BAB V

KESIMPULAN DAN SARAN

A. KESIMPULAN

Berdasarkan hasil penelitian "Optimasi Konsentrasi Gula, Suhu dan Waktu pada Pembuatan Acar Jahe (*Zingiber officinale* Rosc.)" dapat disimpulkn bahwa :

1. Nilai pH dan total asam terbaik diperoleh pada interaksi perlakuan konsentrasi gula 2,5 %, suhu kamar dan lama fermentasi 20 hari, besarnya nilai pH tersebut adalah 3,61 untuk padatan dan 3,37 untuk larutan dan besarnya nilai total asam adalah 0,21 % untuk padatan dan 0,18 % untuk larutan.
2. Nilai kejernihan terbaik diperoleh pada interaksi perlakuan konsentrasi gula 1,5 %, suhu dingin dan lama fermentasi 10 hari, dengan nilai kejernihan 26,33.
3. Nilai kekerasan terbaik diperoleh pada perlakuan konsentrasi gula 2,0 %, suhu kamar dan lama fermentasi 20 hari dengan tingkat kekerasan sebesar 0,63 mm/ detik.
4. Skor organoleptik warna, yang paling disukai adalah yang difermentasikan pada konsentrasi gula 2,5 %, suhu dingin dan lama fermentasi 10 hari dengan nilai 4,20 atau dengan skor agak suka.

5. Skor organoleptik aroma, yang paling disukai adalah yang difermentasikan pada konsentrasi gula 2,0 %, suhu dingin dan lama fermentasi 10 hari dengan nilai 4,40 atau dengan skor agak suka.
6. Skor organoleptik rasa, yang paling disukai adalah yang difermentasikan pada konsentrasi gula 1,5 %, suhu dingin dan lama fermentasi 10 dan 15 hari dengan nilai 4,10 atau dengan skor agak suka.
7. Skor organoleptik tekstur, yang paling disukai adalah yang difermentasikan pada konsentrasi gula 2,5 %, suhu dingin dan lama fermentasi 20 hari dengan nilai 4,45 atau dengan skor agak suka.
8. Skor organoleptik penerimaan keseluruhan, yang paling disukai adalah yang difermentasikan pada konsentrasi gula 2,0 %, suhu dingin dan lama fermentasi 20 hari dengan nilai 4,40 atau dengan skor agak suka.

Untuk memperoleh produk acar jahe yang optimum dapat dilakukan dengan memfermentasikan jahe pada konsentrasi penambahan gula 2,0 %, suhu dingin, dan lama fermentasi 10 hari.

B. SARAN

Untuk pengamatan lebih lanjut, perlu diindentifikasi bakteri yang berperan dalam pembuatan acar stock jahe dan perlu dicari pula pengolahan acar stock menjadi acar konsumsi jenis lain yang paling baik.

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LAMPIRAN

Lampiran 1

Daftar Pertanyaan Untuk Panelis Dalam Uji Organoleptik

Produk Acar Jahe

Nama : .....

Jenis Kel. : .....

Tgl. pengujian : .....

Bahan Uji : .....

Perintah :

Dihadapan saudara tersedia 18 sampel berkode, berilah penilaian pada sampel tersebut dengan skala 1-5 dengan kriteria sebagai berikut :

(1) Tidak suka

(2) Agak tidak suka

(3) Biasa/netral

(4) Agak suka

(5) Suka

No.	Uji Organoleptik	Sampel																	
		1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I
1.	Warna																		
2.	Aroma																		
3.	Rasa																		
4.	Tekstur																		
5.	Penerimaan Keseluruhan																		

Tuliskan komentar anda tentang produk acar ini !

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Lampiran 2

LAMBDA-KAPPA 13:02 Friday, Aug 21, 1998

---------- MATERIAL=BAHAN ----------

Analysis of Variance Procedure
Class Level Information

Class	Levels	Values
SUHU	2	Dingin Kamar
GULA	3	1,5% 2,0% 2,5%
HARI	3	10 15 20
UL	3	1 2 3

Number of observations in by group = 54
Analysis of Variance Procedure

Dependent Variable: pH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
PERL	17	32.63827593	1.91989858	22.88	0.0001
SUHU	1	12.16475741	12.16475741	144.99	0.0001
GULA	2	0.33024815	0.16512407	1.97	0.1545
SUHU*GULA	2	0.98002593	0.49001296	5.84	0.0064
HARI	2	3.52650370	1.76325185	21.02	0.0001
SUHU*HARI	2	5.51930370	2.75965185	32.89	0.0001
GULA*HARI	4	7.99214074	1.99803519	23.82	0.0001
SUHU*GULA*HARI	4	2.12529630	0.53132407	6.33	0.0006
Error	36	3.02033333	0.08389815		
Corrected Total	53	35.65860926			

R-Square	C.V.	Root MSE	pH Mean
0.915299	5.208350	0.289652	5.56129630

---------- MATERIAL=BAHAN ----------

Duncan's Multiple Range Test for variable: pH

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 36 MSE= 0.083898

Number of Means	2	3	4	5	6	7	8	9	10
Critical Range	0.480	0.504	0.521	0.532	0.541	0.548	0.554	0.558	0.562

Number of Means	11	12	13	14	15	16	17	18
Critical Range	0.566	0.568	0.571	0.572	0.574	0.576	0.577	0.578

Means with the same letter are not significantly different.

Duncan Grouping			Mean	N	PERL
	A		6.673	3	Dingin 1,5% 20
	A				
B	A		6.470	3	Dingin 2,0% 15
B	A				
B	A		6.387	3	Dingin 1,5% 15
B	A				
B	A		6.327	3	Dingin 2,0% 20
B	A				
B	A		6.323	3	Dingin 2,5% 20
B	A				
B	A		6.230	3	Dingin 2,5% 10
B					
B	C		5.940	3	Dingin 2,5% 15
	C				
D	C		5.667	3	Kamar 2,0% 15
D	C				
D	C		5.657	3	Kamar 2,5% 10
D	C				
D	C		5.613	3	Kamar 1,5% 15
D					
D	E		5.400	3	Dingin 2,0% 10
D	E				
D	E		5.353	3	Kamar 2,0% 20
D	E				
D	E	F	5.240	3	Kamar 2,5% 15
	E	F			
G	E	F	4.930	3	Kamar 1,5% 20
G	E	F			
G	E	F	4.897	3	Kamar 1,5% 10
G		F			
G		F	4.813	3	Kamar 2,0% 10
G					
G			4.573	3	Dingin 1,5% 10
	H		3.610	3	Kamar 2,5% 20

Lampiran 4

LAMBDA-KAPPA 13:02 Friday, Aug 21, 1998

---------- MATERIAL=LARUTAN ----------

Analysis of Variance Procedure
Class Level Information

Class	Levels	Values
SUHU	2	Dingin Kamar
GULA	3	1,5% 2,0% 2,5%
HARI	3	10 15 20
UL	3	1 2 3

Number of observations in by group = 54
Analysis of Variance Procedure

Dependent Variable: pH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
PERL	17	34.16900926	2.00994172	17.38	0.0001
SUHU	1	12.50889074	12.50889074	108.14	0.0001
GULA	2	0.27084815	0.13542407	1.17	0.3217
SUHU*GULA	2	1.06871481	0.53435741	4.62	0.0164
HARI	2	3.27064815	1.63532407	14.14	0.0001
SUHU*HARI	2	5.19491481	2.59745741	22.45	0.0001
GULA*HARI	4	9.75602963	2.43900741	21.09	0.0001
SUHU*GULA*HARI	4	2.09896296	0.52474074	4.54	0.0045
Error	36	4.16426667	0.11567407		
Corrected Total	53	38.33327593			

R-Square	C.V.	Root MSE	pH Mean
0.891367	6.192764	0.340109	5.49203704

---------- MATERIAL=LARUTAN ----------

Duncan's Multiple Range Test for variable: pH

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 36 MSE= 0.115674

Number of Means	2	3	4	5	6	7	8	9	10
Critical Range	0.563	0.592	0.611	0.624	0.635	0.643	0.650	0.656	0.660

Number of Means	11	12	13	14	15	16	17	18
Critical Range	0.664	0.667	0.670	0.672	0.674	0.676	0.677	0.679

Means with the same letter are not significantly different.

Duncan Grouping			Mean	N	PERL
	A		6.707	3	Dingin 1,5% 20
	A				
B	A		6.427	3	Dingin 1,5% 15
B	A				
B	A		6.290	3	Dingin 2,0% 15
B	A				
B	A		6.273	3	Dingin 2,0% 20
B	A				
B	A	C	6.190	3	Dingin 2,5% 20
B	A	C			
B	A	C	6.157	3	Dingin 2,5% 10
B		C			
B	D	C	5.873	3	Dingin 2,5% 15
	D	C			
E	D	C	5.597	3	Kamar 2,5% 10
E	D				
E	D		5.500	3	Kamar 2,0% 15
E	D				
E	D		5.483	3	Kamar 1,5% 15
E	D				
E	D	F	5.277	3	Dingin 2,0% 10
E		F			
E		F	5.237	3	Kamar 2,0% 20
E		F			
E		F	5.203	3	Kamar 1,5% 20
E		F			
E	G	F	5.173	3	Kamar 2,5% 15
	G	F			
	G	F	4.773	3	Kamar 1,5% 10
	G	F			
	G	F	4.760	3	Kamar 2,0% 10
	G				
	G		4.567	3	Dingin 1,5% 10
	H		3.370	3	Kamar 2,5% 20

Lampiran 6

---------- MATERIAL=BAHAN ----------

Analysis of Variance Procedure
Class Level Information

Class	Levels	Values
SUHU	2	Dingin Kamar
GULA	3	1,5% 2,0% 2,5%
HARI	3	10 15 20
UL	3	1 2 3

Number of observations in by group = 54
Analysis of Variance Procedure

Dependent Variable: TOT_ASAM

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
PERL	17	0.02526667	0.00148627	3.95	0.0003
SUHU	1	0.00267407	0.00267407	7.11	0.0114
GULA	2	0.01194444	0.00597222	15.89	0.0001
SUHU*GULA	2	0.00007037	0.00003519	0.09	0.9109
HARI	2	0.00134444	0.00067222	1.79	0.1818
SUHU*HARI	2	0.00015926	0.00007963	0.21	0.8101
GULA*HARI	4	0.00377778	0.00094444	2.51	0.0586
SUHU*GULA*HARI	4	0.00529630	0.00132407	3.52	0.0159
Error	36	0.01353333	0.00037593		
Corrected Total	53	0.03880000			

R-Square	C.V.	Root MSE	TOT_ASAM Mean
0.651203	9.232766	0.019389	0.21000000

---------- MATERIAL=BAHAN ----------

Duncan's Multiple Range Test for variable: TOT_ASAM

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 36 MSE= 0.000376

Number of Means	2	3	4	5	6	7	8	9	10
Critical Range	.0321	.0337	.0349	.0356	.0362	.0367	.0371	.0374	.0376

Number of Means	11	12	13	14	15	16	17	18
Critical Range	.0379	.0380	.0382	.0383	.0384	.0385	.0386	.0387

Means with the same letter are not significantly different.

Duncan Grouping				Mean	N	PERL
		A		0.2500	3	Kamar 2,5% 15
		A				
B		A		0.2367	3	Kamar 2,5% 20
B		A				
B		A	C	0.2300	3	Kamar 2,0% 20
B		A	C			
B		A	C	0.2233	3	Dingin 2,5% 10
B		A	C			
B		A	C	0.2200	3	Dingin 2,5% 15
B		A	C			
B		A	C	0.2200	3	Dingin 2,0% 20
B		A	C			
B		A	C	0.2200	3	Dingin 2,5% 20
B		A	C			
B	D	A	C	0.2167	3	Kamar 1,5% 10
B	D	A	C			
B	D	A	C	0.2167	3	Kamar 2,0% 15
B	D	A	C			
B	D	A	C	0.2133	3	Kamar 2,0% 10
B	D	A	C			
B	D	A	C	0.2133	3	Dingin 1,5% 15
B	D		C			
B	D		C	0.2100	3	Kamar 2,5% 10
B	D		C			
B	D	E	C	0.2000	3	Kamar 1,5% 15
B	D	E	C			
B	D	E	C	0.2000	3	Dingin 2,0% 10
	D	E	C			
	D	E	C	0.1967	3	Dingin 2,0% 15
	D	E				
F	D	E		0.1800	3	Kamar 1,5% 20
F		E				
F		E		0.1733	3	Dingin 1,5% 20
F						
F				0.1600	3	Dingin 1,5% 10

Lampiran 8

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---------- MATERIAL=LARUTAN. ----------

Class	Levels	Values
SUHU	2	Dingin Kamar
GULA	3	1,5% 2,0% 2,5%
HARI	3	10 15 20
UL	3	1 2 3

Number of observations in by group = 54

Analysis of Variance Procedure

Dependent Variable: TOT_ASAM

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
PERL	17	0.05640000	0.00331765	6.31	0.0001
SUHU	1	0.01014074	0.01014074	19.28	0.0001
GULA	2	0.02381111	0.01190556	22.64	0.0001
SUHU*GULA	2	0.00120370	0.00060185	1.14	0.3297
HARI	2	0.00454444	0.00227222	4.32	0.0208
SUHU*HARI	2	0.00151481	0.00075741	1.44	0.2502
GULA*HARI	4	0.00467778	0.00116944	2.22	0.0858
SUHU*GULA*HARI	4	0.01050741	0.00262685	4.99	0.0026
Error	36	0.01893333	0.00052593		
Corrected Total	53	0.07533333			

R-Square	C.V.	Root MSE	TOT_ASAM Mean
0.748673	12.43359	0.022933	0.18444444

Lampiran 9

LAMBDA-KAPPA 13:02 Friday, Aug 21, 1998

---------- MATERIAL=LARUTAN ----------

Duncan's Multiple Range Test for variable: TOT_ASAM

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 36 MSE= 0.000526

Number of Means	2	3	4	5	6	7	8	9	10
Critical Range	.0380	.0399	.0412	.0421	.0428	.0434	.0438	.0442	.0445

Number of Means	11	12	13	14	15	16	17	18
Critical Range	.0448	.0450	.0452	.0453	.0455	.0456	.0457	.0458

Means with the same letter are not significantly different.

Duncan Grouping			Mean	N	PERL
	A		0.2667	3	Kamar 2,5% 15
	A				
B	A		0.2300	3	Kamar 2,5% 20
B					
B	C		0.2133	3	Kamar 2,0% 10
B	C				
B	C	D	0.2000	3	Kamar 2,0% 15
B	C	D			
B	C	D	0.2000	3	Dingin 2,5% 15
B	C	D			
B	C	D	0.1967	3	Kamar 2,0% 20
B	C	D			
B	C	D	0.1900	3	Kamar 1,5% 10
B	C	D			
B	C	D	0.1867	3	Dingin 2,5% 10
	C	D			
	C	D	0.1833	3	Dingin 2,5% 20
	C	D			
	C	D	0.1833	3	Kamar 2,5% 10
	C	D			
	C	D	0.1800	3	Dingin 2,0% 20
	C	D			
E	C	D	0.1733	3	Dingin 2,0% 15
E	C	D			
E	C	D	0.1733	3	Dingin 1,5% 15
E	C	D			
E	C	D	0.1700	3	Kamar 1,5% 15
E		D			
E		D	0.1633	3	Dingin 2,0% 10
E		D			
E	F	D	0.1567	3	Dingin 1,5% 20
E	F				
E	F		0.1333	3	Kamar 1,5% 20
	F				
	F		0.1200	3	Dingin 1,5% 10

Analysis of Variance Procedure

Analysis of Variance Procedure
Class Level Information

Class	Levels	Values
SUHU	2	Dingin Kamar
GULA	3	1,5% 2,0% 2,5%
HARI	3	10 15 20
UL	3	1 2 3

Number of observations in data set = 54
Analysis of Variance Procedure

Dependent Variable: JERNIH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
PERL	17	3302.666667	194.274510	6.58	0.0001
SUHU	1	294.000000	294.000000	9.96	0.0032
GULA	2	1945.333333	972.666667	32.95	0.0001
SUHU*GULA	2	155.111111	77.555556	2.63	0.0861
HARI	2	804.111111	402.055556	13.62	0.0001
SUHU*HARI	2	54.333333	27.166667	0.92	0.4076
GULA*HARI	4	7.555556	1.888889	0.06	0.9921
SUHU*GULA*HARI	4	42.222222	10.555556	0.36	0.8370
Error	36	1062.666667	29.518519		
Corrected Total	53	4365.333333			

R-Square	C.V.	Root MSE	JERNIH Mean
0.756567	13.77404	5.433095	39.4444444

Duncan's Multiple Range Test for variable: JERNIH

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 36 MSE= 29.51852

Number of Means 2
Critical Range 2.998

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	SUHU
A	41.778	27	Kamar
B	37.111	27	Dingin

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Duncan's Multiple Range Test for variable: JERNIH

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 36 MSE= 29.51852

Number of Means	2	3	4	5	6	7	8	9	10
Critical Range	9.00	9.46	9.77	9.97	10.14	10.28	10.39	10.47	10.55

Number of Means	11	12	13	14	15	16	17	18
Critical Range	10.61	10.66	10.70	10.74	10.77	10.80	10.82	10.84

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	PERL
A	55.667	3	Kamar 2,5% 20
A			
B A	51.000	3	Kamar 2,0% 20
B A			
B A C	46.667	3	Kamar 2,0% 15
B A C			
B D A C	46.000	3	Kamar 2,5% 15
B D A C			
B D A C	46.000	3	Dingin 2,5% 20
B D C			
B D C	45.000	3	Dingin 2,5% 15
B D C			
B D E C	41.333	3	Kamar 2,5% 10
D E C			
F D E C	40.000	3	Dingin 2,5% 10
F D E C			
F D E C	40.000	3	Kamar 2,0% 10
F D E C			
F D E C	40.000	3	Dingin 2,0% 20
F D E C			
G F D E C	37.333	3	Kamar 1,5% 20
G F D E C			
G F D E C H	36.333	3	Dingin 2,0% 15
G F D E H			
G F D E H	35.667	3	Dingin 1,5% 20
G F E H			
G F E H	34.000	3	Dingin 2,0% 10
G F H			
G F H	30.667	3	Kamar 1,5% 15
G F H			
G F H	30.667	3	Dingin 1,5% 15
G H			
G H	27.333	3	Kamar 1,5% 10
H			
H	26.333	3	Dingin 1,5% 10

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Analysis of Variance Procedure
Class Level Information

Class	Levels	Values
SUHU	2	Dingin Kamar
GULA	3	1,5% 2,0% 2,5%
HARI	3	10 15 20
UL	3	1 2 3

Number of observations in data set = 54
Analysis of Variance Procedure

Dependent Variable: KERAS

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
PERL	17	0.15580926	0.00916525	1.26	0.2693
SUHU	1	0.02281667	0.02281667	3.15	0.0845
GULA	2	0.01304815	0.00652407	0.90	0.4156
SUHU*GULA	2	0.00021111	0.00010556	0.01	0.9856
HARI	2	0.01884815	0.00942407	1.30	0.2851
SUHU*HARI	2	0.00934444	0.00467222	0.64	0.5309
GULA*HARI	4	0.07729630	0.01932407	2.67	0.0480
SUHU*GULA*HARI	4	0.01424444	0.00356111	0.49	0.7422
Error	36	0.26100000	0.00725000		
Corrected Total	53	0.41680926			

R-Square	C.V.	Root MSE	KERAS Mean
0.373814	16.65315	0.085147	0.51129630

Duncan's Multiple Range Test for variable: KERAS

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 36 MSE= 0.00725

Number of Means 2
Critical Range .0470

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	SUHU
A	0.5319	27	Kamar
A			
A	0.4907	27	Dingin

Lampiran 16

Duncan's Multiple Range Test for variable: KERAS

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 36 MSE= 0.00725

Number of Means	2	3	4	5	6	7	8	9	10
Critical Range	0.141	0.148	0.153	0.156	0.159	0.161	0.163	0.164	0.165

Number of Means	11	12	13	14	15	16	17	18
Critical Range	0.166	0.167	0.168	0.168	0.169	0.169	0.170	0.170

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	PERL
A	0.6267	3	Kamar 2,0% 20
A			
B A	0.5700	3	Dingin 2,0% 20
B A			
B A	0.5700	3	Dingin 2,5% 20
B A			
B A	0.5667	3	Kamar 2,5% 15
B A			
B A	0.5600	3	Kamar 2,5% 10
B A			
B A	0.5533	3	Kamar 1,5% 10
B A			
B A	0.5367	3	Kamar 1,5% 15
B A			
B A	0.5367	3	Kamar 2,5% 20
B A			
B A	0.4900	3	Dingin 1,5% 15
B A			
B A	0.4867	3	Dingin 2,0% 15
B A			
B A	0.4833	3	Dingin 2,5% 10
B A			
B A	0.4767	3	Dingin 2,5% 15
B A			
B A	0.4733	3	Kamar 2,0% 10
B A			
B A	0.4733	3	Kamar 2,0% 15
B A			
B A	0.4733	3	Dingin 1,5% 10
B A			
B A	0.4600	3	Kamar 1,5% 20
B			
B	0.4567	3	Dingin 1,5% 20
B			
B	0.4100	3	Dingin 2,0% 10

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Analysis of Variance Procedure

Dependent Variable: WARNA

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
PANELIS	19	88.16388889	4.64020468	5.05	0.0001
PERL	17	69.02500000	4.06029412	4.42	0.0001
SUHU	1	1.22500000	1.22500000	1.33	0.2489
GULA	2	39.21666667	19.60833333	21.35	0.0001
SUHU*GULA	2	5.45000000	2.72500000	2.97	0.0528
HARI	2	18.81666667	9.40833333	10.25	0.0001
SUHU*HARI	2	0.15000000	0.07500000	0.08	0.9216
GULA*HARI	4	2.71666667	0.67916667	0.74	0.5655
SUHU*GULA*HARI	4	1.45000000	0.36250000	0.39	0.8124
Error	323	296.5861111	0.9182233		
Corrected Total	359	453.7750000			

R-Square	C.V.	Root MSE	WARNA Mean
0.346403	26.55630	0.958240	3.60833333

Duncan's Multiple Range Test for variable: WARNA

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 323 MSE= 0.918223

Number of Means 2
Critical Range 0.201

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	SUHU
A	3.667	180	DINGIN
A			
A	3.550	180	KAMAR

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Duncan's Multiple Range Test for variable: WARNA

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 323 MSE= 0.918223

Number of Means	2	3	4	5	6	7	8	9	10
Critical Range	0.602	0.633	0.653	0.668	0.681	0.691	0.699	0.706	0.712

Number of Means	11	12	13	14	15	16	17	18
Critical Range	0.717	0.721	0.725	0.728	0.731	0.733	0.735	0.737

Means with the same letter are not significantly different.

Duncan Grouping					Mean	N	PERL		
			A		4.200	20	DINGIN	2,5%	10
			A						
	B		A		4.100	20	DINGIN	2,0%	10
	B		A						
	B		A		4.100	20	DINGIN	2,5%	15
	B		A						
	B		A		4.100	20	KAMAR	2,5%	10
	B		A						
	B		A	C	4.000	20	KAMAR	2,0%	10
	B		A	C					
	B		A	C	3.950	20	KAMAR	2,5%	15
	B		A	C					
	B		A	C	3.950	20	DINGIN	2,5%	20
	B		A	C					
	B	D	A	C	3.750	20	KAMAR	2,5%	20
	B	D	A	C					
E	B	D	A	C	3.700	20	KAMAR	2,0%	15
E	B	D	A	C					
E	B	D	A	C	3.650	20	DINGIN	1,5%	10
E	B	D		C					
E	B	D		C	3.450	20	KAMAR	2,0%	20
E	B	D		C					
E	B	D		C	3.400	20	DINGIN	1,5%	15
E		D		C					
E		D		C	3.350	20	DINGIN	2,0%	15
E		D		C					
E		D		C	3.350	20	KAMAR	1,5%	10
E		D							
E		D	F		3.150	20	DINGIN	1,5%	20
E		D	F						
E		D	F		3.100	20	DINGIN	2,0%	20
E			F						
E			F		3.000	20	KAMAR	1,5%	15
			F						
			F		2.650	20	KAMAR	1,5%	20

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Analysis of Variance Procedure

Dependent Variable: AROMA

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
PANELIS	19	67.01111111	3.52690058	3.17	0.0001
PERL	17	133.4000000	7.8470588	7.05	0.0001
SUHU	1	24.54444444	24.54444444	22.05	0.0001
GULA	2	2.15000000	1.07500000	0.97	0.3817
SUHU*GULA	2	0.70555556	0.35277778	0.32	0.7286
HARI	2	35.26666667	17.63333333	15.84	0.0001
SUHU*HARI	2	43.35555556	21.67777778	19.48	0.0001
GULA*HARI	4	19.03333333	4.75833333	4.28	0.0022
SUHU*GULA*HARI	4	8.34444444	2.08611111	1.87	0.1146
Error	323	359.4888889	1.1129687		
Corrected Total	359	559.9000000			

R-Square	C.V.	Root MSE	AROMA Mean
0.357941	33.49122	1.054973	3.15000000

Duncan's Multiple Range Test for variable: AROMA

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 323 MSE= 1.112969

Number of Means 2
Critical Range 0.221

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	SUHU
A	3.411	180	DINGIN
B	2.889	180	KAMAR

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Duncan's Multiple Range Test for variable: AROMA

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 323 MSE= 1.112969

Number of Means	2	3	4	5	6	7	8	9	10
Critical Range	0.663	0.697	0.719	0.735	0.749	0.761	0.770	0.778	0.784

Number of Means	11	12	13	14	15	16	17	18
Critical Range	0.789	0.794	0.798	0.801	0.804	0.807	0.809	0.812

Means with the same letter are not significantly different.

Duncan Grouping			Mean	N	PERL
	A		4.400	20	DINGIN 2,0% 10
	A				
	A		4.250	20	DINGIN 1,5% 10
	A				
B	A		4.000	20	DINGIN 2,5% 10
B	A				
B	A	C	3.800	20	DINGIN 2,5% 15
B		C			
B	D	C	3.450	20	KAMAR 2,0% 20
B	D	C			
B	D	C	3.350	20	KAMAR 1,5% 10
B	D	C			
B	D	C	3.350	20	DINGIN 2,0% 15
	D	C			
E	D	C	3.100	20	DINGIN 1,5% 15
E	D				
E	D		3.050	20	KAMAR 2,5% 15
E	D				
E	D		3.000	20	KAMAR 2,5% 20
E	D				
E	D		2.850	20	DINGIN 2,0% 20
E	D				
E	D		2.800	20	KAMAR 1,5% 15
E	D				
E	D		2.800	20	KAMAR 2,0% 15
E	D				
E	D		2.750	20	KAMAR 2,5% 10
E					
E			2.550	20	DINGIN 2,5% 20
E					
E			2.450	20	KAMAR 2,0% 10
E					
E			2.400	20	DINGIN 1,5% 20
E					
E			2.350	20	KAMAR 1,5% 20

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Analysis of Variance Procedure

Dependent Variable: RASA

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
PANELIS	19	71.47500000	3.76184211	3.55	0.0001
PERL	17	81.11388889	4.77140523	4.50	0.0001
SUHU	1	5.13611111	5.13611111	4.85	0.0284
GULA	2	6.15555556	3.07777778	2.90	0.0562
SUHU*GULA	2	48.42222222	24.21111111	22.85	0.0001
HARI	2	0.68888889	0.34444444	0.33	0.7227
SUHU*HARI	2	16.15555556	8.07777778	7.62	0.0006
GULA*HARI	4	3.54444444	0.88611111	0.84	0.5029
SUHU*GULA*HARI	4	1.01111111	0.25277778	0.24	0.9164
Error	323	342.2750000	1.0596749		
Corrected Total	359	494.8638889			

R-Square	C.V.	Root MSE	RASA Mean
0.308345	30.45077	1.029405	3.38055556

Duncan's Multiple Range Test for variable: RASA

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 323 MSE= 1.059675

Number of Means 2
Critical Range 0.216

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	SUHU
A	3.500	180	DINGIN
B	3.261	180	KAMAR

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NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 323 MSE= 1.059675

Number of Means	2	3	4	5	6	7	8	9	10
Critical Range	0.647	0.680	0.701	0.718	0.731	0.742	0.751	0.759	0.765

Number of Means	11	12	13	14	15	16	17	18
Critical Range	0.770	0.775	0.779	0.782	0.785	0.788	0.790	0.792

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	PERL
A	4.100	20	DINGIN 1,5% 10
A			
A	4.100	20	DINGIN 1,5% 15
A			
A	4.050	20	DINGIN 2,0% 10
A			
B A	3.850	20	DINGIN 1,5% 20
B A			
B A	3.750	20	KAMAR 2,5% 20
B A			
B A C	3.600	20	KAMAR 2,0% 20
B A C			
B A C	3.550	20	KAMAR 2,0% 15
B A C			
B D A C	3.350	20	DINGIN 2,0% 15
B D A C			
B D A C	3.350	20	KAMAR 2,5% 15
B D A C			
B D A C	3.350	20	KAMAR 2,5% 10
B D A C			
B D A C	3.350	20	DINGIN 2,5% 10
B D A C			
B D A C	3.350	20	KAMAR 2,0% 10
B D C			
B D C	3.250	20	DINGIN 2,0% 20
B D C			
B D E C	3.100	20	KAMAR 1,5% 20
D E C			
D E C	2.850	20	KAMAR 1,5% 15
D E C			
D E C	2.850	20	DINGIN 2,5% 15
D E			
D E	2.600	20	DINGIN 2,5% 20
E			
E	2.450	20	KAMAR 1,5% 10

Analysis of Variance Procedure

Dependent Variable: TEKSTUR

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
PANELIS	19	63.49722222	3.34195906	4.50	0.0001
PERL	17	31.08055556	1.82826797	2.46	0.0012
SUHU	1	14.80277778	14.80277778	19.94	0.0001
GULA	2	0.23888889	0.11944444	0.16	0.8514
SUHU*GULA	2	4.73888889	2.36944444	3.19	0.0424
HARI	2	6.50555556	3.25277778	4.38	0.0132
SUHU*HARI	2	1.87222222	0.93611111	1.26	0.2847
GULA*HARI	4	2.36111111	0.59027778	0.80	0.5290
SUHU*GULA*HARI	4	0.56111111	0.14027778	0.19	0.9441
Error	323	239.75277778	0.74226866		
Corrected Total	359	334.33055556			

R-Square	C.V.	Root MSE	TEKSTUR Mean
0.282887	22.16998	0.861550	3.88611111

Duncan's Multiple Range Test for variable: TEKSTUR

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 323 MSE= 0.742269

Number of Means 2
Critical Range 0.180

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	SUHU
A	4.0889	180	DINGIN
B	3.6833	180	KAMAR

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Duncan's Multiple Range Test for variable: TEKSTUR

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 323 MSE= 0.742269

Number of Means	2	3	4	5	6	7	8	9	10
Critical Range	0.541	0.569	0.587	0.601	0.612	0.621	0.629	0.635	0.640

Number of Means	11	12	13	14	15	16	17	18
Critical Range	0.645	0.648	0.652	0.655	0.657	0.659	0.661	0.663

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	PERL
A	4.450	20	DINGIN 2,5% 20
A			
B A	4.400	20	DINGIN 2,0% 20
B A			
B A C	4.250	20	DINGIN 2,5% 15
B A C			
B A C	4.200	20	DINGIN 2,0% 15
B A C			
B D A C	4.100	20	DINGIN 1,5% 20
B D A C			
E B D A C	4.000	20	DINGIN 2,0% 10
E B D A C			
E B D A C	3.950	20	DINGIN 1,5% 15
E B D A C			
E B D A C	3.950	20	KAMAR 1,5% 20
E B D A C			
E B D A C	3.900	20	KAMAR 1,5% 10
E B D C			
E B D C	3.800	20	DINGIN 1,5% 10
E D C			
E D C	3.750	20	KAMAR 1,5% 15
E D C			
E D C	3.700	20	KAMAR 2,0% 15
E D C			
E D C	3.700	20	KAMAR 2,5% 20
E D C			
E D C	3.650	20	DINGIN 2,5% 10
E D C			
E D C	3.650	20	KAMAR 2,5% 15
E D C			
E D C	3.600	20	KAMAR 2,0% 20
E D			
E D	3.500	20	KAMAR 2,0% 10
E			
E	3.400	20	KAMAR 2,5% 10

Analysis of Variance Procedure

Dependent Variable: SELURUH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
PANELIS	19	53.54166667	2.81798246	3.55	0.0001
PERL	17	46.94722222	2.76160131	3.48	0.0001
SUHU	1	12.46944444	12.46944444	15.73	0.0001
GULA	2	21.37222222	10.68611111	13.48	0.0001
SUHU*GULA	2	1.87222222	0.93611111	1.18	0.3084
HARI	2	3.33888889	1.66944444	2.11	0.1235
SUHU*HARI	2	2.27222222	1.13611111	1.43	0.2401
GULA*HARI	4	4.51111111	1.12777778	1.42	0.2263
SUHU*GULA*HARI	4	1.11111111	0.27777778	0.35	0.8437
Error	323	256.1083333	0.7929051		
Corrected Total	359	356.5972222			

R-Square	C.V.	Root MSE	SELURUH Mean
0.281799	23.14533	0.890452	3.84722222

Duncan's Multiple Range Test for variable: SELURUH

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 323 MSE= 0.792905

Number of Means 2
Critical Range 0.186

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	SUHU
A	4.0333	180	DINGIN
B	3.6611	180	KAMAR

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Duncan's Multiple Range Test for variable: SELURUH

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 323 MSE= 0.792905

Number of Means	2	3	4	5	6	7	8	9	10
Critical Range	0.559	0.588	0.607	0.621	0.632	0.642	0.650	0.656	0.662

Number of Means	11	12	13	14	15	16	17	18
Critical Range	0.666	0.670	0.674	0.676	0.679	0.681	0.683	0.685

Means with the same letter are not significantly different.

Duncan Grouping			Mean	N	PERL	T	J	Hari
	A		4.400	20	DINGIN	2,0%		20
	A							
B	A		4.250	20	DINGIN	2,0%		15
B	A							
B	A		4.250	20	KAMAR	2,0%		20
B	A							
B	A		4.200	20	DINGIN	2,0%		10
B	A							
B	A		4.200	20	DINGIN	1,5%		10
B	A							
B	A		4.100	20	KAMAR	2,0%		15
B	A							
B	A		4.100	20	DINGIN	2,5%		20
B	A							
B	A	C	3.950	20	DINGIN	2,5%		15
B	A	C						
B	A	C	3.950	20	KAMAR	2,0%		10
B	A	C						
B	A	C	3.800	20	KAMAR	2,5%		20
B	A	C						
B	A	C	3.800	20	DINGIN	2,5%		10
B	A	C						
B	A	C	3.750	20	DINGIN	1,5%		20
B		C						
B	D	C	3.650	20	DINGIN	1,5%		15
B	D	C						
B	D	C	3.600	20	KAMAR	1,5%		20
	D	C						
	D	C	3.400	20	KAMAR	1,5%		15
	D	C						
	D	C	3.400	20	KAMAR	1,5%		10
	D	C						
	D	C	3.350	20	KAMAR	2,5%		15
	D							
	D		3.100	20	KAMAR	2,5%		10