

Lampiran 1. Perhitungan Kebutuhan Pupuk Dasar Tanaman Selada

- a. Dosis pemberian pupuk dasar

Kedalaman tanah yang diambil = 20 cm

Berat isi tanah = 1,1 g/cm³

Berat tanah /polybag = 5 kg

Luasan hektar = 10.000 m² = 10⁸ cm²

Berat 1 HLO = luasan hektar x kedalaman tanah yang diambil x BI

$$= 10^8 \text{ cm}^2 \times 20 \text{ cm} \times 1,1 \text{ g/cm}^3$$

$$= 2,2 \times 10^9 \text{ g}$$

$$= 2,2 \times 10^6 \text{ kg}$$

- Dosis N selada = 200 kg/ha (46 % N)

$$\text{Dosis pupuk urea/ ha} = \frac{100}{46} \times 200 \text{ kg/ha} = 434.78 \text{ kg/ ha}$$

$$\text{Dosis pupuk urea/ polybag} = \frac{5 \text{ kg}}{2,2 \times 10^6 \text{ kg}} \times 434.78 \text{ kg} = 0.99 \text{ g/ polybag}$$

- Dosis P₂O₅ selada = 100 kg/ha (36 % P₂O₅)

$$\text{Dosis pupuk SP36/ ha} = \frac{100}{36} \times 100 \text{ kg} = 277.77 \text{ kg/ha}$$

$$\text{Dosis pupuk SP36/ polybag} = \frac{5 \text{ kg}}{2,2 \times 10^6 \text{ kg}} \times 277.77 \text{ kg} = 0.63 \text{ g/ polybag}$$

- Dosis K₂O selada = 100 kg/ha (60 % K₂O)

$$\text{Dosis pupuk KCL/ ha} = \frac{100}{60} \times 100 \text{ kg} = 166.66 \text{ kg/ha}$$

$$\text{Dosis pupuk KCL/ polybag} = \frac{5 \text{ kg}}{2,2 \times 10^6 \text{ kg}} \times 166.66 \text{ kg} = 0.38 \text{ g/ polybag}$$

Lampiran 2. Perhitungan Dosis Pupuk Kandang dan Mikoriza

- a. Dosis pupuk kandang

Dosis pupuk kandang = 100 g

Jari-jari (r) = 20 cm

Tinggi = 25 cm

Berat tanah = 5 kg = 5000 g

HLO = kedalaman x luas 1 ha x BI

$$= 18 \text{ cm} \times 10^8 \text{ cm}^2 \times 1.1 \text{ g/cm}^3$$

$$= 19.8 \times 10^8 \text{ g}$$

$$\begin{aligned}
 100 \text{ g/polybag} &= \frac{HLO}{\text{Berat tanah}} \times 100 \text{ g} \\
 &= \frac{19.8 \times 10^8 \text{ g}}{5000 \text{ g}} \times 100 \text{ g} \\
 &= \frac{1980 \times 10^8 \text{ g}}{5000 \text{ g}} \\
 &= 0.396 \times 10^8 \text{ g} = 39 \text{ t/ha}
 \end{aligned}$$

b. Dosis mikoriza

- $$\begin{aligned}
 5 \text{ g/polybag} &= \frac{HLO}{\text{Berat tanah}} \times \text{rekomendasi} \\
 &= \frac{19.8 \times 10^8 \text{ g}}{5000 \text{ g}} \times 5 \text{ g} \\
 &= \frac{99 \times 10^8 \text{ g}^2}{5000 \text{ g}} \\
 &= 0.0198 \times 10^8 \text{ g} = 1.9 \text{ t/ha}
 \end{aligned}$$

- $$\begin{aligned}
 10 \text{ g/polybag} &= \frac{HLO}{\text{Berat tanah}} \times \text{rekomendasi} \\
 &= \frac{19.8 \times 10^8 \text{ g}}{5000 \text{ g}} \times 10 \text{ g} \\
 &= \frac{198 \times 10^8 \text{ g}^2}{5000 \text{ g}} \\
 &= 0.0396 \times 10^8 \text{ g} = 3.9 \text{ t/ha}
 \end{aligned}$$

- $$\begin{aligned}
 15 \text{ g/polybag} &= \frac{HLO}{\text{Berat tanah}} \times \text{rekomendasi} \\
 &= \frac{22 \times 10^8 \text{ g}}{5000 \text{ g}} \times 15 \text{ g} \\
 &= \frac{330 \times 10^8 \text{ g}^2}{5000 \text{ g}} \\
 &= 0.066 \times 10^8 \text{ g} = 6.6 \text{ t/ha}
 \end{aligned}$$

c. Pupuk dasar

- $$\begin{aligned}
 \text{Urea } 0.99 \text{ g/ polybag} &= \frac{22 \times 10^8 \text{ g}}{5000 \text{ g}} \times 0.99 \text{ g} \\
 &= \frac{21.78 \times 10^8 \text{ g}^2}{5000 \text{ g}} \\
 &= 0.0043 \times 10^8 \text{ g} = 430 \text{ kg/ha}
 \end{aligned}$$

- $$\begin{aligned}
 \text{SP36 } 0.63 \text{ g/polybag} &= \frac{22 \times 10^8 \text{ g}}{5000 \text{ g}} \times 0.63 \text{ g} \\
 &= \frac{13.86 \times 10^8 \text{ g}^2}{5000 \text{ g}} \\
 &= 0.0027 \times 10^8 \text{ g} = 270 \text{ kg/ha}
 \end{aligned}$$

$$\begin{aligned}
 \bullet \text{ KCL } 0,38 \text{ g/polybag} &= \frac{22 \times 10^8 \text{ g}}{5000 \text{ g}} \times 0,38 \text{ g} \\
 &= \frac{8,36 \times 10^8 \text{ g}^2}{5000 \text{ g}} \\
 &= 0,0016 \times 10^8 \text{ g} = 160 \text{ kg/ha}
 \end{aligned}$$

Lampiran 3. Perhitungan Kebutuhan Air Tanaman Selada

a. Perhitungan Berat Isi Tanah

Panjang ring : 4.55 cm
 Diameter ring : 5.45 cm
 Berat ring : 19.04 g
 Berat basah tanah : 211.03 g
 Berat kering tanah : 141.44 g

$$\text{kadar air} = \frac{\text{berat basah tanah} - \text{berat kering tanah (Oven)}}{\text{berat kering tanah (oven)} - \text{berat ring}}$$

$$\text{kadar air} = \frac{211,03 - 141,44}{141,44 - 19,4} = \frac{69,59}{122,04} = 0,57022 \text{ g/g}$$

$$\begin{aligned}
 \text{Berat Isi Tanah} &= \frac{\text{massa padatan}}{\text{volume tanah}} \\
 &= \frac{\text{berat basah tanah} - \text{berat ring}}{1 + \text{kadar air}} \cdot \frac{1}{4\pi} P r^2 \\
 &= \frac{211,03 - 19,4}{1 + 0,57022} : 0,25 \times 3,14 \times 4,55 \text{ cm} \times (5,45 \text{ cm})^2 \\
 &= \frac{191,63}{1,57022} : (3,571 \times 29,70) \\
 &= 122,04 : 106,05 \text{ cm}^3 \\
 &= 1,1 \text{ g/cm}^3
 \end{aligned}$$

Konversi berat tanah kering udara ke berat tanah kering oven

Berat ring : 19.04 g
 BKU : 191.99 g
 BKU + ring : 211.03 g
 BKO : 122.4 g
 BKO + ring : 141.44 g

- KAKU= Kebutuhan Air Kering Udara

$$\text{KAKU} = \frac{\text{BKU} - \text{BKO}}{\text{BKO}} \times 100\%$$

$$KAKU = \frac{211.03-141.44}{141.44} \times 100\%$$

$$KAKU = \frac{69.59}{141.44} \times 100\%$$

$$KAKU = 49.2 \%$$

- BKU untuk BKO = 5kg

$$KAKU = \frac{BKU-BKO}{BKO} \times 100\%$$

$$49.2 \% = \frac{BKU-5kg}{5kg} \times 100\%$$

$$246 \text{ kg} = 100 \text{ BKU} - 500 \text{ kg}$$

$$BKU = \frac{746 \text{ kg}}{100}$$

$$BKU = 7.46 \text{ kg}$$

Perhitungan kapasitas lapang

Massa tanah : 191.99 g

Massa Padatan : 122.4 g

KAKL= Kadar Air Kapasitas Lapang

$$\begin{aligned} KAKL &= \frac{\text{massa tanah} - \text{massa padatan}}{\text{massa padatan}} \\ &= \frac{191.99 - 122.4}{122.4} \\ &= \frac{69.59}{122.4} \\ &= 56.85 \% \end{aligned}$$

Perhitungan kebutuhan air

BKL untuk BKO = 5kg

$$KAKL = \frac{BKL-BKO}{BKO} \times 100\%$$

$$56.85 \% = \frac{BKL-5kg}{5kg} \times 100\%$$

$$284.25 \text{ kg} = 100 \text{ BKL} - 500 \text{ kg}$$

$$BKL = \frac{784.25}{100} \text{ kg}$$

$$BKL = 7.84 \text{ kg}$$

Jumlah air yang ditambahkan = BKL-BKU

$$= 7.84 \text{ kg} - 7.46 \text{ kg}$$

$$= 0.38 \text{ kg}$$

Berat jenis air = 1g/cm³

$$\text{volume air} = \frac{\text{jumlah air yang ditambahkan}}{\text{Berat jenis air}}$$

$$= 380 \text{ g} : 1 \text{ g/cm}^3$$

$$= 380 \text{ cm}^3 = 380 \text{ ml/tanaman}$$

Lampiran 4. Hasil Analisis Dasar Tanah Alfisol, Jatikerto dan Pupuk Kandang Ayam

Tabel 13. Hasil Analisis Dasar Tanah Alfisol, Jatikerto

N0.	Analisa dasar	Hasil	Kriteria*
1	Ph	6,5	Agak masam
2	P-total (ppmP)	195.47	Sangat tinggi
3	P-tersedia (ppmP)	15.64	Rendah
4	N-Total (%)	0.20	Rendah
5	C-organik (%)	0.47	Sangat rendah
6	B0	0.80	Sangat rendah
7	K (me /100 g)	0.50	Sangat rendah
12	C/N	2.35	Sangat rendah
13	C/P	24.10	Mineralisasi
13	Tekstur		-
	% fraksi : Pasir	30	-
	Debu	56	-
	Liat	23	-
14	Kadar air	0.8	-
15	Jumlah spora	15	Glomus dan Acaluspora

Keterangan *Sumber: Balai Penelitian Tanah, (2009).

Tabel 14. Hasil Analisis Pupuk Kandang Ayam

N0.	Analisa dasar	Hasil	Kriteria *
1	pH	7,6	Masam
2	P-total (ppmP)	1368.83	Tinggi
3	C-organik (%)	7,85	Tinggi
4	C/P	57.38	mineralisasi
4	Kadar air	12%	-

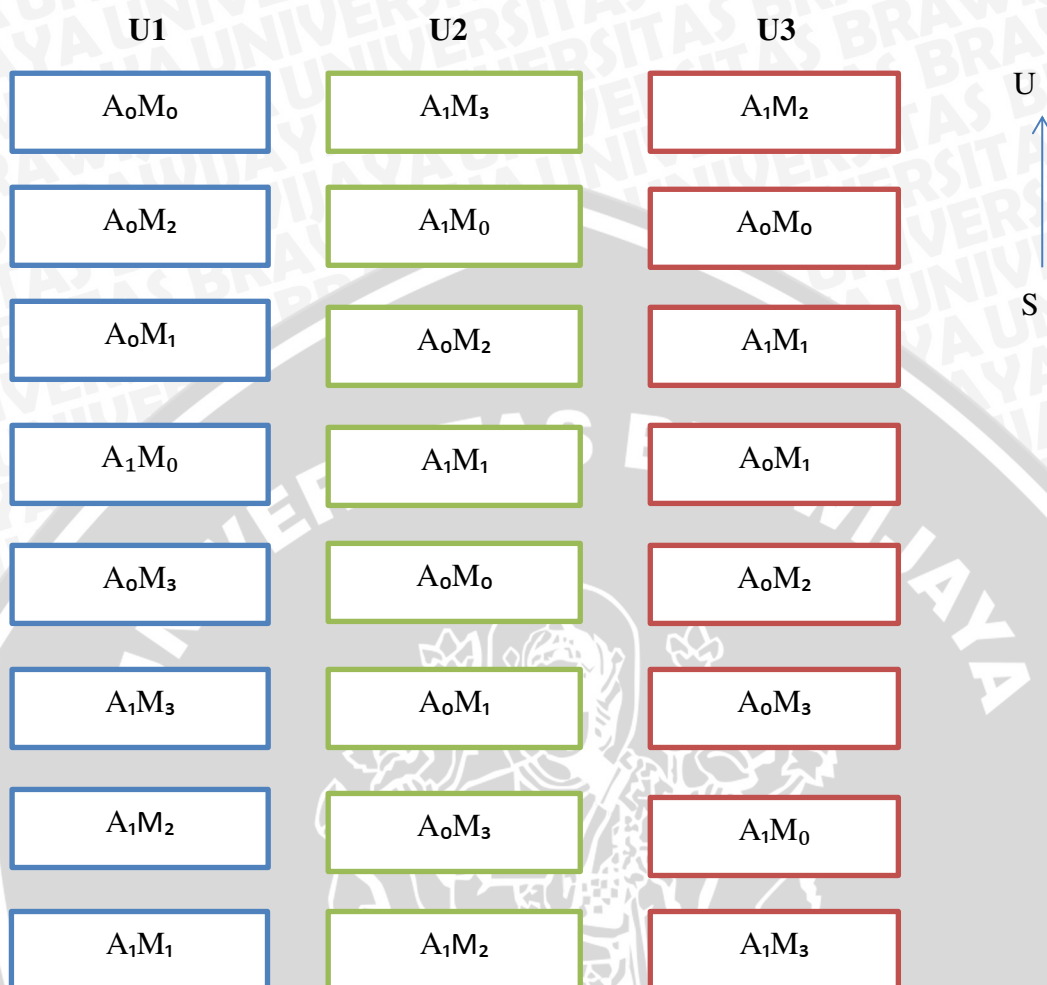
Keterangan: * Sumber: Standar Kualitas Kompos (SNI 19-7030-2004)

Tabel 15. Hasil Kriteria C/P

Rasio C/P	Kriteria *
<200	Mineralisasi
200-300	mineralisasi dan immobilisasi
>300	Immobilisasi

Keterangan: *sumber : Novizan, (2002)

Lampiran 5. Denah Petak Percobaan Penelitian



Lampiran 6. Hasil Analisis Ragam Varibel Pengamatan

a. Variabel pH tanah

Sumber keragaman	Db	JK	KT	F. Hitung	Sign	F. tabel 5%	F. tabel 1%
Perlakuan	7	0.613082	0.08758314	57.87751	**	2.6571966	4.025947
Pupuk kandang	1	0.469840167	0.46984017	310.4842	**	4.4939985	8.530965
Mikoriza	3	0.142044333	0.04734811	31.28902	**	3.2388715	5.292214
A X M	3	0.001198	0.00039917	0.263781	tn	3.2388715	5.292214
Galat	16	0.14	0.00151325				
Total	23	38784.67					

b. P-tersedia Tanah

Sumber keragaman	db	JK	KT	F. Hitung	Sign	F.tabel 5%	F. tabel 1%
Perlakuan	7	30260.596	4322.942	58.16436	**	2.6571966	4.025947
Pupuk kandang	1	29938.4	29938.4	402.8155	**	4.4939985	8.530965
Mikoriza	3	214.72363	71.57454	0.963022	tn	3.2388715	5.292214
A X M	3	107.47277	35.82426	0.482009	tn	3.0279984	4.764877
Galat	16	1189.1659	74.32287				
Total	23	31449.762					

c. C-organik Tanah

Sumber keragaman	db	JK	KT	F. Hitung	Sign	F. tabel 5%	F. tabel 1%
Perlakuan	7	1.341412464	0.191630352	10.20431382	**	2.657197	4.025947
Pupuk kandang	1	0.95490397	0.95490397	50.84862435	**	4.493998	8.530965
Mikoriza	3	0.206326669	0.068775556	3.662297513	tn	3.238872	5.292214
A X M	3	0.180181825	0.060060608	3.198226629	tn	3.238872	5.292214
Galat	16	0.300469555	0.018779347				
Total	23	1.641882019					

d. Tinggi Tanaman Selada

MST	Sumber keragaman	db	JK	KT	F. Hitung	sign	F. tabel 5%	F. tabel 1%
1MST	Perlakuan	7	15.51958	2.217083	1.775442	tn	2.657197	4.025947
	Pupuk kandang	1	1.65375	1.65375	1.324324	tn	4.493998	8.530965
	Mikoriza	3	10.80458	3.601528	2.884106	tn	3.238872	5.292214
	A X M	3	3.06125	1.020417	0.81715	tn	3.238872	5.292214
	Galat	16	19.98	1.24875				
	Total	23	35.49958					
2MST	Perlakuan	7	53.31625	7.6166071	2.753405	*	2.657197	4.025947
	Pupuk kandang	1	40.82041667	40.820417	14.75659	**	4.493998	8.530965
	Mikoriza	3	10.85125	3.6170833	1.307576	tn	3.238872	5.292214
	A X M	3	1.644583333	0.5481944	0.198172	tn	3.238872	5.292214
	Galat	16	44.26	2.76625				
	Total	23	97.57625					
3MST	Perlakuan	7	134.4462	19.20661	5.363726	**	2.657197	4.025947
	Pupuk kandang	1	94.80375	94.80375	26.47533	**	4.493998	8.530965
	Mikoriza	3	28.72792	9.575972	2.67423	tn	3.238872	5.292214
	A X M	3	10.91458	3.638194	1.016019	tn	3.238872	5.292214
	Galat	16	57.29333	3.580833				
	Total	23	191.7396					
4MST	Perlakuan	7	165.3129	23.61613	5.328449	**	2.657197	4.025947
	Pupuk kandang	1	122.8537	122.8537	27.71919	**	4.493998	8.530965
	Mikoriza	3	38.47125	12.82375	2.893391	*	3.238872	5.292214
	A X M	3	3.987917	1.329306	0.299928	tn	3.238872	5.292214
	Galat	16	70.91333	4.432083				
	Total	23	236.2263					

e. Jumlah Daun Tanaman Selada

MST	Sumber keragaman	db	JK	KT	F. Hitung	sign	F. tabel 5%	F. tabel 1%
1MST	Perlakuan	7	2.958333	0.422619	1.44898	tn	2.657197	4.025947
	Pupuk kandang	1	2.041667	2.041667	7	*	4.493998	8.530965
	Mikoriza	3	0.458333	0.152778	0.52381	tn	3.238872	5.292214
	A X M	3	0.458333	0.152778	0.52381	tn	3.238872	5.292214
	Galat	16	4.666667	0.291667				
	Total	23	7.625					
2MST	Perlakuan	7	9.291667	1.327381	3.982143	*	2.657197	4.025947
	Pupuk kandang	1	5.041667	5.041667	15.125	*	4.493998	8.530965
	Mikoriza	3	2.458333	0.819444	2.458333	tn	3.238872	5.292214
	A X M	3	1.791667	0.597222	1.791667	tn	3.238872	5.292214
	Galat	16	5.333333	0.333333				
	Total	23	14.625					
3MST	Perlakuan	7	25.95833	3.708333	7.416667	**	2.657197	4.025947
	Pupuk kandang	1	15.04167	15.04167	30.08333	*	4.493998	8.530965
	Mikoriza	3	5.458333	1.819444	3.638889	*	3.238872	5.292214
	A X M	3	5.458333	1.819444	3.638889	*	3.238872	5.292214
	Galat	16	8	0.5				
	Total	23	33.95833					
4MST	Perlakuan	7	55.33333	7.904762	18.97143	**	2.657197	4.025947
	Pupuk kandang	1	42.66667	42.66667	102.4	**	4.493998	8.530965
	Mikoriza	3	6.333333	2.111111	5.066667	*	3.238872	5.292214
	A X M	3	6.333333	2.111111	5.066667	*	3.238872	5.292214
	Galat	16	6.666667	0.416667				
	Total	23	62					

f. Bobot Segar Tanaman Selada

Sumber keragaman	db	JK	KT	F.Hitung	sign	F.tabel 5%	F. tabel 1%
Perlakuan	7	15780.72	2254.389	8.45943	**	2.657197	4.025947
Pupuk kandang	1	15316.65	15316.65	57.47463	**	4.493998	8.530965
Mikoriza	3	367.4875	122.4958	0.459657	tn	3.238872	5.292214
A X M	3	96.58055	32.19352	0.120804	tn	3.238872	5.292214
Galat	16	4263.907	266.4942				
Total	23	20044.63					

g. Bobot Kering Tanaman Selada

Sumber keragaman	db	JK	KT	F. Hitung	sign	F. tabel 5%	F. tabel 1%
Perlakuan	7	34.7864	4.969486	3.018701	*	2.657197	4.025947
Pupuk kandang	1	29.48167	29.48167	17.90856	**	4.493998	8.530965
Mikoriza	3	3.5225	1.174167	0.713244	tn	3.238872	5.292214
A X M	3	1.782233	0.594078	0.360871	tn	3.238872	5.292214
Galat	16	26.33973	1.646233				
Total	23	61.12613					

h. Serapan P Tanaman Selada

Sumber keragaman	db	JK	KT	F. Hitung	sign	F. tabel 5%	F. tabel 1%
Perlakuan	7	14645414.07	2092202.01	13.70895	**	2.657197	4.025947
Pupuk kandang	1	14047545.67	14047545.67	92.04516	**	4.493998	8.530965
Mikoriza	3	527885.0842	175961.6947	1.152972	tn	3.238872	5.292214
A X M	3	69983.31683	23327.77228	0.152853	tn	3.238872	5.292214
Galat	16	2441852.899	152615.8062				
Total	23	17087266.97					

i. Infeksi akar

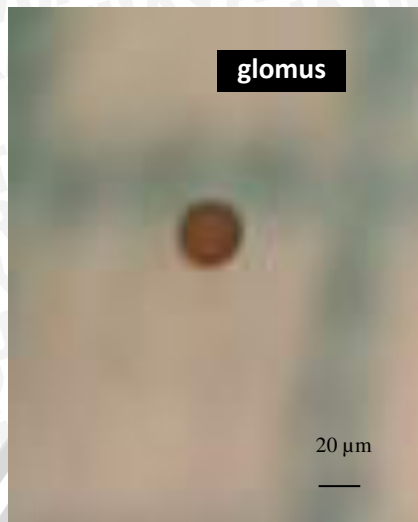
Sumber keragaman	db	JK	KT	F. Hitung	sign	F. tabel 5%	F. tabel 1%
Perlakuan	1	5983.3333	854.7619	20.514286	**	2.657197	4.025947
Pupuk kandang	1	1066.6667	1066.6667	25.6	**	4.493998	8.530965
Mikoriza	3	4750	1583.3333	38	**	3.238872	5.292214
A X M	3	166.66667	55.555556	1.3333333	tn	3.238872	5.292214
Galat	16	666.66667	41.666667				
Total	23	6650					

j. Jumlah spora

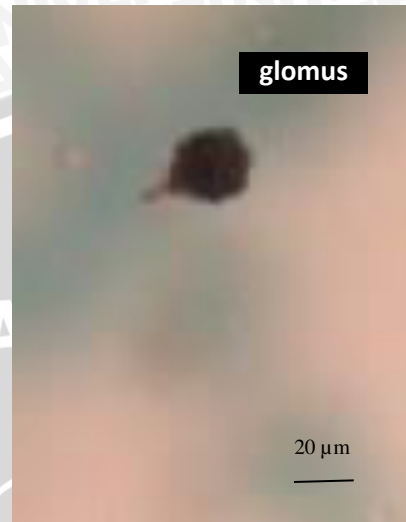
Sumber keragaman	db	JK	KT	F. Hitung	sign	F. tabel 5%	F. tabel 1%
Perlakuan	7	17916	2559.429	44.1598	**	2.657197	4.025947
Pupuk kandang	1	1204.167	1204.167	20.77642	**	4.493998	8.530965
Mikoriza	3	16358.33	5452.778	94.081	*	3.238872	5.292214
A X M	3	353.5	117.8333	2.03307	tn	3.238872	5.292214
Galat	16	927.3333	57.95833				
Total	23	18843.33					

Keterangan :
 * berbeda sangat nyata pada peluang 5%
 ** berbeda sangat nyata pada peluang 1%
 tn tidak nyata

Lampiran 8. Spora Mikoriza Jenis Glomus dan Acaulasporea pada Perlakuan A0M0, A0M1, A0M2, A0M3, A1M0, A1M1, A1M2 dan A1M3 pada 4 MST



A0M0 = Kontrol (tanpa pupuk kandang dan mikoriza)



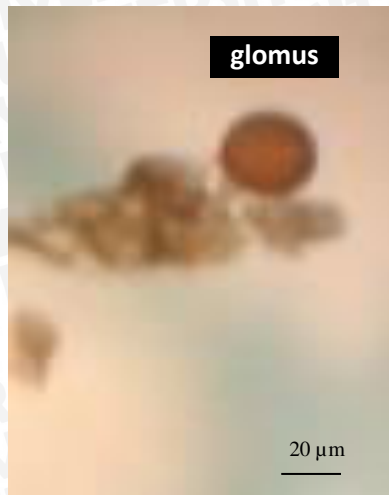
A0M1 = Mikoriza 5 g/polybag



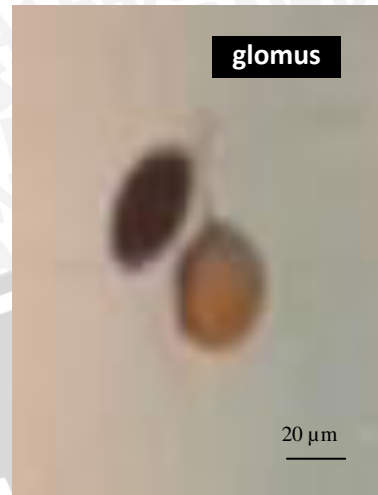
A0M2 = Mikoriza 10 g/polybag
(Perbesaran 50 kali)



A0M3 = Mikoriza 15 g/polybag



A0M3 = Mikoriza 15 g/polybag



A1M0 = Pupuk kandang 100 g/polybag



A1M1 = Pupuk kandang 100 g dan mikoriza 5 g/polybag



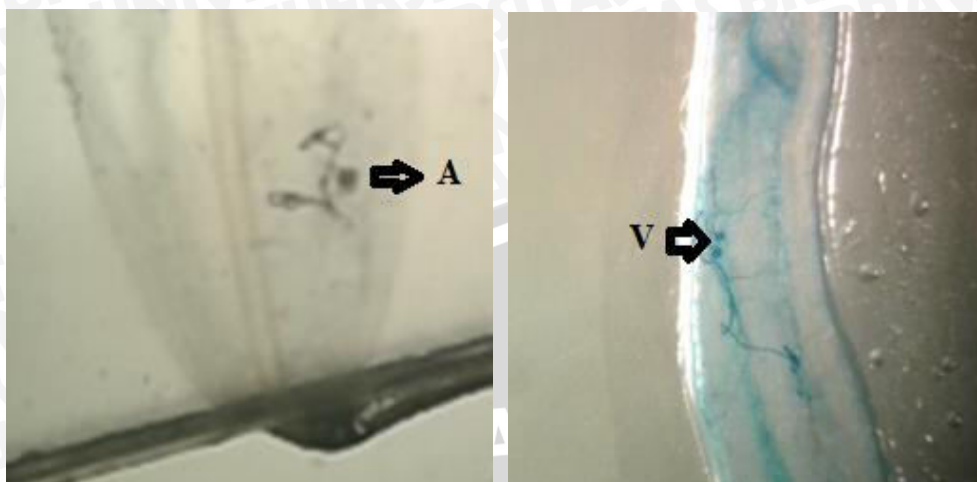
A1M2 = Pupuk kandang 100 g dan mikoriza 10 g/polybag



A1M2 = Pupuk kandang 100 g dan mikoriza 15 g/polybag (Perbesaran 50 kali)

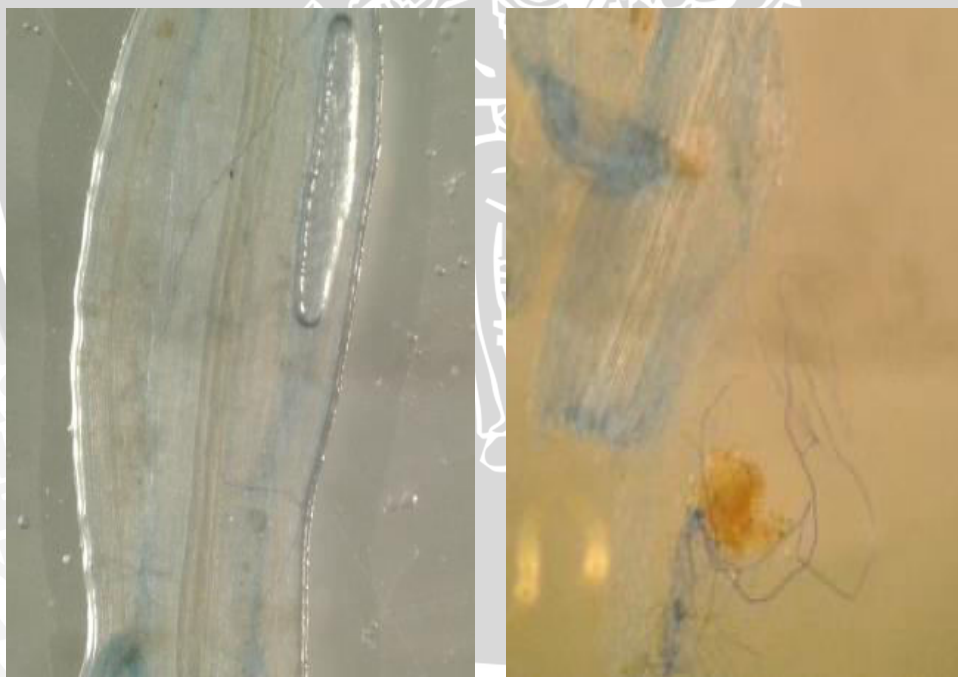


Lampiran 9. Infeksi Jaringan Akar Tanaman Selada pada A1M1 4 MST



A1M1 (Pupuk kandang 100 g dan mikoriza 5 g)
Perbesaran 50 kali

Lampiran 10. Hifa pada Perlakuan A0M0, A0M1, A0M2, A0M3, A0M4, A1M0, A1M1, A1M2, A1M3 pada Jaringan Akar Tanaman Selada 4 MST



A0M0 (tanpa pupuk kandang dan mikoriza)

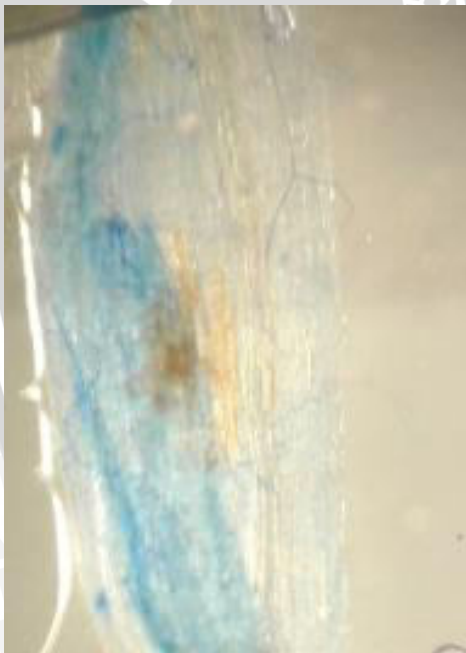
A0M1 (Mikoriza 5 g/polybag)



A0M2 (Mikoriza 10 g/polybag)



A0M3 (Mikoriza 15 g/polybag)



A1M0 (pupuk kandang 100 g/polybag)



A1M1 (pupuk kandang 100 g dan mikoriza 5 g/polybag)

(Perbesaran 50 kali)



A1M2 (pupuk kandang 100 g dan mikoriza 10 g/polybag)
(Perbesaran 50 kali)



A1M3 (pupuk kandang 100 g dan mikoriza 15 g/polybag)

Lampiran 11. Tanaman Selada Perlakuan A0M2, A0M3, A1M0 dan A1M1 pada 4 MST

A0M2

A0M3

A1M0

A1M1



A0M2 = Mikoriza 10 g/polybag

A0M3 = Mikoriza 15 g/polybag

A1M0 = Pupuk kandang 100 g/polybag

A1M1 = Pupuk kandang 100 g dan mikoriza 5 g/polybag

Lampiran 12. Tanaman selada perlakuan A0M0, A0M1, A0M2, A0M3, A1M0, A1M1, A1M2 dan A1M3 pada 4 MST



- A0M0 = Tanpa pupuk kandang dan Mikoriza
- A0M1 = Mikoriza 5 g/polybag
- A0M2 = Mikoriza 10 g/polybag
- A0M3 = Mikoriza 15 g/polybag
- A1M0 = Pupuk kandang 100 g/polybag
- A1M1 = Pupuk kandang 100 g dan mikoriza 5 g/polybag
- A1M2 = Pupuk kandang 100 g dan mikoriza 10 g/polybag
- A1M3 = Pupuk kandang 100 g dan mikoriza 15 g/polybag

Lampiran 13. Tanaman Selada Bagian Akar, Batang dan Daun pada 4 MST



AOM0 = Kontrol (tanpa pupuk kandang dan mikoriza)



AOM1= Mikoriza 5 g/polybag



AOM2 = Mikoriza MA 10 g/polybag



AOM3= Mikoriza 15 g/polybag



A1M0 = Pupuk kandang 100 g



A1M1 = Pupuk kandang 100 g dan mikoriza 5 g/polybag



A1M2 = Pupuk kandang 100 g dan mikoriza 10 g/polybag



A1M3 = Pupuk kandang 100 g dan mikoriza 15 g/polybag