APPENDIX A

REAGENT

1. Polyvinyl alcohol-lacto-glycerol (PVLG) mountant (Brundrett *et al*., 1996)

Polyvinyl alcohol	8.33	g
Distilled water	50	ml
Lactic acid	50	ml
Glycerine	5	ml

2. Melzer's reagent (Brundrett *et al*., 1996)

Iodine	1.5	g
Potassium iodine	5	g
Distilled water	100	ml

3. Reagents for roots clearing and staining reagents (Brundrett *et al*., 1996)

10% KOH (w/v) (exothermic reaction)

50% Glycerol-water (v/v) for destaining and storage of roots

0.05% w/v trypan blue in lactoglycerol (1:1:1 lactic acid, glycerol and water)

Dissolve trypan blue in water before adding equal volumes of lactic acid and glycerol.

4. Modified Hoagland's nutrient solution (modified from Gambrog and Wetter, 1975)

Solution A

H_3BO_3	280	mg
$MnSO_4.H_2O$	340	mg
$CuSO_4.5H_2O$	10	mg
$ZnSO_4.7H_2O$	22	mg
$(NH_4)Mo_7O_{24}.4H_2O$	10	mg

Adjust volume to 100 ml and keep in 4 ºC.

Solution B

Concentrate H_2SO_4	0.5	ml

Adjust volume to 100 ml and keep in 4 ºC.

Solution C

Na_2EDTA	3.36	g
$FeSO_4.7H_2O$	2.79	g

Adjust volume to 400 ml and heat at 70 ºC until the solution turn into yellow color. Adjust volume to 500 ml and keep the solution in 4 ºC.

Hoagland's stock solution (10x)

$Ca(NO_3)_2$	4.7	g
$MgSO_4.7H_2O$	2.6	g
KNO_3	3.3	g
$NH_4H_2PO_4$	0.6	g
Solution A	5	ml
Solution B	0.5	ml

Adjust volume to 500 ml and keep the solution in 4 ºC.

1x Hoagland's nutrient solution

10x Hoagland's stock solution	100	ml
Solution C	5	ml

Adjust volume to 1,000 ml (prepare before use).

APPENDIX B

MEDIA

1. Minimal (M) medium (Bécard and Fortin 1988)

$MgSO_4.7H_2O$	731	mg
KNO_3	80	mg
KCl	65	mg
KH_2PO_4	4.8	mg
$Ca(NO_3)_2.4H_2O$	288	mg
NaFeEDTA	8	mg
KI	0.75	mg
$MnCl_2.4H_2O$	6	mg
$ZnSO_4.7H_2O$	2.65	mg
H_3BO_3	1.5	mg
$CuSO_4.5H_2O$	0.13	mg
$Na_2MoO_4.2H_2O$	0.0024	mg
Sucrose	10,000	mg
Glycine	3	mg
Thiamine hydrochioride	0.1	mg
Pyridoxine hydrochloride	0.1	mg
Nicotinic acid	0.5	mg
Myo inositol	50	mg
Bacto Agar	10,000	mg

2. Modified Strullu Romand (MSR) medium (Declerck *et al*., 1998, modified from Strullu and Romand, 1986)

$MgSO_4.7H_2O$	739	mg
KNO_3	76	mg
KCl	65	mg
KH_2PO_4	4.1	mg
$Ca(NO_3)_2.4H_2O$	359	mg
NaFeEDTA	8	mg
$MnSO_4.4H_2O$	2.45	mg
$ZnSO_4.7H_2O$	0.29	mg
H_3BO_3	1.86	mg
$CuSO_4.5H_2O$	0.24	mg
$Na_2MoO_4.2H_2O$	0.0024	mg
$(NH_4)_6Mo_7O_{24}.4H_2O$	0.035	mg
Sucrose	10,000	mg
Thiamine hydrochioride	1	mg
Pyridoxine hydrochloride	0.9	mg
Nicotinic acid	1	mg
Calcium panthotenate	0.9	mg
Cyanocobalamine	0.4	mg
Biotin	0.9×10^{-3}	mg
Bacto Agar	10,000	mg

Adjust the volume into 1,000 ml with distilled water

3. Luria-Bertani (LB) medium

Tryptone	10	g
Yeast extract	5	g
NaCl	5	g
Agar	15	g

4. Super Optimal Broth (SOB medium)

Tryptone	20	g
Yeast extract	5	g
NaCl	0.5	g

- Add 950 ml de–ionized water
- Add 10 ml 250 mM KCl
- Add 20 ml 1M $MgSO_4$
- Adjust pH to 7.0 with 5N NaOH
- Adjust volume to 1 liter with de–ionized water

CURRICULUM VITAE

Name:	Ms. Amornrat Chaiyasen
Date of Birth:	March 16th, 1985
Place of Birth	Chiang Rai Province, Thailand
Education:	
2001 - 2003	High school at Wattanothai Payap School, Muang, Chiang Mai, Thailand.
2004 - 2007	Bachelor of Science (Microbiology) with Secound Class Honors in Biology. Special project: Propagation of endomycorrhizal spore and effects of endomycorrhiza and *Piriformospora indica* on *Coix lacryma-jobi* L. and *Tagetes patula* L., Department of Biology, Faculty of Science, Chiang Mai University.
Scholarships:	
2007	Industrial and Research Projects for Undergraduate Students (IRPUS), The Thailand Research Fund.
2008–present	The Royal Golden Jubilee Ph.D. Program- Industry, The Thailand Research Fund.
2011–2013	The Higher Education Commission, Thailand under the National Research University: A1 program (research assistant).
2012–2014	Thailand Research Fund for Research Team Association Grant: RTA5580007 (research assistant).

Experience:

August - December 2010	Training and study AM fungal community analysis via terminal restriction fragment length polymorphism (T-RFLP) at Department of Biology, University of York, UK.
2012–2014	Speaker and staff in workshop on Use of Mycorrhiza to Increase Organic Plant Production at Department of Biology, Faculty of Science, Chiang Mai University.
July - November 2013	Training and study AM fungal *in vitro* production and on-farm inoculum production at USDA, Agricultural Research Service, Eastern Regional Research Center, Pennsylvania, USA.

Publications:

1. Kumla J., Suwannarach N., **Jaiyasen A.**, Bussaban B. and Lumyong S. 2013. Development of an edible wild strain of Thai oyster mushroom for economic mushroom production. Chiang Mai Journal of Science 40:161–172.

2. **Chaiyasen A**, Young JPW, Teaumroong N, Gavinlertvatana P, Lumyong S. 2014. Characterization of arbuscular mycorrhizal fungus communities of *Aquilaria crassna and Tectona grandis* roots and soils in Thailand plantations. PLOS ONE 9(11): e112591.

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Poster presentation:

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2. **Chaiyasen A**, Lumyong S. 2010. Diversity of Arbuscular Mycorrhizal Fungi in Rhizosphere Soil of *Tectona grandis* Linn. (Teak) and *Aquilaria crassna* Pierre. (Agarwood). International Symposium on Fungal Biodiversity and Resources. Wang Come Hotel, Chiang Rai, Thailand.

3. **Chaiyasen A**, Young JPW, Lumyong S. 2011. Arbuscular Mycorrhizal Fungi Comparative Community Analysis in Rhizosphere soil and root of *Tectona grandis* Linn. and *Aquilaria crassna* Pierre. via Terminal-Restriction Fragment Length Polymorphism. RGJ-Ph.D. Congress XII "Discovery and Diversity". Jomtien Palm Beach Hotel and Resort, Pattaya, Thailand.

4. **Chaiyasen A**, Lumyong S. 2012. Diversity of Arbuscular Mycorrhiza Fungi in Rhizosphere Soils of Teak (*Tectona grandis* L.) and Agar wood (*Aquilaria crassna* Pierre.). 1st Phayao Research. University of Payao, Payao, Thailand.

5. **Chaiyasen A**, Young JPW, Gavinlertvatana P, Lumyong S. 2012. Community Analysis and Effects of Arbuscular Mycorrhizal Fungi on *Tectona grandis* Linn. and *Aquilaria crassna* Pierre. RGJ-Ph.D. Congress XIII. Jomtien Palm Beach Resort, Pattaya, Chonburi, Thailand.