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LAMPIRAN



Lampiran 1 Data rendemen minyak kelapa dengan pengaruh penambahan konsentrasi sari buah pepaya dan lama pemeraman

Konsentrasi	Ulangan	Lama Pemeraman			
		15 jam	20 jam	25 jam	30 jam
15 ml	1	22,75	23,35	23,025	24,125
	2	22,875	23,75	24	24,575
	3	22,675	22,9	24,075	24,075
20 ml	1	23,05	23,75	24,7	24,625
	2	23,375	23,225	24,075	24,5
	3	23,375	23,5	24,45	24,575
25 ml	1	24,175	24,775	27,075	27,75
	2	24	25,475	26,3	27,15
	3	24,3	25,85	24,625	28,025
30 ml	1	27,4	31,2	33,475	33
	2	28,35	31,625	32,3	34,375
	3	28,5	30,325	33,325	34,5

Sumber : Aulia, 2010



Lampiran 2 Perhitungan Uji Liliefors

- 1) Urutkan Data yang terkecil ke yang terbesar
- 2) Menghitung nilai S_y

$$S_y = \sqrt{\frac{n \sum_{i=1}^n Y_i^2 - (\sum_{i=1}^n y_i)^2}{n(n-1)}} = \sqrt{\frac{48(33518,73) - 1257,25^2}{48(48-1)}} = 3,537$$

- 3) Menghitung nilai $F(z_i)$ dengan rumus sebagai berikut :

$$F(z_i) = P[Z \leq z_i]; z_i = \frac{y_{io} - \bar{y}_{oo}}{S_y}$$

Nilai $F(z_i)$ terdapat pada tabel bantu uji Liliefors pada lampiran (2b)

- 4) Menghitung nilai $S(z_i)$ dengan rumus :

$$S(z_i) = \frac{\text{banyaknya } z_1, z_2, \dots, z_N \leq z_i}{N}$$

Nilai $S(z_i)$ terdapat pada tabel bantu uji Liliefors pada lampiran (2b)

- 5) Menghitung nilai selisih $|F(z_i) - S(z_i)|$
- 6) Nilai L_o adalah selisih terbesar dari $|F(z_i) - S(z_i)|$



Lampiran 3 Tabel Bantu Uji Liliefors Pada Data

Y	$Y_i - \bar{Y}$	z_i	$F(z_i)$	$S(z_i)$	$ F(z_i) - S(z_i) $
22.675	-3.51771	-0.99458	0.159969	0.020833	0.139136
22.75	-3.44271	-0.97338	0.165183	0.041667	0.123516
22.875	-3.31771	-0.93804	0.174113	0.0625	0.111613
22.9	-3.29271	-0.93097	0.175935	0.083333	0.092602
23.025	-3.16771	-0.89563	0.185226	0.104167	0.08106
23.05	-3.14271	-0.88856	0.18712	0.125	0.06212
23.225	-2.96771	-0.83908	0.200713	0.145833	0.054879
23.35	-2.84271	-0.80374	0.210775	0.166667	0.044108
23.375	-2.81771	-0.79667	0.212822	0.208333	0.004489
23.375	-2.81771	-0.79667	0.212822	0.208333	0.004489
23.5	-2.69271	-0.76133	0.223231	0.229167	0.005936
23.75	-2.44271	-0.69064	0.244895	0.270833	0.025938
23.75	-2.44271	-0.69064	0.244895	0.270833	0.025938
24	-2.19271	-0.61996	0.267643	0.3125	0.044857
24	-2.19271	-0.61996	0.267643	0.3125	0.044857
24.075	-2.11771	-0.59875	0.274669	0.375	0.100331
24.075	-2.11771	-0.59875	0.274669	0.375	0.100331
24.075	-2.11771	-0.59875	0.274669	0.375	0.100331
24.125	-2.06771	-0.58462	0.279403	0.395833	0.11643
24.175	-2.01771	-0.57048	0.284176	0.416667	0.13249
24.3	-1.89271	-0.53514	0.296277	0.4375	0.141223
24.45	-1.74271	-0.49273	0.311103	0.458333	0.147231
24.5	-1.69271	-0.47859	0.316115	0.479167	0.163052
24.575	-1.61771	-0.45738	0.323697	0.520833	0.197136
24.575	-1.61771	-0.45738	0.323697	0.520833	0.197136
24.625	-1.56771	-0.44325	0.328793	0.5625	0.233707
24.625	-1.56771	-0.44325	0.328793	0.5625	0.233707
24.7	-1.49271	-0.42204	0.336497	0.583333	0.246836
24.775	-1.41771	-0.40084	0.34427	0.604167	0.259897
25.475	-0.71771	-0.20292	0.419598	0.625	0.205402
25.85	-0.34271	-0.0969	0.461404	0.645833	0.184429

Sumber : Hasil Olahan,2020



Lampiran 3 Tabel Bantu Uji Liliefors Pada Data (Lanjutan)

Y	$Y_i - \bar{Y}$	z_i	$F(z_i)$	$S(z_i)$	$ F(z_i) - S(z_i) $
26.3	0.107292	0.030335	0.5121	0.666667	0.154567
27.075	0.882292	0.249456	0.598496	0.6875	0.089004
27.15	0.957292	0.270661	0.606674	0.708333	0.101659
27.4	1.207292	0.341345	0.633578	0.729167	0.095589
27.75	1.557292	0.440303	0.670141	0.75	0.079859
28.025	1.832292	0.518055	0.69779	0.770833	0.073043
28.35	2.157292	0.609945	0.729051	0.791667	0.062616
28.5	2.307292	0.652355	0.742914	0.8125	0.069586
30.325	4.132292	1.168349	0.878667	0.833333	0.045334
31.2	5.007292	1.415743	0.921575	0.854167	0.067408
31.625	5.432292	1.535906	0.937719	0.875	0.062719
32.3	6.107292	1.726753	0.957894	0.895833	0.062061
33	6.807292	1.924668	0.972865	0.916667	0.056198
33.325	7.132292	2.016558	0.978129	0.9375	0.040629
33.475	7.282292	2.058968	0.980251	0.958333	0.021918
34.375	8.182292	2.313431	0.989651	0.979167	0.010484
34.5	8.307292	2.348773	0.990582	1	0.009418

Sumber : Hasil Olahan,2020



Lampiran 4 Nilai Kritis Untuk Uji Liliefors

Banyaknya Sample	Taraf Nyata (α)				
	0,01	0,05	0,1	0,15	0,2
n = 4	0,417	0,381	0,352	0,319	0,3
5	0,405	0,337	0,315	0,299	0,285
6	0,364	0,319	0,294	0,277	0,265
7	0,348	0,300	0,276	0,258	0,247
8	0,331	0,285	0,261	0,244	0,233
9	0,311	0,271	0,249	0,233	0,223
10	0,294	0,258	0,239	0,224	0,215
11	0,284	0,249	0,23	0,217	0,206
12	0,275	0,242	0,223	0,212	0,199
13	0,268	0,234	0,214	0,202	0,19
14	0,261	0,227	0,207	0,194	0,183
15	0,257	0,220	0,201	0,187	0,177
16	0,25	0,213	0,195	0,182	0,173
17	0,245	0,206	0,189	0,177	0,169
18	0,239	0,200	0,184	0,173	0,166
19	0,235	0,195	0,179	0,169	0,163
20	0,231	0,19	0,174	0,166	0,16
25	0,2	0,1730	0,158	0,147	0,142
30	0,187	0,161	0,144	0,136	0,131
n > 30	$1,031/\sqrt{n}$	$0,886/\sqrt{n}$	$0,805/\sqrt{n}$	$0,768/\sqrt{n}$	$0,736/\sqrt{n}$

Sumber : Ina Antasari, 2010



Lampiran 5 Perhitungan Uji Kehomogenan variansi

Mengitung nilai S_{ij}^2

$$S_{ij}^2 = \frac{1}{r_{ij}-1} \sum_{i=1}^{\alpha} \sum_{j=1}^{\beta} (y_{ijk} - \bar{y}_{ij.})^2$$

$$\begin{aligned} S_{11}^2 &= \frac{1}{2} ((22,75-22,767)^2 + (22,875-22,767)^2 + (22,675-22,767)^2) \\ &= \frac{1}{2} (0,0204) \\ &= 0,01 \end{aligned}$$

Dengan rumus yang sama diperoleh nilai

$$S_{12}^2 = 0,18$$

$$S_{13}^2 = 0,343$$

$$S_{14}^2 = 0,076$$

$$S_{21}^2 = 0,035$$

$$S_{22}^2 = 0,069$$

$$S_{23}^2 = 1,039$$

$$S_{24}^2 = 0,004$$

$$S_{31}^2 = 0,023$$

$$S_{32}^2 = 0,298$$

$$S_{33}^2 = 1,568$$

$$S_{34}^2 = 0,006492$$

$$S_{41}^2 = 0,2$$

$$S_{42}^2 = 0,356$$

$$S_{43}^2 = 0,439$$

$$S_{44}^2 = 0,409$$



Lampiran 5 Perhitungan Uji Kehomogenan variansi (Lanjutan)

Selanjutnya

$$S_g^2 = \frac{\sum_{i=1}^p (n-1) S_{ij}^2}{N-p}$$

$$S_g^2 = \frac{2(0,01)+2(0,18)+\dots+2(0,409)}{32}$$
$$= \frac{11,486}{32} = 0,359$$

Selanjutnya

$$q = (N - p) \log S_g^2 - \sum_{i=1}^p (n - 1) \log S_{ij}^2$$

$$q = (48 - 16) \log S_g^2 - \sum_{i=1}^9 (3 - 1) \log S_{ij}^2$$

$$q = 32 \log(0,359) - ((2 \times \log(0,01) + 2 \times \log(0,18) + \dots + 2 \times \log(0,409)))$$
$$= (-14,2399) - (-26,692) = 12,452$$

$$c = 1 + \frac{1}{3(p-1)} \left(\sum_{i=1}^p \left(\frac{1}{n-1} \right) - \frac{1}{\sum_{i=1}^p (n-1)} \right)$$

$$c = 1 + \frac{1}{3(16-1)} \left[\left(\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \dots + \frac{1}{2} \right) - \frac{1}{32} \right]$$

$$c = 1 + \frac{1}{45} \left[(8) - \frac{1}{32} \right] = 8,145833$$

sehingga diperoleh :

$$\chi^2_{hit} = \ln(10) \frac{q}{c}$$

$$\chi^2_{hit} = \ln(10) \frac{12,452}{8,145833} = 3,5198$$



Lampiran 6 Tabel Nilai Kritis Sebaran χ^2

ν	Taraf Nyata (α)				
	0,95	0,05	0,025	0,01	0,005
1	0,00393	3,841	5,024	6,635	7,879
2	0,103	5,991	7,378	9,21	10,597
3	0,352	7,815	9,348	11,345	12,838
4	0,711	9,488	11,143	13,277	14,86
5	1,145	11,07	12,832	15,086	16,75
6	1,635	12,592	14,449	16,812	18,548
7	2,167	14,067	16,013	18,475	20,278
8	2,733	15,507	17,535	20,09	21,955
9	3,325	16,919	19,023	21,666	23,589
10	3,94	18,307	20,483	23,209	25,188
11	4,575	19,675	21,92	24,725	26,757
12	5,226	21,026	23,337	26,217	28,3
13	5,892	22,362	24,736	27,688	29,819
14	6,571	23,685	26,119	29,141	31,319
15	7,261	24,996	27,488	30,578	32,801
16	7,962	26,296	28,845	32	34,267
17	8,672	27,587	30,191	33,409	35,718
18	9,39	28,869	31,526	34,805	37,156
19	10,117	30,144	32,852	36,191	38,582
20	10,851	31,41	34,17	37,566	39,997
21	11,591	32,591	35,479	38,932	41,401
22	12,338	33,924	36,781	40,289	42,796
23	13,091	35,172	36,076	41,638	44,181
24	13,848	36,415	39,364	42,98	45,558
25	14,611	37,652	40,646	44,314	46,928
26	15,379	38,885	41,923	45,642	48,296
27	16,151	40,113	43,194	46,963	49,645
28	16,928	41,337	44,461	48,278	50,993
29	17,708	42,557	45,722	49,588	52,336
30	18,493	43,773	46,979	50,892	53,672

Sumber : Ronald E. Walpole (2011)



Lampiran 7 Nilai Sisaan dan Nilai Dugaan

	\hat{y}_{ijk}	\hat{e}_{ijk}	$(\hat{e}_{ijk})^2$	$\hat{e}_{ijk} - \hat{e}_{ijk-1}$	$(\hat{e}_{ijk} - \hat{e}_{ijk-1})^2$
\hat{y}_{111}	24.39063	-1.69062	2.858213		
\hat{y}_{112}	24.39063	-1.51562	2.297119	0.175	0.030625
\hat{y}_{113}	24.39063	-1.71562	2.943369	-0.2	0.04
\hat{y}_{121}	23.13229	0.217708	0.047397	1.933333	3.737778
\hat{y}_{122}	23.13229	0.617708	0.381564	0.4	0.16
\hat{y}_{123}	23.13229	-0.23229	0.053959	-0.85	0.7225
\hat{y}_{131}	24.10729	-1.08229	1.171355	-0.85	0.7225
\hat{y}_{132}	24.10729	-0.10729	0.011512	0.975	0.950625
\hat{y}_{133}	24.10729	-0.03229	0.001043	0.075	0.005625
\hat{y}_{141}	24.92813	-0.80313	0.64501	-0.77083	0.594184
\hat{y}_{142}	24.92813	-0.35313	0.124697	0.45	0.2025
\hat{y}_{143}	24.92813	-0.85313	0.727822	-0.5	0.25
\hat{y}_{211}	22.30938	0.740625	0.548525	1.59375	2.540039
\hat{y}_{212}	22.30938	1.065625	1.135557	0.325	0.105625
\hat{y}_{213}	22.30938	1.065625	1.135557	0	0
\hat{y}_{221}	23.55104	0.198958	0.039584	-0.86667	0.751111
\hat{y}_{222}	23.55104	-0.32604	0.106303	-0.525	0.275625
\hat{y}_{223}	23.55104	-0.05104	0.002605	0.275	0.075625
\hat{y}_{231}	24.52604	0.173958	0.030262	0.225	0.050625
\hat{y}_{232}	24.52604	-0.45104	0.203439	-0.625	0.390625
\hat{y}_{233}	24.52604	-0.07604	0.005782	0.375	0.140625

Sumber : Hasil Olahan,2020



Lampiran 7 Nilai Sisaan dan Nilai Dugaan (Lanjutan)

	\hat{y}_{ijk}	\hat{e}_{ijk}	$(\hat{e}_{ijk})^2$	$\hat{e}_{ijk} - \hat{e}_{ijk-1}$	$(\hat{e}_{ijk} - \hat{e}_{ijk-1})^2$
\hat{y}_{241}	25.34688	-0.72188	0.521104	-0.64583	0.417101
\hat{y}_{242}	25.34688	-0.84688	0.717197	-0.125	0.015625
\hat{y}_{243}	25.34688	-0.77188	0.595791	0.075	0.005625
\hat{y}_{311}	24.16771	0.007292	5.32E-05	0.779167	0.607101
\hat{y}_{312}	24.16771	-0.16771	0.028126	-0.175	0.030625
\hat{y}_{313}	24.16771	0.132292	0.017501	0.3	0.09
\hat{y}_{321}	25.40938	-0.63438	0.402432	-0.76667	0.587778
\hat{y}_{322}	25.40938	0.065625	0.004307	0.7	0.49
\hat{y}_{323}	25.40938	0.440625	0.19415	0.375	0.140625
\hat{y}_{331}	26.38438	0.690625	0.476963	0.25	0.0625
\hat{y}_{332}	26.38438	-0.08437	0.007119	-0.775	0.600625
\hat{y}_{333}	26.38438	-1.75938	3.0954	-1.675	2.805625
\hat{y}_{341}	27.20521	0.544792	0.296798	2.304167	5.309184
\hat{y}_{342}	27.20521	-0.05521	0.003048	-0.6	0.36
\hat{y}_{343}	27.20521	0.819792	0.672058	0.875	0.765625
\hat{y}_{411}	29.90729	-2.50729	6.286512	-3.32708	11.06948
\hat{y}_{412}	29.90729	-1.55729	2.425157	0.95	0.9025
\hat{y}_{413}	29.90729	-1.40729	1.98047	0.15	0.0225
\hat{y}_{421}	31.14896	0.051042	0.002605	1.458333	2.126736
\hat{y}_{422}	31.14896	0.476042	0.226616	0.425	0.180625
\hat{y}_{423}	31.14896	-0.82396	0.678907	-1.3	1.69

Sumber : Hasil Olahan,2020



Lampiran 7 Nilai Sisaan dan Nilai Dugaan (Lanjutan)

	\hat{y}_{ijk}	\hat{e}_{ijk}	$(\hat{e}_{ijk})^2$	$\hat{e}_{ijk} - \hat{e}_{ijk-1}$	$(\hat{e}_{ijk} - \hat{e}_{ijk-1})^2$
\hat{y}_{431}	32.12396	1.351042	1.825314	2.175	4.730625
\hat{y}_{432}	32.12396	0.176042	0.030991	-1.175	1.380625
\hat{y}_{433}	32.12396	1.201042	1.442501	1.025	1.050625
\hat{y}_{441}	32.94479	0.055208	0.003048	-1.14583	1.312934
\hat{y}_{442}	32.94479	1.430208	2.045496	1.375	1.890625
\hat{y}_{443}	32.94479	1.555208	2.418673	0.125	0.015625

Sumber : Hasil Olahan,2020

Dari hasil pengolahan data pada tabel di atas maka dapat diperoleh hasil Uji Durbin – Watson sebagai berikut:

$$d = \frac{\sum_{i=1}^a \sum_{j=1}^b \sum_{k=2}^r (\hat{e}_{ijk} - \hat{e}_{ijk-1})^2}{\sum_{i=1}^a \sum_{j=1}^b \sum_{k=2}^r (\hat{e}_{ijk})^2} = \frac{50,407}{40,869} = 1,233$$

Kemudian berdasarkan data pada tabel di atas dapat diketahui :

$$R = 20$$

$$n1 = 22$$

$$n2 = 26$$

Sehingga hasil untuk Run Test diperoleh :

$$\bar{R} = \frac{2n1n2}{n1+n2} + 1 = 24,833$$

$$s_R = \sqrt{\frac{2n1n2(2n1n2-n1-n2)}{(n1+n2)^2(n1+n2-1)}} = \sqrt{\frac{1253824}{108288}} = 3,403$$

$$Z = \frac{R-\bar{R}}{s_R} = \frac{20-24,833}{3,403} = -1,42$$



Lampiran 8 Tabel distribusi Z

z	0	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
1	0.841	0.843	0.846	0.848	0.851	0.853	0.855	0.858	0.86	0.862
1.1	0.864	0.867	0.869	0.871	0.872	0.875	0.877	0.879	0.881	0.883
1.2	0.885	0.887	0.889	0.891	0.893	0.894	0.896	0.898	0.899	0.901
1.3	0.903	0.905	0.907	0.908	0.91	0.911	0.913	0.915	0.916	0.918
1.4	0.919	0.920	0.922	0.924	0.925	0.926	0.928	0.929	0.930	0.932
1.5	0.933	0.934	0.936	0.937	0.938	0.939	0.941	0.942	0.943	0.944
1.6	0.945	0.946	0.947	0.948	0.949	0.951	0.952	0.953	0.954	0.954
1.7	0.955	0.956	0.957	0.958	0.959	0.96	0.961	0.962	0.962	0.963
1.8	0.964	0.965	0.966	0.966	0.967	0.968	0.969	0.969	0.97	0.971
1.9	0.971	0.972	0.973	0.973	0.972	0.974	0.975	0.976	0.976	0.977
2	0.977	0.978	0.978	0.979	0.979	0.979	0.980	0.981	0.981	0.982
2.1	0.982	0.983	0.983	0.983	0.984	0.984	0.985	0.983	0.985	0.986
2.2	0.986	0.986	0.987	0.987	0.987	0.988	0.988	0.988	0.989	0.989
2.3	0.989	0.989	0.989	0.990	0.990	0.991	0.991	0.991	0.991	0.992
2.4	0.992	0.992	0.992	0.992	0.993	0.993	0.993	0.993	0.993	0.994
2.5	0.994	0.993	0.994	0.994	0.994	0.995	0.995	0.995	0.995	0.995
2.6	0.995	0.995	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996

Sumber : Microsoft Excel 2013



Lampiran 9 Tabel Durbin – Watson

n	k=6		k=7		k=8		k=9	
	dU	dL	dU	dL	dU	dL	dU	dL
30	0.998	1.931	0.926	2.034	0.854	2.141	0.782	2.251
31	1.02	1.92	0.95	2.018	0.879	2.121	0.81	2.226
32	1.041	1.909	0.972	2.004	0.904	2.102	0.836	2.203
33	1.061	1.9	0.994	1.991	0.927	2.085	1.861	2.181
34	1.079	1.891	1.015	1.979	0.95	2.069	0.885	2.162
35	1.097	1.884	1.034	1.967	0.971	2.054	0.908	2.144
36	1.114	1.876	1.053	1.957	0.991	2.041	0.93	2.127
37	1.131	1.87	1.071	1.948	1.011	2.029	0.951	2.112
38	1.146	1.864	1.088	1.939	1.029	2.017	0.971	2.098
39	1.161	1.859	1.104	1.932	1.047	2.007	0.99	2.085
40	1.175	1.854	1.12	1.924	1.064	1.997	1.008	2.072
41	1.189	1.849	1.135	1.918	1.08	1.988	1.025	2.061
42	1.202	1.845	1.149	1.911	1.096	1.98	1.042	2.05
43	1.215	1.841	1.163	1.906	1.111	1.972	1.058	2.04
44	1.227	1.838	1.176	1.9	1.125	1.965	1.074	2.031
45	1.239	1.835	1.189	1.895	1.139	1.958	1.089	2.022
46	1.25	1.832	1.201	1.891	1.132	1.951	1.103	2.014
47	1.261	1.829	1.213	1.886	1.165	1.946	1.117	2.006
48	1.271	1.827	1.225	1.882	1.178	1.94	1.131	1.999
49	1.281	1.824	1.236	1.879	1.19	1.935	1.143	1.992
50	1.291	1.822	1.246	1.875	1.201	1.93	1.156	1.986

Sumber : N. E. Savin dan K. J White, 1977

