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LAMPIRAN

Lampiran 1. Hasil pengukuran warna pada biji kopi

No	Kode Sampel	Nilai									Rata - rata		
		Ulangan I			Ulangan II			Ulangan III					
		L*	a*	b*	L*	a*	b*	L*	a*	b*	L*	a*	b*
1	NNR	45.73	3.95	18.88	40.31	1.89	17.75	32.01	2.94	13.64	39.35	2.93	16.76
2	NLR	36.21	9.44	20.37	30.57	9.82	20.53	35.38	10.74	19.25	34.05	10.00	20.05
3	NDR	14.12	2.8	14.95	12.04	3.77	15.57	13.13	4.19	12.23	13.10	3.59	14.25
4	FNR	37.91	1.75	14.95	31.44	3.34	15.33	25.39	2.54	13.65	31.58	2.54	14.64
5	FLR	35.28	9.28	18.45	38.54	7.95	18.13	37.83	9.97	18.91	37.21	9.07	18.49
6	FDR	14.84	2.94	12.82	17.67	4.16	10.59	18.86	3.53	9.96	17.12	3.54	11.12

Lampiran 2. Input analisis sidik ragam (ANOVA) nilai L

Between-Subjects Factors

		Value Label	N
Metode Pengolahan	1	Natural	9
	2	Full wash	9
Tingkat	1	Non Roast	6
Penyangraian	2	Light Roast	6
	3	Dark Roast	6

Lampiran 3. Hasil analisis sidik ragam (ANOVA) nilai L pada berbagai metode pengolahan dan tingkat penyangraian

Descriptive Statistics

Dependent Variable: Nilai L

Metode Pengolahan	Tingkat Penyangraian	Mean	Std. Deviation	N
Natural	Non Roast	39.3500	6.91020	3
	Light Roast	34.0533	3.04507	3
	Dark Roast	13.0967	1.04040	3
	Total	28.8333	12.61292	9
Full wash	Non Roast	31.5800	6.26117	3
	Light Roast	37.2167	1.71436	3
	Dark Roast	17.1233	2.06500	3
	Total	28.6400	9.60026	9
Total	Non Roast	35.4650	7.27276	6
	Light Roast	35.6350	2.80831	6
	Dark Roast	15.1100	2.64630	6
	Total	28.7367	10.87408	18

Lampiran 4. Hasil analisis sidik ragam (ANOVA) nilai L

Tests of Between-Subjects Effects

Dependent Variable: Nilai L

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Model	16665.480[a]	6	2777.580	159.461	.000
Metode	.168	1	.168	.010	.923
tingkat	1671.261	2	835.631	47.974	.000
Metode * tingkat	129.722	2	64.861	3.724	.055
Error	209.022	12	17.419		
Total	16874.502	18			

Lampiran 5. Input analisis sidik ragam (ANOVA) nilai a*

Between-Subjects Factors			
		Value Label	N
Metode Pengolahan	1	Natural	9
	2	Full wash	9
Tingkat Penyangraian	1	Non Roast	6
	2	Light Roast	6
	3	Dark Roast	6

Lampiran 6. Hasil analisis sidik ragam (ANOVA) nilai L pada berbagai metode pengolahan dan tingkat penyangraian

Descriptive Statistics

Dependent Variable: Nilai a*

Metode Pengolahan	Tingkat Penyangraian	Mean	Std. Deviation	N
Natural	Non Roast	2.9267	1.03006	3
	Light Roast	10.0000	.66843	3
	Dark Roast	3.5867	.71290	3
	Total	5.5044	3.45743	9
Full wash	Non Roast	2.5433	.79501	3
	Light Roast	9.0667	1.02676	3
	Dark Roast	3.5433	.61011	3
	Total	5.0511	3.12606	9
Total	Non Roast	2.7350	.84930	6
	Light Roast	9.5333	.92830	6
	Dark Roast	3.5650	.59393	6
	Total	5.2778	3.20600	18

Lampiran 7. Hasil analisis sidik ragam (ANOVA) nilai a*

Tests of Between-Subjects Effects

Dependent Variable: Nilai a*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Model	667.973[a]	6	111.329	163.937	.000
Metode	.925	1	.925	1.362	.266
Tingkat	165.054	2	82.527	121.525	.000
Metode * Tingkat	.605	2	.303	.446	.651
Error	8.149	12	.679		
Total	676.122	18			

Lampiran 8. Input analisis sidik ragam (ANOVA) nilai b*

Between-Subjects Factors

		Value Label	N
Metode Pengolahan	1	Natural	9
	2	Full wash	9
Tingkat penyangraian	1	Non Roast	6
	2	Light Roast	6
	3	Dark Roast	6

Lampiran 9. Hasil analisis sidik ragam (ANOVA) nilai b* pada berbagai metode pengolahan dan tingkat penyangraian

Descriptive Statistics

Dependent Variable: Nilai b

Metode Pengolahan	Tingkat penyangraian	Mean	Std. Deviation	N
Natural	Non Roast	16.7567	2.75761	3
	Light Roast	20.0500	.69742	3
	Dark Roast	14.2500	1.77663	3
	Total	17.0189	3.02622	9
Full wash	Non Roast	14.6433	.88098	3
	Light Roast	18.4967	.39209	3
	Dark Roast	11.1233	1.50274	3
	Total	14.7544	3.31626	9
Total	Non Roast	15.7000	2.16612	6
	Light Roast	19.2733	.98990	6
	Dark Roast	12.6867	2.25802	6
	Total	15.8867	3.29277	18

Lampiran 10. Hasil analisis sidik ragam (ANOVA) nilai b*

Tests of Between-Subjects Effects

Dependent Variable: Nilai b

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Model	4698.400[a]	6	783.067	325.479	.000
Metode	23.075	1	23.075	9.591	.009
Tingkat	130.466	2	65.233	27.114	.000
Metode * Tingkat	1.908	2	.954	.397	.681
Error	28.871	12	2.406		
Total	4727.271	18			

Lampiran 11. Hasil Pengujian kandungan kafein pada kopi robusta

No	Kode sampel	Ulangan		Rata –rata
		I	II	
1	RNNR	0.874	0.820	0.847
2	RNLR	1.067	1.068	1.068
3	RNDR	1.309	1.302	1.306
4	RFWNR	0.808	0.831	0.820
5	RFWLR	1.029	1.051	1.040
6	RFWDR	1.239	1.209	1.224

Lampiran 12. Input analisis sidik ragam (ANOVA) kandungan kafein

Between-Subjects Factors			
		Value Label	N
Metode Pengolahan	1	Natural	6
	2	Full Wash	6
Tingkat	1	Non Roast	4
Penyangraian	2	Light Roast	4
	3	Dark Roast	4

Lampiran 13. Hasil analisis sidik ragam (ANOVA) kandungan kafein pada berbagai metode pengolahan dan tingkat penyangraian

Descriptive Statistics

Dependent Variable: Kandungan Kafein

Metode Pengolahan	Tingkat Penyangraian	Mean	Std. Deviation	N
Natural	Non Roast	.84700	.038184	2
	Light Roast	1.06750	.000707	2
	Dark Roast	1.30550	.004950	2
	Total	1.07333	.205819	6
Full Wash	Non Roast	.81950	.016263	2
	Light Roast	1.04000	.015556	2
	Dark Roast	1.22400	.021213	2
	Total	1.02783	.181670	6
Total	Non Roast	.83325	.028745	4
	Light Roast	1.05375	.018246	4
	Dark Roast	1.26475	.048706	4
	Total	1.05058	.186606	12

Lampiran 14. Hasil analisis sidik ragam (ANOVA) kandungan kafein

Tests of Between-Subjects Effects

Dependent Variable: Kandungan Kafein

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Model	13.625[a]	6	2.271	5585.285	.000
Metode	.006	1	.006	15.275	.008
Tingkat	.372	2	.186	458.018	.000
Metode * Tingkat	.002	2	.001	2.391	.172
Error	.002	6	.000		
Total	13.628	12			

Lampiran 15. Hasil Pengujian kandungan asam klorogenat pada kopi robusta

No	Kode sampel	Ulangan		Rata –rata
		I	II	
1	RNNR	5.833	5.709	5.771
2	RNLR	7.496	7.354	7.425
3	RNDR	4.445	4.499	4.472
4	RFWNR	5.563	5.430	5.497
5	RFWLR	6.754	6.855	6.805
6	RFWDR	4.092	4.182	4.137

Lampiran 16. Input analisis sidik ragam (ANOVA) kandungan asam klorogenat

Between-Subjects Factors

		Value Label	N
Metode Pengolahan	1	Natural	6
	2	Full Wash	6
Tingkat Penyangraian	1	Non Roast	4
	2	Light Roast	4
	3	Dark Roast	4

Lampiran 17. Hasil analisis sidik ragam (ANOVA) kandungan asam klorogenat Pada berbagai metode pengolahan dan tingkat penyangraian

Descriptive Statistics

Dependent Variable: Kandungan Asam Klorogenat

Metode Pengolahan	Tingkat Penyangraian	Mean	Std. Deviation	N
Natural	Non Roast	5.77100	.087681	2
	Light Roast	7.42500	.100409	2
	Dark Roast	4.47200	.038184	2
	Total	5.88933	1.325251	6
Full Wash	Non Roast	5.49650	.094045	2
	Light Roast	6.80450	.071418	2
	Dark Roast	4.13700	.063640	2
	Total	5.47933	1.194524	6
Total	Non Roast	5.63375	.175007	4
	Light Roast	7.11475	.365241	4
	Dark Roast	4.30450	.198102	4
	Total	5.68433	1.221779	12

Lampiran 18. Hasil analisis sidik ragam (ANOVA) kandungan asam klorogenat

Tests of Between-Subjects Effects

Dependent Variable: Kandungan Asam Klorogenat

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Model	404.123[a]	6	67.354	10856.801	.000
Metode	.504	1	.504	81.288	.000
Tingkat	15.810	2	7.905	1274.241	.000
Metode * Tingkat	.068	2	.034	5.504	.044
Error	.037	6	.006		
Total	404.160	12			

Lampiran 19. Hasil Pengujian kandungan trigonelin pada kopi robusta

No	Kode sampel	Ulangan		Rata –rata
		I	II	
1	RNNR	0.598	0.584	0.591
2	RNLR	0.618	0.623	0.621
3	RNDR	0.103	0.111	0.107
4	RFWNR	0.615	0.612	0.614
5	RFWLR	0.653	0.708	0.681
6	RFWDR	0.122	0.143	0.133

Lampiran 20. Input analisis sidik ragam (ANOVA) kandungan asam klorogenat

Between-Subjects Factors			
		Value Label	N
Metode	1	Natural	6
Pengolahan	2	Full Wash	6
Tingkat	1	Non Roast	4
Penyangraian	2	Light Roast	4
	3	Dark Roast	4

Lampiran 21. Hasil analisis sidik ragam (ANOVA) kandungan trigonelin pada berbagai metode pengolahan dan tingkat penyangraian

Descriptive Statistics

Dependent Variable: Kandungan Trigonelin

Metode Pengolahan	Tingkat Penyangraian	Mean	Std. Deviation	N
Natural	Non Roast	.59100	.009899	2
	Light Roast	.62050	.003536	2
	Dark Roast	.10700	.005657	2
	Total	.43950	.257946	6
Full Wash	Non Roast	.61350	.002121	2
	Light Roast	.68050	.038891	2
	Dark Roast	.13250	.014849	2
	Total	.47550	.268020	6
Total	Non Roast	.60225	.014245	4
	Light Roast	.65050	.041332	4
	Dark Roast	.11975	.017347	4
	Total	.45750	.251494	12

Lampiran 22. Hasil analisis sidik ragam (ANOVA) kandungan trigonelin

Tests of Between-Subjects Effects

Dependent Variable: Kandungan Trigonelin

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Model	3.206[a]	6	.534	1705.073	.000
Metode	.004	1	.004	12.409	.012
Tingkat	.689	2	.345	1099.638	.000
Metode * Tingkat	.001	2	.000	1.386	.320
Error	.002	6	.000		
Total	3.207	12			

Lampiran 23. Hasil uji organoleptik aroma pada kopi robusta

Rasa	Nilai			
	NLR	NDR	FWLR	FWDR
Acidity	2.3	1.6	1.5	1.6
Bitterness	2.5	2.1	1.9	2
Sweetness	2.3	1.4	1.8	2
Sourness	2.1	1.3	1.6	1.8
Body	2.4	1.7	1.8	1.9
Aftertaste	2.3	1.2	2.5	1.4

Lampiran 24. Input analisis sidik ragam (ANOVA) uji organoleptik rasa

Between-Subjects Factors			
		Value Label	N
Metode	1	Natural Light Roast	60
Pengolahan	2	Natural Dark Roast	60
	3	Full Wash Light Roast	60
	4	Full Wash Dark Roast	60
Rasa	1	Acidity	40
	2	Bitterness	40
	3	Sweetness	40
	4	Sourness	40
	5	Body	40
	6	Aftertaste	40

Lampiran 25. Hasil analisis sidik ragam (ANOVA) uji organoleptik rasa pada berbagai metode pengolahan dan tingkat penyangraian

Descriptive Statistics

Dependent Variable: Skor Nilai

Metode Pengolahan	Rasa	Mean	Std. Deviation	N
Natural Light Roast	Acidity	2.30	1.418	10
	Bitterness	2.50	1.434	10
	Sweetness	2.30	.949	10
	Sourness	2.10	1.370	10
	Body	2.40	1.430	10
	Aftertaste	2.30	1.636	10
	Total	2.32	1.334	60
Natural Dark Roast	Acidity	1.60	1.265	10
	Bitterness	2.10	2.331	10
	Sweetness	1.40	.966	10
	Sourness	1.30	.949	10
	Body	1.70	1.337	10
	Aftertaste	1.20	.632	10
	Total	1.55	1.333	60
Full Wash Light Roast	Acidity	1.50	.707	10
	Bitterness	1.90	1.449	10
	Sweetness	1.80	1.229	10
	Sourness	1.60	.966	10
	Body	1.80	1.229	10
	Aftertaste	2.40	1.897	10
	Total	1.83	1.278	60
Full Wash Dark Roast	Acidity	1.60	.843	10
	Bitterness	2.00	1.333	10
	Sweetness	2.00	1.491	10
	Sourness	1.80	1.033	10
	Body	1.90	1.370	10
	Aftertaste	1.40	.966	10
	Total	1.78	1.166	60
Total	Acidity	1.75	1.104	40
	Bitterness	2.12	1.636	40
	Sweetness	1.88	1.181	40
	Sourness	1.70	1.091	40
	Body	1.95	1.319	40
	Aftertaste	1.83	1.430	40
	Total	1.87	1.302	240

Lampiran 26. Hasil analisis sidik ragam (ANOVA) uji organoleptik rasa

Tests of Between-Subjects Effects

Dependent Variable: Skor Nilai

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Model	872.700[a]	24	36.362	21.097	.000
Metode	18.646	3	6.215	3.606	.014
Rasa	4.671	5	.934	.542	.744
Metode * Rasa	9.379	15	.625	.363	.987
Error	372.300	216	1.724		
Total	1245.000	240			

Lampiran 27. Hasil uji organoleptik aroma pada kopi robusta

Aroma	Nilai			
	NLR	NDR	FWLR	FWDR
Earthy	2.9	1.1	2.1	2
Smokey	3.5	1.3	2.9	1.4
Chocolaty	2.6	1.6	2.1	2.2
Caramelly	2.5	1.5	2	1.5
Nutty	3.1	1.3	3.2	2.1
Fruty	2	1.1	1.7	1.2

Lampiran 28. Input analisis sidik ragam (ANOVA) uji organoleptik aroma

Between-Subjects Factors			
		Value Label	N
Metode Pengolahan	1	Natural Light Roast	60
	2	Natural Dark Roast	60
	3	Full wash Light Roast	60
	4	Full wash Dark Roast	60
Aroma	1	Earthy	40
	2	Smokey	40
	3	Chocolaty	40
	4	Caramelly	40
	5	Nutty	40
	6	Frutty	40

Lampiran 29. Hasil analisis sidik ragam (ANOVA) uji organoleptik aroma pada berbagai metode pengolahan dan tingkat penyangraian

Descriptive Statistics

Dependent Variable: Skor Nilai

Metode Pengolahan	Aroma	Mean	Std. Deviation	N
Natural Light Roast	Earthy	2.90	1.370	10
	Smokey	3.50	1.581	10
	Chocolaty	2.60	1.174	10
	Caramelly	2.50	1.434	10
	Nutty	3.10	1.912	10
	Frutty	2.00	1.054	10
	Total	2.77	1.466	60
Natural Dark Roast	Earthy	1.10	.316	10
	Smokey	1.30	.483	10
	Chocolaty	1.60	1.075	10
	Caramelly	1.50	.972	10
	Nutty	1.30	.949	10
	Frutty	1.10	.316	10
	Total	1.32	.748	60
Full wash Light	Earthy	2.10	1.370	10
Roast	Smokey	2.90	1.969	10
	Chocolaty	2.10	1.101	10
	Caramelly	2.00	.667	10
	Nutty	3.20	1.874	10
	Frutty	1.70	.823	10
	Total	2.33	1.434	60
Full wash Dark	Earthy	2.00	1.054	10
Roast	Smokey	1.40	.516	10
	Chocolaty	2.20	1.033	10
	Caramelly	1.50	.972	10
	Nutty	2.10	1.370	10
	Frutty	1.20	.632	10
	Total	1.73	1.006	60
Total	Earthy	2.03	1.250	40
	Smokey	2.28	1.585	40
	Chocolaty	2.12	1.114	40
	Caramelly	1.88	1.090	40
	Nutty	2.42	1.708	40
	Frutty	1.50	.816	40
	Total	2.04	1.317	240

Lampiran 30. Hasil analisis sidik ragam (ANOVA) uji organoleptik aroma

Tests of Between-Subjects Effects

Dependent Variable: Skor Nilai

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Model	1111.500[a]	24	46.312	33.401	.000
Metode	73.879	3	24.626	17.761	.000
Aroma	21.188	5	4.238	3.056	.011
Metode * Aroma	20.096	15	1.340	.966	.492
Error	299.500	216	1.387		
Total	1411.000	240			

Lampiran 31. Hasil pengukuran kadar air biji kopi

a. Robusta Full Wash

W1 = 29.127

W = 2.023

W2 = 30.94

Jawab :

% Kadar air = $\frac{(29.127+2.023)-30.94}{2.023} \times 100\ \%$ = 10.19%

b. Robusta Natural

W1 = 27.278

W = 2.154

W2 = 29.25

Jawab :

% Kadar air = $\frac{(27.278+2.154)-29.25}{2.154} \times 100\ \%$ = 8.44%

Lampiran 32. Kuesioner Organoleptik Rasa

KUESIONER UJI ORGANOLEPTIK

Nama :

Tanggal :

Sampel :

Pengujian : Rasa

Dihadapan saudara tersedia sampel kopi sangrai. Saudara diminta untuk memberi penilaian atas sampel tersebut berdasarkan kesukaan saudara dengan memberi tanda pada skala kolom untuk masing-masing sampel dari parameter (rasa), diantara kolom berskala 1-7 (1= sangat tidak suka, 7= sangat suka).

1. Acidity

1		2		3		4		5		6		7	

2. Bitterness

1		2		3		4		5		6		7	

3. sweetness

1		2		3		4		5		6		7	

4. sourness

1		2		3		4		5		6		7	

5. Body

1		2		3		4		5		6		7	

6. Aftertaste

1		2		3		4		5		6		7	

Lampiran 33. Kuesioner Organoleptik Aroma

KUESIONER UJI ORGANOLEPTIK

Nama :

Tanggal :

Sampel :

Pengujian : Aroma

Dihadapan saudara tersedia sampel kopi sangrai. Saudara diminta untuk memberi penilaian atas sampel tersebut berdasarkan kesukaan saudara dengan memberi tanda pada skala kolom untuk masing-masing sampel dari parameter (aroma), diantara kolom berskala 1-7 (1 = sangat tidak suka, 7= sangat suka).

1. Ashy / Earthy

1		2		3		4		5		6		7	

2. Burnt / Smokey

1		2		3		4		5		6		7	

3. Chocolaty

1		2		3		4		5		6		7	

4. Caramelly

1		2		3		4		5		6		7	

5. Nutty

1		2		3		4		5		6		7	

6. Fruity / Citrus

1		2		3		4		5		6		7	

Lampiran 34. Data Panelis uji organoleptik aroma dan rasa

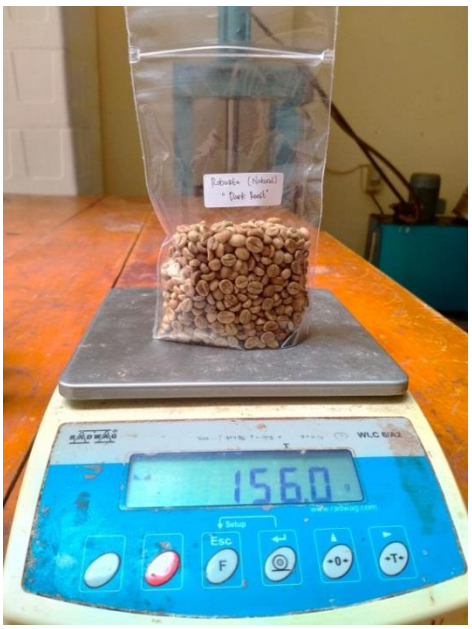
No	Nama	Jenis Kelamin	Umur (Tahun)	Pengalaman	Penghargaan
1	Moh. Arya	Laki-laki	22	Barista kopiapi Pasar Segar	
2	Haidir	Laki-laki	40	- Trainer Kopiapi - Roaster	- Cupping intermediate caswell - Roasting kompetisi
3	Ode	Laki-laki	23	Barista kopiapi Herper Perintis	
4	Ishaq	Laki-laki	30	- Barista kopiapi - Roaster Kopiapi	Latte art
5	Widia	Perempuan	22	Barista kopiapi Herper Perintis	
6	Arla	Perempuan	20	Barista kopiapi Pasar Segar	
7	A. Muh. Fikri	Laki-laki	21	Barista kopiapi Herper Perintis	
8	Indra	Laki-laki	21	Barista kopiapi Herper Perintis	
9	Izzah	Perempuan	21	Barista kopiapi Herper Perintis	
10	Rachwan Arna	Laki-laki	38	- Cupping - Roaster - Owner	Intermediate at advance

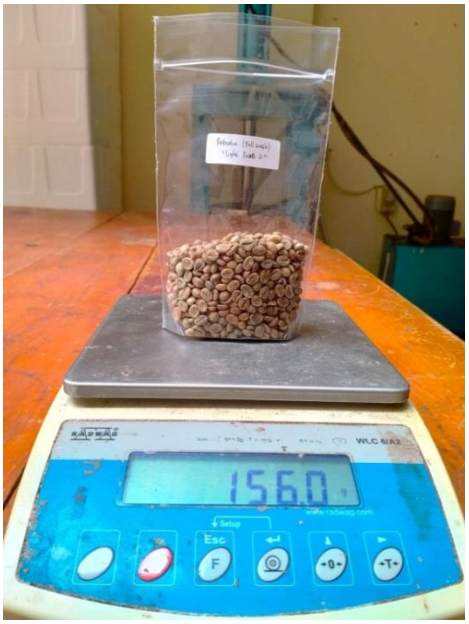
Lampiran 35. Pengukuran kadar air

Menimbang berat sampel biji kopi sebelum di Oven

Pengovenan dan menimbang berat sampel biji kopi setelah di oven

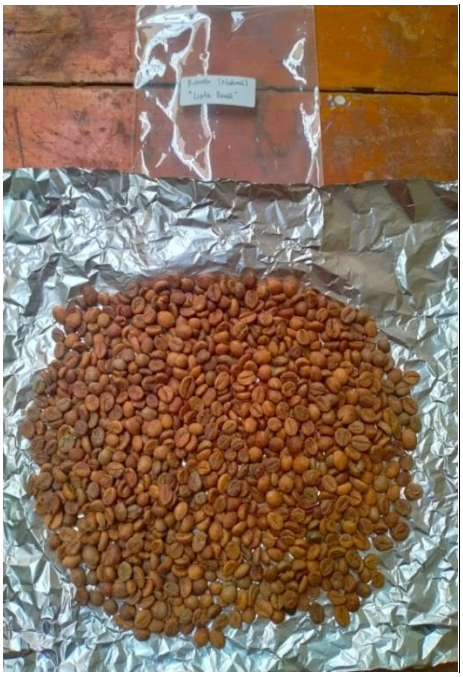
Lampiran 36. Proses penyangraian kopi





Menimbang berat biji kopi sebelum disangrai

Menyangrai biji kopi menggunakan alat sangrai



Proses pendinginan biji kopi setelah disangrai

Biji kopi *non roast*, *light roast*, dan *dark roast*

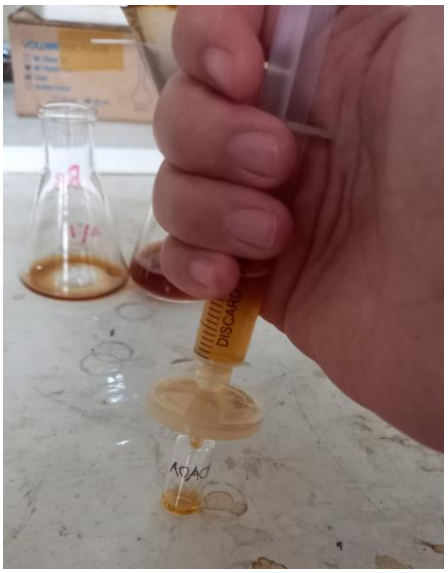
Lampiran 37. Proses pengukuran warna biji kopi

Pengukuran warna menggunakan *colorimeter* model *CS-10*

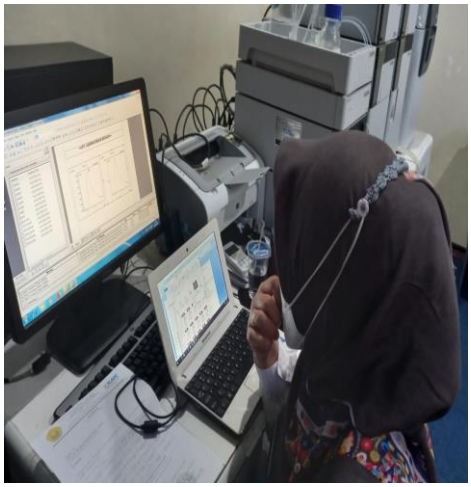
Lampiran 38. Proses pengukuran kandungan kimia biji kopi

Menghaluskan dan menimbang sampel biji kopi

Memanaskan kemudian menyaring sampel kopi

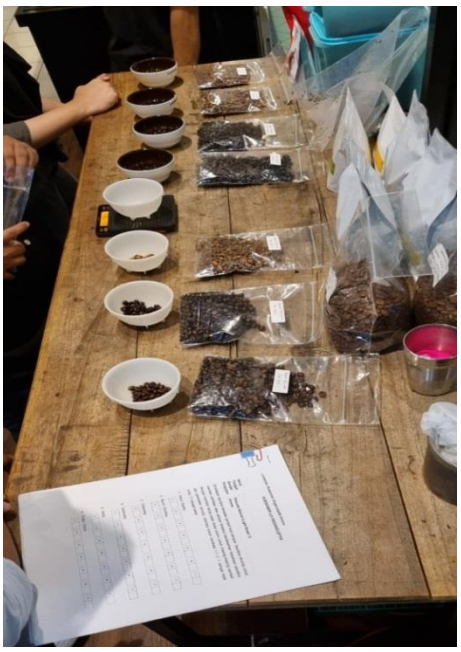


Memasukkan filtrat ke dalam vial *LCMS*



Proses pengujian sampel kopi pada alat *LCMS*

Lampiran 39. Proses pengujian organoleptik aroma dan rasa



Proses persiapan sampel pengujian aroma dan rasa kopi

Proses seduh sampel kopi

Proses membersihkan bubuk kopi sebelum pengujian aroma dan rasa