**Lampiran 13. Hasil Analisis Kadar air Pada Penelitian Utama**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Konsentrasi Pektin (A) | Kelompok | Konsentrasi Asam Sitrat | | | Total | Rata-Rata |
| b1 (1% ) | b2 ( 20% ) | b3 (3% ) |
| a1 (0.3% ) | 1 | 24.24 | 25.79 | 26.78 | 76.81 | 25.60 |
| 2 | 23.81 | 25.40 | 26.66 | 75.87 | 25.29 |
| 3 | 22.36 | 23.60 | 25.64 | 71.60 | 23.87 |
| Sub Total | | 70.41 | 74.79 | 79.08 | 224.28 | 74.76 |
| Rata-Rata Sub Total | | 23.47 | 24.93 | 26.36 | 74.76 | 24.92 |
| a2 ( 1% ) | 1 | 23.08 | 24.68 | 25.69 | 73.45 | 24.48 |
| 2 | 25.59 | 25.54 | 25.10 | 76.23 | 25.41 |
| 3 | 21.82 | 22.95 | 25.74 | 70.51 | 23.50 |
| Sub Total | | 70.49 | 73.17 | 76.53 | 220.19 | 73.40 |
| Rata-Rata Sub Total | | 23.50 | 24.39 | 25.51 | 73.40 | 24.47 |
| a3 (2% ) | 1 | 24.24 | 23.62 | 25.79 | 73.65 | 24.55 |
| 2 | 23.71 | 22.82 | 25.60 | 72.13 | 24.04 |
| 3 | 19.84 | 22.64 | 22.78 | 65.26 | 21.75 |
| Sub Total | | 67.79 | 69.08 | 74.17 | 211.04 | 70.35 |
| Rata-Rata Sub Total | | 22.60 | 23.03 | 24.72 | 70.35 | 23.45 |
| Total | | 208.69 | 217.04 | 229.78 | 655.51 | 218.50 |
| Total Rata-Rata | | 69.56 | 72.35 | 76.59 | 218.50 | 72.83 |
| Total Sebenarnya | | 23.19 | 24.12 | 25.53 |  |  |

**Perhitungan Analisis Kadar Air Selai Lembaran Labu Kuning**

Faktor Koreksi (FK) = 

= 

= 15914.56

JK Kelompok (JKK) = 

= 

**=** 20.66

JK Total (JKT) = 

= 

**=** 70.75

Jumlah Kuadrat A (JKA) = 

= 

**=** 10.21

Jumlah Kuadrat B (JKB) = 

= 

**=** 25.06

Jumlah Kuadrat AB

(JKAB) = JKA JKB

= 

**=** 1.15

JK Perlakuan (JKP) = 

= 

= 36.43

JK Galat (JKG) = JKT – JKK – JKA – JKB – JKAB

= 70.75 – 20.66 – 10.21 – 25.06 – 1.15

**=** 13.65

**Tabel ANAVA untuk Kadar Air Selai Lembaran Labu Kuning**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sumber Keragaman | db | JK | KT | F Hitung | F Tabel 5% |
| Kelompok | 2 | 20.664 | 10.3321 |  |  |
| Perlakuan : |  |  |  |  |  |
| Konsentrasi Pektin (A) | 2 | 10.213 | 5.1064 | 5.98\* | 3.63 |
| Konsentrasi Asam Sitrat (B) | 2 | 25.067 | 12.5337 | 14.68\*\* | 3.63 |
| Interaksi AB | 4 | 1.154 | 0.2884 | 0.34 | 3.01 |
| Galat | 16 | 13.657 | 0.8536 |  |  |  |
| Total | 26 | 70.755 |  |  |  |  |

\*) Berpengaruh Nyata

\*\*) Berpengaruh Sangat Nyata

tn) Tidak Berpengaruh

**Kesimpulan :**

Berdasasarkan tabel ANAVA, F hitung lebih kecil dari F tabel pada taraf 5%, sehingga dapat disimpulkan interaksi faktor a dan faktor b tidak berpengaruh nyata terhadap kadar air selai lembaran labu kuning. Konsentrasi pekton dan konsentrasi asam sitrat, F hitung lebih besar dari F tabel pada taraf 5%, maka konsentrasi asam sitrat berpengaruh sangat nyata, dan kosentrasi pektin berpengaruh nyata terhadap kadar air selai lembaran labu kuning. Maka dari itu perlakuan faktor A yaitu konsentrasi pektin dan faktor B konsentrasi asam sitrat perlu dilakukan uji lanjut *Duncan*.

**Uji Lanjut *Duncan* TerhadapKadar Air Selai Lembaran Labu Kuning**

**Standar Galat = 0,308**

**Tabel Uji Lanjut Duncan untuk Konsentrasi Pektin (A)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| SSR 5% | LSR 5% | Perlakuan | Rata – rata Perlakuan | perlakuan | | | taraf nyata 5% |
| 1 | 2 | 3 |
|  |  | a3 | 23.45 | - |  |  | a |
| 3.00 | 0.308 | a2 | 24.47 | 1.017\* | - |  | b |
| 3.15 | 0.323 | a1 | 24.92 | 1.471\* | 0.454\* | - | c |

**Kesimpulan :**

Berdasarkan uji lanjut *Duncan*, menunjukkan bahwa *selai lembaran*  yang dihasilkan pada perlakuan konsentrasi pektin a1, a2, dan a3 berbeda nyata terhadap kadar air selai lembaran labu kuning.

**Tabel Uji Lanjut Duncan untuk Konsentrasi Asam Sitrat (B)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| SSR 5% | LSR 5% | Perlakuan | Rata – rata Perlakuan | perlakuan | | | taraf nyata 5% |
| 1 | 2 | 3 |
|  |  | b1 | 23.19 | - |  |  | a |
| 3.00 | 0.308 | b2 | 24.12 | 0.928\* | - |  | b |
| 3.15 | 0.323 | b3 | 25.53 | 2.343\* | 1.416\* | - | c |

**Kesimpulan :**

Berdasarkan uji lanjut *Duncan*, menunjukkan bahwa selai lembaran yang dihasilkan pada perlakuan konsentrasi asa, sitrat b1, b2, dan b3 berbeda nyata terhadap kadar air selai lembaran labu kuning.

**Lampiran 14. Hasil Analisis Kadar Serat Pada Penelitian Utama**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Konsentrasi Pektin (A) | Kelompok | Konsentrasi Asam sitrat | | | Total | Rata-Rata |
| b1 ( 1% ) | b2 ( 2% ) | b3 ( 3% ) |
| a1 ( 0.3% ) | 1 | 2.25 | 2.56 | 2.34 | 7.15 | 2.38 |
| 2 | 2.58 | 2.56 | 2.50 | 7.64 | 2.55 |
| 3 | 3.87 | 3.78 | 3.75 | 11.40 | 3.80 |
| Sub Total | | 8.70 | 8.90 | 8.59 | 26.19 | 8.73 |
| Rata-Rata Sub Total | | 2.90 | 2.97 | 2.86 | 8.73 | 2.91 |
| a2 ( 1% ) | 1 | 2.63 | 3.41 | 3.50 | 9.54 | 3.18 |
| 2 | 3.57 | 3.73 | 3.00 | 10.30 | 3.43 |
| 3 | 4.20 | 4.13 | 4.13 | 12.46 | 4.15 |
| Sub Total | | 10.40 | 11.27 | 10.63 | 32.30 | 10.77 |
| Rata-Rata Sub Total | | 3.47 | 3.76 | 3.54 | 10.77 | 3.59 |
| a3 ( 2% ) | 1 | 3.37 | 3.63 | 3.44 | 10.44 | 3.48 |
| 2 | 4.31 | 3.66 | 3.00 | 10.97 | 3.66 |
| 3 | 5.26 | 5.08 | 4.13 | 14.47 | 4.82 |
| Sub Total | | 12.94 | 12.37 | 10.57 | 35.88 | 11.96 |
| Rata-Rata Sub Total | | 4.31 | 4.12 | 3.52 | 11.96 | 3.99 |
| Total | | 32.04 | 32.54 | 29.79 | 94.37 | 31.46 |
| Total Rata-Rata | | 10.68 | 10.85 | 9.93 | 31.46 | 10.49 |

**Perhitungan Analisis Kadar Serat Terhadap Selai Lembaran Labu Kuning**

Faktor Koreksi (FK) = 

= 

= 329.84

JK Kelompok (JKK) = 

= 

**=** 8.04

JK Total (JKT) = 

= 

**=** 16.11

Jumlah Kuadrat A (JKA) = 

= 

**=** 5.33

Jumlah Kuadrat B (JKB) = 

= 

**=** 0.47

Jumlah Kuadrat AB

(JKAB) = JKA JKB

= 

**=** 0.69

JK Perlakuan (JKP) = 

= 

= 6.50

JK Galat (JKG) = JKT – JKK – JKA – JKB – JKAB

= 16.11 – 8.04 – 5.33 – 0.47 – 0.69

**=** 1.55

**Tabel ANAVA untuk Analisis Kadar Serat Selai Lembaran Labu Kuning**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sumber Keragaman | db | JK | KT | F Hitung | F Tabel 5% |
| Kelompok | 2 | 8.050 | 4.0249 |  |  |
| Perlakuan : |  |  |  |  |  |
| Konsentrasi Pektin (A) | 2 | 5.335 | 2.6675 | 27.38\*\* | 3.63 |
| Konsentrasi Asam sitrat (B) | 2 | 0.477 | 0.2384 | 2.45tn | 3.63 |
| Interaksi AB | 4 | 0.695 | 0.1738 | 1.78 tn | 3.01 |
| Galat | 16 | 1.559 | 0.0974 |  |  |
| Total | 26 | 16.115 |  |  |  |

\*) Berpengaruh Nyata

\*\*) Berpengaruh Sangat Nyata

tn) Tidak Berpengaruh

**Kesimpulan :**

Berdasasarkan tabel ANAVA, F hitung lebih besar dari F tabel pada taraf 5%, sehingga dapat disimpulkan konsentrasi pektin berpengaruh sangat nyata terhadap kadar serat selai lembaran labu kuning. Maka dari itu untuk faktor (a) perlu dilakukan uji lanjut *Duncan.* Pengaruh konsentrasi asam sitrat dan interaksi konsentrasi pektin dan konsentrasi asam sitrat, F hitung lebih kecil dari F tabel pada taraf 5% sehingga dapat disimpulkan konsentrasi asam sitrat dan interaksi konsentrasi pektin dan konsentrasi asam sitrat tidak berpengaruh terhadap kadar serat selai lembaran labu kuning.

**Uji Lanjut *Duncan* TerhadapAnalisis Kadar Serat Selai Lembaran Labu Kuning**

**Standar Galat = 0,035**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| SSR 5% | LSR 5% | Perlakuan | Rata – rata Perlakuan | Perlakuan | | | Taraf nyata 5% |
| 1 | 2 | 3 |
|  |  | a1 | 2.91 | - |  |  | a |
| 3.00 | 0.104 | a2 | 3.59 | 0.679\* | - |  | b |
| 3.15 | 0.109 | a3 | 3.99 | 1.077\* | 0.398\* | - | c |

**Tabel Uji Lanjut Duncan untuk Konsentrasi Pektin (A)**

**Kesimpulan :**

Berdasarkan uji lanjut *Duncan*, menunjukkan bahwa *selai lembaran*  yang dihasilkan pada perlakuan konsentrasi pektin a1 (0.3%), a2 (1%), dan a3 (2%) berbeda nyata terhadap kadar serat selai lembaran labu kuning.

**Lampiran 15 . Hasil Analisis Kekuatan Gel Pada Penelitian Utama**

**Pengaruh Konsentrasi Asam Sitrat Terhadap Konsentrasi Pektin**

* Selai Lembaran Dengan Asam Sitrat 1%
* Asam Sitrat 1% + pektin 0.3% = 5.4 N

5.4 N = 5.4 x 105 = 540.000 gr.cm/s2

540.000 gr.cm/s2 = = 699.46 gr/cm2

* Asam Sitrat 1% + pektin 1% = 6.13 N

6.13 N = 6.13 x 105 = 613.000 gr.cm/s2

613.000 gr.cm/s2 = = 794.44 gr/cm2

* Asam Sitrat 1% + pektin 1.7% = 6.81N

6.81 N = 6.81 x 105 = 681.000 gr.cm/s2

681.000 gr.cm/s2 = = 800.92 gr/cm2

* Asam Sitrat 1% + pektin 2.4% = 7.1 N

7.1 N = 7.1 x 105 = 710.000 gr.cm/s2

710.000 gr.cm/s2 = = 920.16 gr/cm2

* Asam Sitrat 1% + pektin 3.1% = 7.95 N

7.95 N = 7.95 x 105 = 795.000 gr.cm/s2

795.000 gr.cm/s2 = = 1030.46 gr/cm2

* Selai Lembaran Dengan Asam Sitrat 2%
* Asam Sitrat 2% + pektin 0.3% = 2.24 N

2.24 N = 2.24 x 105 = 224.000 gr.cm/s2

224.000 gr.cm/s2 = = 290.30 gr/cm2

* Asam Sitrat 2% + pektin 1% = 3.75 N

3.75 N = 3.75 x 105 = 375.000 gr.cm/s2

375.000 gr.cm/s2 = = 486 gr/cm2

* Asam Sitrat 2% + pektin 1.7% = 4.22 N

4.22 N = 4.22 x 105 = 422.000 gr.cm/s2

422.000 gr.cm/s2 = = 546 gr/cm2

* Asam Sitrat 2% + pektin 2.4% = 4.96 N

4.96 N = 4.96 x 105 = 496.000 gr.cm/s2

496.000 gr.cm/s2 = = 642 gr/cm2

* Asam Sitrat 2% + pektin 3.1% = 5.15 N

5.15 N = 5.15 x 105 = 515.000 gr.cm/s2

515.000 gr.cm/s2 = = 677.44 gr/cm2

* Selai Lembaran Dengan Asam Sitrat 3%
* Asam Sitrat 3% + pektin 0.3% = 1.86 N

1.86 N = 1.86 x 105 = 1.86.000 gr.cm/s2

186.000 gr.cm/s2 = = 241.05 gr/cm2

* Asam Sitrat 3% + pektin 1% = 1.98 N

1.98 N = 1.98 x 105 = 198.000 gr.cm/s2

198.000 gr.cm/s2 = = 256.60 gr/cm2

* Asam Sitrat 3% + pektin 1.7% = 2.16 N

2.16 N = 2.16 x 105 = 216.000 gr.cm/s2

216.000 gr.cm/s2 = = 279.93 gr/cm2

* Asam Sitrat 3% + pektin 2.4% = 3 N

3 N = 3 x 105 = 300.000 gr.cm/s2

300.000 gr.cm/s2 = = 388.8 gr/cm2

* Asam Sitrat 3% + pektin 3.1% = 3.87 N

3.87 N = 3.87 x 105 = 387.000 gr.cm/s2

387.000 gr.cm/s2 = = 501.55 gr/cm2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Konsentrasi Pektin | | | | | Total |
| 0.30% | 1% | 1.70% | 2.40% | 3.10% |
| 699.46 | 794.44 | 800.92 | 920.16 | 1030.46 | 4245.44 |
| 290.3 | 486 | 546 | 642 | 677.44 | 2641.74 |
| 241.05 | 256.6 | 279.93 | 388.8 | 501.55 | 1667.93 |
| 1230.81 | 1537.04 | 1626.85 | 1950.96 | 2209.45 | 8555.11 |

Faktor Koreksi (FK) = 

= = 4,879,327.14

JK Total (JKT) = 

=  = 885261.09

JK Perlakuan (JKP) = 

=  = 677581.16

JK Galat (JKG) = JKT – JKP

= 885261.09 – 677581.16

**=** 207679.93

**Tabel ANAVA**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sumber Keragaman | db | JK | KT | F Hitung | F Tabel 5% |
| Perlakuan | 4 | 677581.16 | 169395.29 | 8.15\* | 3.48 |
| Galat | 10 | 207679.93 | 20767.9 |  |  |
| Total | 14 | 885261.09 |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SSR 5% | LSR 5% | Perlakuan | Rata – rata Perlakuan | Perlakuan | | | | Taraf nyata 5% |
| 1 | 2 | 3 |  |
|  |  | 0.3% | 410.27 | - |  |  |  | a |
| 3.64 | 302.84 | 1% | 512.34 | 102tn | - |  |  | a |
| 3.74 | 311.16 | 1.7% | 542.28 | 132 tn | 29.94 tn | - |  | ab |
| 3.79 | 315.32 | 2.4% | 650.32 | 240 tn | 137.98tn | 108tn | - | ab |
| 3.83 | 318.65 | 3.1% | 736.48 | 326.21\* | 224.14 tn | 194.2tn | 86.16tn | b |

Berdasarkan tabel ANAVA, F hitung lebih besar dibandingkan dengan F tabel pada taraf 5%, maka dapat disimpulkan bahwa selai lembaran dengan konsentrasi asam sitrat terhadap kekuatan gel berpengaruh nyata sehingga perlu dilakukan uji lanjut *Duncan*.

Sy = 83.20

Konsentrasi Pektin (%)

Kekuatan Gel (gr/cm2)

Grafik Kekuatan Gel Selai Lembaran dengan Asam Sitrat

**Pengaruh Konsentrasi Pektin Terhadap Konsentrasi Asam Sitrat**

* Selai Lembaran Dengan Pektin 0.3%
* Pektin 0.3% + asam sitrat 1% = 5.45 N

5.45 N = 5.45 x 105 = 545.000 gr.cm/s2

545.000 gr.cm/s2 = = 706 gr/cm2

* Pektin 0.3% + asam sitrat 2% = 2.20 N

2.20 N = 2.20 x 105 = 220.000 gr.cm/s2

220.000 gr.cm/s2 = = 285.12 gr/cm2

* Pektin 0.3% + asam sitrat 3% = 1.85 N

1.85 N = 1.85 x 105 = 185.000 gr.cm/s2

185.000 gr.cm/s2 = = 239.76 gr/cm2

* Pektin 0.3% + asam sitrat 4% = 1.39 N

1.39 N = 1.39 x 105 = 139.000 gr.cm/s2

139.000 gr.cm/s2 = = 180.14 gr/cm2

* Pektin 0.3% + asam sitrat 5% = 1.01 N

1.01 N = 1.01 x 105 = 101.000 gr.cm/s2

101.000 gr.cm/s2 = = 130.89 gr/cm2

* Selai Lembaran Dengan Pektin 1%
* Pektin 1% + asam sitrat 1% = 6.12 N

6.12 N = 6.12 x 105 = 612.000 gr.cm/s2

612.000 gr.cm/s2 = = 793.15 gr/cm2

* Pektin 1% + asam sitrat 2% = 3.70 N

3.70 N = 3.70 x 105 = 370.000 gr.cm/s2

370.000 gr.cm/s2 = = 479 gr/cm2

* Pektin 1% + asam sitrat 3% = 1.91 N

1.91 N = 1.91 x 105 = 191.000 gr.cm/s2

191.000 gr.cm/s2 = = 247.53 gr/cm2

* Pektin 1% + asam sitrat 4% = 1.83 N

1.83 N = 1.83 x 105 = 183.000 gr.cm/s2

183.000 gr.cm/s2 = = 237.16 gr/cm2

* Pektin 1% + asam sitrat 5% = 1.46 N

1.46 N = 1.46 x 105 = 146.000 gr.cm/s2

146.000 gr.cm/s2 = = 189.21 gr/cm2

* Selai Lembaran Dengan Pektin 2%
* Pektin 2% + asam sitrat 1% = 7.29 N

7.29 N = 7.29 x 105 = 729.000 gr.cm/s2

729.000 gr.cm/s2 = = 944.78 gr/cm2

* Pektin 2% + asam sitrat 2% = 4.62 N

4.62 N = 4.62 x 105 = 462.000 gr.cm/s2

462.000 gr.cm/s2 = = 598.75 gr/cm2

* Pektin 2% + asam sitrat 3% = 2.89 N

2.89 N = 2.89 x 105 = 289.000 gr.cm/s2

289.000 gr.cm/s2 = = 374.54 gr/cm2

* Pektin 2% + asam sitrat 4% = 2.01 N

2.01 N = 2.01 x 105 = 201.000 gr.cm/s2

201.000 gr.cm/s2 = = 260.49 gr/cm2

* Pektin 2% + asam sitrat 5% = 1.87 N

1.87 N = 1.87 x 105 = 187.000 gr.cm/s2

187.000 gr.cm/s2 = = 189.2 gr/cm2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Konsentrasi Asam Sitrat | | | | | Total |
| 1% | 2% | 3% | 4% | 5% |
| 706 | 285.12 | 239.76 | 180.14 | 130.89 | 1541.91 |
| 793.15 | 479 | 247.53 | 237.16 | 189.21 | 1946.05 |
| 944.78 | 598.75 | 374.54 | 260.49 | 189.2 | 2367.76 |
| 2443.93 | 1362.87 | 861.83 | 677.79 | 509.3 | 5855.72 |

Faktor Koreksi (FK) = 

= = 2285963.78

JK Total (JKT) = 

=  = 907720.11

JK Perlakuan (JKP) = 

=  = 811284.62

JK Galat (JKG) = JKT – JKP

= 907720.11 – 811284.62

= 96435.49

**Tabel ANAVA**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sumber Keragaman | db | JK | KT | F Hitung | F Tabel 5% |
| Perlakuan | 4 | 811284.62 | 202821.15 | 21.03\* | 3.48 |
| Galat | 10 | 96435.49 | 9643.54 |  |  |
| Total | 14 | 907720.11 |  |  |  |

Berdasarkan tabel ANAVA, F hitung lebih besar dari F tabel pada taraf 5%, sehingga dapat disimpulkan konsentrasi pektin berpengaruh sangat nyata terhadap kekuatan gel selai lembaran selai lembaran labu kuning. Maka dari itu untuk faktor (a) perlu dilakukan uji lanjut *Duncan.*

Sy = 56.69

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SSR 5% | LSR 5% | Perlakuan | Rata – rata Perlakuan | Perlakuan | | | | Taraf nyata 5% |
| 1 | 2 | 3 |  |
|  |  | 5% | 169.67 | - |  |  |  | a |
| 3.64 | 206.35 | 4% | 225.93 | 56.26tn | - |  |  | a |
| 3.74 | 212.02 | 3% | 287.27 | 117.6tn | 61.34tn | - |  | ab |
| 3.79 | 214.85 | 2% | 454.29 | 284.62\* | 228.36\* | 167.02tn | - | b |
| 3.83 | 217.12 | 1% | 814.64 | 644.97\* | 588.71\* | 527.37\* | 360.35\* | c |

Konsentrasi

Asam Sitrat (%)

Kekuatan Gel (gr/cm2)