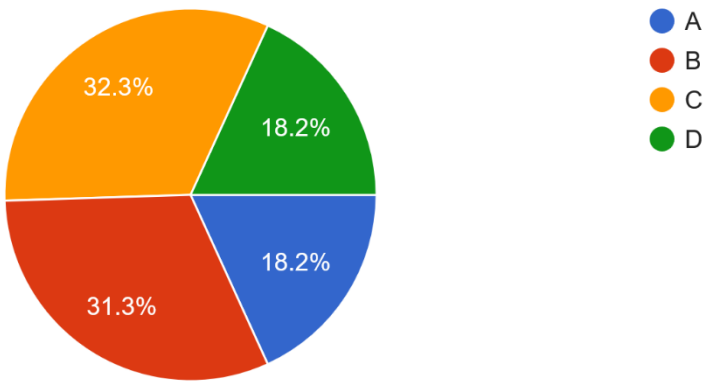
Question 1 Can you taste the difference between samples A-D?

99 responses



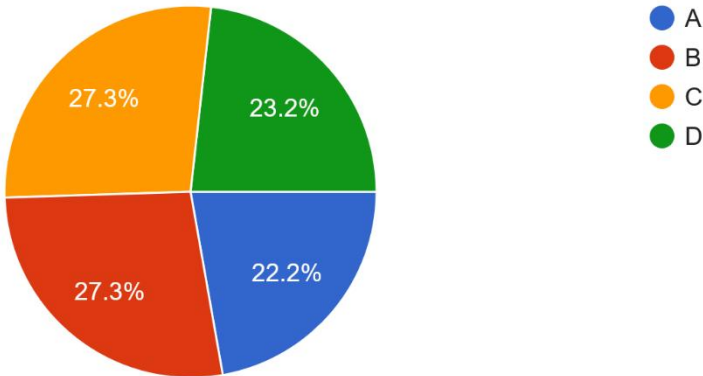
Question 2 Which one has the most pleasant Acidity?

99 responses



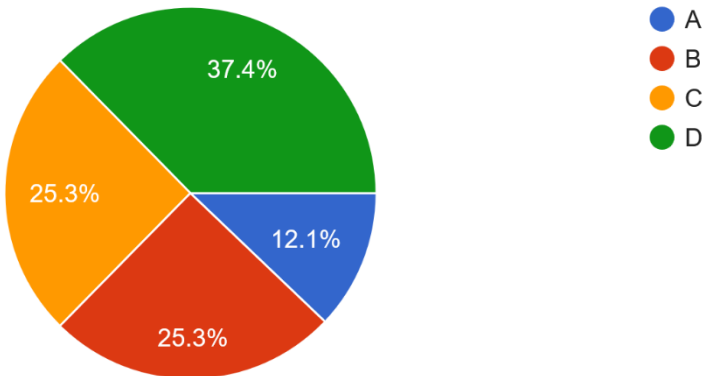
Question 3 Which one has the best Sweetness?

99 responses



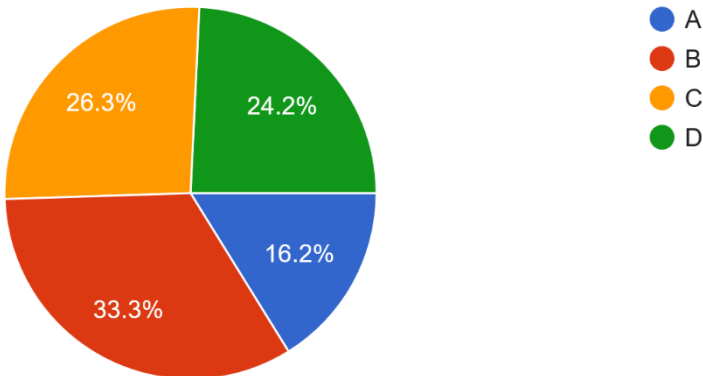
Question 4 Which one has the best Finish/Aftertaste?

99 responses



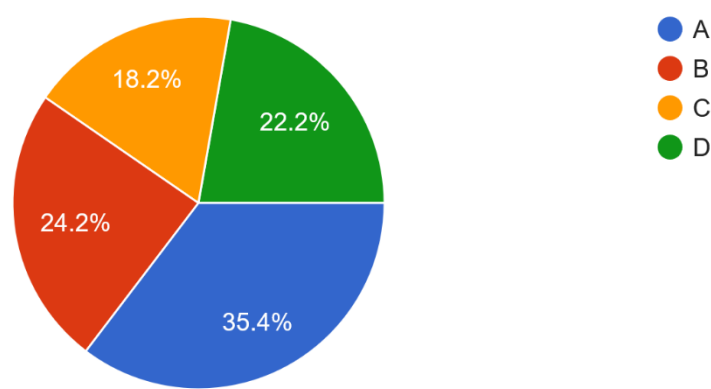
Question 5 Which one do you like the Most?

99 responses



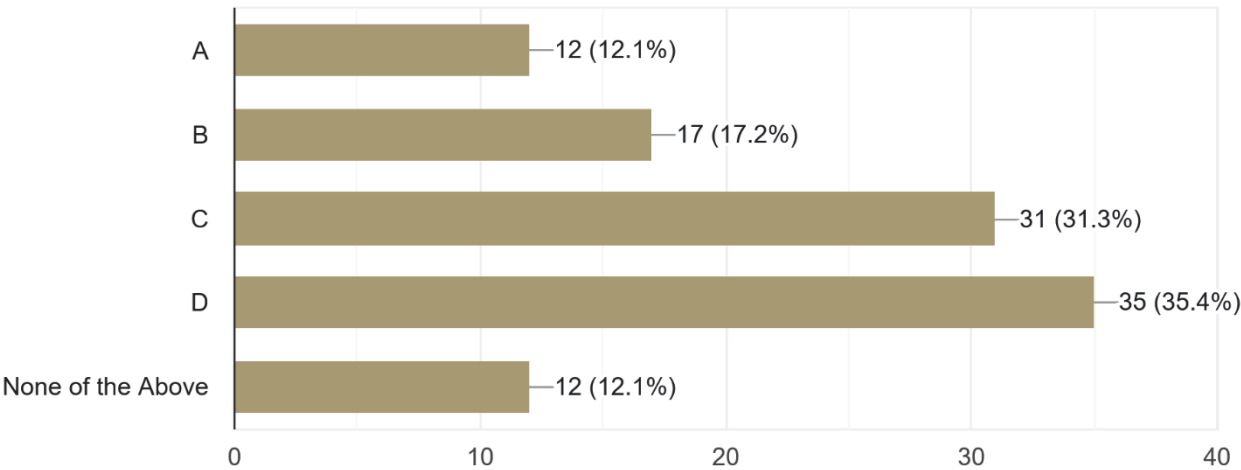
Question 6 Which one do you like the Least?

99 responses



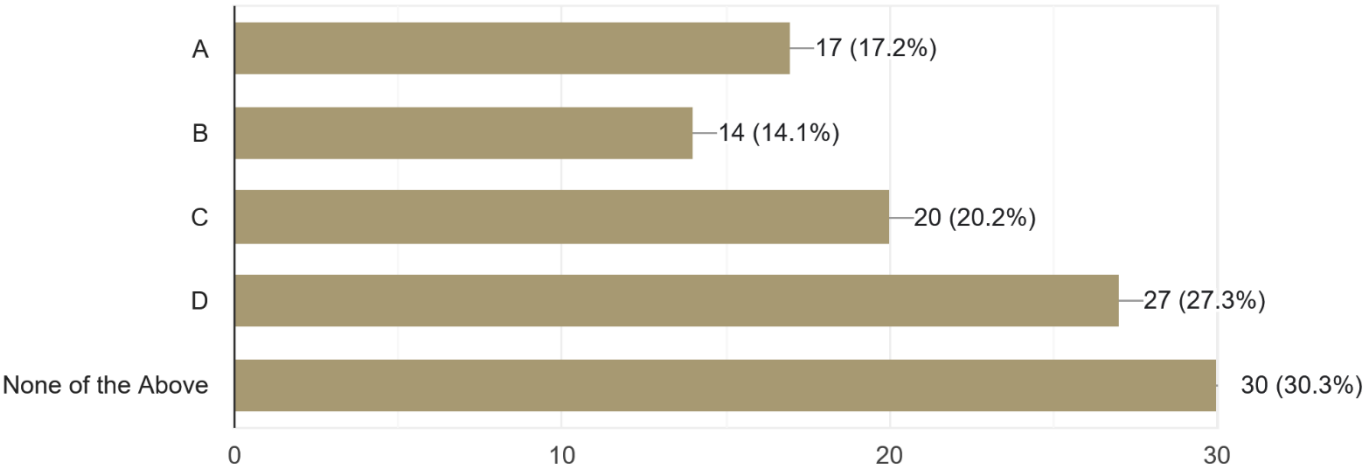
Question 7 Which one/s would you use for an Espresso Extraction - specifically Black?

99 responses



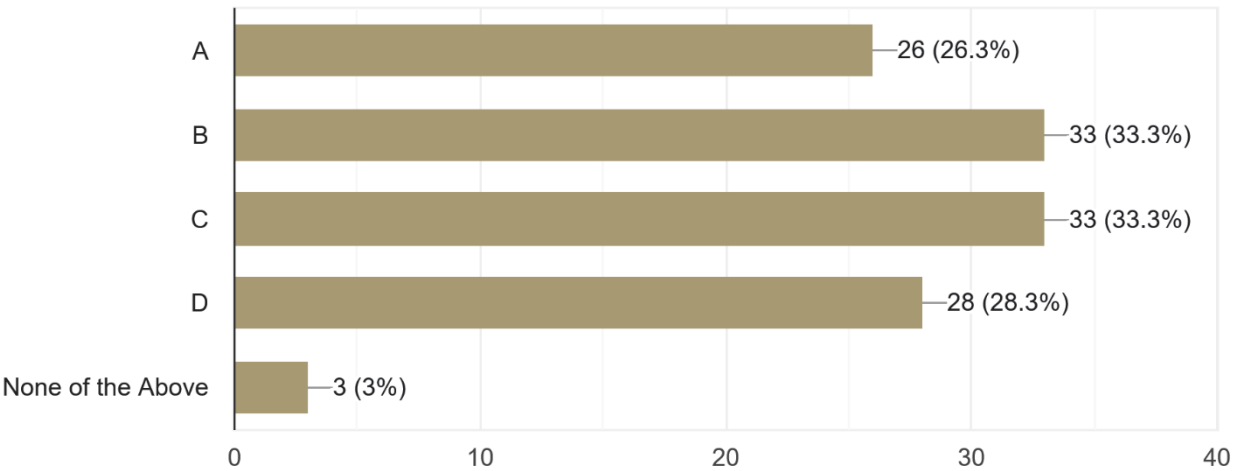
Question 8 Which one/s would you use for an Espresso Extraction - specifically Milk based drinks?

99 responses



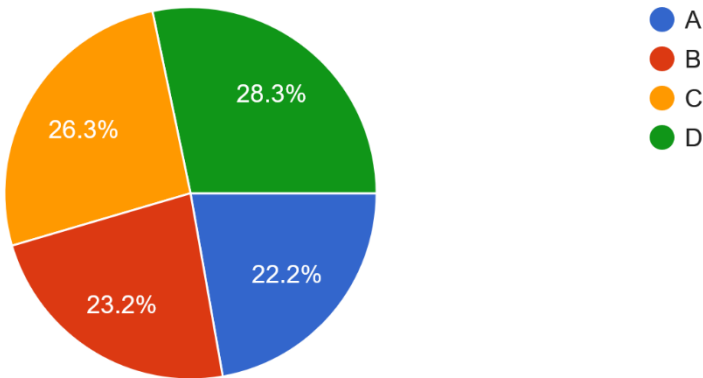
Question 9 Which one/s would you use for a Pour-over Brew?

99 responses



Question 10 Which one best represents your current roasting style/preference for a Light Roast Level?

99 responses



Outcomes:

Ultimately this tasting set out to show that whatever you do to manipulate the times in roasting reactions pre-first crack it does have an impact on flavour, contrary to what others in the industry have preached.

By keeping the last phase and end roast level a constant and then changing the timing of the phases before first crack, flavour differences were detected.

In summary, it could be said that samples B and D (followed very closely by C) were the preferred representations of what roasters from the Oceania region preferred for the Light roast level.

Interestingly sample C had the longest roast time and didn't necessarily taste as negative as one would think. It had the same colour measurement as sample A which was the least preferred out of the samples.

Sample C does bring up some questions to be further explored in future tastings as in initial preparation cupping assessments the length of the roast did show up as a negative flavour but not necessarily in the brewed tastings. So, does it show us that we can roast slow and still enjoy a brewed light roast? And is this result specific to a washed coffee? Would a natural coffee react differently?

Overall, this tasting set of the different iterations of the Light roast level does challenge some current teachings where we're told to disregard time, especially before first crack, and that achieving a certain end roast colour is all you need to do. The tasting results clearly demonstrates that along with roast level/colour you do need to also know how a coffee was roasted in terms of time spent in each of the 3 phases, especially in the instance where a profile is being matched onto another roasting system.

So just because a coffee has been roasted to a target end roast colour doesn't mean it will taste 'right'.

You need both time and colour to complement each other.

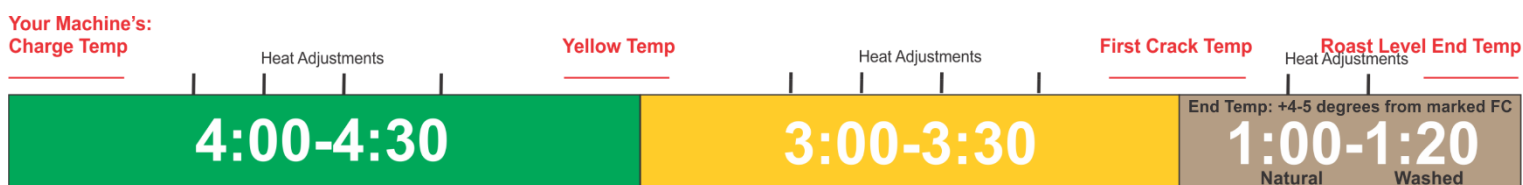
For the Oceania region it could be stated that a preferred Light Roast is currently defined as:

- An 8:30 - 9:30 total roast time
- with an 800micron ground agtron colour of 85-88
- with recipe phase times of: 4:00-4:30 / 3:00-3:30 / 1:00-1:20
- Batch size will also play a role in impacting time spent in the first preparation phase. A larger batch size may need 30sec to 1:00 longer, but once at yellow, the times for the last 2 phases must be the same.
- 3:30 in the middle Maillard Phase could become a reliable, minimum standard light roast profile requirement, regardless of roasting machine used, as this will always result in a balanced aftertaste for a light roast like in Sample D

Further recommendations for the light roast recipe, in regard to setting the final end temperature in the development phase post FC for specific processes could be:

- Washed: +4-5 degrees post marked FC in 1:20
- Honey: +4-5 degrees post marked FC in 1:00
- Natural: +4-5 degrees post marked FC in 45sec - 1:00sec
- Experimental: +4-5 degrees post marked FC in 45sec
-

So the Mother Sauce Standard Light Roast recipe for the Oceania Region could look like:



To do this Light roast recipe on your machine, simply use your temp probe markers for yellow and FC and then apply heat on your machine accordingly to achieve the same recipe phase times along with the above suggested way to achieve the end temperature for your machine's probe and a specific bean's process.

So essentially this is a guide on how to cook coffee, not on how to operate your machine – you operate your machine in response to the cooking time goals of the recipe!

ROAST LEVELS:

With an enormous amount of change challenging our industry it has been commented that the “old rules of roasting don’t apply anymore” and the way we communicate about roasting has evolved.

It could be said that roasting is now more about a roast level that can be made with a certain brew recipe on any given piece of coffee making equipment - as in, who’s to stop someone from putting a dark roast through a filter and a light roast through an espresso machine. So, in essence, there is no such thing as an ‘espresso roast’ anymore but a roast level that can be extracted in many different ways.

So we needed to identify the roast levels we’re currently roasting in order to then help create a clearer definition of what these roast levels could look like as a standard roast profile.

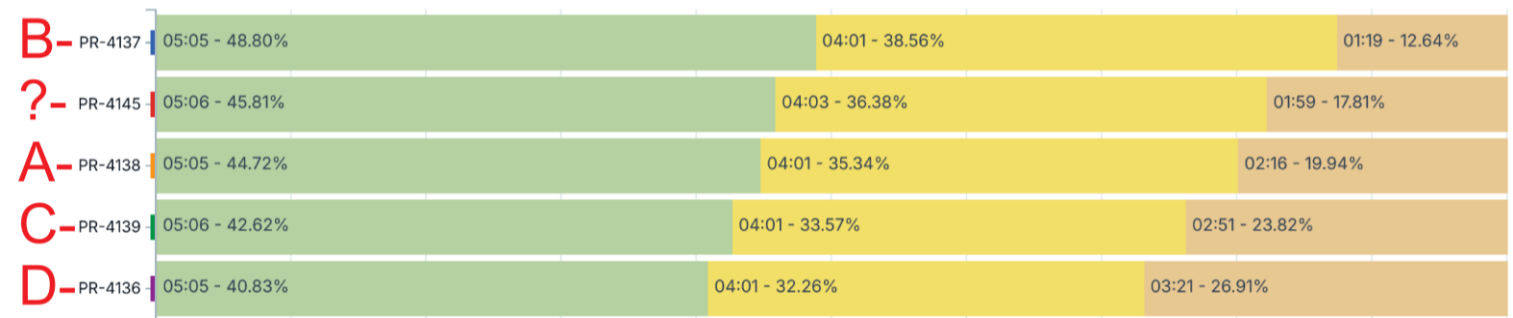
The purpose was to taste and identify some of the main Roast Levels we use when roasting – Light, Medium, Dark - which would become the master baseline for the Mother Sauce standard recipes & then also taste the ‘Daughter’ recipes of Light/Medium & Medium/Dark as well.

All samples were roasted with the same coffee (a washed Costa Rica) with the same Preparation and Maillard phase times before first crack, and then have different end temperatures and development times post first crack to create the different roast levels.

What the samples were:

- A: Medium
- B: Light
- C: Med/Dark
- D: Dark
- ?: Light/Medium

How they were Roasted:



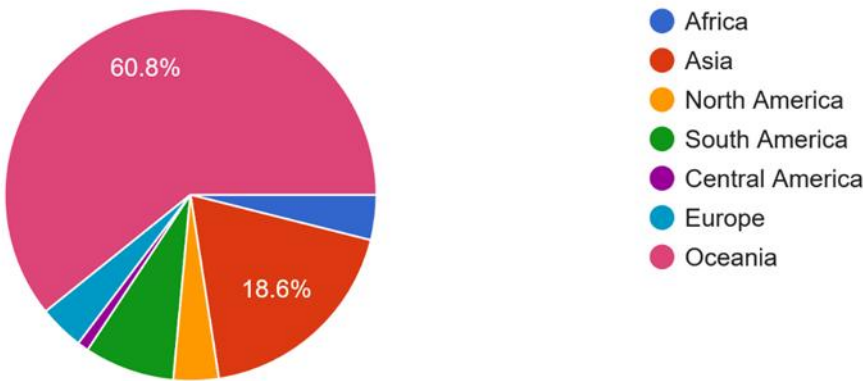
Roast Log Data:

COFFEE	START/ CHARGE TEMP	YELLOW TIME	YELLOW TEMP	FIRST CRACK TIME	FIRST CRACK TEMP	Maillard		END ROAST TEMP	Dev. Time		Dev. Degrees		GREEN KG IN	ROAST KG OUT	WEIGHT LOSS %	WB	GND Cupping Grind 800microns	DELTA SPREAD
						YELL. TO FC TIME	TOTAL ROAST TIME		STRETCH TIME Total Time minus FC Time	STRETCH DEGREES End Temp minus FC Temp	DEV. RATIO %							
11. Medium - A	180	5:00	163	9:00	203	4:00	11:22	213	2:22	+10			3kg	2.54	15.3%	61	71	10
12. Light - B	180	5:00	163	9:00	203	4:00	10:19	208	1:19	+5			3kg	2.58	14%	68	82	14
13. Med/Dark - C	180	5:00	163	9:00	203	4:00	12:00	218	3:00	+15			3kg	2.515	16.3%	57	64	7
14. Dark - D	180	5:00	163	9:00	203	4:00	12:30	224	3:30	+21			3kg	2.495	16.8%	51	57	6
15. Light/Med - ?	180	5:00	163	9:00	203	4:00	11:00	211	2:00	+8			3kg	2.55	15%	65	76	11

Results of the Tasting:

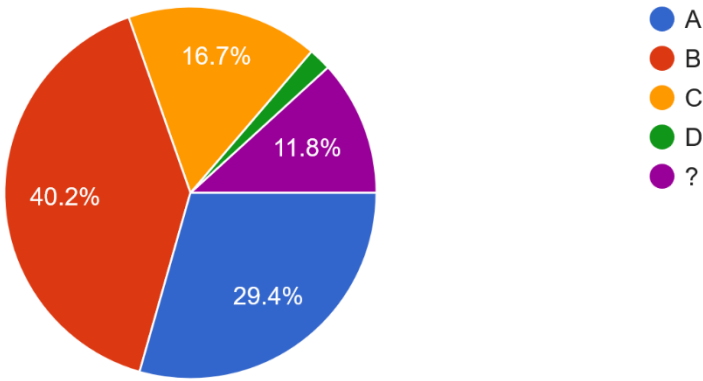
Which Region are you from?

102 responses



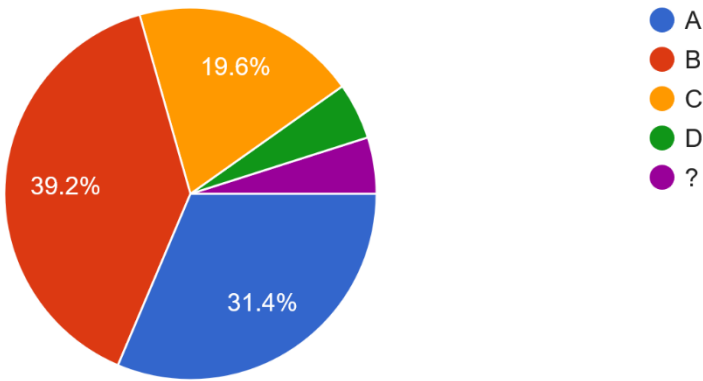
Question 1 Which one would you consider to be the Light Roast Level?

102 responses



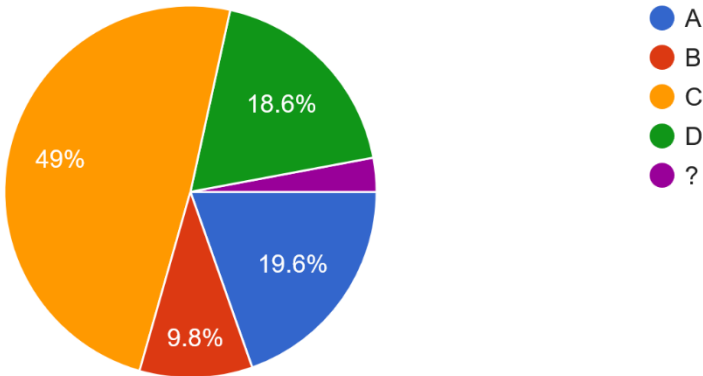
Question 2 Which one would you consider to be the Medium Roast Level?

102 responses



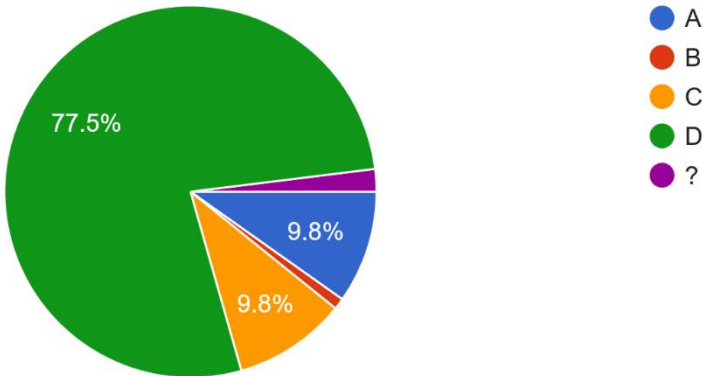
Question 3 Which one would you consider to be the Med/Dark Roast Level?

102 responses



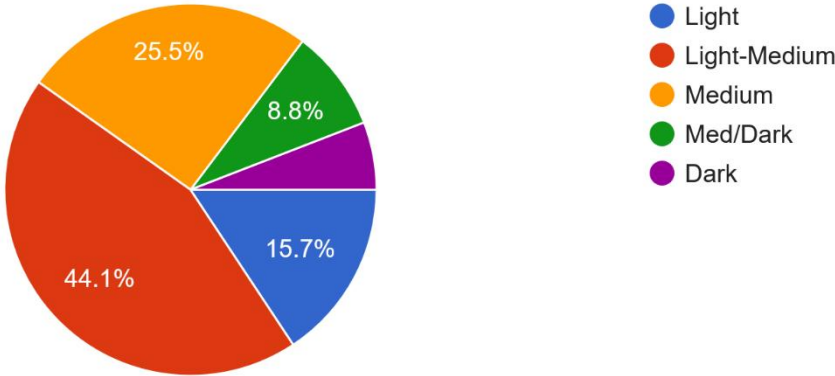
Question 4 Which one would you consider to be the Dark Roast Level?

102 responses



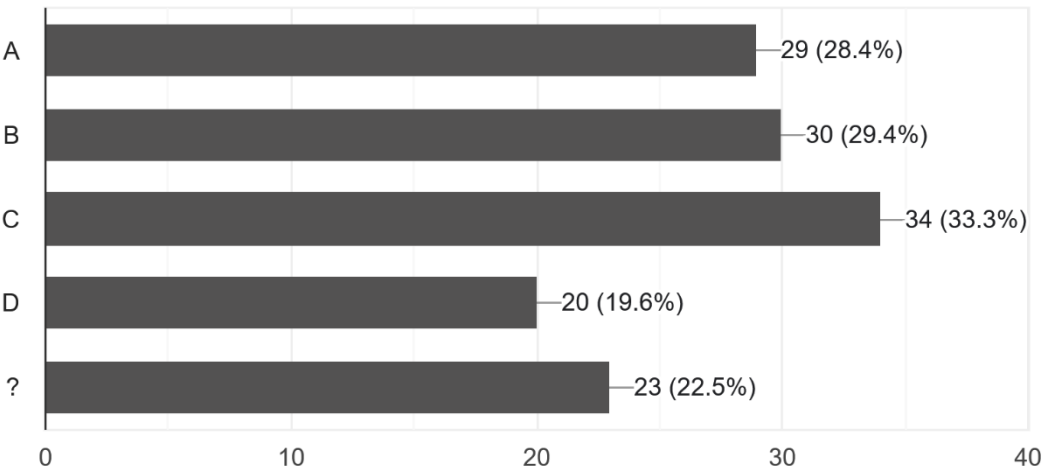
Question 5 What do you think the ? Roast Level is?

102 responses



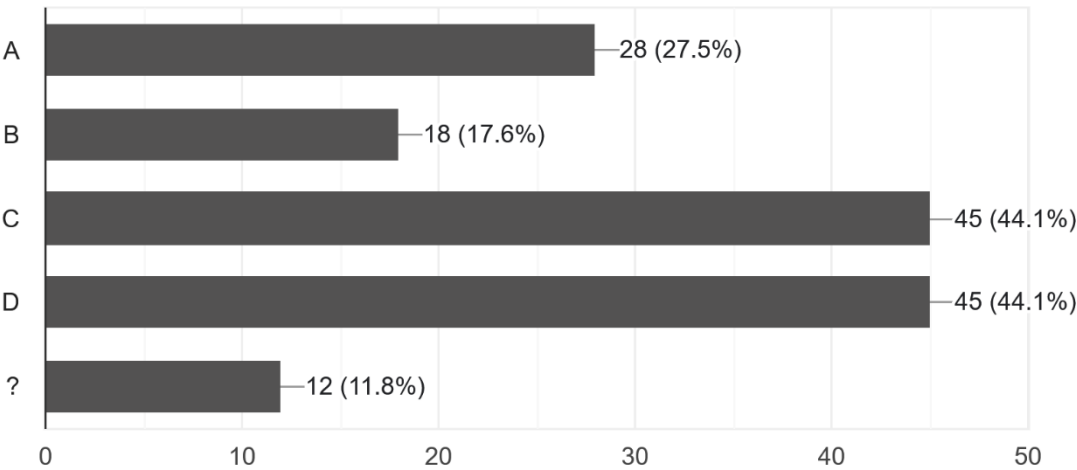
Question 6 Which one/s would you use for an Espresso Extraction - specifically Black?

102 responses



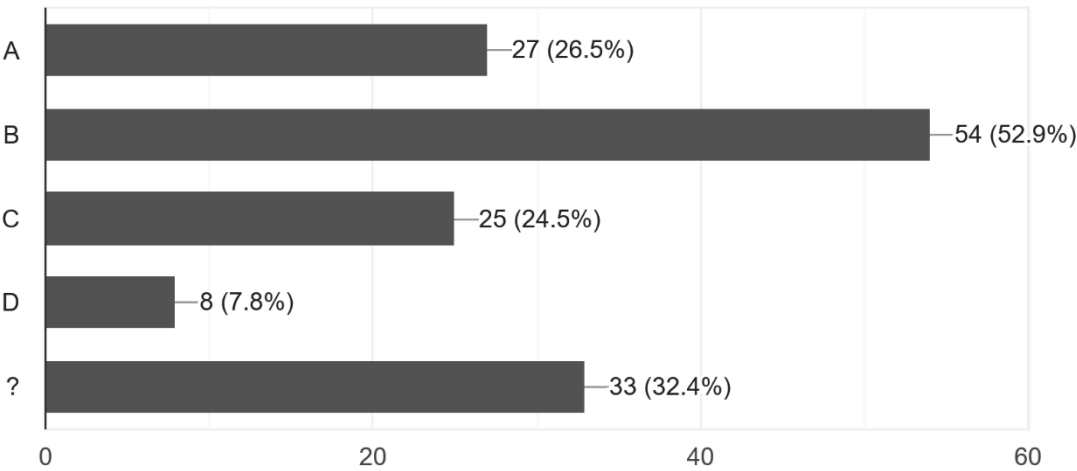
Question 7 Which one/s would you use for an Espresso Extraction - specifically Milk based drinks?

102 responses



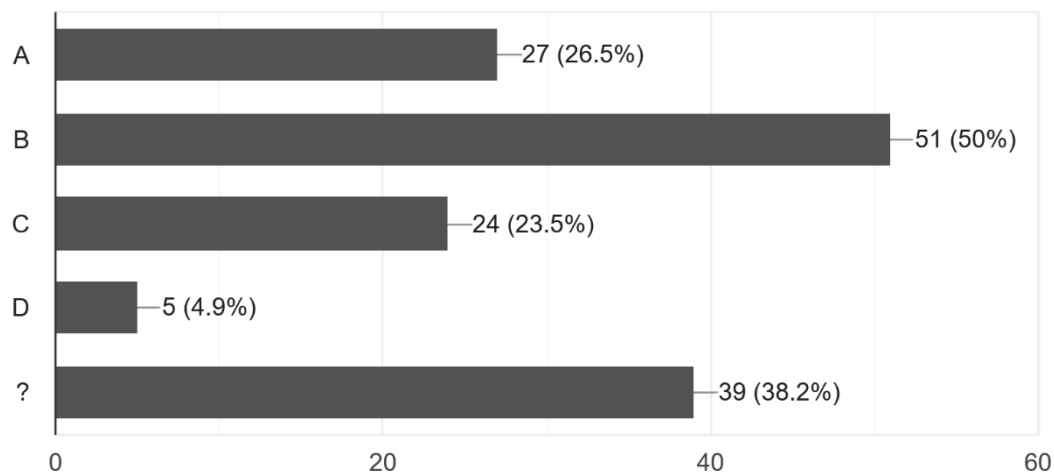
Question 8 Which one/s would you use for a Pour-over Brew?

102 responses



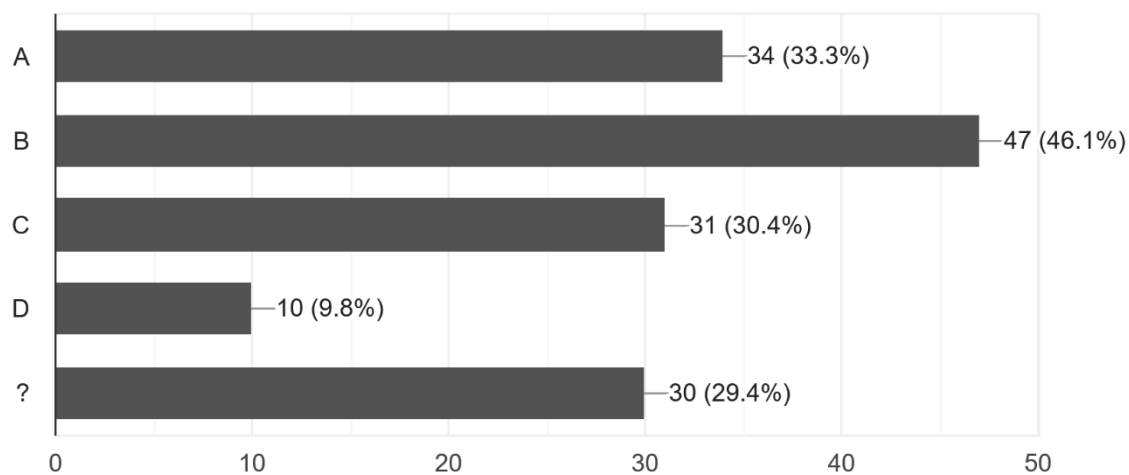
Question 9 Which one/s would you use for Batch Brew?

102 responses



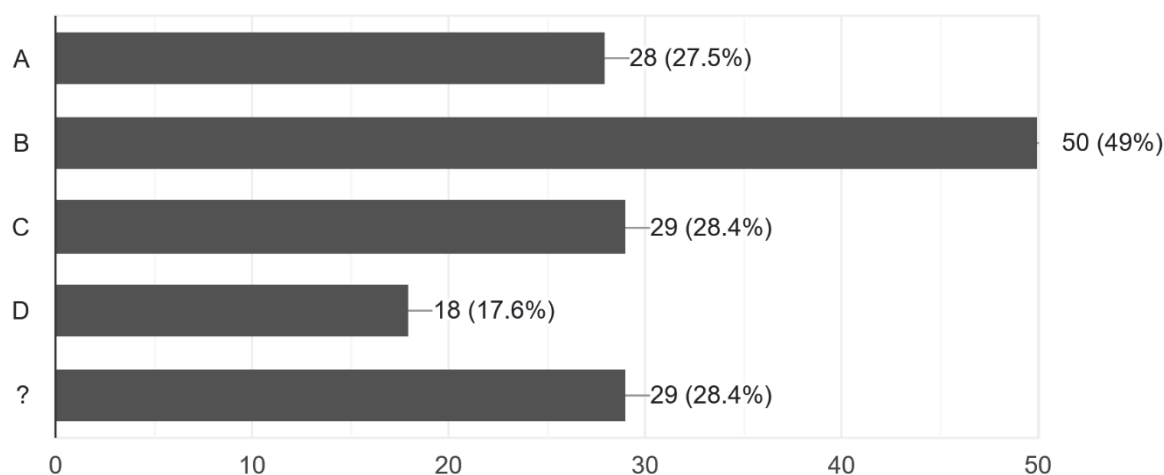
Question 10 Which one/s would you use for Cold Brew?

102 responses



Question 11 Which one/s best represents your current roasting style/business?

102 responses



Outcomes:

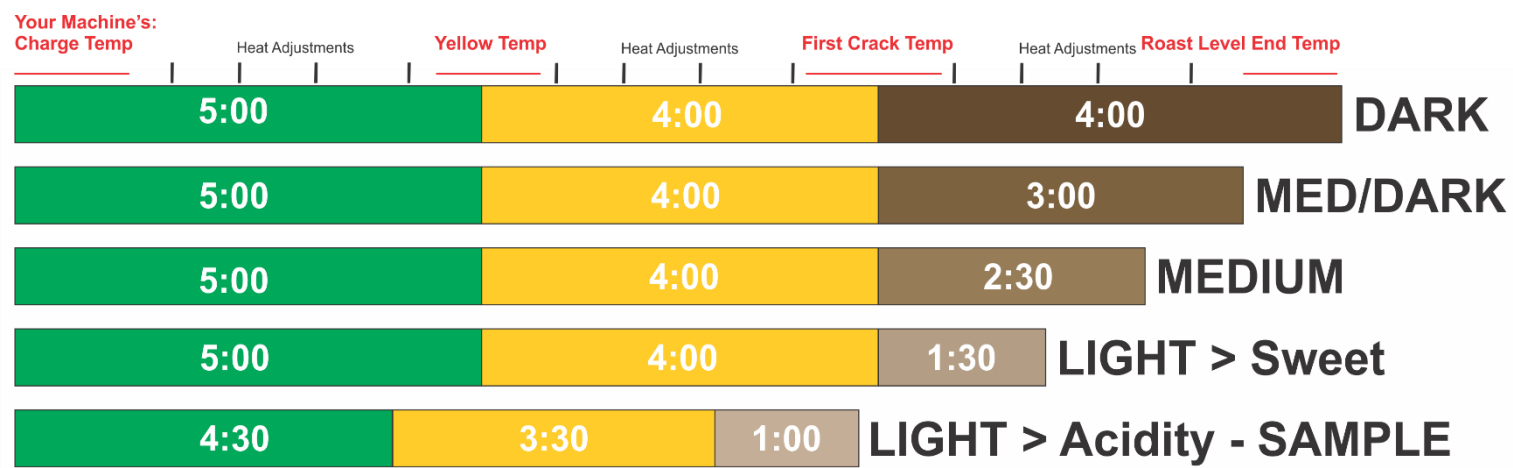
It would seem that palate preferences for the Oceania region are erring more toward the Light-Medium range.

However one thing that should have been done better in question 11 was to have separate questions about a roaster's roasting style preference vs their business/customer's preferences. But it has also highlighted the age old issue of roasters liking to roast one way for themselves vs what their customers actually like which would often be more of the Med/Dark roast level.

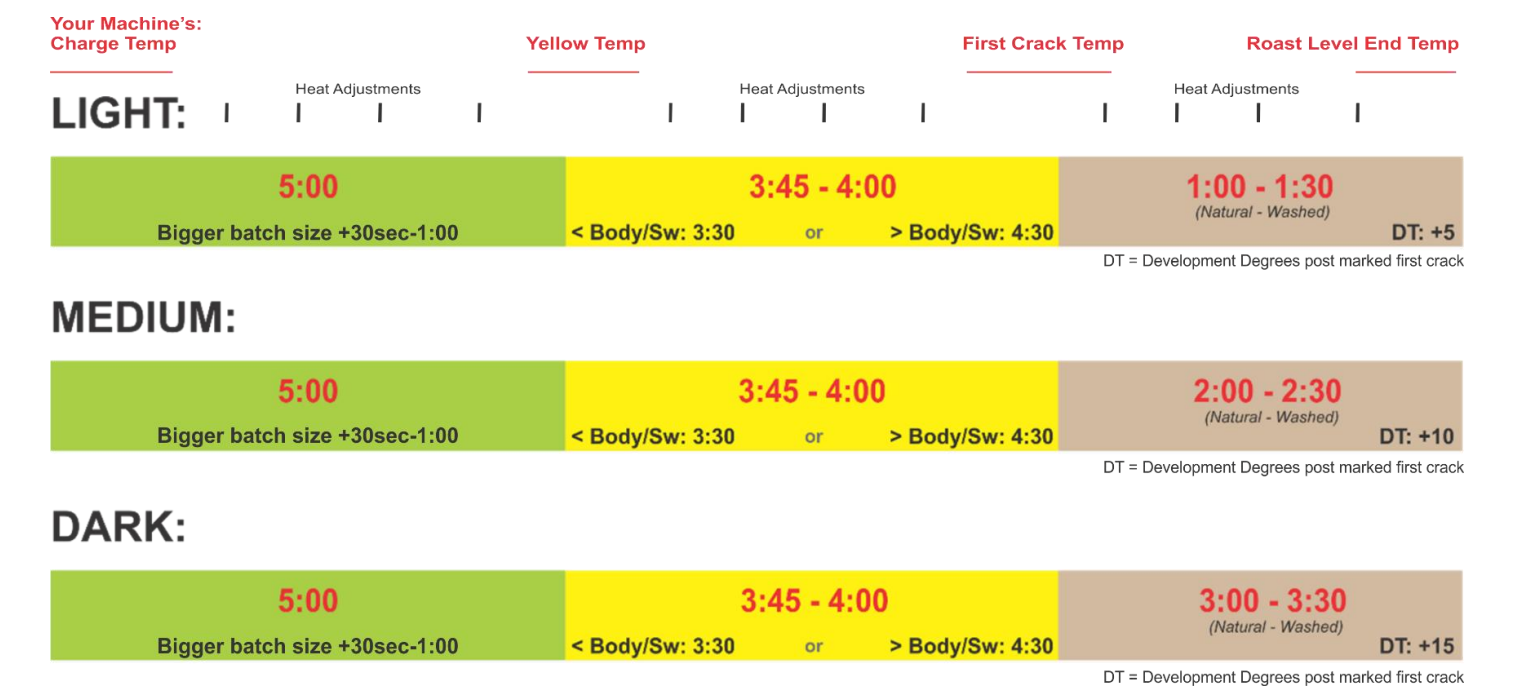
Interestingly there was also a bit of uncertainty on the light vs medium roast levels in question 2 with the tasters incorrectly choosing the light roast as the medium roast.

And also interestingly the Med/Dark roast was selected for Espresso in Question 6. Next time this question is posed it should have been more clearly identified as being for single origin espresso as that was the intention of the question but not interpreted accordingly. If tasters had of known the question was asking more specifically about single origin espresso, I believe that the preference would not have been the Med/Dark roast but either the Medium or Light/Medium - possibly even the light roast too!

But overall, it could be ascertained, in general, that the Mother Sauce Roast Level standard recipes for the Oceania region could look like this:



Or another way to show it could be:



To do these roast level recipes on your machine, simply use your temp probe markers for yellow and FC and then apply heat on your machine accordingly to achieve the same recipe phase times along with the above suggested way to achieve the end temperature for your machine's probe and a specific bean's process.

So essentially this is a guide on how to cook coffee, not on how to operate your machine – you operate your machine in response to the cooking time goals of the recipe!

Batch size will also play a role in impacting time spent in the first preparation phase. A larger batch size may need 30sec to 1:00 longer, but once at yellow, the times for the last 2 phases must be the same.