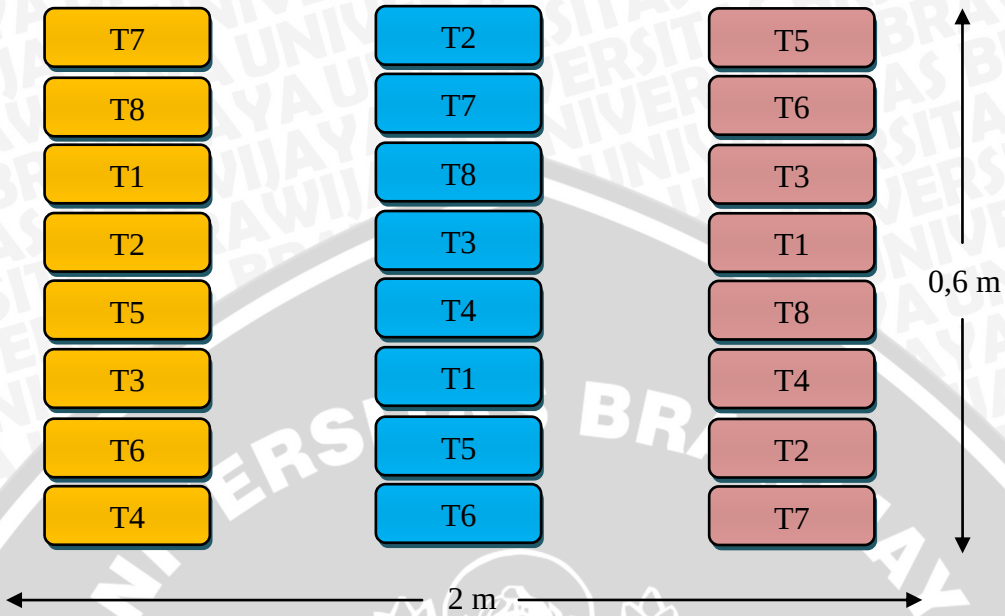
Lampiran 1. Denah Percobaan



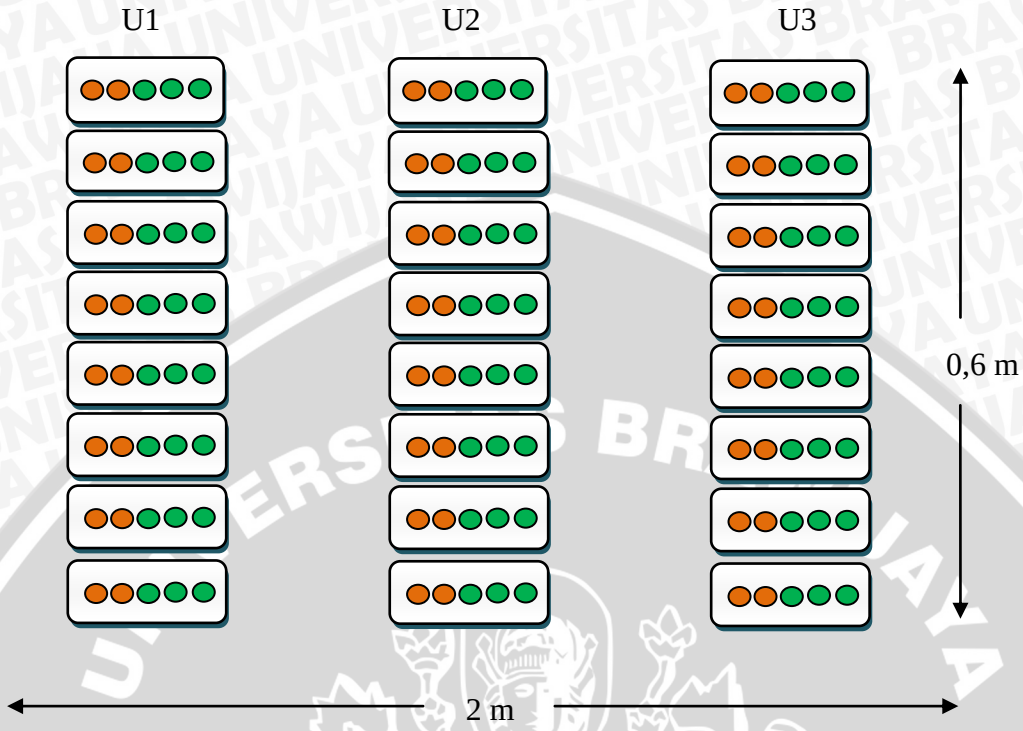
Keterangan :

: Ulangan 1

: Ulangan 2

: Ulangan 3

Lampiran 2. Petak Percobaan



Keterangan :

: Pengamatan non destruktif

: Pengamatan destruktif

Lampiran 3. Perhitungan Pembuatan Larutan Stok Perlakuan Cu dan Mo

Volume larutan stok perlakuan = 100 mL

Larutan stok $CuSO_4 . 5H_2O$ = 50 ppm = 50 mg/L

= 0,05 g/L

= 0,0005 g/100 mL

Larutan stok $Na_2MoO_4.2H_2O$ = 50 ppm = 50 mg/L

= 0,05 g/L

= 0,0005 g/100 mL

Volume pembuatan media perlakuan = 500 mL

Perlakuan T1 tanpa $CuSO_4 . 5H_2O$

Perlakuan T2 0,25 ppm $CuSO_4 . 5H_2O$ $= \frac{0{,}25\ ppm \times 500\ mL}{50\ ppm}$ = 2,5 mL

Perlakuan T3 0,5 ppm $CuSO_4 . 5H_2O$ $= \frac{0{,}5\ ppm \times 500\ mL}{50\ ppm}$ = 5 mL

Perlakuan T4 0,75 ppm $CuSO_4 . 5H_2O$ $= \frac{0{,}75\ ppm \times 500\ mL}{50\ ppm}$ = 7,5 mL

Perlakuan T5 tanpa $Na_2MoO_4.2H_2O$

Perlakuan T6 0,25 ppm $Na_2MoO_4.2H_2O$ $= \frac{0{,}25\ ppm \times 500\ mL}{50\ ppm}$ = 2,5 mL

Perlakuan T7 0,5 ppm $Na_2MoO_4.2H_2O$ $= \frac{0{,}5\ ppm \times 500\ mL}{50\ ppm}$ = 5 mL

Perlakuan T8 0,75 ppm $Na_2MoO_4.2H_2O$ $= \frac{0{,}75\ ppm \times 500\ mL}{50\ ppm}$ = 7,5 mL

Lampiran 4. Kadar Kurkumin

Ulangan 1

Kode		Penimbangan Ekstrak (mg)	Peak Area	Kadar Kurkumin Dalam Ekstrak (%)	Rerata Kadar Kurkumin (%)
T1 U1	1	59	509,63	0,39	0,46
	2	59	851,45	0,53	
T2 U1	1	240	2114,74	0,26	0,20
	2	240	1050,56	0,15	
T3 U1	1	261	1047,73	0,14	0,16
	2	261	1534,56	0,18	
T4 U1	1	437	2764,05	0,15	0,09
	2	437	436,51	0,04	
T5 U1	1	278	365,11	0,07	0,12
	2	278	1623,64	0,18	
T6 U1	1	231	1260,19	0,20	0,23
	2	231	1711,62	0,26	
T7 U1	1	239	3589,82	0,56	0,58
	2	239	3917,06	0,61	
T8 U1	1	285	5175,57	0,58	0,62
	2	285	5877,89	0,66	

Ulangan 2

Kode		Penimbangan Ekstrak (mg)	Peak Area	Kadar Kurkumin Dalam Ekstrak (%)	Rerata Kadar Kurkumin (%)
T1 U1	1	216	4513,81	0,55	0,44
	2	216	2513,81	0,33	
T2 U1	1	249	3297,78	0,36	0,39
	2	249	3875,13	0,42	
T3 U1	1	261	1116,91	0,14	0,22
	2	261	2699,52	0,29	
T4 U1	1	437	207,34	0,03	0,05
	2	437	979,47	0,07	
T5 U1	1	572	3883,95	0,18	0,13
	2	572	1623,64	0,09	
T6 U1	1	231	4463,88	0,59	0,54
	2	231	3573,41	0,48	
T7 U1	1	239	3180,77	0,50	0,62
	2	239	4871,75	0,74	
T8 U1	1	285	5174,64	0,58	0,62
	2	285	5930,25	0,66	

Lampiran 5. Perhitungan Kadar Kurkumin

Standar (x)	Peak Area (y)
1,00	2856,58
1,50	4784,02
2,00	6267,67
2,50	7993,09

- b = 3378,64

  a = -437,27

  r = 0,997643613

- Persamaan Kurva Baku Standar Kurkumin

  $y = bx + a$

  $\frac{y\ (peak\ area) - a}{b} = x$

- Perhitungan Kadar Kurkumin (%)

  T1 U1 = $\frac{y-a}{b} \times \frac{10000}{\frac{b.kering\ planlet \times (2 \times 8\ \mu l)}{bobot\ ekstrak\ sampel}}$

  T1 U1 (1) = $\frac{509{,}63-(-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}13 \times (2 \times 8\ \mu l)}{59}}$ = 0,39 %

  T1 U1 (2) = $\frac{851{,}45-(-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}13 \times (2 \times 8\ \mu l)}{59}}$ = 0,53 %

- T2 U1 = $\frac{y-a}{b} \times \frac{10000}{\frac{b.kering\ planlet \times (2 \times 8\ \mu l)}{bobot\ ekstrak\ sampel}}$

  T2 U1 (1) = $\frac{2114{,}74-(-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}13 \times (2 \times 8\ \mu l)}{240}}$ = 0,26 %

  T2 U1 (2) = $\frac{1050{,}56-(-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}13 \times (2 \times 8\ \mu l)}{240}}$ = 0,15 %

- T3 U1 = $\frac{y-a}{b} \times \frac{10000}{\frac{b.kering\ planlet \times (2 \times 8\ \mu l)}{bobot\ ekstrak\ sampel}}$

  T3 U1 (1) = $\frac{1047{,}73-(-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}13 \times (2 \times 8\ \mu l)}{261}}$ = 0,14 %

  T3 U1 (2) = $\frac{1534{,}56-(-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}13 \times (2 \times 8\ \mu l)}{261}}$ = 0,18 %

- T4 U1 = $\frac{y-a}{b} \times \frac{10000}{\frac{b.kering\ planlet \times (2 \times 8\ \mu l)}{bobot\ ekstrak\ sampel}}$

  T4 U1 (1) = $\frac{2764{,}05 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}11 \times (2 \times 8\ \mu l)}{437}} = 0{,}15\ \%$

  T4 U1 (2) = $\frac{436{,}51 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}11 \times (2 \times 8\ \mu l)}{437}} = 0{,}04\ \%$

- T5 U1 = $\frac{y-a}{b} \times \frac{10000}{\frac{b.kering\ planlet \times (2 \times 8\ \mu l)}{bobot\ ekstrak\ sampel}}$

  T5 U1 (1) = $\frac{365{,}11 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}13 \times (2 \times 8\ \mu l)}{278}} = 0{,}07\ \%$

  T5 U1 (2) = $\frac{1623{,}64 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}13 \times (2 \times 8\ \mu l)}{278}} = 0{,}18\ \%$

- T6 U1 = $\frac{y-a}{b} \times \frac{10000}{\frac{b.kering\ planlet \times (2 \times 8\ \mu l)}{bobot\ ekstrak\ sampel}}$

  T6 U1 (1) = $\frac{1260{,}19 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}15 \times (2 \times 8\ \mu l)}{231}} = 0{,}20\ \%$

  T6 U1 (2) = $\frac{1711{,}62 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}15 \times (2 \times 8\ \mu l)}{231}} = 0{,}26\ \%$

- T7 U1 = $\frac{y-a}{b} \times \frac{10000}{\frac{b.kering\ planlet \times (2 \times 8\ \mu l)}{bobot\ ekstrak\ sampel}}$

  T7 U1 (1) = $\frac{3589{,}82 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}18 \times (2 \times 8\ \mu l)}{239}} = 0{,}56\ \%$

  T7 U1 (2) = $\frac{3917{,}06 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}18 \times (2 \times 8\ \mu l)}{239}} = 0{,}61\ \%$

- T8 U1 = $\frac{y-a}{b} \times \frac{10000}{\frac{b.kering\ planlet \times (2 \times 8\ \mu l)}{bobot\ ekstrak\ sampel}}$

  T8 U1 (1) = $\frac{5175{,}57 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}16 \times (2 \times 8\ \mu l)}{285}} = 0{,}58\ \%$

  T8 U1 (2) = $\frac{5877{,}89 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}16 \times (2 \times 8\ \mu l)}{285}} = 0{,}66\ \%$

- T1 U2 = $\frac{y-a}{b} \times \frac{10000}{\frac{b.kering\ planlet \times (2 \times 8\ \mu l)}{bobot\ ekstrak\ sampel}}$

  T1 U2 (1) = $\frac{4513{,}81 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}13 \times (2 \times 8\ \mu l)}{216}} = 0{,}55\ \%$

  T1 U2 (2) = $\frac{2513{,}81 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}13 \times (2 \times 8\ \mu l)}{216}} = 0{,}33\ \%$

- T2 U2 = $\frac{y-a}{b} \times \frac{10000}{\frac{b.kering\ planlet \times (2 \times 8\ \mu l)}{bobot\ ekstrak\ sampel}}$

  T2 U2 (1) = $\frac{3297{,}78 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}13 \times (2 \times 8\ \mu l)}{249}} = 0{,}36\ \%$

  T2 U2 (2) = $\frac{3875{,}13 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}13 \times (2 \times 8\ \mu l)}{249}} = 0{,}42\ \%$

- T3 U2 = $\frac{y-a}{b} \times \frac{10000}{\frac{b.kering\ planlet \times (2 \times 8\ \mu l)}{bobot\ ekstrak\ sampel}}$

  T3 U2 (1) = $\frac{1116{,}91 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}13 \times (2 \times 8\ \mu l)}{261}} = 0{,}14\ \%$

  T3 U2 (2) = $\frac{2699{,}52 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}13 \times (2 \times 8\ \mu l)}{261}} = 0{,}29\ \%$

- T4 U2 = $\frac{y-a}{b} \times \frac{10000}{\frac{b.kering\ planlet \times (2 \times 8\ \mu l)}{bobot\ ekstrak\ sampel}}$

  T4 U2 (1) = $\frac{207{,}34 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}11 \times (2 \times 8\ \mu l)}{437}} = 0{,}03\ \%$

  T4 U2 (2) = $\frac{979{,}47 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}11 \times (2 \times 8\ \mu l)}{437}} = 0{,}07\ \%$

- T5 U2 = $\frac{y-a}{b} \times \frac{10000}{\frac{b.kering\ planlet \times (2 \times 8\ \mu l)}{bobot\ ekstrak\ sampel}}$

  T5 U2 (1) = $\frac{3883{,}95 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}13 \times (2 \times 8\ \mu l)}{572}} = 0{,}18\ \%$

  T5 U2 (2) = $\frac{1623{,}64 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}13 \times (2 \times 8\ \mu l)}{572}} = 0{,}09\ \%$

- T6 U2 = $\frac{y-a}{b} \times \frac{10000}{\frac{b.kering\ planlet \times (2 \times 8\ \mu l)}{bobot\ ekstrak\ sampel}}$

  T6 U2 (1) = $\frac{4463{,}88 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}15 \times (2 \times 8\ \mu l)}{231}} = 0{,}59\ \%$

  T6 U2 (2) = $\frac{3573{,}41 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}15 \times (2 \times 8\ \mu l)}{231}} = 0{,}48\ \%$

- T7 U2 = $\frac{y-a}{b} \times \frac{10000}{\frac{b.kering\ planlet \times (2 \times 8\ \mu l)}{bobot\ ekstrak\ sampel}}$

  T7 U2 (1) = $\frac{3180{,}77 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}18 \times (2 \times 8\ \mu l)}{239}} = 0{,}50\ \%$

  T7 U2 (2) = $\frac{4871{,}75 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}18 \times (2 \times 8\ \mu l)}{239}} = 0{,}74\ \%$

- T8 U2 = $\frac{y-a}{b} \times \frac{10000}{\frac{b.kering\ planlet \times (2 \times 8\ \mu l)}{bobot\ ekstrak\ sampel}}$

  T8 U2 (1) = $\frac{5175{,}57 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}16 \times (2 \times 8\ \mu l)}{285}} = 0{,}58\ \%$

  T8 U2 (2) = $\frac{5930{,}25 - (-437{,}27)}{3378{,}64} \times \frac{10000}{\frac{0{,}16 \times (2 \times 8\ \mu l)}{285}} = 0{,}66\ \%$

Lampiran 6. Analisis Ragam Jumlah Tunas Perlakuan Cu dan Mo pada Umur 1-9 MST

SK	db	1 MST		2 MST		3 MST		4 MST		5 MST		F-tab 5%
		KT	F-hit	KT	F-hit	KT	F-hit	KT	F-hit	KT	F-hit	
Ulangan	2	0,38	2,54 tn	0,36	2,15 tn	0,29	1,19 tn	0,44	2,07 tn	0,40	1,47 tn	3,73
Perlakuan	7	0,23	1,57 tn	0,32	1,91 tn	0,42	1,69 tn	0,53	2,51 tn	0,50	1,81 tn	2,76
Galat	14	0,15		0,17		0,24		0,21		0,27		
Total	23											

SK	db	6 MST		7 MST		8 MST		9 MST		F-tab 5%
		KT	F-hit	KT	F-hit	KT	F-hit	KT	F-hit	
Ulangan	2	0,23	0,66 tn	0,08	0,17 tn	0,73	1,12 tn	0,62	1,00 tn	3,73
Perlakuan	7	0,51	1,46 tn	0,45	0,98 tn	0,67	1,03 tn	0,75	1,20 tn	2,76
Galat	14	0,35		0,46		0,65		0,62		
Total	23									

Keterangan : MST = minggu setelah tanam, tn = tidak nyata

Lampiran 7. Analisis Ragam Jumlah Akar Perlakuan Cu dan Mo pada Umur 1-9 MST

SK	db	1 MST		2 MST		3 MST		4 MST		5 MST		F-tab 5%
		KT	F-hit	KT	F-hit	KT	F-hit	KT	F-hit	KT	F-hit	
Ulangan	2	0,21	0,58 ^{tn}	0,19	0,47 ^{tn}	0,52	1,10 ^{tn}	0,07	0,11 ^{tn}	0,19	0,39 ^{tn}	3,73
Perlakuan	7	0,41	1,11 ^{tn}	0,16	0,39 ^{tn}	0,38	0,81 ^{tn}	0,71	1,21 ^{tn}	0,57	1,19 ^{tn}	2,76
Galat	14	0,36		0,41		0,47		0,58		0,48		
Total	23											

SK	db	6 MST		7 MST		8 MST		9 MST		F-tab 5%
		KT	F-hit	KT	F-hit	KT	F-hit	KT	F-hit	
Ulangan	2	0,60	1,19 ^{tn}	0,24	0,35 ^{tn}	0,50	1,46 ^{tn}	0,50	1,46 ^{tn}	3,73
Perlakuan	7	0,98	1,92 ^{tn}	0,87	1,27 ^{tn}	0,51	1,50 ^{tn}	0,51	1,50 ^{tn}	2,76
Galat	14	0,51		0,68		0,34		0,34		
Total	23									

Keterangan : MST = minggu setelah tanam, tn = tidak nyata

Lampiran 8. Analisis Ragam Panjang Tanaman Perlakuan Cu dan Mo pada Umur 1-9 MST

SK	db	1 MST		2 MST		3 MST		4 MST		5 MST		F-tab 5%
		KT	F-hit	KT	F-hit	KT	F-hit	KT	F-hit	KT	F-hit	
Ulangan	2	0,30	2,59 tn	0,28	1,15 tn	0,29	0,81 tn	1,59	2,86 tn	1,17	2,34 tn	3,73
Perlakuan	7	0,11	0,93 tn	0,31	1,27 tn	0,43	1,21 tn	1,15	2,08 tn	2,65	5,28 *	2,76
Galat	14	0,11		0,24		0,36		0,55		0,50		
Total	23											

SK	db	6 MST		7 MST		8 MST		9 MST		F-tab 5%
		KT	F-hit	KT	F-hit	KT	F-hit	KT	F-hit	
Ulangan	2	1,42	3,04 tn	1,06	2,38 tn	0,91	1,78 tn	3,62	2,55 tn	3,73
Perlakuan	7	2,01	4,29 *	1,13	2,54 tn	1,20	2,33 tn	5,45	3,85 *	2,76
Galat	14	0,46		0,44		0,51		1,41		
Total	23									

Keterangan : MST = minggu setelah tanam, * = nyata pada taraf 5%, tn = tidak nyata

Lampiran 9. Analisis Ragam Jumlah Daun Perlakuan Cu dan Mo pada Umur 1-9 MST

SK	db	1 MST		2 MST		3 MST		4 MST		5 MST		F-tab 5%
		KT	F-hit	KT	F-hit	KT	F-hit	KT	F-hit	KT	F-hit	
Ulangan	2	0,16	1,40 tn	0,13	2,70 tn	0,44	3,15 tn	0,03	0,17 tn	0,05	0,28 tn	3,73
Perlakuan	7	0,19	1,60 tn	0,03	0,76 tn	0,18	1,33 tn	0,65	3,57 *	1,38	7,71*	2,76
Galat	14	0,11		0,05		0,14		0,18		0,17		
Total	23											

SK	db	6 MST		7 MST		8 MST		9 MST		F-tab 5%
		KT	F-hit	KT	F-hit	KT	F-hit	KT	F-hit	
Ulangan	2	0,16	0,56 tn	0,33	1,26 tn	0,28	0,69 tn	0,28	0,69 tn	3,73
Perlakuan	7	1,35	4,50 *	1,67	6,34 *	2,21	5,39 *	2,21	5,39 *	2,76
Galat	14	0,30		0,26		0,41		0,41		
Total	23									

Keterangan : MST = minggu setelah tanam, * = nyata pada taraf 5%, tn = tidak nyata

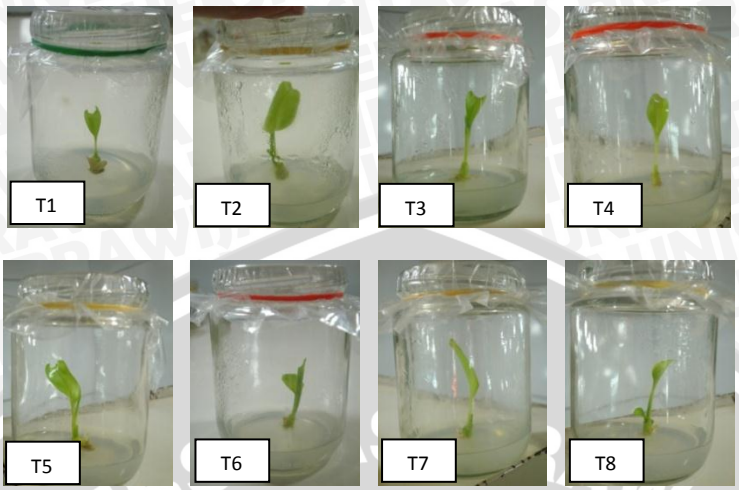
Lampiran 10. Analisis Ragam Bobot Segar Planlet, Bobot Kering Planlet dan Kadar Kurkumin Perlakuan Cu dan Mo Umur 9 MST

SK	db	9 MST				F-tab 5%
		Bobot Segar		Bobot Kering		
		KT	F-hit	KT	F-hit	
Ulangan	2	0,70	2,27 ^{tn}	0,0049	4,86*	3,73
Perlakuan	7	0,75	2,42 ^{tn}	0,0013	1,34 ^{tn}	2,76
Galat	14	0,31		0,0010		
Total	23					

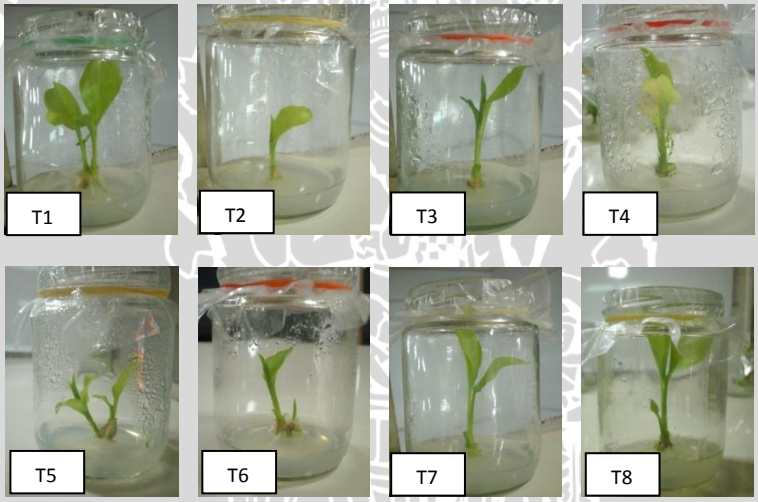
SK	db	9 MST		F-tab 5%
		Kadar Kurkumin		
		KT	F-hit	
Ulangan	1	0,018	2,60 ^{tn}	3,78
Perlakuan	7	0,086	11,94 *	5,59
Galat	7	0,007		
Total	15			

Keterangan : MST = minggu setelah tanam, * = nyata pada taraf 5%, tn = tidak nyata

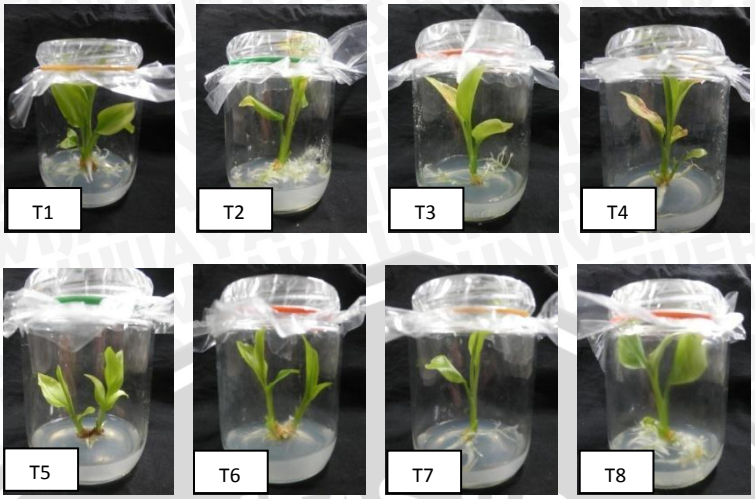
Lampiran 11. Dokumentasi



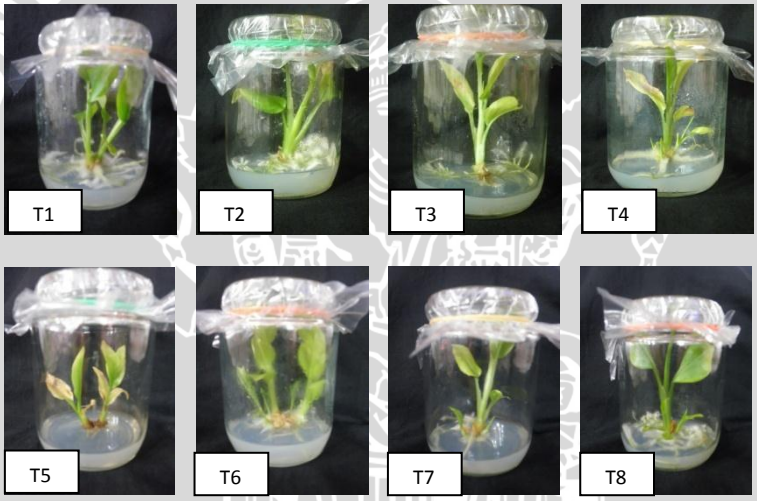
Keterangan : Planlet Temulawak Perlakuan T1 (0 ppm Cu), T2 (0,25 ppm Cu), T3 (0,5 ppm Cu), T4 (0,75 ppm Cu), T5 (0 ppm Mo), T6 (0,25 ppm Mo), T7 (0,5 ppm Mo), T8 (0,75 ppm Mo) Umur 2 MST.



Keterangan : Planlet Temulawak Perlakuan T1 (0 ppm Cu), T2 (0,25 ppm Cu), T3 (0,5 ppm Cu), T4 (0,75 ppm Cu), T5 (0 ppm Mo), T6 (0,25 ppm Mo), T7 (0,5 ppm Mo), T8 (0,75 ppm Mo) Umur 4 MST.



Keterangan : Planlet Temulawak Perlakuan T1 (0 ppm Cu), T2 (0,25 ppm Cu), T3 (0,5 ppm Cu), T4 (0,75 ppm Cu), T5 (0 ppm Mo), T6 (0,25 ppm Mo), T7 (0,5 ppm Mo), T8 (0,75 ppm Mo) Umur 6 MST.



Keterangan : Planlet Temulawak Perlakuan T1 (0 ppm Cu), T2 (0,25 ppm Cu), T3 (0,5 ppm Cu), T4 (0,75 ppm Cu), T5 (0 ppm Mo), T6 (0,25 ppm Mo), T7 (0,5 ppm Mo), T8 (0,75 ppm Mo) Umur 8 MST.