

Materials List for

Mass Production of Entomopathogenic Fungi, *Metarhizium robertsii* and *Metarhizium pinghaense*, for Commercial Application Against Insect Pests

Letodi Luki Mathulwe¹, Antoinette Paula Malan¹, Nomakholwa Faith Stokwe¹

¹Department of Conservation Ecology and Entomology, Faculty of AgriSciences, Private Bag X1

Corresponding Author

Letodi Luki Mathulwe
mathulwell@sun.ac.za

Citation

Mathulwe, L.L., Malan, A.P., Stokwe, N.F. Mass Production of Entomopathogenic Fungi, *Metarhizium robertsii* and *Metarhizium pinghaense*, for Commercial Application Against Insect Pests. *J. Vis. Exp.* (181), e63246, doi:10.3791/63246 (2022).

Date Published

March 31, 2022

DOI

10.3791/63246

URL

jove.com/video/63246

Materials

Name	Company	Catalog Number	Comments
0.05% Tween 20	Lasec		Added to conidial suspensions to allow fungal spores to mix with water
20 mL McCartney bottles	Lasec		Used to make conidial suspensions
Aluminium foil			Used as a cover of the cotton wool plugs on 250-mL flask
Autoclave			Used to sterilize materials and ingredients used for the conidia production process
Autoclave bags	Lasec		Fermentation bags or solid substrate containers
Autoclave tape	Lasec		To secure PVC pipes on the fermentation bags
Brown Kraft paper bags			Used to dry conidia cultures on agricultural grains
Bunsen burner	Labnet (Labnet International, Inc.)		Used to flame equipment (surgical blades, inoculating loops and rims of flasks)
Clear edge test sieve			Used to separate fungal conidia from agricultural grain substrates
Corn steep liquor	SIGMA	66071-94-1	Ingredient of the blastospore liquid medium
Cotton Wool	Lasec		Used as plug of the neck for fermentation bags
Duran laboratory bottles	Neolab		Used to autoclave SDA medium and distilled water
Electrical tape			Used to tape and seal the sieve joints to prevent the escape of conidial dust
ENDECOTTS test sieve			Used to separate fungal conidia from agricultural grain substrates
Erlenmeyer Flasks, Narrow neck, 250-mL flask	Lasec		Carrier of the blastospore liquid medium

Ethanol (99%)	Lasec		Used to sterilize surgical blades and inoculating loops
Flaked barley	Health Connection Wholefoods		Agricultural grain used as a solid substrate growth medium for conidia of both <i>M. pinghaense</i> and <i>M. robertsii</i>
Flaked oats	Tiger brands		Agricultural grain used as a solid substrate growth medium for conidia of both <i>M. pinghaense</i> and <i>M. robertsii</i>
Glucose	Merck		Ingredient of the blastospore liquid medium
Growth Chamber/ incubators			For growing fungal conidia culture
Haemocytometer			Used to determine conidial concentrations
Inoculating loops	Lasec		For harvesting spores to inoculate liquid medium for blastospores growth
Kitchen rolling pin			Used to manipulate the solid grain substrate bed
Laminar flow Cabinet	ESCO Laminar Flow Cabinet		Provide as sterile environment during substrate inoculation
<i>Metarhizium pinghaense</i> conidia	Stellenbosch University	5HEID	Cultures used to mass culture conidia of <i>Metarhizium pinghaense</i>
<i>Metarhizium robertsii</i> conidia	Stellenbosch University	6EIKEN	Cultures used to mass culture conidia of <i>Metarhizium robertsii</i>
Microscope	ZEISS (Scope. A1)		Used to determine conidial concentrations and conidial viability
Orbital shaker	IncoShake- LABOTEC		Used for the blastospore production process
Parboiled rice	Spekko		Agricultural grain used as a solid substrate growth medium for conidia of both <i>M. pinghaense</i> and <i>M. robertsii</i>
Penicillin-Streptomycin	SIGMA		Added to the SDA medium to prevent bacterial contamination
Petri-dishes	Lasec		Containers for the SDA medium
Pipettes and pipette tips	Labnet (BioPette PLUS)		Used to measure liquids ingredients
Polyvinylchloride Marley waste pipe			Used to create a neck for the fermentation bag
Potassium phosphate dibasic (K ₂ HPO ₄)	SIGMA-ALDRICH		Ingredient of the blastospore liquid medium
Rubber band			Used to secure the secure the surgical paper over the fermentation bag PVC pipe necks
Sabaroud dextrose agar (SDA)	NEOGEN Culture Media		Medium used to culture spores of both <i>Metarhizium pinghaense</i> and <i>Metarhizium robertsii</i>
Sterile distilled water			To hydrate agricultural grains, to make conidial suspensions
Sticky pad			Used to secure the sieves on the vibratory shaker
Surgical blade	Lasec		Used to scrape off spores from fungal cultures
Surgical paper	Lasec		Used to cover the PVC necks and cotton wool plugs of the fermentation bag
Vibratory shaker			Used to shake conidia off the agricultural grain substrates

Vortex mixer	Labnet (Labnet International, Inc.)		Used to mix conidial suspensions in Mc Cartney bottles
Yeast extract	Biolab		Added to the SDA medium to improve spore germination and growth
Zipper-lock bags	GLAD		Used to to store harvested fungal conidia